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FRUIT NOTES

January 1950 - January 1955

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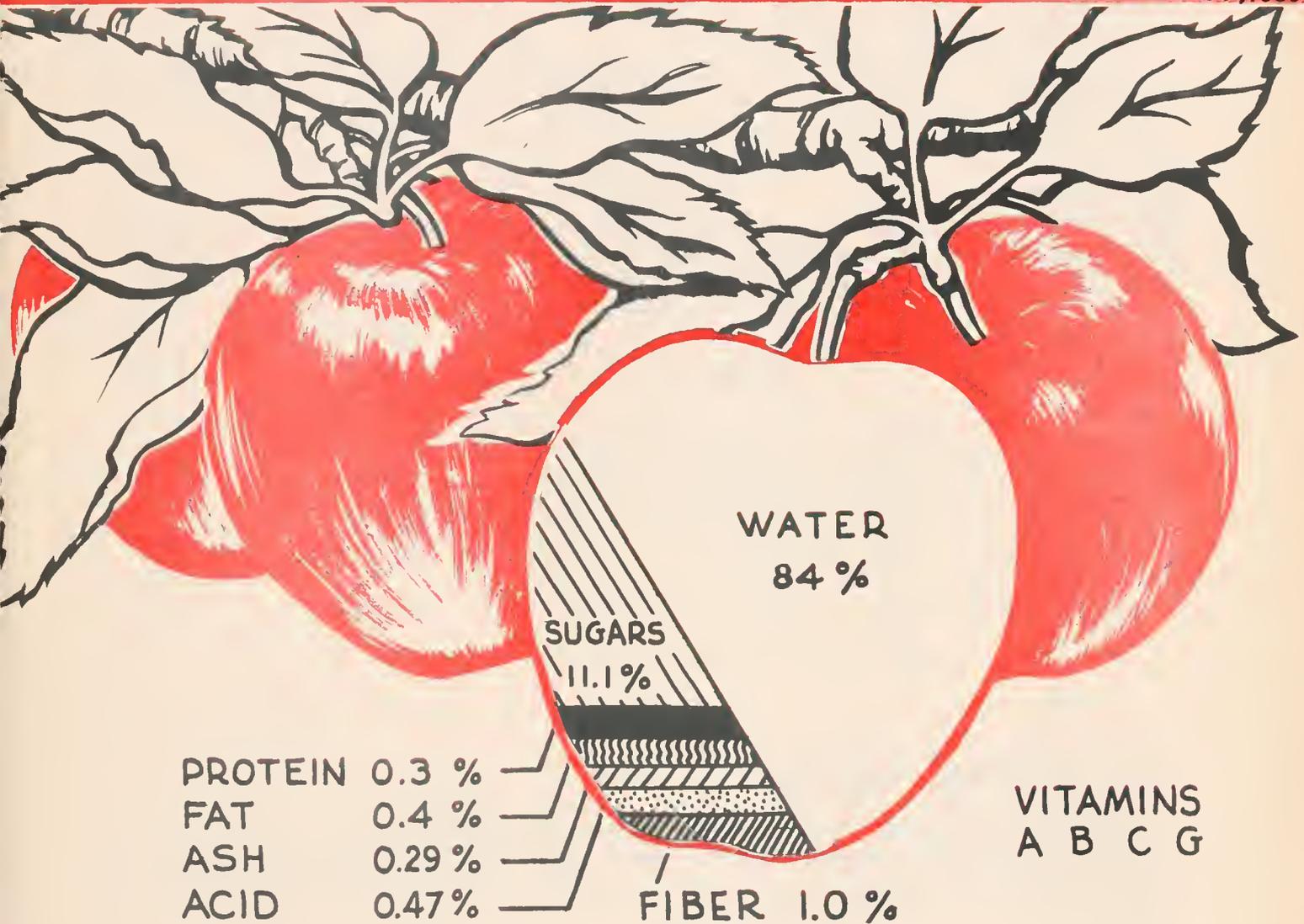
Jan. 1950 - Jan. 1955

Horticulture

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Fruit Notes

JANUARY 31, 1950



Prepared by the Departments of Pomology, Entomology, and Botany, and
Other Staff Members

Compiled by W. H. Thies, Extension Horticulturist

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SOME FACTS ABOUT APPLE VARIETIES

Growers frequently ask about the parentage and place of origin of the newer apple varieties including Macoun, Kendall, etc. Here are the facts concerning some of the more important varieties.

| <u>Variety</u> | <u>Season</u> | <u>Parentage</u> | <u>Place of Origin</u> | <u>Year of Introduction</u> |
|-----------------|---------------|--------------------------|------------------------|-----------------------------|
| Close | VE | Unknown | USDA | ? |
| Cortland | ML | Ben Davis x McIntosh | NY Sta. | 1915 |
| Crimson Beauty | VE | Unknown | Canada | ? |
| Dolgo Crab | EM | A Russian Crab | S.Dak.Sta. | 1916 |
| Early McIntosh | E | Yel. Trans. x McIntosh | NY Sta. | 1923 |
| Haralson | L | Malinda (open poll.) | Minn. Sta. | 1923 |
| Kendall | ML | Zuzoff x McIntosh | NY Sta. | 1932 |
| Lobo | M | McIntosh (open poll.) | Canada | 1909 |
| Lodi | E | Montgomery x Yel. Trans | NY Sta. | 1924 |
| Macoun | L | McIntosh x Jersey Black | NY Sta. | 1923 |
| Medina | L | Deacon Jones x Delicious | NY Sta. | 1922 |
| Melba | E | McIntosh (open poll.) | Canada | 1911 |
| Milton | EM | Yel. Trans. x McIntosh | NY Sta. | 1923 |
| Newfane | ML | Deacon Jones x Delicious | NY Sta. | 1927 |
| Orleans | L | Deacon Jones x Delicious | NY Sta. | 1924 |
| Red Gravenstein | EM | Bud Sport | Wash. | 1911 |
| Red Spy | L | Bud Sport | N. Y. | 1923 |
| Sweet McIntosh | ML | Lawver x McIntosh | NY Sta. | 1922 |

(E=Early M=Medium L=Late V=Very)

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TWO NEW BLUEBERRIES INTRODUCED

Two new varieties of cultivated blueberries, Berkeley and Coville, have recently been named and introduced by the Bureau of Plant Industry, Soils and Agricultural Engineering of the U.S.D.A. and the New Jersey Agricultural Experiment Station.

The Berkeley, tested as U-85, was named after Berkeley township in New Jersey. The Coville, tested as DN-76, was named in honor of the late Dr. Fredrick V. Coville, who started the pioneering work which developed into the present cultivated blueberry industry.

The following are the official descriptions:

"The BERKELEY (U-85) is a seedling resulting from a cross of Stanley x GS-149 (Jersey x Pioneer). It was selected in 1938 at Weymouth, New Jersey and has been tested and propagated in the years since. The Berkeley ripens about a week later than Stanley and a week before Jersey. The berries are lighter blue and also larger than any variety now in the trade. The berries are firm and the flavor medium with some aroma. The clusters are rather open and loose and the berries are not subject to cracking. The bush is a vigorous, good grower and it has been productive. It has been easy to propagate.

"The COVILLE (DN-76) resulted from a cross of GM-37 (Jersey x Pioneer) x Stanley. It has the same parentage as Dixi and was raised and selected at the same time. The fruit usually ripens about a week later than Jersey and because it does not drop may be picked in New Jersey until the end of August. It is later than any variety now in the trade. The berries are lighter blue than Dixi and about the same in color as Jersey. They have averaged slightly larger than Dixi and nearly as large as Berkeley. The berries are firm and the flavor tart until fully ripe. It has a high aroma. The clusters are open and loose and the berries are not subject to cracking. The bush is vigorous, a good grower, and very productive. It has been relatively easy to propagate.

"The Berkeley and Coville have been tested chiefly at Beltsville, Maryland, and in New Jersey and are recommended for trial as commercial varieties from Maryland to New Jersey. The Berkeley has also been tested at the South Haven Horticultural Experiment Station in Michigan and has been promising there. The Coville is being tested there but has not been there long enough to determine its value. Neither variety can yet be recommended as far south as North Carolina."

The Berkeley and Coville, as well as numerous other selections, are under observation in the Experiment Station fields, both at Amherst and East Wareham. However, they have not been under test long enough to evaluate their usefulness under Massachusetts conditions. Plants are not available from either of the introducing agencies. They must be obtained from cooperating growers and nurseries. A list of these will be sent on request.

-- John S. Bailey

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BIRDS AND BLUEBERRIES

While catbirds and robins are frequently found feeding on blueberries, this fruit has been found in the stomachs of 93 kinds of birds in the United States. In a Michigan study, 11 kinds were found eating cultivated blueberries and 11 other kinds were active in the planting. Some were probably feeding on insects or weed seeds. The observers draw these conclusions: -- "Losses to birds in plantations of cultivated blueberries of commercial size appear minor and not to justify much expenditure in crop protection. Damage in small plantings may be severe. The ground feeding habits of robins and other birds are probably beneficial, especially in small plantings where the number of birds per bush is great enough to remove all fallen fruit."

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LAW PERTAINING TO DEER AND DEER DAMAGE CHANGED BY LEGISLATURE

Three Amendments to the General Laws, of concern to fruit growers, were passed by the Legislature during 1949. Every grower interested in the deer damage problem should make a careful study of these Amendments in order to be fully informed on the present situation. Following are the Amendments as supplied to us by the Department of Conservation:

CH. 282 - AN ACT RELATIVE TO THE HUNTING OF DEER. Chapter 131 of the General Laws is hereby amended by striking out section 79, as appearing in section 2 of chapter 599 of the acts of 1941, and inserting in place thereof the following section:-
 Section 79. Whoever, except as provided in this chapter, hunts or has in possession the carcass of a deer shall be punished by a fine of one hundred dollars; provided, that any person may, on land owned or occupied by him, hunt any deer which he finds in the act of damaging crops, fruit or ornamental trees, except grass growing on uncultivated land; and he may authorize any member of his family, or any person, other than an alien, employed by him, so to hunt a deer under the circumstances above specified. In the event of the wounding or killing of a deer as aforesaid, the person by whom or under whose direction the deer was wounded or killed shall within twenty-four hours thereafter send to the director a written report, signed by him, of the facts relative to the said wounding or killing, including the time and place thereof, and the kind of tree or crop injured or destroyed, or about to be injured or destroyed, by the deer. All deer so killed shall be turned over immediately to the nearest conservation officer and shall be disposed of by the director. -- Approved May 10, 1949.

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CH. 304 - AN ACT RELATIVE TO THE HUNTING OF DEER AND OTHER MAMMALS. Section 78 of chapter 131 of the General Laws, as amended by chapter 275 of the acts of 1947, is hereby further amended by striking out the first paragraph and inserting in place thereof the following paragraph: --Whoever constructs, erects, sets, uses, locates, repairs, tends or maintains any snare for the purpose of catching or killing any mammal, or hunts a mammal by such means or by the aid or use of any motor vehicle or airplane, or hunts a mammal by the aid or use of artificial light, shall be punished by a fine of not less than fifty nor more than two hundred dollars. The construction, erection, setting, using, locating, repairing, tending or maintenance of any snare by any person shall be prima facie evidence of a violation by him of this section.

--Approved May 13, 1949

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CH. 751 - AN ACT RELATIVE TO THE PAYMENT OF COMPENSATION FOR DAMAGE CAUSED BY DEER OR MOOSE. Section 83 of chapter 131 of the General Laws, as appearing in section 2 of chapter 599 of the acts of 1941, is hereby amended by adding at the end the following paragraph:- No compensation for damage shall be paid under this section to any owner or lessee of land if such owner or lessee has, within one year prior to the damage claim, posted said land, other than an orchard or that portion of the land immediately surrounding his house, barn or other out-buildings, to prevent the hunting of deer.

--Approved August 26, 1949.

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SURVEY SHOWS WHERE FRESH FRUIT CONSUMPTION HAS GCNE. (From The Packer, December 17, 1949)

Seattle, Wash., Dec. 16. -- No wonder the apple grower is in for a rough time, if a survey by Washington State College economists, using figures gathered by the USDA means anything.

The average citizen is eating considerably less fresh fruit than in former years, with apples taking the biggest decline.

Fresh apple consumption in the 1910-14 period was 67 pounds per capita annually. By 1948, the consumption was down to 25 pounds. On the other hand, citrus fresh fruit consumption has gone up from 19 pounds per capita annually in the 1910-14 period to 54 pounds last year.

Demand for canned, dried, frozen, or juiced fruits has brought about the fresh fruit consumption decline, economists declared. The apple growers take a beating on this account, as their high quality product is primarily adapted for the fresh market. Pear and peach growers complained this year that canneries offered them less than the cost of production of No. 1 fruit.

Processed fruit consumption in 1948 was given at 18 pounds per capita in juices, 17.7 pounds canned, four dried, 2.9 frozen. Consumption of processed fruits has increased from nine pounds in the 1910-14 period to nearly 43 pounds today. Over the same period, fresh fruit use has dropped from 149 pounds to 134 pounds.

-- O. C. Roberts

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STORAGE TEST ON MCINTOSH

In company with Donald T. Thayer, Associate County Agent in Franklin County, four storages were visited December 22, 1949, and samples of McIntosh tested for ripeness. Each lot listed, consisted of 10 apples with two pressures on each. These storages were as follows:

(Roger Peck - Kemp Orchard) The apples were picked about September 20 or about mid-season of the McIntosh harvest. The early picked fruit was in the back part of the storage and was inaccessible. A storage temperature of 32° was maintained. The average test on these apples was 9.09 lbs.

(Wellsmont) The apples were picked about mid-season. The temperature of the storage was 36° for about a week while apples were going into storage. The average test on these apples was 9.42 lbs.

(Lyndon Peck) The storage was held at 32° continuously. The test on these apples was 9.05 lbs.

(Clarkdale Orchard) Samples were taken from apples that had just been brought back to the farm from the Amherst Apple Cold Storage. The test on these apples was 8.37 lbs.

-- O. C. Roberts

* * * * *

To make one pound of honey, bees must travel a total distance of about 50,000 miles, or twice the distance around the earth. It is believed that no honeybee ever made a pound of honey by itself.

* * * * *

MAJOR CHANGES IN THE 1950 SPRAY AND DUST CHART FOR APPLE INSECT CONTROL

Dormant: No change in the face of the chart, but Note 1 has been rewritten to explain more completely the differences between the older types of DN compounds and those containing butyl phenol. The note also de-emphasizes the substitution of the butyl phenol types of DN's for oil sprays against overwintering eggs of Red Mite.

Delayed Dormant: Miscible or emulsible products containing at least 96% superior type oil or raw superior type oil, tank-mixed, with blood albumin are recommended in applications made when 1/4 to 1/2" of green leaf tips are showing. A note indicates that superior oils may be used when 1, 2, or even 3 leaves are folded back from the bud.

Pink: DDT has been given preference over lead arsenate because of the lessened danger to pollinating insects and also because of its increased effectiveness on plant bugs. Nicotine sulfate is recommended only when DDT is not used.

Calyx: No change in the face of the chart except additional references to notes on curculio and leafroller. Where plum curculio has been especially destructive, it is recommended that 2 lbs. of 50% methoxychlor wetttable powder be substituted for DDT in the DDT-lead arsenate combination. Methoxychlor at 3 to 4 lbs. of the 50% powder is recommended in Calyx, First and Second Cover sprays on inter-planted peach and apple blocks. The note on leafroller refers to the use of DDD at 1 lb. of 50% wetttable powder or 1 qt. of 25% emulsion in a special application either before or after First Cover if leafrollers are sufficiently abundant to warrant such a spray.

First Cover: No change except as indicated in paragraph above.

Second Cover: The use of a summer miticide is suggested in the Second Cover wherever 5 or more active stages or eggs are found per leaf. TEPP is recommended as the lowest cost miticide available which can be used at any time during the growing season. A safety warning is included and also the fact that TEPP is incompatible with Phygon and probably phenyl mercuries at least on some varieties.

Third Cover: No change except for the recommendation of TEPP as a miticide as indicated in the above paragraph.

Fourth and Fifth Covers: No change except that under Note 8 Parathion is discussed. Following a suitable warning statement, Parathion is suggested to control Summer Brood Bud Moth. This would be in the Fourth Cover or in an early Fifth Cover. Parathion is suggested also for use in the Fifth Cover spray when mites are still a problem and it is necessary to combat newly hatched Red-banded Leafroller. The possibility of injury on McIntosh and related varieties when Parathion is used at concentrations greater than 1/2 lb. of 15% powder is noted here. You will note that the use of Parathion previous to Fourth Cover is not recommended.

DDD is recommended in place of DDT wherever a second-brood Leafroller is a problem.

-- Ellsworth H. Wheeler

A FEW FACTS ABOUT SPRAY OILS

If you are not applying an oil spray this spring the rest of this story is unimportant. But if you are buying oil, these facts may save you money, --

- (1) Highly paraffinic or "superior" type oils (those meeting or exceeding the minimum standards listed below) are recommended for use in the Delayed Dormant and Late Delayed Dormant at 2 to 100. (2) Low paraffin or "regular" type oils are not recommended. (3) Naphthenic type oils (with A.P.I. Gravity below 28°) are not recommended.

Specifications for high paraffinic or "superior" type oils are listed below. If in doubt about the oil you intend to buy, take these specifications directly to your dealer. Any oil listed as "superior" should meet these minimum standards:

| | |
|---|--|
| Viscosity (Saybolt, at 100°F.) | 90 - 120 seconds |
| Viscosity index (Kinematic) | 90 (minimum) |
| Gravity (A.P.I. degrees) | 31 (minimum) |
| Unsulphonated residue (U.R. value) (A.S.T.M.) | 90 (minimum) |
| Pour Point | Not greater than 30°F. |
| Homogeneity | A relatively narrow boiling distillate portion of petroleum. |

It is recognised that these are minimum standards. Growers are urged to note A.P.I. Gravity and U. R. values and to understand that higher cost may reflect higher quality -- that "superior" type oils vary with respect to these specifications.

-- Ellsworth H. Wheeler

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CUR COVER. What are apples made of? On a percentage basis--mostly water (about 84%) and a long list of other things, some of them in very small amounts. We've all seen the data covering the chemical composition of a man -- enough iron to make a nail or two, calcium to whitewash a henhouse, etc. But a man's worth isn't figured that way. Like an apple, certain subtle ingredients can scarcely be expressed in chemical terms. We eat apples not alone because they supply sugars or acids, but because we like 'em. They add a certain zest to life. They satisfy a certain craving. Maybe it's the flavor, the aroma, the crispness or a combination of many things. The chemist tells us what an apple contains. Our senses of taste smell and touch reveal it in its true perspective.

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Ethelbert Bliss of Wilbraham, 98 years old, is said to be the first man in Massachusetts to grow peaches on a commercial scale. Four generations are now living on the farm to which he moved as a youth in 1870.

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A Note On Fire Blight

During a 10-year study of a Michigan pear orchard of the Bartlett variety, more fire blight was observed in a clean culture-cover crop plot than in a sod-mulch plot. Also blight infections were more frequently fatal to trees during their vigorously growing, non-bearing years than similar infections during later years. As the trees came into bearing and growth became less vigorous and succulent they became more resistant to the invasion and rapid movement of the blight organism. The decrease in growth and succulence of twigs was hastened by the competition of the sod cover for moisture and mineral nutrients in the sod-mulch plot thereby encouraging a type of growth resistant to blight infection.

* * * * *

A Nurseryman Says, --

"Why is the maintenance of the soil such an important problem? It can be truly said that the nurseryman has two bank accounts and each is of equal importance. Into one bank he deposits his cash receipts; into the other bank represented by his land, he must also deposit regularly a most important asset a goodly increase of plant humus, an improvement of the mechanical condition of the top soil and a little plant food. Withdrawal of the assets from either of these banks faster than they are put in results in disaster."

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The apples in the top layer sell the first box; the ones in the bottom layer sell the second.

* * * * *

In the Next Issue, -- A Pruning Platform. In other fruit growing regions particularly in California, home-made elevated platforms are coming into common use as a substitute for ladders in pruning. Of adjustable height and with two movable planks which can be shifted quickly and easily to place the worker in a more favorable position, this gadget is worthy of trial in New England. W. C. Harrington of the Agricultural Engineering Department is preparing a simple sketch for the next issue of FRUIT NOTES from which a platform may be built. The construction is no more complicated than that of a brush pusher and the platform may be installed on almost any type of truck.

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THE MCINTOSH SELLING JOB, 1950, WITH COMPARISONS

On January 15, 1950, the Special Apple Market Report listed McIntosh holdings in cold storage, Boston area, Massachusetts as 476,627 bushels.

More people have enjoyed apples this year than for several years. The selling effort by growers and the trade has moved more apples (771,422 bushels) between October 15, 1949 and January 15, 1950 from storage in the Boston area than were moved in the entire storage season in all but one of the last 15 years. The exception was in the 1944-45 season when the October 15 holdings were 890,000 bushels.

The application of the out of storage movement in bushels of the years 1944-45 and 1947-48, to the amount of McIntosh apples on hand, Boston area January 15, 1950, may be interesting as a pace setter for the rest of this season.

Storage Holdings, McIntosh
Boston Area, Massachusetts
(Bushels out of storage in 1944-45 and 1947-48
for each storage period, in parentheses)
-Thousands of Bushels-

Applying the Out of Storage
movement of 1944-45 and
1947-48 to the Jan. 15 amount,
1950, we get the following
set of figures.

| | <u>On Hand</u> 1944-45 season | <u>On Hand</u> 1947-48 season | <u>1944-45</u> movement | <u>1947-48</u> movement |
|----------|-------------------------------------|-------------------------------------|----------------------------|----------------------------|
| Jan. 15 | 394 | 315 | 476(1/15/50) | 476(1/15/50) |
| Feb. 1 | 319 (75) | 242 (73) | 401 | 403 |
| Feb. 15 | 263 (56) | 205 (37) | 345 | 366 |
| March 1 | 212 (51) | 163 (42) | 294 | 324 |
| March 15 | 166 (46) | 117 (46) | 248 | 278 |
| April 1 | 113 (53) | 66 (51) | 195 | 227 |

From the foregoing data, it is very apparent that if McIntosh apples move out of storage ne faster during the next few weeks than during the 1944-45 and 1947-48 seasons, April 1 will find a large volume still unsold.

-- Frederick E. Cole

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A HUMAN APPROACH TO DISTRIBUTION

Many people have commented on the damage to apples in retail stores. The man on the produce counter has been criticized for the poor condition of apples. Handling in the stores has been blamed for poor sales and poor returns. It is commonly stated that the retail store is the weakest spot in the distribution system as far as handling is concerned.

"Changing help, inexperienced help, uninterested help, low priced help" have been the reasons given for the small amount of progress. "Men have not made a career of a fruit and vegetable counter."

There is one produce counter where I got to know Walter and then Bobby - both good boys. They are given responsibility in the store. They try to treat the customers right. Bobby and Walter are all right. Then it occurred to me that I knew Bobby. It was the ones I didn't know who were at fault. Then I realized how human and unjustified that attitude was.

The problem from the viewpoint of produce counter men, sounds like this:

"The fruit grower sends all kinds of fruit, some ripe, some bruised, some scabby, some good, all in the same kind of box. Often the boxes are second hand. Sometimes they are thin, cheap boxes that hardly hold together. Apples are not packed, just dumped. The apples are put up as if the grower did not think much of the fruit himself - and then he crabs us because we don't handle the apples like eggs. The grower does not handle the apples well, why should we? Customers get the same idea, too!" Some growers have the idea that as long as the consumers do not see or handle the package, all they need in a box is to get the apples to the store and that's all - it is a gift package. Growers pack for the wholesale buyer.

One day Walter got some apples in a carton. They looked good to him. They were not bruised. They were really packaged. The grower thought enough of the apples to take good care of them. Walter built up a display at the end of a gondola - fastened a new piece of cellophane on the top of one carton and placed it on its side so that the customers could see the good apples - each one in its own cell - clean, unbruised - really something choice. The sign read "3 lbs. for 29¢." He said, "Those apples are really moving, customers like them." The men on the produce counter are human beings. They react to cheap packaging, good packaging, poor quality and good quality, the same as anyone else.

Then came a series of articles in trade papers about packaging - new designs, attractive colors - in lines where the customers did not see the package. The attractive package was just for the clerk behind the counter! It was working. More goods were being sold - better care - the clerks knew the lines better - more sales. Packaging for the clerks on the counter is a paying proposition. Why not for apples?

Apple growers could use attractive packages - do better packing in wholesale package - for the clerks, and attack the weakest spot in the distribution chain. The more I thought about it - compared costs, compared prices - the less excuse there was for good apples in a crate, particularly good apples in the same kind of a crate that carried the poor apples.

Therefore, I pass the thought on to you: - Use a carton, label it and put instructions on it for the clerk on the produce counter. Package for the produce counter clerk. Tackle the weakest spot in the apple distribution with a package and instructions designed for him. Dress up the apples instead of crabbing the clerk. Put only poor apples in the crates where poor apples are at home.

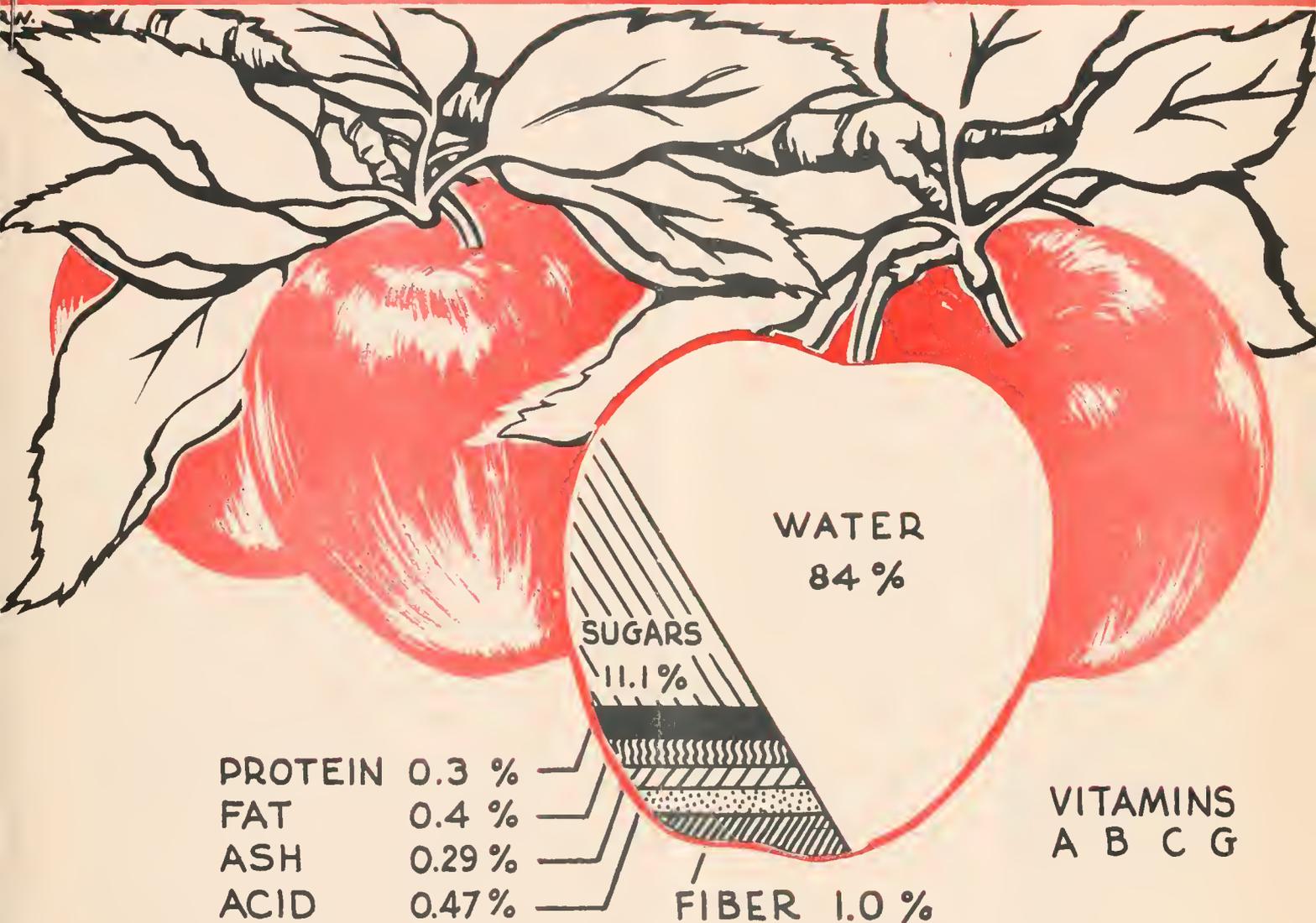
Treat the man on the produce counter as a human being, give him good apples, packed right, in an attractive package, and the man who has been blamed for poor condition may turn out to be one of the best friends the apple grower has. Just a human approach to a difficult problem, - but who isn't human?

-- Frederick E. Cole

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Fruit Notes

MARCH 30, 1950



Prepared by the Departments of Pomology, Entomology, and Botany, and
Other Staff Members
Compiled by W. H. Thies, Extension Horticulturist

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EVALUATION OF SOME OF THE NEWER VARIETIES OF APPLES IN COMPARISON WITH MCINTOSH

The accompanying chart gives evaluation of a few varieties of apples which have been rather widely tested by Massachusetts growers in recent years. It represents the collective opinion of a panel of eight persons and the audience which discussed it at the recent annual meeting of the M.F.G.A.

| Variety | Annual or Biennial | Years to start bearing | Yield | Growth habit | Pollinizer for McIntosh | Fruit size | Fruit color | Fruit quality | Preharvest drop | Cold storage life | Other weaknesses |
|------------------|--------------------|------------------------|-------|--------------|-------------------------|------------|-------------|---------------|-----------------|-------------------|-------------------------|
| Lodi | B | 7 | 3 | 3 | 3 | 3 | 5 | 3 | 3 | 5 | |
| Melba | B | 7 | 3 | 2 | 3 | 4 | 3 | 2 | 3 | 5 | |
| Early McIntosh | B | 8 | 3 | 4 | 4 | 5 | 2 | 2 | 5 | 5 | Fruit cracking |
| Milton | A-B | 7 | 2 | 1 | 2 | 2 | 2 | 1 | 3 | 5 | Irregular fruit shape |
| Hume | B | 10 | 3 | 2 | 4 | 2 | 3 | 1 | 5 | 4 | Burr Knot |
| Lobo | B | 9 | 2 | 2 | 2 | 1 | 1 | 3 | 3 | 4 | |
| McIntosh | A | 8 | 1 | 1 | M.G. | 2 | 2 | 1 | 5 | 2 | Easily bruised, Scab |
| Kendall | B | 10 | 2 | 3 | 4 | 1 | 1 | 4 | 3 | 4 | Scab, Baldwin Spot |
| Cortland | A | 7 | 1 | 2 | 1 | 1 | 2 | 1 | 1 | 3 | Scald |
| Macoun | B | 10 | 3 | 4 | 4 | 4 | 1 | 1 | 4 | 3 | Short stem |
| Golden Delicicus | B | 7 | 2 | 2 | 2 | 4 | 3 | 1 | 2 | 2 | Shrivel |
| Davey | A-B | 7 | 2 | 1 | 3 | 2 | 2 | 2 | 1 | 2 | Shrivel, Fruit cracking |
| Gallia | A | 7 | 2 | 2 | 4 | 1 | 1 | 4 | 2 | 1 | Scald, Cedar Rust |

The following points should be kept in mind for a better understanding of the chart: (1) Years to start bearing is interpreted as the age at which a tree will bear one to two bushels of fruit. (2) All items, except the first two, are evaluated on a scale of five, 1 is the most desirable and 5 the least desirable degree.

(3) Growth habit includes not only uprightness of growth, but sparse branching, excessive twigs, etc. (4) Desirability as a pollinizer for McIntosh is based chiefly on age of bearing, regularity of bloom, and season of bloom. As far as is known all of these varieties produce an abundance of viable pollen.

It is quite evident from the evaluations placed on those varieties which are listed below McIntosh, that the ideal late winter variety has not yet been found. Your Pomology Department is intensifying its search for a superior apple to fill that season and within the limits of its funds will test every new introduction which has any promise as a late winter variety in this territory.

-- A. P. French

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WHAT DOES IT COST TO REMOVE APPLE TREES?

How much it costs to remove apple trees obviously depends upon several factors such as size of trees, method of removal, cost of labor, topography, etc. A recent experience of the Pomology Department indicates the approximate cost under a particular set of conditions.

Last fall the Pomology Department decided to remove one of the University orchards which ceased to be of value for experimental purposes. The trees in this orchard were full sized 35-year old apple trees. Fourteen of the trees were Baldwin and 13 McIntosh making a total of 27 trees. The orchard was on a relatively level piece of land with no obstructions to interfere with the removal of the trees. A bulldozer was employed to push the trees over. The entire orchard was pushed over in two hours. The actual time of removing a tree from the time the bulldozer made contact with it until it was shoved to one side was 45 seconds.

After the trees were removed, the stumps were sawed off with a chain saw operated by two men. The stumps were then hauled to the dump and the tops worked up by hand tools into 4-foot lengths for firewood. The use of a chain saw would have reduced the cost of cutting up the tops to some extent.

The costs of the various operations for the 27 trees have been calculated as follows:

| | |
|-----------------------------------|-----------------|
| Pushing trees over with bulldozer | \$10.00 |
| Cutting off stumps | 20.00 |
| Hauling stumps to dump | 75.00 |
| Cutting up tops and burning brush | 80.00 |
| Total cost | <u>\$185.00</u> |
| Cost per tree | \$6.85 |

Approximately 10 cords of firewood were obtained. At a conservative value of \$8.00 a cord, the net cost of removing the orchard was approximately \$105.00, or a net cost per tree of \$3.90.

-- O. C. Roberts

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No February Fruit Notes This is the first issue of Fruit Notes since January, none having been distributed last month.

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HAY MULCH. HOW LONG DOES IT PAY DIVIDENDS?

We are all familiar with what a heavy mulch can do for tree growth and soil nutrients, but we have not been too sure for how long a period we could expect to receive benefits after mulching was discontinued. Recent results of soil tests which were taken from one of our long term mulching experiments reveal some interesting information on the question. In 1922, Dr. Shaw began a mulching experiment here at the University. For 16 years 2 plots received heavy applications of mulch in the form of low grade hay. Two similar plots were kept in cultivation. In 1939 the differential treatments were discontinued and the plots were continued as sod orchards except that the mulched plots did not receive any fertilizer. In 1948 soil samples were taken from the different plots and analyzed for total nitrogen, phosphorus, available potassium, magnesium and calcium. The analyses revealed that 10 years after the mulch had been applied the soil in the mulched plots contained twice as much nitrogen and potassium as the cultivated plots, four times as much magnesium, eight times as much phosphorus, and nearly twice as much calcium. The performance of the trees on the mulched plots and the results of the soil analyses indicate that we may expect to receive benefits from mulching long after it has been discontinued.

Here are possible reasons for larger amounts of available mineral elements in the mulched plots. Considerable quantities of minerals are added by the heavy application of hay. As this material decays, the organic matter not only yields these mineral elements in available form, but tends to retain them against leaching. Prevention of soil erosion by the mulch also helps the mulched plots to retain more nutrients.

-- W. D. Weeks

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"Phony Peach" Leafhoppers are now known to spread the serious disease of peaches known as "phoney peach." Four species of leafhoppers have been found capable of transmitting the disease. They are general feeders, but at certain seasons they suck the juice of peach trees. The disease causes dwarfed trees which produce limited numbers of small peaches. More than a million peach trees have been lost in southeastern states since 1935 because of "phony peach" disease. There is no known cure for it.

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Grapevines on Light Soil Respond to Fertilizers Four tons of grapes per acre are considered a reasonable goal in certain vineyard areas in the Middle West. The average yield in the Lake Erie grape belt is said to be approximately 1 1/2 tons per acre. Growers who are getting a ton or less are applying little, if any, fertilizer. However, growers who are applying a complete fertilizer annually and manure every 4 or 5 yrs. are harvesting 3 1/2 to 4 tons per acre.

COUNTY AGENT'S CORNER

Bad Time for Apple Curculio in Franklin County (By D. T. Thayer)

You can sweat over scab, be miserable over mites, and rent your garments over red-banded, but you've never had it so good unless you've tangled with the virile hill town strains of apple curculio. Ask genial Don Howes of Ashfield's Apple Valley!

Not too long ago, Don might rest on his porch of a warm summer's nooning, and from the Wealthy block might hear the little Tachypterellus quadrigibbus sneering at his fine lead cover amid the patter of little apples. Storing his pent-up wrath for a real hot, still day, Don and crew would sally to the Wealthy block and pluck the invaders with nimble thumb and finger. But that's a losing game, so ax and saw were resorted to, in the belief

that if you can't protect the Wealthy apple you can so-and-so well get rid of the tree.

Then along came the good Doc Wheeler, prescribing "smelly stuff" (BHC) and "my word don't spill that" (TEPP) and some others, and George Greaney of Niagara came up with the goods to compare with the standard lead. Some general conclusions were reached. Don learned that TEPP is a real "kill 'em deader" on contact, but we wanted to know more about the protection angle of the cover spray.

So this year we rigged up a similar deal with amiable Aubrey Amidon, Jr., of South Halifax, Vermont. Taking only slight geographical liberties, Aubrey's orchard is astride the Massachusetts-Vermont line, and everyone knows that the apples that qualified him for Red Apple Club in '48 and '49 came from spurs under the Massachusetts environment. However, on the Vermont side, apple "curcs" were lurking in the brushy walls and corners. Plenty of varieties in the Amidon orchard and the beetles liked them all, especially a scattering of Winter Bananas near the graveyard (no connection).

To bolster Doc Wheeler's morale, he was sulking because he couldn't find any red-banded up there, we let him in on it, and of course, reliable George Greaney. The come-on was DDT and lead; BHC and lead; Chlordane and lead; and (gulp!) Parathion. TEPP was also on hand for a "fireman treatment" if needed. Check trees were left unsprayed in each row in the block of thirty-year-old Wealthies. Combinations were put on in calyx, 1st and 2nd cover, except Parathion which was applied separately at about the same time. Table 1 below sums up the results. There remains but one variable to be explored; is there any correlation between lead applications for *Odocoileus virginianus* (look it up) and build up of apple curculio in the Amidon orchard?

Table Showing Apple Curculio Control on Wealthy

| Treatment No. | Materials and Pounds Per 100 Gallons (Note 1) | Percentage of Fruit Clean at Harvest |
|---------------|---|---|
| 1 | DDT, 50% w.p. (2) Lead Arsenate (2) (3 in Calyx) | 87.3 |
| 2 | BHC, 12% Gamma (1) Lead Arsenate (3) | 81.1 |
| 3 | Chlordane, 50% w.p. (2) | No counts made. Severe injury to foliage. (Note 2) |
| 4 | Parathion, 15% w.p. (1 1/2) No Lead Arsenate | 83.8 |
| 5 | No treatment | est. 10-25 |

Note 1: One half the normal concentrations of Kolofog and lime sulfur were included in each application of insecticides.

Note 2: Injury probably caused by lime sulfur - chlordane combination and not by chlordane alone.

Cultivated Blueberries in Bristol County (By Harold O. Woodward)

Southeastern Massachusetts, including Bristol County, seems to be well adapted to the infant enterprise of highbush blueberry production. The requirement seems to be a high organic soil with a high constant water table, yet with good drainage of the top soil. These conditions are well met on our so-called dry cranberry bog sites.

Climate on the coast is modified by the ocean dulling the edge of cold spells and taking some of the bite out of spring frosts. Blueberries bloom late, over a considerable period and the delicate part of the bloom is inside a nearly closed bell. For these reasons they quite consistently escape the frost hazard.

Up until now growers have been quite successful in moving their crops locally at luxury prices which means a price beyond the range of the ordinary family. As volume increases the price may fall to a point comparable to that of wild berries. If growers can afford to produce at such a price, and the writer believes they can, then there is an almost unlimited outlet for this highly desirable fruit.

We are located near a very great potential blueberry market and by virtue of location, ability to stand holding and shipping is less important than with berries from competing areas. In other words, a high quality berry that may tear might not be at a serious disadvantage in Bristol County. Occasionally, we hear folks say the cultivated berry is not as good as the wild fruit. Actually, there are as wide differences in blueberry varieties as in apples. Some are sweet, some sour and at the same time, flavors vary. It would seem important for growers to learn the high quality varieties and plant for quality, size and high yield. Plantings in Bristol County are on the increase and those who have well managed, bearing bushes appear to be doing well with the enterprise.

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COMMERCIAL HAND POLLINATION IN THE APPLE ORCHARD

(The following details of hand pollination were presented at a Nashoba meeting in Harvard, Mass., by Ralph C. Palmer, Associate County Agent, Monroe County, N.Y. They are based on operations in his own orchard.)

Commercial hand pollination in the apple orchard is suggested as an emergency measure for solid blocks of McIntosh. Delicious and Northern Spy pending the time that adequate provisions for cross-pollination can be made by interplanting or top-working. Bouquets and bees are also recommended in such situations. Hand pollination will also prove profitable with any self-unfruitful variety when there is too little favorable weather during the bloom for the activity of those insects responsible for cross-pollination.

In collecting pollen, only those varieties that furnish an abundance of viable pollen should be used. Among these are Delicious, Hubbardston, Duchess, Twenty-Cunce, Jonathan, Ben Davis, Northern Spy, Winter Banana, and Wolf River. Wealthy has good pollen but it is not produced in very large quantity. Baldwin, Rhode Island Greening, Roxbury Russet and Gravenstein are worthless as pollen sources. Care should always be used to gather pollen of some variety other than the one to be pollinated. If enough pollen of one variety cannot be obtained, it can be combined with that of any other desirable variety; that is, a mixture of Duchess and Delicious pollen would be quite all right to use on Northern Spy trees.

One of the most practical ways of collecting pollen in quantity is to gather the blossoms when they are in the balloon stage or just before the flowers open. Blossoms in this condition can be picked rapidly just as the trees are coming into bloom. A convenient method is to use a fruit picking bucket slung from the shoulders by straps so that flowers can be picked with both hands.

There are several methods of removing the anthers or pollen bearing organs from the flowers. The anthers can be pulled off along with the petals by breaking or twisting the unopened flower with the fingers. A faster and very effective way is to dump a handful of flowers on a screen having about eight meshes per inch and gently rub the flowers back and forth so that the anthers are broken off and fall through the screen to a suitable receptacle. With either of these methods considerable quantities of torn petals and other flower tissues are mixed with the anthers. The anthers can then be easily cleaned of this "chaff" with a small sieve that will just allow the anthers to pass through. A flour sieve used in bread making equipped with a hand crank and agitator is well adapted for the purpose.

The green anthers should then be spread out thinly on waxed or glazed paper to ripen. Do not use ordinary newspaper because it is fuzzy and much of the pollen will adhere to the surface. The anthers should be ripened in a dry place in sunlight before a window. Mild heat may be applied if sunlight is not available. After about 24 hours the anthers should have ripened and split so that the pollen appears as powdery yellow dust.

The dried anthers shedding the pollen may be stored in small glass bottles containing one-half to one ounce. Pollen is a living material; it respire, and if stored in large quantities or under warm or moist conditions it will heat up and lose its viability. It should be kept cool and dry. If the bottles are stoppered, cotton plugs should be used. Storing the bottles in a dessicator held at about 36°F. would be ideal. If such equipment is not available, keep the bottles where these conditions will be most nearly met. In any case, under ordinary conditions, it is not advisable to keep pollen more than a week from the time it is dried until it is used.

One of the most practical ways of applying pollen is to spread it on the flower with a small brush of camel's hair with bristles about 3/4 inch long and a 6-inch handle. The brush is dipped in the container holding the pollen so that some of the powdery yellow dust adheres to the bristles, then daubed lightly upon the center of the apple flowers so that the stigmas come in contact with the bristles. It is necessary to pollinate only one or two flowers in every 4th or 5th cluster on a full blossoming apple tree. Under conditions when insects fly, pollen will be spread from the hand-pollinated cluster to other parts of the tree. The small wide mouth bottles commonly used for individual servings of coffee cream in restaurants make excellent containers for carrying the pollen in the orchard. A small strip of gauze can be sewed tightly around the neck of such a bottle and this pinned with a safety pin to the operator's shirt. Such an arrangement, makes for convenience in getting around through the tree, and decreases the chances of tipping containers and wasting pollen.

The time spent on a tree depends on its size. For a 20-year old McIntosh tree capable of bearing 25 bushels, 15 to 20 minutes per tree should be adequate. Of this about half the time should be spent on the ground and the remainder in the top of the tree, either using a step ladder or climbing into the tree. As a

practical working program it is advisable not to pollinate every tree. Applying pollen to every other tree in every other row will ordinarily be adequate if bees have some opportunity to work. If time permits, the orchard can be gone over again applying pollen to some of the other trees.

Although the problem of applying pollen in quantity with a duster and other types of blowers has been investigated to some extent, no practical or effective method has been devised or tested that can be recommended at the present time. When one considers the nature of apple pollen, the problem of collecting it in large quantities, handling and keeping it in a viable condition and applying it to the small stigmatic surfaces; it seems, that the process of cross-pollination lends itself mainly to some method of contact such as is performed by bees, other insects or the brush method described above.

* * * * *

Place Beehives in the Sun. If possible, beehives in the orchard should be placed where the sun will shine on them and with the entrances toward the east or south. The heat from the sun, and the additional sunlight induce the bees to fly and work on the blossoms at times when colonies in the shade will not be active.

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An Objective in Pruning A federal publication says, "Pruning in the home orchard is often so done that the result is worse than no pruning at all." This statement need not be limited to home orchards. Commercial blocks are frequently pruned in such way that only the more convenient cuts are made, or so many vigorous, upright growths are removed as to encourage a heavy growth of suckers. In bearing trees it is extremely important that those branches and parts of branches which have become submerged and overtopped by younger wood, be removed. It is always advisable to remove the older wood instead of trying to invigorate it by giving it more light.

* * * * *

Set Strawberry Plants Early The strawberry plant thrives in cool weather. Early set plants are able to develop a root system before weather conditions favor top development and loss of water through the leaves. Furthermore, a runner plant which takes root in July is likely to yield twice as many berries as one which starts in September. It is better to set plants in mid-April even though the soil is a little muddy than to wait until mid-May.

* * * * *

Growing Peaches in Sod The practice of cultivating a peach orchard until mid-summer or later has been shown to be unnecessary, and in many cases, detrimental. A peach tree is less able to compete with grass than an apple tree, and if the competition is too severe, the tree fails to make the kind of growth which accompanies good production. But if heavily mulched, favorable growing conditions are created (See Hay Mulch article on page 3) and good crops of excellent quality are produced. Peach trees are being grown under these conditions in several Massachusetts orchards with very favorable results, the fruit maturing a few days earlier and frequently attaining a more attractive color. The secret to bear in mind is that competing vegetation must be fairly well suppressed by the mulch and unless the soil is naturally fertile, a somewhat heavier fertilizer application may be needed.

FIRM, HIGH-COLORED APPLES AS RELATED TO THE NITROGEN APPLICATION

With the season for fertilizing the sod orchard near at hand, an analysis of the above relationship is in order. Apple buyers everywhere are interested in McIntosh which are not only firm but of good color. And they are willing to pay a premium for that kind of fruit. If color and firmness were the only factors to be considered, growers would be using less nitrogen, on the average, and in many blocks, none at all. But the number of bushels per acre must be kept above a certain minimum if the grower is to stay in business, because it takes at least 200 bushels per acre to cover expenses. And nitrogen is sooner or later the limiting factor as regards yield in every sod orchard. The buyer has little interest in the number of bushels per acre. The grower has a very real interest. To satisfy both the buyer and the grower, common sense suggests the use on each tree of enough nitrogen to maintain tree vigor and thus encourage a satisfactory yield without seriously interfering with either firmness or color.

On a particular farm in Middlesex County the McIntosh apples in one block are well above average in firmness and color. In another block of the same age on a deeper soil, the trees are at least 50% larger and the fruit softer and less well colored. There is considerable crowding of trees and many of the apples have poor exposure to light. Obviously, the latter block is well supplied with nitrogen, perhaps too well, and if more were applied without removing some of the trees, it is quite likely that the fruit might be even less desirable than at present. In the other block, where the soil is lighter and less fertile, the nitrogen application could probably be doubled, with a gratifying increase in yield, but without appreciable reduction of either firmness or color.

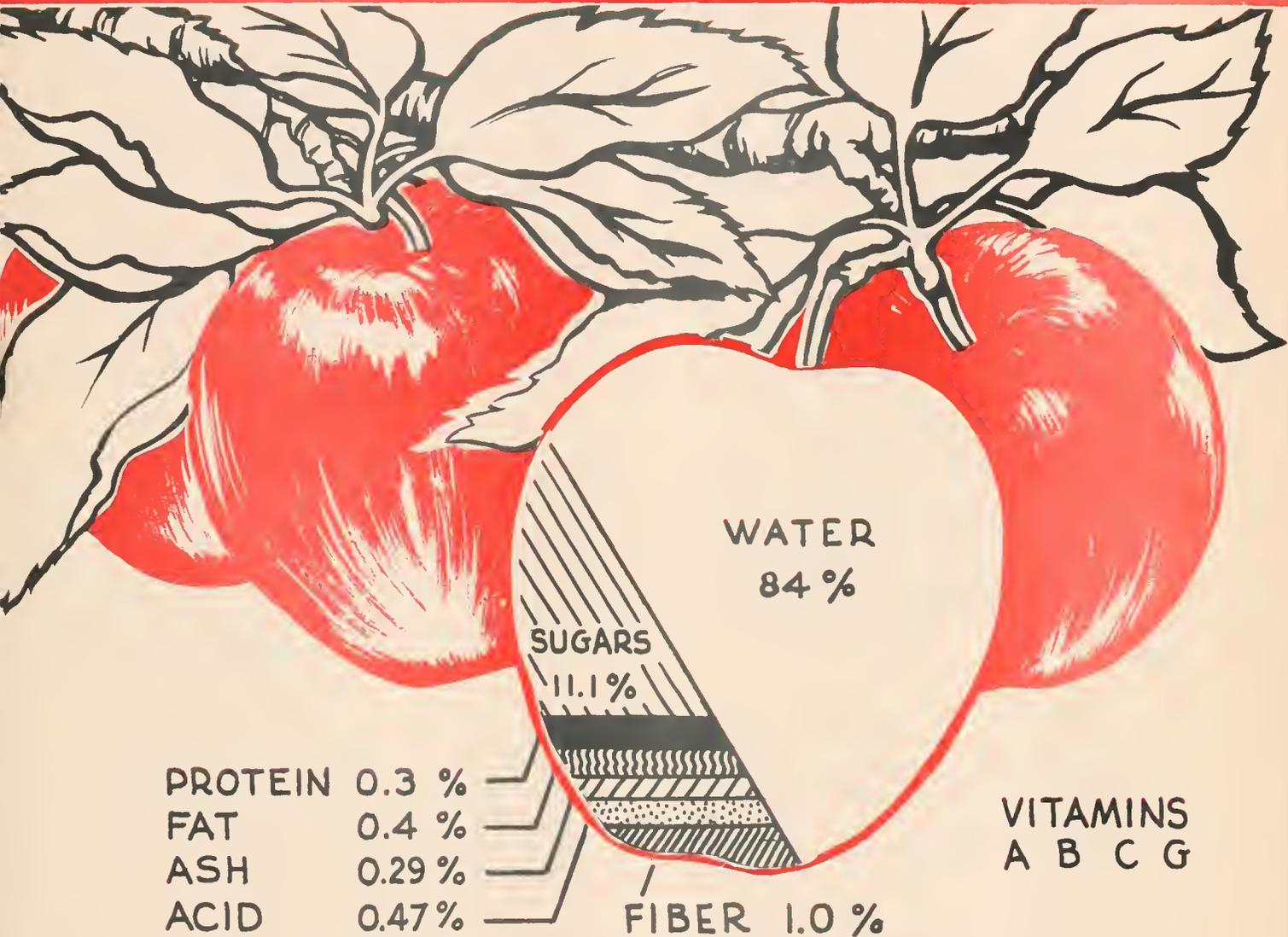
We need to recognize the fact that soils vary tremendously in depth, texture, and fertility and that trees growing on a particular soil type must be fertilized or mulched in accordance with their needs, bearing in mind that 400 bushels per acre year after year are necessary for a fair margin of profit. We must get away from the idea of applying nitrogen according to age of tree or trunk diameter, without reference to soil type. We can well afford to step up the nitrogen application on some trees and cut it out entirely on others. Magness of the USDA says that nitrogen is a two-edged sword: The higher the nitrogen content of fruit and foliage, the poorer the color. But if not enough is used, yield will suffer.

A Valuable Storage Gadget, the Pressure Tester In January Fruit Notes reference was made to the testing of apples in several storages, without an explanation of the significance of the readings. Similar readings were taken in at least 30 storages during the winter months to determine the rate of ripening apples, particularly McIntosh. It is interesting to note that the plunger of the pressure tester breaks through the flesh of the apple (skin removed) under less pressure as the apple ripens, the gauge reading being a direct measure of maturity. A reading of 8 means that an apple is in prime eating condition and must be sold promptly while 12 means several weeks more of storage life. The pressure tester tends to take the guess-work out of a critical storage problem.

An Omission and an Explanation In January Fruit Notes we promised to include in the current issue the plans for a Pruning Platform. These plans must be omitted for reasons beyond our control. They will, however, be included at a later date.

Fruit Notes

AUGUST 14, 1950



Prepared by the Departments of Pomology, Entomology, and Botany, and
Other Staff Members
Compiled by W. H. Thies, Extension Horticulturist

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Professor W. H. Thies, Extension Horticulturist and Editor of FRUIT NOTES, is on a temporary leave of absence assisting with extension work in Germany. During his absence FRUIT NOTES is being edited by O. C. Roberts, Associate Professor of Pomology.

Professor Thies writes that he has been assigned to Coblenz in the French Zone of Occupation.

Previous to going to Coblenz he was stationed in the State of Hesse, Germany, and tells in the following article of some of his impressions of Agriculture in Germany.

AGRICULTURE IN GERMANY

I arrived in Germany June 16 on a three-months agricultural mission with the State Department. After spending about a month in the State of Hesse, I have been assigned to the French Zone of Occupation where fruits are relatively more important.

In Hesse it has been my privilege to visit many farms, large and small, although small farms predominate. The average size of farms is 4.2 hectares, or about 10.5 acres. Farms are very much split up. It is not uncommon for a 5-acre farm to consist of 20 or 30 separate fields scattered in different directions from the village. There are about 2700 villages or farm communities in Hesse. A start has been made in the consolidation of farms to solve a problem resulting from centuries of subdivision in accordance with inheritance laws. There is one farm of about 65 acres consisting of 625 separate pieces of land. This number has recently been reduced to 120. Land consolidation is one of the biggest agricultural problems in Germany.

Women do about 60% of the farm work. Hand labor and long hours are the accepted lot of farm people. Farm machinery of every description is seen here and there on large farms, but it is not adapted to most farms even though money were available to buy it. Crops look unusually well this season, and large yields are expected. The yield per acre, due in part to liberal use of manure and other fertilizers, is high, but the yield per worker is low.

Fruits, particularly grapes and apples, are a major enterprise in some localities. No large orchards are in evidence. Instead, a few rows of fruit trees with other crops between, are of common occurrence. All fruit trees are "high-headed" to facilitate cultivation of potatoes, sugar beets, currants, or the handling of grain crops underneath. The lowest limb is generally 5 or 6 feet from the ground. Land must be conserved. Germany was not self-supporting from a food standpoint under normal conditions. Now with 8 or 10 million refugees in the Western zones, food production is even more of a problem.

At a cooperative fruit auction in Weinheim visited June 27, the principal offerings were cherries, currants, and gooseberries. About 100 tons were sold in less than an hour. Fruits for this sale were brought in from 50 assembly points in that area.

Vineyards along the Rhine will be the subject of a later story. Some of the plantings are on areas so steep that high retaining walls are necessary.

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ACCOUNTING FOR THE APPLE SCAB SITUATION

Apple Scab has caused a great deal more trouble than most growers expected considering the relatively light carryover of the Scab fungus and the character of the weather. By studying the rain dates (with temperature and duration of wet periods) and the dust and spray dates during the growth period from delayed dormant until one to two weeks after petalfall, it is not difficult to account for primary and secondary infections that occurred in certain orchards.

Below is a list of Scab infection periods for Amherst, with the tree development stages and the dates when the infections showed up as Scab spots.

| <u>No.</u> | <u>Rain Date</u> | <u>Fruit Bud Stage</u> | <u>Scab Spots Appeared</u> |
|------------|------------------|------------------------|----------------------------|
| 1 | Apr. 20 | Del. Dorm. | May 11-13 (Late pink) |
| 2 | 4/30-5/1 | Pre-pre-pink | May 16-17 (Early bloom) |
| 3 | May 9-10 | Pink | May 24-26 (Calyx) |
| 4 | May 17-18 | Mid-bloom | May 31-June 2 |
| 5 | May 19-20 | Full bloom | June 3 (First Cover) |
| 6 | May 24-26 | Calyx | June 7-8 |
| 7 | May 29-30 | Before 1st Cover | June 10-11 |
| 8 | June 1-2 | First Cover | June 12-13 |
| 9 | June 3 | First Cover | June 14-15 |
| 10 | June 10-11 | Second Cover | June 20-21 |

Most other sections in the western half of the state, including the southern half of Worcester County received the same infection periods. Upper Worcester County and all the remaining eastern areas had fewer and shorter rainy periods and consequently are experiencing less trouble with Scab.

Much of the difficulty with Scab goes back to fruit spur leaf spots that originated on April 20 and 4/30-5/1 in the low elevation orchards, and on 4/30-5/1 and May 9-10 in the later or high elevation orchards. These spots were plentiful in orchards that received no or inadequate fungicidal protection ahead of pre-pink bud stage, and they were present and furnishing an abundance of summer spores for secondary infections throughout the blossom period. Primary inoculum, as ascospores, was also available during bloom, although the supply diminished rapidly with each wet period from pink bud onward.

This was a season when at least two protective applications were needed during bloom: ahead of the 5/17-18 rain or the 5/19-20 rain, depending when the pink spray was applied, and again ahead of or during the extended rain of May 24-26. This applies to low elevation orchards. In fact, one dusting in some instances was not sufficient for the May 24-26 rain, particularly when applied from one side only. It seems, also, that very few growers applied an eradicant fungicide following that protracted wet period even though it was time for the regular petalfall spray.

Infections that showed up between June 1 and 10 originated during bloom in the earlier sections, and they were definitely more pronounced where early season spur-leaf spots were present in the trees. In a few orchards observed, a moderately heavy crop of Scab spots showed up on leaves around June 15, originating no doubt in the rain of June 3, even though the calyx spray was applied about May 29. However, the June 1-2 rain brought one inch of precipitation ahead of the infection

period of June 3. The first cover spray went on about June 5. In these orchards fruit-spur leaf spots were plentiful, furnishing inoculum after practically all of the winter spores had been discharged from the overwintered leaves.

Fruit Infection: To many growers, Scab spots on the apples were even more difficult to explain than leaf infections. It is true that fruit Scab is far more abundant than the dust and spray programs might indicate. It did not occur as sepal infection during pre-pink or early pink bud stages, but as spots on what was the inner side of the fruit when pink buds were still unseparated. This year the blossom buds generally were unusually late in separating in the fruit bud cluster, in fact, in many cases not until after one or more of the buds had opened into bloom. This was particularly true in the earlier or low elevation orchards. This meant that, unless the pink spray was delayed until early bloom, the inner surface of many of the small apples received no protective fungicide until the first dust or spray during bloom. Hence, they were open to both primary and secondary infections at the first rain that occurred after the buds split apart.

Remarks:--based upon orchard observations so far:

1. It is dangerous to omit fungicidal protection on Scab-susceptible varieties during the early-to-late delayed dormant fruit bud stage, especially in a season when ascospore maturity is abnormally early.
2. It is extremely important to delay the pink spray just as long as possible -- even until a few blossoms are open -- particularly in a season when the fruit buds are reluctant to separate.
3. In seasons when 2 to 3 infection periods occur during bloom, two supplementary protections are likely to be needed between the pink spray and the petal-fall spray, especially if an eradicant fungicide is not used in the calyx spray at the end of an infection period.
4. An emergency or supplementary dust application during bloom or elsewhere in the schedule is likely to be inadequate for protection against Scab unless applied from both sides of the tree. This is particularly true for an extended wet period such as occurred on May 24-26 during bloom.
5. Scab spots on fruit spur leaves, that originated at delayed dormant to pre-pink, can be a dangerous source of secondary infection for both fruits and leaves during bloom and even subsequently. Furthermore, such spots are difficult to burn out with eradicant fungicides unless applied at pink or calyx.
6. Secondary Scab infections this year were most pronounced on the upper sides of leaves in the lower parts of the tree -- indicating (a) accumulation of spores as they dripped downward through the trees; (b) the lack of enough protective fungicide and at the right time on the lower branches; and (c) the absence of appreciable drip and run-off from semi-concentrate applications of protective fungicides.
7. There was evidence in more than one orchard where semi-concentrates, 4X in particular, were applied with a Speed-Sprayer, that the lower branches of the trees were not as well protected as the upper two-thirds of the tree. Probably, either not enough material was delivered to the lower branches or it was not well distributed there -- in the absence of little or no drip and run-off. A similar failure

to control Scab as well on the lower branches as the upper ones was observed in an orchard where the standard, dilute formula was delivered through an 8-nozzle broom from a tower on the tank. There, primary Scab spots were numerous on both surfaces of the leaves, there being only a trace of early season infection on the spur leaves.

8. There is some evidence, although no definite proof, that 4X concentrations of sulfur or ferbam have not given as long protection between applications as the standard, dilute concentrations. If this is really true, might it not be due to poorer redistribution of the 4X spray deposit during wet periods that follow the application than the amount of redistribution in the dilute spray deposit?

-- O. C. Boyd

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MOVEMENT OF THE 1949 APPLE CROP

At the meeting of the National Apple Institute in Swampscott last June, Dr. John D. Black, Agricultural Economist of Harvard University made this significant comment with respect to the movement of last year's apple crop:

"I am particularly impressed here, while listening to the accounts of activities of your various grower associations, with their efforts in making apple producers consumer-conscious. You who produce have got to become more consumer-minded, market-minded, as you haven't been in the past. It has been a typical attitude of all farmers that "We'll grow the stuff; it's up to the market to take it." Your ordeal this past season contained some great lessons. One is that it makes you put more thought on promotion in connection with your product. I was particularly interested in seeing what happened to your big apple crop last fall and onward. Something happened that makes an outside observer sit up and take notice. Something was going on so that you came out better than it seemed in the cards you could. I'm interested in the way you got the purveyors, the stores, to work with you. Doubtless, this was one big part of it. I'd like to see a study project on this, to find out and describe how you got that big crop moved through the channels of trade as you did. Your state and area associations, working together like this, are in position to do a wonderful job along the lines being discussed today. Remember, you don't make your living growing the crop. You make it, or don't, from what happens afterward."

What actually happened in the case of the Massachusetts McIntosh crop last year compared with other years and a standard desirable rate of movement is shown by the chart prepared by Professor F. E. Cole, Extension Specialist in Fruit and Vegetable Marketing.

Both Dr. Black's comments and Professor Cole's chart are a compliment to Massachusetts growers and their ability to meet what seemed to be a tough problem a year ago. The good job done with the 1949 crop should inspire confidence that an equally good job can be done with the 1950 crop.

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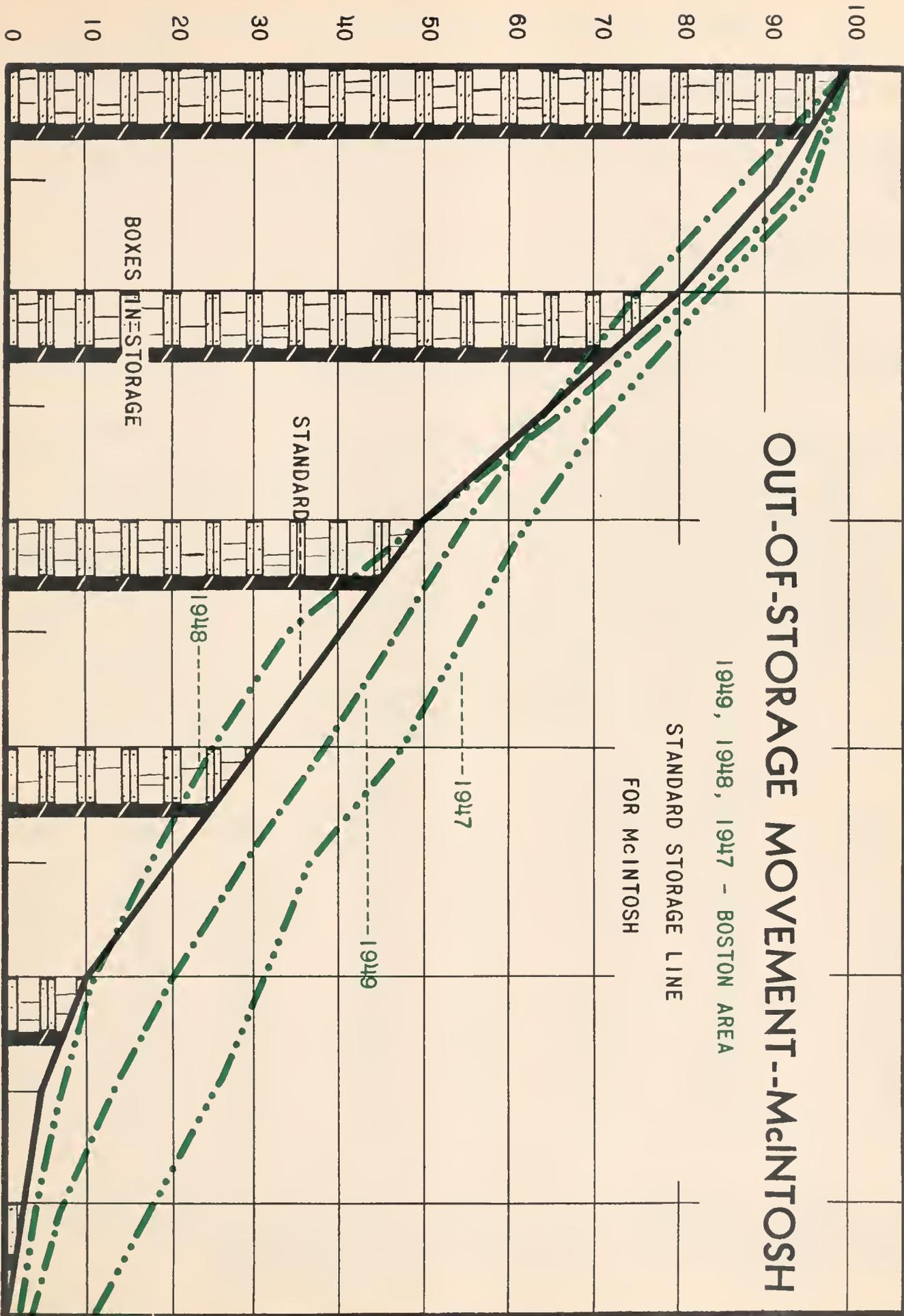
Orchard Trees Through State Pool. Edward D. Johnson, State Horticulturist for Maine, reports that: Maine orchardists have received 7,659 fruit trees through the Apple Tree Pool operated by the Maine Department of Agriculture. The pool included 6,484 apple trees, of which total almost half, 3,104, were of the McIntosh variety. Cortland was the second most popular variety with 1,539 trees. The Maine Apple Tree Pool supplies orchardists who require 50 or more trees and apply to the department some months in advance of planting each year.

* * * * *

OUT-OF-STORAGE MOVEMENT--McINTOSH

1949, 1948, 1947 - BOSTON AREA

STANDARD STORAGE LINE
FOR McINTOSH



EXPLANATORY NOTES ON "STANDARD STORAGE LINE" FOR MCINTOSH

An appraisal of a market price can be made by comparing actual crop movement to a desired crop movement.

The "STANDARD STORAGE LINE" for McIntosh - the solid black line on the chart on the other side - may be used to measure current out-of-storage movement of McIntosh apples in the Boston (Eastern Massachusetts) area.

The 1947, 1948 and 1949 out-of-storage movement of McIntosh is indicated by the green lines.

The table below gives the figures used in making the chart.

You may plot the out-of-storage movement of McIntosh for 1950-51 on this chart from figures released by the MDA Special Apple Market Report. All percentages are based on the October 15th storage holdings.

You may also plot your own out-of-storage movement of McIntosh by basing your percentages on McIntosh in storage on October 15, 1950.

The "STANDARD STORAGE LINE" is not presented as an ideal out-of-storage movement for all apples. The "STANDARD STORAGE LINE" may be used as a measure to determine whether the current out-of-storage movement is faster, slower or the same as in previous years. The standard line was developed from a record of the 1935-48 averages with slight modifications suitable to changed storage and marketing practices. The standard line furnishes a guide to an orderly movement of the crop with the most rapid movements in periods when the most sales outlets are available and when people seem to want apples the most.

McIntosh Storage Holdings
Total Bushels and Percent of Oct. 15 Holdings
Boston Area

| <u>Date</u> | <u>Standard Storage Line %</u> | 1949 bushels <u>(000)</u> | <u>1949%</u> | 1948 bushels <u>(000)</u> | <u>1948%</u> | 1947 bushels <u>(000)</u> | <u>1947%</u> |
|-------------|--|---------------------------------|--------------|---------------------------------|--------------|---------------------------------|--------------|
| Oct. 15 | 100.0 | 1,248 | 100.0 | 580 | 100.0 | 669 | 100.0 |
| Nov. 1 | 92.0 | 1,093 | 87.6 | 548 | 94.5 | 641 | 95.8 |
| Nov. 15 | 80.0 | 934 | 74.8 | 473 | 81.5 | 561 | 83.9 |
| Dec. 1 | 65.0 | 804 | 64.4 | 387 | 66.7 | 479 | 71.6 |
| Dec. 15 | 50.0 | 688 | 55.1 | 284 | 49.0 | 409 | 61.1 |
| Jan. 1 | 40.0 | 584 | 46.8 | 190 | 32.8 | 362 | 54.1 |
| Jan. 15 | 30.0 | 477 | 38.2 | 142 | 24.5 | 315 | 47.1 |
| Feb. 1 | 20.0 | 350 | 28.0 | 102 | 17.6 | 242 | 36.2 |
| Feb. 15 | 10.0 | 238 | 19.1 | 59 | 10.2 | 205 | 30.6 |
| Mar. 1 | 5.0 | 160 | 12.8 | 39 | 6.7 | 163 | 24.4 |
| Mar. 15 | 2.5 | 88 | 7.1 | 20 | 3.4 | 117 | 17.5 |
| April 1 | 0 | 30 | 2.4 | 10 | 1.7 | 66 | 9.9 |

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Issued by the Extension Service, Willard A. Mumson, director, in furtherance of Acts of May 8 and June 30, 1914. University of Massachusetts, United States Department of Agriculture and County Extension Services Cooperating.

1950 RED APPLE CLUB

The time is at hand to make application for the 1950 Red Apple Club. Any apple grower in Massachusetts with an orchard of at least five acres may apply to his County Agricultural Agent for an official inspection of his apple crop. Applications should be filed not later than September 1.

Requirements for Club Membership.

To become a member of the Red Apple Club the following standards must be met. (1) The crop must score at least 90% free from insect and disease blemishes, (2) grade at least 65% U. S. Fancy, (3) yield at least 400 bushels per acre if trees are more than 20 yrs. of age, 300 bushels per acre if 15 to 20 yrs. and 200 bushels per acre if less than 15 yrs. and (4) a simple record of the spray and dust program will be submitted, including dates, materials and such other information as is needed to determine the approximate per bushel cost of pest control.

The grower may select any one commercial variety to be inspected and membership will be based on the inspection of that variety. The per-acre yield, however, will include all varieties in the block inspected. In other words, where a block involves mostly McIntosh with pollinizers of various kinds, the sample will be made up of McIntosh and the total yield will include McIntosh and pollinizers.

Information on procedure of collecting and storing official samples will be furnished by your County Agent.

* * * * *

A Good Way to Tell Folks About Massachusetts Apples. There are in Massachusetts 250 Women's Clubs; 2000 P.T.A. Associations; 135 Garden Clubs; over 300 Service Clubs, Rotary, Kiwanis, Lion, Exchange, etc. More than 250,000 members in the above groups. Most of these are in urban and suburban areas, just where apples should go. A very simple way to tell these folks about apples would be to distribute a recipe folder at their meetings. All of them would undoubtedly be glad to allow this. Another way to get this message to prospective users of apples would be to enclose such a leaflet with your letters. If you would like to try this out, write to the Department of Pomology, University of Massachusetts, Amherst, Mass., and find out how easy it is to get these leaflets.

-- W. R. Cole

* * * * *

A recent study by the U.S. Dept. of Agric. ("Changes in American Farming," Misc. Pub. No. 707) of the forces now in operation and those on the horizon indicates that the following changes in farming are likely to occur in coming years:

1. Farmers will continue to shift to mechanical power until it has largely supplanted animal power.
2. The use of fertilizer and lime will be increased.
3. Use of grass and legumes in rotations, contour farming, strip cropping and other means will be used to control erosion.
4. More effective use of improved crop varieties, fertilizer, lime, rotations and other soil practices will increase yields.
5. Control of pests and diseases of plants and animals will become more efficient.
6. Irrigation in humid areas will be stepped up.
7. Good roads, electricity, and other conveniences will cause more people in nonfarm work to seek rural homes.
8. Fewer workers will be needed in full-time farming as mechanization gains.
9. Family farms are likely to become larger and fewer, and some increase will occur in number of large-scale farms.
10. Commercial farming will become more complex as technological advances continue.

* * * * *

McIntosh Slogan Contest. A Steering Committee made up of George A. VanHorn, Extension Radio Editor, Fred Cole, and W. R. Cole met recently and have drawn up the following outline of procedure and operations.

1. Enlist fifteen radio stations each to carry four two-minute presentations on successive Thursdays, Sept. 21-28, October 5-12; these to be supplied to the stations in the form of recordings, all made in advance and at hand for use.
2. Prepare and release four newspaper stories to be used on successive Thursdays, Sept. 21-28, October 5-12.
3. Enlist as complete as possible a list of Retail Distributors to use small mats supplied by the Association, in their week to week advertising, for the four weeks, September 21-October 12.
4. Prepare, print, and distribute to all possible individuals, firms and organizations, a circular or flier describing the Contest, carrying information about the McIntosh Apple, and other pertinent material.

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SUGGESTIONS FOR PICKING FRUIT

In the July issue of Virginia Fruit, Fred R. Dreiling, Associate Extension Horticulturist, has some suggestions on picking peaches. His advice is directed to the grower, the foreman, and the picker respectively. To the grower his recommendations are as follows: Provide safe equipment, create and maintain an atmosphere that promotes good work, provide good supervision, provide plenty of containers, and have a definite understanding as to when and how pickers are to be paid.

Quoting directly from his advice to the foreman, he says, "You are the captain of the picking crew. You are an instructor. New pickers need fundamental instruction. Experienced pickers want your suggestions for doing a good job easier." He urges foremen to demonstrate to pickers how to pick the fruit, how to empty picking containers, how to place the fruit in picking containers, how to handle a ladder, and how to fill the field boxes. He should also show the pickers at what stage of ripeness fruit is to be picked, where to start picking, and what to do when he has finished a tree.

To the picker he emphasizes such things as how to twist the fruit from the tree, the importance of placing the fruit in the container rather than dropping it, and how to pick efficiently.

All of these suggestions have the objective of getting the crop off of the trees as carefully, efficiently, and economically as possible.

A similar procedure is just as important in properly handling a McIntosh crop in Massachusetts as in handling a peach crop in Virginia.

* * * * *

Fruit Notes

FEBRUARY 9, 1951



Prepared by the Departments of Pomology, Entomology, and Botany, and
Other Staff Members
Compiled by W. H. Thies, Extension Horticulturist

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IS PRUNING WORTH THE COST?

The answer, for some of the pruning I've seen, is definitely "No." The present day scale of wages, a dollar an hour or somewhat less, is justified in pruning only if the worker understands the Why of pruning and realizes that it is closely associated with good spraying and a higher percentage of Fancy fruit. But if the pruning cuts involve mainly easily reached branches, or vigorous wood instead of weak wood, then the returns on a pruning investment are likely to be non-existent.

In Michigan, someone made the observation a few years ago that during mild winters, fruit growers were inclined to prune too heavily and when the winter was severe or the snow deep, little or no pruning was done. Looking at some of our Massachusetts orchards, the same observer would conclude that for many winters past, the owners had stoked the fire instead of braving the elements. To say that a few commercial orchards would profit from a mild winter or two may be an understatement.

One authority was harsh enough to characterize a certain orchard as being 10 years behind on pruning. This raises the simple question, Why prune at all? Beautiful fruit frequently comes from trees which haven't seen a pruning saw in years. And certainly the amateur who concentrates on pruning instead of pest control has a rude awakening long before harvest time. Let's look at a bearing apple tree as we try to answer this question.

When a tree begins to bear at 5 to 7 years of age, each bearing twig is bent downward. Year after year this bending process continues as new growths develop, generally in an upward direction. And as these growths become two or three years old, they are themselves bent downward under a load of fruit. If we follow this process for five or ten years, assuming heavy annual crops, the whole tree becomes a drooping affair, with some varieties resembling an umbrella. In the meantime, what has happened to those parts of the tree which were bearing apples for the first time five or ten years ago? They are now in the hopelessly shaded class and have been superceded by more recent growths which still get a glimpse of the sun now and then.

From their location in the tree it is easy to understand why some spurs bear small, poorly colored apples and others larger apples of brilliant color. And no one would question the wisdom of doing something to correct this situation. But with pruning saw in hand the tendency is all too common to cut out the very wood which is capable of producing Fancy fruit, just because it seems to be shading the twigs underneath or because, as some pruners insist, it is "getting too high."

In the extreme top of the tree there is good reason for removing some of these branches which are heading skyward, since spraying is thereby simplified. But in other parts of the tree, the experienced pruner will concentrate on the drooping, submerged branches and will leave most of the young, vigorous, well exposed branches. In this way he eliminates poor apples at the source, by cutting out those parts of the tree which produce them, instead of cutting out good wood in the hope of invigorating the poor wood.

In the writer's opinion a grower cannot afford to do detail pruning on the average bearing tree. The pruning shears has little or no place here because it is too time consuming. Instead of sifting out small unwanted twigs, whole branches or parts of branches, frequently one to two inches in diameter, should be removed. If such growths are below the horizontal position, the chances are that a large proportion of their spurs have largely outlived their usefulness. In many bearing

trees, 15 minutes work with a good saw will go a long way toward eliminating from a brushy tangle, the less valuable branches, leaving those parts which have a few years of good production ahead.

If the problem consisted solely of getting rid of spurs which bear low grade fruit, we might tolerate a brushy tree a little longer. But this unwanted wood is not only producing poor fruit in itself, but is interfering with spraying the more valuable parts of the tree. For efficient pest control a tree must be reasonably thin. Each branch should have undisputed possession of a definite space. Two or three branches lying on top of one another contribute to poor pest control. And while we are thinning out our bearing trees to permit a good job of spraying, why not do the thinning in terms of the poorer branches?

We have in our storages today too many green, undersized apples. The percentage of Fancy fruit in the 1951 crop will be larger if every pruner eliminates poor apples at the point of origin -- those shaded branches, drooping ends and downward growing laterals. If the remaining winter months bring mild weather, maybe much of this needed pruning will be accomplished.

* * * * *

BULK PRUNING IN ALTERNATE YEARS

An interesting experiment is under way at the Hood River Experiment Station in Oregon. Quoting from Better Fruit magazine, "Saving money is something that appeals to practically every successful orchard operator. At the Hood River Station, economy tests were started some 15 years ago to see what benefits, if any, could be obtained from reduced pruning. Some trees were permitted to go unpruned, while so-called bulk pruning was tried on others. In the latter, no pruning was done that couldn't be done with a saw and this was only on alternate years. Records kept over the 15-year period show that an average of 15 cuts per year were made in the pruned trees (30 cuts in alternate years). Most interesting development was that there was no significant difference in total yields between pruned and unpruned trees, although the pruned trees did produce better sized fruit. Where trees are too crowded, many orchardists endeavor to make up for lack of space by heavy pruning. It appears that it would be better to do less pruning and more tree removal."

* * * * *

ARE WE USING ENOUGH LIME

"According to records begun in 1911, approximately 259,000,000 tons of lime and limestone have been used on farms in the United States since that year. In 1948 alone, American farmers used about 24,000,000 tons. Even on the basis of a conservative estimate of an additional net profit of \$2.00 to \$3.00 for each ton of lime applied, this would mean an additional \$60,000,000 in net profits in 1948, or about \$650,000,000 to \$750,000,000 in net profits since 1911." The foregoing statement is taken from Farm Finance. In spite of this impressive record, much more lime (high magnesium) could and should be used in Massachusetts.

* * * * *

COOPERATIVE STRAWBERRY VARIETY TESTS -- 1950

At the M.F.G.A. meeting of strawberry growers in Worcester, January 11, the following summary was presented. It covers observations of seven growers in the following counties - Berkshire, Hampshire, Worcester, Essex, Bristol, Barnstable.

In 1949, 50 plants each of 5 varieties were distributed to 11 growers scattered over the state. This summary covers the observations of only 7 of these growers, the other 4 being omitted for various reasons, - severe drought or insufficient data. The numbers following "good", "fair", etc., indicate the numbers of growers reporting that particular observation.

| | Howard 17 | Catskill | Midland | Fairland | Spark 1 |
|---|----------------------------|--------------------|----------------------------|----------------------------|--------------------|
| Runner Plant Development (good, fair, poor) | good-7 | good-5 fair-2 | good-3 fair-1 poor-3 | good-6 poor-1 | good-6 fair-1 |
| Approx. number of original plants (50) which failed to grow | (Totals for seven growers) | | | | |
| | 34 | 42 | 36 | 17 | 14 |
| Date of ripening of <u>first</u> berries | (Range of dates) | | | | |
| | June 9 to June 17 | June 16 to June 22 | June 11 to June 20 | June 11 to June 21 | June 18 to June 24 |
| Date of ripening of <u>last</u> berries | July 1 to July 18 | July 3 to July 21 | June 30 to July 20 | July 8 to July 14 | July 6 to July 25 |
| Approx. number of quarts harvested | (Totals for seven growers) | | | | |
| | 416 | 324 | 249 | 427 | 459 |
| As season advances, do berries hold up in size? (yes, no) | yes-5 no-2 | yes-6 no-1 | yes-1 no-6 | yes-3 no-4 | yes-4 no-3 |
| Quality (good, fair, poor) | good-4 fair-2 poor-1 | good-5 fair-2 | good-1 fair-5 poor-1 | good-2 fair-2 poor-3 | good-6 fair-1 |
| Firmness (good, fair, poor) | good-2 fair-3 poor-2 | good-5 fair-2 | good-4 fair-2 poor-2 | good-4 fair-3 | good-7 |

CONSUMER APPLE BUYING (Based on Results of a U.S.D.A. Consumer Preference Survey)

This study, conducted in 1949 by the Bureau of Agricultural Economics, was designed to obtain information about consumer preferences and practices with regard to deciduous fruits. Apples were the chief subject, but attention was also given to fresh and commercially-prepared apple products. A total of 2,573 households were used in the sample; and these were considered representative of the 42 million private households in the United States. Urban and rural households, those of different income levels, community size, and family size were all proportionately represented. Additional interviews were conducted in Philadelphia and Chicago, giving special attention to the use of and attitudes toward small apples.

Homemakers are likely to use apples in more than one way. About 45% of those who used fresh apples said they served them raw, baked and cooked. One out of three reported serving them both raw and cooked. Only 17% reported using apples raw only.

Consumers who used few apples were less likely to make as many uses of them.

The way in which apples were used most was eating them raw. Nearly 70% of the homemakers who used apples reported this the most frequent use. About 25% said cooking was the most important use. Only 3% said they used most of their apples for baking. This pattern held true in both urban and rural areas.

Ninety-seven per cent of those who used apples from the 1948 crop said they served them raw; 67% in salads; 66% made apple pies; 57% cooked applesauce; and 48% baked the apples.

Most homemakers, both urban and rural, said they preferred to have separate pieces of apple in their pies after they were cooked, rather than have them cooked smooth. Only a third of the rural and about a fourth of the urban homemakers indicated they preferred a smooth texture.

Most homemakers preferred to have applesauce cooked smooth. Only a fifth of the rural homemakers and even fewer urban homemakers favored applesauce with pieces of apple in it.

-- Charles E. Eshbach

Apples are influenced by Nitrogen Fertilizers. Tests at the Ohio Agricultural Experiment Station (Wooster) show that nitrogen fertilizers affect fruit color, size and, to some extent, the quality of fruit. Working with 26-year old Stayman Winesap and Baldwin trees, ammonium nitrate was applied to each of six trees at rates ranging from 1 1/2 to 6 pounds per tree. Samples of fruit taken at harvest time showed best color where the smallest amount of nitrogen was applied although the color was still satisfactory where somewhat more was used. Fruit size increased with increasing nitrogen up to the 4 1/2 pound treatment while fruit quality was best at the 3-pound nitrogen level for both varieties. On the basis of these tests, it appears that a so-called normal application of nitrogen fertilizers results in high quality and large size without sacrificing either fruit color or yield.

Judging the Nitrogen Needs of An Apple Tree

Some common sense on this question is expressed in an article by J. . . Beattie in Hoosier Horticulture. Quoting from his article "Fruit growers must learn to observe and recognize certain signs and symptoms which will permit them to adjust their nitrogen fertilizer program accordingly. If apple trees make on the average from 6 to 12" of shoot growth each season and if the leaves by mid-July are a true green in color, it is almost certain that they are receiving an adequate supply of nitrogen. If shoot growth is less than 6" and the leaves become yellow-green in color, the nitrogen supply is too low. Excessive growth, large green leaves, and the production of very large, poorly colored fruit indicates the nitrogen supply is too high. By applying these principles the keen, observing orchardist can largely solve his own nitrogen fertilizer problems."

* * * * *

LIABILITY INSURANCE FOR THE FRUIT GROWER

Two kinds of insurance which will protect the fruit grower in the event of accidents to his employees are briefly described in Farmers' Bulletin No. 2016 as follows, - Employer's liability insurance protects the employer in case of a suit by an employee who is injured while at work. From the standpoint of the farmer, such insurance provides protection about equal to that provided by Workmen's Compensation Insurance except that it does not provide for payments to the injured employee. This employee must first prove negligence by, or the responsibility of, the farmer and be awarded a judgment against the farmer in court in order for the insurance company to pay him under the policy.

Workmen's compensation insurance assures the employee that he will receive certain benefits or payments set up by law in case he is injured, if he agrees not to sue his employer. In this sense it protects the farmer against claims or court awards arising from injury to the hired help just as employer's liability insurance does. Yet workmen's compensation insurance generally costs no more than straight employer's liability insurance without the worker benefits.

* * * * *

Sensitive Strawberry A Kind Of Guinea Pig. Progress in combating strawberry diseases has been speeded up by a British discovery that Fragaria vesca, the wild strawberry of Europe is extremely sensitive to the viruses that damage commercial and garden varieties. Tried out here through preliminary U. S. Department of Agriculture tests at Beltsville, Md., several diseases show their presence in this guinea-pig plant with much more conspicuous changes than occur in the well-known Marshall variety -- which had been used for the purpose. It makes identification quicker and surer. When some forms of virus were transmitted to this wild strawberry especially by grafts, they caused extreme dwarfing, thin, short leaf stems and very small leaves. A form of virus that attacks strawberries on the Pacific Coast is easily identified when put into this test plant as it mottles the leaves. An Eastern virus causes no mottling but makes the leaf stems turn down. This sensitive test strawberry also shows a difference when the Eastern virus is transmitted by the aphid vector rather than by some other means.

* * * * *

SPRAYING COSTS COMPARED

The average cost of spraying and dusting apples for 100 farms in Western New York and the Hudson River Valley in 1949 was \$2.79 per tree. Apple growers using high pressure rigs for the control of insects and diseases had slightly lower costs than farmers using speed sprayers. The major differences were that growers with speed sprayers used more materials and had higher equipment costs despite lower labor requirements.

Growers who used a gun or broom in connection with a high pressure rig had an average cost of \$2.61 per tree or 18 cents below the average on all farms. The labor cost for these farmers was high, but their investment in equipment was low. Also they were able to aim the spray more directly at the tree and consequently used less materials. Farmers using a mast or mechanical device with a high pressure rig reduced their labor considerably. However, their cost per tree was \$2.77 or just below the average of all farms. This is because the equipment cost for these growers were higher and off-set the reduction in the cost of labor and power.

The cost of spray and dust materials made up 63% or close to two-thirds of the total costs of spraying. Each grower kept a detailed record including the hours of labor and equipment used and the amounts of spray and dust materials put on one block of apples. The cost of the spray equipment including depreciation, interest, repairs, gasoline, oil and grease amounted to 19% or one-fifth of the total. Labor was 11% and tractor power 7%.

* * * * *

SOME OBSERVATIONS ON TREE FRUITS IN GERMANY

As I traveled through eastern Germany last summer, I was impressed by the number of different fruits grown in quantity. In one large fruit and vegetable auction, red currants were the principal item. In another, it was plums, both yellow and blue. And as suggested in January FRUIT NOTES, grapes are grown by thousands of farmers for the making of wine.

In the French Zone of Occupation, with which I am most familiar, there are relatively few large, specialized apple farms although there is an immense number of small orchards including trees along the roadside. Wherever the climate is suitable, and that does not include a highland area around Donaueschingen where there are only 90 frost-free days during the year, most farms include a small orchard, frequently a row or two of trees. One large apple by-products plant in Radolfzell, near the Swiss border, receives apples from about 3000 farmers who are members of the cooperative. This plant made 1,500,000 liters of Apfelsaft (the German equivalent of our apple juice) last year. And in the basement of one of the agricultural schools, facilities are available for pressing out apples for all farmers in the community thus providing a drink for home use at a nominal charge.

Few of the apple trees in this area get more than three sprays. Double cropping of the land frequently interferes with a good spray program. And since most of the apple crop goes into juice anyway, farmers are not much concerned about pest control. A distinct rotten apple taste in much of the Apfelsaft is suggestive of the apples from which it is made. One orchard I visited had received 6 sprays and the owner was very much interested in scab control, this fungus being

troublesome on certain varieties. But the variety list, in general, excludes scab susceptible varieties. Another fungus, apple mildew, is also prevalent. There is little or no interest in McIntosh and its relatives because of the extensive spray program they would require.

There is some interest among research workers and teachers in dwarf trees on galling stocks. Many of the Winter Schools have such a planting. Numbers 9, 4, and 1 are favored. I saw one experimental galling stock orchard of 2000 trees, half of which was irrigated. The differences in yield were quite striking. In this orchard I saw one tree which had taken root above the graft union and the resulting tree was behaving in the same way as they do in this country.

All fruits on standard stocks, with the exception of peaches, have relatively long trunks. In fact, one can walk under most fruit trees without bumping his head on the lowest branch. This arrangement makes it possible to grow other crops in an orchard without much interference. Among the second crops grown are hay, grain, potatoes, fodder beets, vegetables, etc. In one orchard of about 1500 trees near the Rhine on a light soil, hay was being harvested for cattle even though the trees were very much in need of a liberal mulch.

High headed fruit trees are the result of a special method used in the nursery. In one nursery visited where plum trees were being budded, the bud was inserted at a point 180 centimeters (almost six feet) from the ground. All branches below that point are subsequently removed. Incidentally, it is now possible to obtain from German nurseries very good apple trees on galling stocks for the equivalent of 75¢ to \$1.00. A 1950 catalog showed a quotation of 3 DM. (A Deutsche Mark is worth about 25¢). About the only familiar apple varieties encountered were Ontario, Cox Orange, Gravenstein and an early apple (Weisseklar) very similar to Yellow Transparent. It may be that variety.

Here and there in Germany one finds very good pears, including Bartlett and Flapp, both of which are known by their German names. But many of the pears are small, some very small, and are used for juice (Birnensoft). Probably half of the pears produced are used in this way.

Plums occupy an important place on German tables, and having sampled their plum cake several times, I can understand why. It is very edible, to state the case mildly. But plums are also used in making Schnaps, a potent beverage taken in small amounts on special occasions. Cherries, cultivated and wild, also find their way into this concoction.

In one section of Rhineland-Pfalz, apricots are grown quite extensively. I was fortunate enough to visit this area when they were in their prime. Needless to say the samples were enjoyed. Marmalade is commonly served in Germany and many of the apricots are used in making this product. In the Bad Duerkheim area, peaches are of some importance, and a peach experiment station is testing more than 100 varieties including South Haven, Elberta, Champion, etc. At three farms I had an opportunity to compare the quality of several varieties.

Of the remaining tree fruits, quinces are no more common than in Massachusetts, and one of the varieties is shaped like a pear. Where this quince was observed, the owner had a small stationary spray outfit, the only one which came to my attention.

Cherries are of some importance in the Kaiserstuhl area where the temperature averages several degrees higher than in other parts of Western Germany and the soil rests above the neutral point because of its limestone origin. I was told that a

cherry maggot (Not the same species as we have in the U.S.) is occasionally troublesome. In those years the fruit is turned into Schnaps because, in the many, small plantings, control would be difficult even if the owners were well equipped. In other years some of the cherries are sold for eating out of hand.

Of the various fruit insects with which we are familiar a few appear to be absent in German orchards. No one mentioned plum curculio, apple maggot or pear psylla. In fact, pear trees, if sprayed at all, are sprayed the same as apples. A single spray chart is prepared for both fruits. The codling moth is very common, and if I am not mistaken, it came to the U.S. from Europe originally.

In the next issue of FRUIT NOTES, I'll tell how fruits and vegetables are sold in Germany through a unique cooperative auction method.

* * * * *

Handle Potent Chemicals Carefully. Fruit growers can profit by the following quotation that Dr. J. G. Townsend, Chief, Division of Industrial Hygiene, U.S. Public Health Service, made at the 16th annual meeting of the National Agricultural Chemicals Association:

"The farmer need not bow to economic pests, but can use to the fullest advantage the potent new insecticides if he is scrupulous in protecting himself and his employees."

"On the farm, as well as in the factory, dangerous chemicals may be used safely with proper precautions. If manufacturers, processors and distributors had to relinquish certain substances because they are toxic, American industry would be in a primitive stage."

"Too much emphasis cannot be put on education of the person who may be exposed to these chemicals. Correct information insures safe practices and wipes out apprehension and distortion of the facts."

"We are interested in protecting the health of the worker from harmful exposures in plants handling these chemicals. Our second concern is the health of the man on the farm who uses them. One of the principal tenets of the Division of Industrial Hygiene is that any poison, no matter how toxic, can be handled safely if proper precautions are observed."

-- E. H. Wheeler

* * * * *

As I See It. "There's not much left on earth that I, or you, or anyone can buy, that's fit to eat, according to a few! For when they try to kill the bugs with all these new fandangled drugs, the worms they beat, but leave a residue. To eat, or not to eat. Ah, me! The choice is bugs - or drugs. The only dish that's left is fish, as far as I can see."

(Author unknown)

* * * * *

I have gathered a posie from other men's flowers and naught but the thread that binds them is my own.

(Flyleaf, Familiar Quotations,
John Bartlett)

* * * * *

Effects of Ferbam on McIntosh Apple Trees. The beneficial effects of ferbam on apple has been noted for several years. Some interesting light on this question is contained in a recent letter from Dr. D. H. Palmiter of the New York State Agricultural Experiment Station.

"In one experiment at Rock City I have had ferbam sprayed McIntosh compared with sulfur sprayed McIntosh for eight years. On plots where no fertilizer of any kind has been used the ferbam plots have out-yielded the sulfur plots by over 40 per cent. The ferbam without fertilizer has out-yielded the best nitrogen fertilized sulfur plots during the last four years.

"Trunk circumference measurements were made each year to determine the increase. The sulfur plots with no nitrogen increased 9.9 inches in eight years, sulfur plus soil nitrogen increased 11.3 inches, and with NuGreen foliage sprays 10.2 inches compared with an increase of 10.7 inches with ferbam and no nitrogen. The soil nitrogen plots made the best growth but had poor fruit color and a heavy drop.

"Nitrogen and chlorophyll data have not been taken every year but there are some indications that the ferbam sprayed trees have a greater chlorophyll content for a given nitrogen level than the sulfur sprayed trees. The ferbam sprayed trees always look greener than the sulfur sprayed trees without nitrogen and often greener than the sulfur sprayed trees with nitrogen.

"Ferbam contains about 10 per cent nitrogen but at the rate used a tree would not receive more than 1/4 pound of nitrogen during the season from this source. I feel the increased yield is due to reduced spray injury rather than any nutrient effect from the ferbam."

* * * * *

Can Apple Growers Influence Consumer Acceptance? Discussing this question in the February 6 issue of FRUIT AND VEGETABLE MARKETER, F. E. Cole says,

"If a good proportion of the crop is sold early in the year, it is not necessary to have increasing quantities on the market week after week from January through March. However, if an insufficient proportion of the crop was sold before Christmas, there is no alternative but to place the remaining apples on the market during the winter. The apples have to be sold. If consumer demand is not stepped-up to take the apples, the pressure remains on the supply end.

"There are ways of bringing apples to the attention of consumers - apple publicity. There are ways of making apples more attractive in bigger and better placed displays. Growers have ways of protecting the condition of apples so as to make them better tasting and of greater use. The rate at which apples are put on the market, the changes in week to week supply - i.e., the pattern of apple movement is in the hands of growers."

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Fruit Notes

MARCH 31, 1951



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PRODUCING VIRUS-FREE STRAWBERRY PLANTS IN ENGLAND

Strawberry growers in England have some of the same troubles as growers in this country. Among the more serious of these are virus infections. Four strains of virus have been recognized, each of which can be identified by inoculation into the Alpine strawberry, Fragaria vesca, which grows wild in England. The virus situation became serious enough and the demand from growers insistent enough so that a very interesting method has been developed for supplying virus-free plants.

A single virus-free plant was found and taken to the Experiment Station at East Malling. From this single plant virus-free runner plants are produced. These are sold to strawberry plant propagators who do nothing but produce strawberry plants. They never produce any fruit. These propagators increase the plant supply by what is called the isolated block method. The plants are set in a double row and the runners from four plants trained to the center of the square formed by these plants. Thus, the field becomes a checkerboard of these squares or blocks with two foot paths between them. If one of these blocks becomes infected, it can be removed at once without infecting other blocks. These stock nurseries must be at least a mile from any commercial strawberry planting. The beds are fumigated with nicotine to keep them free of aphids which transmit the virus. Twice during the summer the stock nursery is inspected by a representative from the Ministry of Agriculture. If it passes inspection, a special stock certificate is **used**. As a further precaution these stock nurseries must renew their stock from the original source at East Malling every three or four years.

Naturally the plants produced by the plant propagators are high priced; too high priced to be sold to the grower. They are sold to nurserymen with an ordinary license who produce plants for the strawberry grower. This may seem like a costly and time consuming way to produce strawberry plants, but it gets results.

-- J. S. Bailey

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INFECTION AND INCUBATION PERIODS FOR APPLE SCAB

Infection Period: In the case of primary infection of apple scab, an infection period is an overall period of sufficient wetness to allow discharge of ascospores from the overwintered leaves, their dissemination to green leaves and fruits, their germination, and penetration far enough to establish infection. Length of such a wetting period varies with the temperature. A wet period with insufficient water or insufficient length to permit ascospore discharge, dissemination, germination and penetration would not be an infection period. Intermittent rain periods may constitute an infection period provided not more than 3 hours of drying occurs between the wet periods.

For secondary infections by the summer spores (conidia) of apple scab, an infection period implies a wetting of sufficient duration for dissemination (dripping and wind-blown in rain), germination and penetration by the summer spores. It may be only about two-thirds the length of the earlier primary infection periods.

Table 1 indicates the relationship between time and temperature requirements for primary infection in orchards with medium to heavy scab carryover.

Table 1. Hours of wetting needed at different temperatures for apple Scab primary infection on unsprayed leaves early in the season.*

| Temperatures (°F.) | Light Infection | Moderate Infection | Heavy Infection |
|--------------------|-----------------|--------------------|-----------------|
| 42 | 28 | 37 | --- |
| 45 | 20 | 26 | 40 |
| 50 | 14 | 19 | 29 |
| 55 | 12 | 16 | 24 |
| 60 | 10 | 13 | 20 |
| 65-75 | 9 | 12 | 18 |
| 78 | 12 | 17 | 26 |

Incubation Period: Incubation period covers the time from penetration and establishment of infection to the appearance of the disease lesions. It too varies in length with the temperature, and also with the kind of disease. The lower the daily temperatures after infection takes place, the longer will be the incubation period. W. D. Mills in New York State found that the mean temperature for the first 5 days after infection was a more reliable criterion than the mean temperature of the entire incubation period in arriving at an accurate relationship between temperature and length of incubation period. The data in Table 2 show the relationship between the mean daily temperature for the entire incubation period and the length of that period, as compared with the mean temperature for the first 5 days. One value of these data lies in the ability of one to figure back after scab spots appear and determine through temperature records which wet period caused the infection. Also, it is possible to note the mean daily temperatures for five days after an infection period and then figure out when the spots will show up. This latter advantage is by far the more useful one to the grower.

Table 2. Observations on incubation periods for Apple Scab in Western New York, based upon the first important infection period of each year for 27 years.*

| Mean temperature (°F.) for the entire incubation period | Approximate number of days in the incubation period | Mean temperature (°F.) of first five days after infection |
|---|---|---|
| --- | 19 | 35-37 |
| --- | 18 | 38-40 |
| 48-49 | 17 | 41-43 |
| 50-51 | 16 | 44-46 |
| 52-53 | 15 | 47-49 |
| 54-55 | 14 | 50-53 |
| 56-57 | 13 | 54-56 |
| 58-59 | 12 | 57-59 |
| 60 | 11 | 60-62 |
| 61-62 | 10 | 63-65 |
| 63-64 | 9 | 66-68 |
| 65-66 | 8 | 69-72 |
| --- | 7 | 73-74 |

* Data from reports by W. D. Mills, Cornell University

There are other factors besides temperature that affect the length of the incubation period for apple scab. Observations in Massachusetts indicate that 2 to 3 applications of wettable sulfur during the incubation period will lengthen it from 1 to 3 days over the incubation period for the corresponding infections in unsprayed orchards. W. D. Mills states that lime-sulfur applied too late for after-rain (kick-back) control may delay the appearance of scab spots as much as 5 days. Phenyl mercury spray has been known to permanently inactivate the scab fungus midway in a 15-day incubation period. Under some conditions, however, like lime-sulfur it may only lengthen the incubation period. The reason why the scab fungus in incubation may be slowed up or otherwise hindered by spray applications is its close proximity to the surface of the leaf, i.e., just beneath the cuticle.

-- C. C. Boyd

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NOTES ON ORGANIC GARDENING:

In a recent issue of Agricultural Chemicals the opinions of two eminent soil scientists on this controversial subject are expressed. Dr. Truog of Wisconsin is reported as saying, "Soil organic matter is of tremendous importance: it facilitates the intake of water and thus reduces runoff and erosion. It also favors workability or ease of cultivation, aeration and drainage. Fresh organic matter contains all of the elements needed for plant growth, which as decomposition proceeds, are released in forms suitable for new plant growth ... However, to say (as the organic school does) that chemical fertilizers, such as super-phosphate and muriate of potash should not be used to make up inevitable deficiencies of nutritive elements that cannot be supplied through the use of organic matter is just pure bunkum.

This same authority is also quoted in part as follows: "Fertilizer elements in commercial fertilizers are fully as available to crops as those in organic materials, and in some cases even more so. There is absolutely no difference in the nature of the nitric and sulphuric acids formed in the soil from organic matter through the action of bacteria, as the nature of these same acids as used in a fertilizer factory. The form in which plants take up their nutrients is the same whether they are originally supplied as organic material, such as compost or commercial fertilizer. It is true that the use of composts adds to the supply of organic matter in soils, and in this way promotes a better physical condition of soils....This use may be important especially with the city gardener....The farmer in general, however, cannot cover his large acreages with compost. Sufficient amounts of leaves and other organic materials just do not exist on his farm for this."

Dr. Bear of New Jersey refers to the organic group as an "international cluttering up our soils literature with a mixture of facts and fancies that are so cleverly interwoven that it is very difficult to know where one leaves off and the other begins....Such teachings link the farmer inseparably with the manure pile and peasantry. They set aside some of the most important findings of a century of agricultural science."

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A Note on Orchard Fertilization It's almost time for the spring tonic in apple orchards, - the allotment of nitrogen which works wonders in encouraging better terminal growth, making leaves a darker green and in stepping up the per acre yield. But how much nitrogen is enough and not too much. Folks have tried for years to use a "rule of thumb", by correlating the nitrogen application with trunk diameter or age of tree. As a rough guide that's not a bad idea. But neither diameter nor age show whether a tree is starved for nitrogen or at the opposite extreme, getting too much nitrogen. The best indicators of nitrogen needs are (1) last year's terminal growth, (2) shade of green in the leaves, and (3) color of the fruit. If vegetative growth is excessive, leaves a dark green and fruit color poor, a grower should lay off on nitrogen entirely for a year. And if all of these items indicate nitrogen starvation, double the standard application may be a good investment. It is time we quit fertilizing trees as we fertilized them last year, or as a neighbor does. The ideal system involves gauging the fertilizer application to fit the needs of the tree, decreasing the amount whenever it seems to interfere with the development of good color. But if a tree is deficient in nitrogen, the yield is reduced and even the McIntosh variety tends to become biennial. For the correct amount of nitrogen to be applied -- ask the tree.

Fall vs. Spring Planting of Strawberries The principal advantage of setting strawberry plants in the fall is that the roots become established while the air is cool, and before top growth begins. But if fall set plants are not mulched they are likely to suffer from winter injury and actually make a poorer showing than plants set in early spring. Thus the grower must mulch his planting twice for one crop of berries. Fall planting is much better than late spring but little, if any, better under our conditions than early spring.

Girdled Trees? Then you may be interested in an excellent publication which illustrates and describes the practice of "Bridge Grafting". It is Farmers' Bulletin No. 1369. A copy is available from your County Extension Office or from the Mailing Room at the University.

* COUNTY AGENTS' CORNER

* Footnote to a Spray Schedule

* D. T. Thayer, Franklin County

Try This for Size An apple tree in a crowded orchard pruned as follows: Side limbs removed because of interference. Lower limbs removed to facilitate mowing. Center limbs removed to admit light. Top limbs removed because too high. -- A special case? Not at all. Only one of the many trees in Massachusetts owned by men who want to get "one more crop" before removing every other diagonal row.

* Vegetable grower Gilbert S. Watts, no stranger to the edible root, stem, and leaf clan as co-author of "the book" among vegetable texts, journeyed to Amherst from his home acres in Pennsylvania during January to talk on the annual Vegetable Day Program.

* To those of us fortunate to catch one-half of the Watts family it became

apparent early. At the speaker packed much more than the customary toothbrush and pajamas in the old gladstone. One man doesn't carry so many good ideas around in one head, not all the way from Penn's woods.

Delivering at a rate variously estimated by growers present from 400-500 words per minute, Gilbert Watts really laid it on the line to the clerical set, and what the man said ought to make sense to a lot of us these days, whether we tend an apple orchard or babbitt bushings, or whatever it is they do to bushings.

Departing from strictly subject matter, Mr. Watts took a dim view of what he called "superimposed leadership," or leadership thrust down from the loftier top levels, rather than springing from the grassier grass roots. Then, angling to the marketing side, there's never yet a master plan been whipped up on the Potomac flats, or any place else that could solve everyone's problems for them, or words to that effect. If you want to lay out a buck ninety-eight for a magic set (junior size) you may "amaze and mystify your friends," but don't count on it to sell squash, (or apples, or bushings).

Then he hauled out and dusted off the old pioneer virtues. Over-rated and over-done? Perhaps a little "corny" this day? Maybe, (who knows when Flag Day comes?) But somehow it sounded level coming out of this speaker, and maybe we would be smart to buy some pioneer virtues.

Sure, we are forging ahead, but when a horse is said to be "forging", he is over-reaching, clipping his forehead with his back, and it is still a job for a blacksmith, a pioneer type guy.

And then Mr. Watts said something like, "Let's not be feeling sorry for ourselves." The fruit men, like the vegetable men (and the babbitt bushers,) have had their good ones and their rough ones. But not yet awhile in this country do we have to mess around with squash, or apples, or bushings if we don't want to. We can always go down the road.

One way to look at it is: there's always some poor Mac snatcher, somewhere, getting a worse deal. 'Course if you have a scab crop, the fact that neighbor Harry has twice as much scab isn't going to put much more oatmeal on your table, but Harry figures he is making out because he lost less this year than last, and so on.

Farmer Experiments with Weedkillers on Raspberries
C. S. Johnson, Barnstable County

David Crowell, owner of Crow Farm in Sandwich, is one farmer who attends the majority of the local and statewide vegetable and fruit meetings. From June to December, he supplies his successful roadside stand with high grade fruits and vegetables from his own farm. The fruits that he grows include apples, peaches, pears, plums, sweet and sour cherries, strawberries, raspberries, grapes and nectarberries.

From the meetings that he attends, he is interested primarily in picking up information on new varieties that are particularly adapted to his roadside demand, labor saving devices and methods, pest control materials and their application, and in the past few years, he has been especially interested in weed control information.

Mr. Crowell applies Stoddard solvent to his carrots each year, has tried Aero Cyanamid on onions, and 2,4-D on corn. Two years ago he decided to try Stoddard solvent on the raspberry rows where the harrow and cultivator could not reach. The material was applied in late spring after the weeds had a good start. He thoroughly sprayed the whole area in the row not caring particularly whether the solvent hit the canes or not. The weeds were cleaned out thoroughly as were the young raspberry sprouts. The lower leaves on the mature canes dropped off, but the canes and yields were not affected. Weed growth during the rest of the season was not troublesome. He states that he would like to use Stoddard solvent each year on the raspberries for weed control, but feels that for him, on a comparatively small area, the treatment is too expensive.

Dog grass, or quack grass, is a terrific problem on most farms in this area so Mr. Crowell decided to try the dog grass killer, IPC, in different areas of his farm. On a small raspberry plot, IPC, mixed according to directions, did a beautiful job on the dog grass, but also killed every raspberry plant. He then tried it around one tree in his peach orchard where dog grass has been a problem for years. IPC did a perfect job on the quack grass and did not affect the tree too much although he thought that the leaves appeared a little light in color. He also tried 2,4-D on a part of his raspberry patch. It killed all the broadleaf weeds, left the grasses which grew more profusely than ever, and caused a distortion of the canes.

As new information comes out on weedkillers, Mr. Crowell will continue to test it and also to carry on side experiments on his own. At the present time, he is applying the new 2,4-D and 2,4,5-T brushkiller as a dormant spray to a brush area where he hopes to plant holly trees.

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FRUIT AUCTIONS IN GERMANY

In the course of my travels last summer I was able to make a first hand study of the German method of selling fruits at auction. The German word for auction is Versteigerung, the second syllable coming from "steigen", meaning to climb. But instead of climbing from a low bid to a higher one, the system works in reverse, starting at the top. There is never more than one bid, as will be explained later.

The auction occupies a very important place in the marketing of farm produce. It provides a means of selling immense quantities from a large number of different farmers, with amazing efficiency. The system, borrowed originally from Holland, was about the same in all of the five auctions visited. In the first one, currants and gooseberries were a principal item. In another, it was plums, yellow and blue. Cherries, apricots, and pears were prominent in others, and generally there were various kinds of vegetables.

The average set-up is about like this: The auction room, a spacious affair, is centrally located. Assembly points, as many as 50, are located in surrounding communities, some of them as far as 20 miles from the auction room. Produce is delivered to these assembly points by farmers in the neighborhood and trucked from there to the place of sale. This makes it possible for a small farmer with only a cow for motive power to sell at auction the product of a dozen currant bushes. He might even carry it to the assembly point on his back. In fact, fruit has been transported from farm to assembly point in a baby carriage.

In the auction room the various lots, each with its number, are arranged in piles, and prospective buyers have an opportunity to make a careful inspection before the auction begins, generally at 10 or 11 A.M. There is some semblance of grading although it is more a matter of sorting according to size or color than of rigidly observed grades. The auction manager may refuse to accept any lot considered unsalable.

The sale is conducted in another room with seats for buyers arranged as in an amphitheater. On the opposite wall there is a device resembling a roulette wheel, with numbers ranging up to 100, an indicator, and in the center a stationary board with numbered lights, the numbers corresponding to those on pushbuttons at each buyer's seat.

Selling proceeds as follows: The auctioneer seated by the wheel identifies the first lot, and announces its number. He then gives the wheel a spin starting with the indicator at the highest number likely to be bid. For example, suppose a lot of plums is up for sale and they are worth about 80 Pfennigs per unit. The indicator starts at 100 and moves downward slowly. At the instant the indicator reaches a figure which any one of the buyers is willing to pay, he immediately pushes his button and the light flashes at his number on the board. There is no talking except the original announcement of the auctioneer and his statement as to the number of the buyer and the price bid. By starting high and allowing the indicator to move to a lower figure every buyer is on the alert and if a buyer loses out on several lots because someone else pushed his button first, he will make sure that he gets the next lot by "raising the ante" and pushing his button a little sooner.

In one auction I saw 170 lots of fruit sold in one hour, and when the sale was over, each buyer found the slips for his purchases in a neat pile where they had been arranged by the auctioneer's assistant. There had been no waving of hands and no shouting, only a careful scanning of lot designations and a spirited pushing of buttons. All fruit must be claimed promptly and moved off the floor to make room for the lots to be sold the next day.

As I watched this type of auction I naturally wondered how it would work in the United States. Maybe it's worth a trial.

In the next issue the growing of cherries in Germany will be discussed. An article written in German by a fruit instructor near Koblenz, has been translated for use in FRUIT NOTES.

Chemical Thinning of Apples and Peaches The 1951 suggestions of the Department of Pomology, University of Massachusetts, Amherst, concerning the use of dinitros and hormones for the chemical thinning of fruit trees are now available to growers and may be had by contacting your County Agricultural Agent or by writing directly to the Department at Amherst.

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A VISIT TO BELTSVILLE

A few weeks ago the writer visited the USDA Plant Industry Station at Beltsville, Maryland, and looked over some of the important fruit research work now under way. In this issue we include a brief summary of a rather outstanding mulching experiment which has a direct application to orchards in Massachusetts.

Comparison of High Nitrogen Hay and Straw Mulch On the light soil in the experimental orchard, a block of York Imperial trees have shown every evidence of faulty nutrition. They were typically "sick trees." Some of the limbs were dying and others were on the way. Here seemed to be an ideal chance to compare the nutritive effects of mulch materials, a test which would show very little on a good soil. Previously, mulching experiments have been conducted mainly to determine the effects on yields and growth without going into the chemical and nutritive effects.

The two mulch materials selected were straw, a low nitrogen high carbon material, and high nitrogen hay, obtained by fertilizing an orchard grass meadow with 300 pounds per acre of ammonium nitrate. The grass was cut at the heading stage and the yield amounted to as much as 5 tons per acre. A chemical test showed slightly more than 2% actual nitrogen. This hay, as the reader can well imagine, was dark green in color, the kind any dairyman would welcome in his haymow. It was applied to half of the "sick trees" in June at the rate of 100 pounds of air dried hay per tree, the other trees receiving a similar amount of straw. A year later, 200 pounds of these materials were added to the same trees.

Within a year of the time the hay was applied, the trees receiving the hay were definitely on the way back while the trees receiving straw plus as much nitrogen as the hay contained had shown much less response. The latter looked better than unmulched trees, but in no case were they as vigorous as the trees mulched with hay. The trees mulched with high nitrogen hay were thriving, and the set of fruit was heavy. Analyses of the leaves showed a somewhat higher content of all the essential mineral elements, including the so-called minor ones. Evidently, the decaying hay mulch was yielding these mineral elements in available form or was helping to make them available in the soil. And as might be expected, root development just beneath the hay mulch was very noticeable.

As a preliminary to this test, a laboratory study of the rate of decay of high and low nitrogen hay had been made. Some elements, notably potassium, may leach from mulches without the benefit of decomposition, while other ions, combined in the more complex molecules apparently require micro-biological action for their release. This laboratory study substantiated the claim that nutrients are released more readily from a high nitrogen material.

From a practical standpoint the test at Beltsville points the way toward the nutrition of trees on a light soil by the application of mulch material grown outside the orchard under a fairly liberal supply of nitrogen instead of trying to nourish the tree directly from the fertilizer bag. It also suggests the value of broadcasting a nitrogenous fertilizer over the orchard floor to grow more high nitrogen hay in the orchard and then cutting the hay for use around the trees. Fertilizer used in this way may return more profit than if used in a ring application. This method assumes, of course, that ample high magnesium lime has been applied in the orchard to bring the pH up to at least 5.5. It takes about 3 pounds of dolomitic lime to counteract the acidifying effect of one pound of sulfur used in the dusting program.

To summarize the Beltsville results, instead of considering all mulch materials as equally effective, we need to take into account the nitrogen content since that is directly related to the rate of decomposition and consequently the release of nutrients. Hay from a very poor soil will necessarily be lacking in nitrogen. It will therefore be of more value from a physical than from a chemical standpoint. There is a common notion among growers that a "mulch is a mulch" and that its main purpose is to conserve moisture. However important that may be, its effect is limited unless it brings something of the response noted in those York Imperial trees in Beltsville.

On a cost basis, there is little difference in the cost per pound of nitrogen applied as hay or as ammonium nitrate. Dr. C. P. Harley submits these figures:

| | |
|---|----------------|
| 300 lbs. of ammonium nitrate per acre | \$15.00 |
| Labor (fertilize, mow, rake, haul, spread) | 20.00 |
| Total cost per acre | <u>\$35.00</u> |

At 2% N, 5 tons of hay contains 200 lbs. N.
Using 200 lbs. of hay per tree means 4 lbs. N.
Cost per tree is 70¢, or 17 1/2¢ per lb. of N.

Ammonium nitrate @ 5¢ per lb. means 15¢ per lb. of N.
labor 2¢
17¢ per lb. of N.

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Sawdust or Straw Mulch We are beginning to realize that mulch materials vary considerably in their effect upon the plant we are trying to benefit by mulching. Take, for example, a material like sawdust or straw, both of which are high in carbon and very low in nitrogen. Before these materials can decay, the organisms which bring about decay must increase in numbers and complete their development. This process requires nitrogen in available form, since protein contains nitrogen. Thus they become competitors of the plant for nitrates. So an apple tree on a poor soil heavily mulched with sawdust will suffer a nitrogen deficiency unless additional nitrogen is added to the sawdust. Not so with a "high nitrogen" mulch material like clover hay or even grass grown on a fertile soil. Here the mulch material releases available nutrients as it decays. It also helps to conserve moisture and smothers competing vegetation. To make a long story short, any of the plant residues have some value as a mulch material but those containing a moderately high percentage of nitrogen cause a more rapid response on a light soil. Blueberry plants mulched with sawdust at the Beltsville Plant Industry Station receive twice as much nitrogenous fertilizer as plants under cultivation.

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Does Propping Pay? In some of the high producing apple orchards in Massachusetts, no props at all are used. And, strange to say, the breakage of branches is negligible. Tree framework and method of pruning offer the explanation. If trees are trained according to the "Leader System", branches are well spaced and no weak crotches are allowed to develop, they will hold a heavy crop with only an occasional broken branch. The tree with a 40-bushel load droops umbrella-like, and after harvest comes up smiling again. But an old, poorly formed, winter injured tree is a different story. If it matures a heavy crop, something is likely to give way. Maybe trees of that kind have outlived their usefulness. Having observed thousands of orchards we come to this conclusion: With the right kind of pruning, propping is not only unnecessary, but unprofitable. Prop poles cost money. They last only a few years. The pile of prop poles harbors certain pests. It's a laborious job to set the poles properly. If set in the wrong place, the branch may break at the point of contact. An investment in poles and in propping labor is a dubious one. Propping is a poor way to "prop up" an orchard enterprise.

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A 3,700-Year-Old Farm Bulletin Extension teaching is much older than most folks realize. An expedition in Iran last year unearthed a clay tablet bearing agricultural information which antedates the first previously known bulletin, "Works and Days," by the Greek poet, Hesiod. Among the approved practices here listed are putting the grain in the soil two fingers deep and irrigating a fourth time to net an extra yield of one cup in every ten. "On the day when the seed breaks through the ground." the farmer was advised to say a prayer to the goddess of the mongoose, enemy of field mice and other vermin that might harm the grain. He must also scare away the birds.

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Bulk Spreading of Lime The total tonnage of ground limestone distributed to Massachusetts farmers through the FIA in 1950 is impressive. It amounts to more than 55,000 tons of which 18,000 tons were bulk spread. Lime distributed to fruit growers was, for most part, high magnesium or dolomitic. Every fruit grower should request this type since it represents the cheapest form of insurance against magnesium deficiency. And bulk spreading is by far the best means of placing the lime where it will do the most good. An occasional mound of unspread lime here and there where bags were piled in years past is a reflection on the business ability of the owner.

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NOTES ON A FEW APPLE INSECTS

Red-banded Leafroller Moths of the first generation of Red-banded Leafroller are now flying. In particularly advanced orchards we have found the young larvae of the second brood already beginning to feed on leaves. Growers with Red-banded Leafroller present in their orchards now would seem to be very unwise if they do not use DDD in some form in either one or two applications against second broods.

With the Red-banded Leafroller second brood already starting to appear, some growers may wish to include DDD in their regular fifth cover spray or a spray which will be put on about the 25th of July. Since there will be also some late Red-banded Leafroller moths, egg laying and hatching, a second application of DDD coming about the second week in August would seem to be necessary in these orchards.

The other alternative would be to put the regular materials on in the late July spray followed by a special application of DDD in the second week of August. In light to moderate infestations this single application coming about the second week in August should give complete control of Red-banded Leafroller provided the application is thorough. Including the DDD in the two sprays would of course give additional assurance of control.

The DDD may be used as a substitute for the DDT in the late July sprays. I am sure that lead arsenate should be included to provide the longer lasting residue against apple maggot. We should not apply lead arsenate in the August sprays except perhaps a small quantity to the later varieties. Certainly not on McIntosh at that time.

Green Aphid Green aphids are building up to rather alarming numbers in many bearing orchards. So long as they stay strictly on the terminals, the only damage to fruit will be an occasional smutting due to the growth of sooty mold in honey-dew which drops from the aphids on the higher terminals onto the fruit. If they start migrating to the fruit clusters which they are doing in many instances, then some control measures should be taken. TEPP will provide the least expensive and probably the most effective control. Mites will be hit with the same application. Aramite has little or no effect against aphids. Where it seems undesirable to use TEPP, the older recommendation for the use of nicotine sulfate could be used. It would be more expensive and might not be so effective.

Woolly Apple Aphid This insect is much more numerous this year and some growers are expressing considerable concern over the presence of it on their terminals in addition to suckers and around pruning scars on the limbs and branches. This insect overwinters in active stages on the roots of trees and also in mild winters as young nymphs tucked away in the crevices of the scars formed during the previous season. I feel fairly certain that the increase of this insect is due to our series of mild winters. Where parasites have been depended upon to provide most of the control for Woolly Aphid, then the use of DDT has been responsible, at least in part, for its increase. Here in the Northeast the Woolly Apple Aphid has been kept under control not alone by parasites, but by winter killing. Thus my opinion that our mild winters of recent years may be largely responsible for the present excessive numbers. The same materials effective against Green Aphid are reported to be effective against Woolly Aphid, but it is necessary to increase the amount of wetting material and to spray very thoroughly so as to wet the waxy coverings of the aphid colonies.

Codling Moth Some fresh larval entrances and unhatched eggs of Codling Moth were found on July 11. These should represent the last kick-up of first brood Codling Moth for this season. Growers who applied sprays during the first week of July or early this week (July 12) should be well protected against these late hatching first brood larvae and the final egg laying of the late emerging moths.

E. H. Wheeler

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PEACH PRODUCTION IN '51 SHOWS GAINS IN RESEARCH

(Following is an abstract of a release on this subject from the USDA)

Science is bringing changes to the peach orchard. Although weather is still the main factor in determining the size of the crop, improved varieties and important advances in cultural practices, and disease and insect control are helping to stabilize yields of high-quality fruit. Surveying research gains, Dr. F. P. Cullinan, assistant chief of the Bureau of Plant Industry, Soils, and Agricultural Engineering, points out that a number of the varieties expected to make a good showing this year have come out of the Federal-State cooperative breeding program within the past 7 years.

One of the chief objectives has been to extend the production season with superior commercial varieties that ripen earlier or later than Elberta, the standard market peach. In making the crosses and selections from which the new varieties originated, the breeders have been guided by consumer preference for peaches with bright-colored skins, good size, firm flesh, and sweet flavor. From the New Jersey Station have come Jerseyland, a solid red-skinned peach with yellow flesh, that ripens about 4 to 5 weeks before Elberta, and Laterose, a promising variety that ripens soon after Elberta. Goodcheer, introduced in 1947, ripens about 10 days after Elberta. The fruit, medium-sized to large, has an attractive red skin, and firm yellow flesh.

Recent research is giving a better understanding of the effects of pruning. The trend is toward less severe pruning of young trees and more cutting back of older trees. The findings show that trees pruned while dormant produce the longest shoot growth and largest number of flower buds per foot. But in cases where weather and other factors delay the operation until after dormancy, the studies indicate it is better to prune late -- about a month after bloom if necessary -- than not to prune at all.

Fruit thinning is now an established practice in the commercial peach orchard. Research shows that, in general, the earlier the variety, the greater its response to early thinning. Chemical blossom sprays have not been completely worked out for the peach orchard. Results with different chemicals under trial vary. Brush brooms made from prunings are being used advantageously to thin blossoms on early varieties in the South. They are not recommended in areas where frost thinning is still a possibility. Poles of various kinds are used to jar small branches before and during the June drop. In the Pacific Northwest, some orchardists are using spray equipment -- a single nozzle spray gun opened to its narrowest stream-- to "water-thin" blossoms.

The trend is toward less cultivation in the peach orchard. The specialists now recommend cover crops that can be seeded in late summer and grown through winter and early spring when the cover will not compete with the trees for water and nitrogen. Where erosion is a problem, growers are advised to use mulch.

For highest quality peaches, fertilization studies indicate the soil nitrogen level should be neither extremely high nor extremely low. High nitrogen detracts from color in the Elberta, Sullivan, Elberta, and Belle varieties but not in Halehaven and Dixired. High nitrogen and moisture reduce sugar content and flavor, and result in easier bruising. Tests so far indicate that nitrogen sprays, such as urea, are of doubtful value on peaches.

Virus diseases now causing highest losses to the peach crop are phony disease in the Southeast, mosaic in the Southwest, Western X in the Northwest, and Eastern X and yellows in the Northeast. Identification of the large leafhopper as the vector of phony peach disease is a definite advance in its control, says Dr. Cullinan. All varieties in the Southeast appear susceptible to phony diseases and losses from this source are estimated between 60,000 and 100,000 trees annually. Brown rot, which now costs about 6 million dollars annually, would cost 10 times that amount if present sulfur sprays were not used. A possibility for reducing losses even more lies in the development of a spray to eliminate mummies (rotted peaches) where the fungus overwinters in the orchard.

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Do You Have Enough Fire Insurance? Replacement costs of homes and other buildings have increased nearly 30% in the past 5 years and have nearly doubled in the past 10 years. A \$5,000 home built in 1940 would cost \$9,950 today. Storages, packing houses and other farm buildings represent a similar increase in value. Insurance coverage should take into account the slumping value of the dollar. Fire destroyed \$688,460,000 in American property in 1950.

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An Ingenious Pruning Gadget A pruning device which enables one man to do the work of two is described in a recent issue of the Wayne County (N.Y.) FARM AND HOME NEWS. On the James Beneway farm in Ontario there is a mechanical device, built by Mr. Beneway, which operates as follows: It resembles a crane but is operated by means of controls placed on the platform where Jim is working instead of by controls near the motor. Hydraulic pressure is provided by the gasoline motor and the same motor provides compressed air to operate the power pruner. Jim stops his outfit (jeep and trailer with crane) between 4 trees and then prunes the quarter of each tree nearest the machine. When ready to move to a new position he lets the crane lower him to the rear of the jeep, climbs in and drives on to a new position. He is thus doing the work of two men and yet is not working as hard as if he were to climb around the tree in the usual manner. Here is an example of Yankee ingenuity at its best.

* * * * *

ERADICATING POISON IVY

Many ways have been tried for eradicating poison ivy. Spraying with chemicals appears to be the most satisfactory. Of the many chemicals tried, ammonium sulfamate and 2, 4, 5 trichlorophenoxyacetic acid have given best results.

Poison ivy is very susceptible to 2, 4, 5 trichlorophenoxyacetic acid, commonly known as 245, or 2, 4, 5-T or 5-T. This is one of the "growth substances" and, therefore, is effective in relatively small quantities and, like 2,4-D, it is a selective weed killer. It is non-inflammable, noncorrosive and nontoxic to animals. It is, however, very difficult to clean from a sprayer. It is strongly recommended that any sprayer used for this material not be used for applying fungicides or insecticides. If it must be used for fungicides or insecticides, fill it with 1% household ammonia solution, pump some through the hose and nozzle, and let stand over night. Then wash thoroughly with water.

Also, a combination of 2,4,5-T with 2,4-D, usually sold under the name "brush killer," may be used. The ester forms of these materials are the most effective and are most apt to cause trouble because of their volatility. Ask for low volatile forms and do not use them too close to gardens or valuable shrubs. They may be applied any time while the poison ivy leaves are fully expanded. These materials can also be used in high concentrations in oil (kerosene, fuel or diesel oil) during the dormant season. Dormant treatment is effective if all stems are sprayed. Without their leaves small stems of poison ivy hidden in the grass may be missed. For this reason summer treatment usually gives best results. The manufacturer's directions on the container should be followed as to dilution.

Ammonium sulfamate is a very good eradicator for poison ivy. It is noninflammable, nontoxic, very soluble and easily dissolved and cleaned from a sprayer but it is very corrosive on metals. Immediately after its use the spray equipment should be washed thoroughly inside and out. Some baking soda or spray lime added to the rinse water helps. It is nonselective and will severely injure or kill most plants sprayed with it. It is nonvolatile and can be used close to gardens provided spray drift is kept off valuable plants. It is very toxic to peaches and cultivated blueberries and should not be used around these fruits. It can be used at 3/4 to 1 pound per gallon of water. The ivy should be thoroughly wetted with the spray. Application may be made any time the leaves are fully expanded until frost but June or early July applications usually give best results.

In this type of spraying low pressure (40-100 pounds per square inch) is desirable because the spray droplets are larger and there is less danger from spray drift.

John S. Bailey

"Fruit Thinning With Chemical Sprays" A new publication on this subject, Circular 867, is now available from the Office of Information, USDA, Washington 25, D.C. While the effects of recent chemical thinning tests in Massachusetts are being watched with interest, a study of the nation-wide recommendations and results is suggested. Every grower interested in getting better results from his hormone thinning applications should obtain and study this new Circular 867.

PREPAREDNESS PAYS

Farm Workers - If you are going to need workers -- go to your nearest Employment Service Office at an early date and give the Farm Placement Representative the information which will enable him to start the search for labor. Give information as to available housing; the type of work to be performed; when and for how long and wage offered.

Do all you can to keep good labor, up wages before you have to. Industry is paying high wages and a tight labor market is developing. Consider share plans or incentive payments. Make improvements in the tenant house for health, safety, efficiency, comfort and general appearance. This will help keep the hired man's wife contented and happy.

Pay social security taxes on wages of eligible workers before April 30. Social Security will help to keep reliable help. Every time a worker changes employers he loses at least three months' credit toward benefit payments.

Get all machinery ready to go when you need it. Check over all seeding, fertilizing, tillage and haying machinery to make sure they are in working order.

Increasing labor shortages and high machinery costs will require the fullest use of machinery this year. See if you can hire some work done cheaper on a custom basis than if you buy machinery to do it yourself.

Balanced farming - Make every acre and animal do its part by planning the entire farm to make best use of land, labor, equipment and finances.

Last call before the peak of spring work arrives--buy supplies and repair parts now. Buying needed supplies early is not hoarding. Check things you will need--repair parts, containers, twine, fencing materials, nails, tools, insecticides, seed, fertilizer, etc.

Increase farm income from dairying, chickens and turkeys through closer culling and improved breeding, pasture management, feeding and marketing.

Use clean high quality seeds and plants for additional income and efficient crop production.

Use approved methods and materials in controlling crop and livestock insects, diseases and parasites, rats, weeds and other pests.

Supplies of burlap and cotton are expected to be increasingly tight. Demand can be expected to increase substantially during present defense emergency. Suggestions for users of burlap and cotton bags -- keep bags in use; handle bags carefully.

-- Roy E. Moser

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Who Has A Good Second-hand Grader? The owner of one of the larger orchards in Norfolk County is interested in getting a second-hand grader of a standard make. Any grower with such a piece of surplus equipment may obtain further details by contacting the compiler of FRUIT NOTES.

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(While in Germany last summer the writer became acquainted with Eduard Reuss, a fruit instructor in one of the Winter Schools. Here is a liberal translation of an article he has written.)

CULTIVATION OF CHERRIES IN GERMANY

The cultivation of sweet cherries along the Rhine dates back to the Middle Ages. At the present time they are of considerable economic importance. In some districts 25 tons or more are delivered at the collecting points every day during the harvest season. The harvest lasts about six weeks and in some areas brings in more money than all other crops taken together.

Along both banks of the Rhine in the Neuwieder Becken district, pumice soil prevails, and is as much as 13 feet deep. The surface layer consists of sandy clay often two feet deep. Pumice soils may be interrupted by harder layers which cannot be penetrated by roots. The ~~natural~~ warmth of a deep loess soil (Lössboden) provides ideal growing conditions for sweet cherries. In the St. Goar district cherries are planted in a soil derived from shale. Here cherry trees fare very well in dry seasons because the subsoil is well supplied with water. The trees are planted close together forming a dense growth, an Eldorado for all sorts of pests.

The Rhine Valley, with its smaller side-valleys, has the best climate for sweet cherries. Here the annual rainfall amounts to about 23 inches. Spring frosts occur very seldom. Poor harvests are a rarity.

In every village cherries are collected at designated places. This arrangement is effective since large quantities could not be sold if direct contact between seller and buyer were necessary. Besides the daily local sales, buyers from the whole Federal Republic come here and transport the fruit by trucks to their destination.

In the Middle Rhine Valley there are about 10 times as many sweet as sour cherries. Trees of the latter are developed with short trunks, while the former are long. And the method of starting trees differs from that of other districts where nursery trees are planted. But here wild cherry trees are planted and later budded on the spot. The latter method has certain advantages. A nursery tree planted on a gravelly soil comes into bearing early, makes poor growth and is short-lived, while in a deep loess soil nursery trees develop very well. Budding of trees is done by experts who do 300 to 400 trees per day, with a high degree of success. But the growth is not always ideal and the shape of the crown may be like that of a poplar.

A species of maggot (*Rhagoletis cerasi*) is troublesome in certain years but it attacks only the later ripening varieties. This mischief may be avoided by growing only those varieties which ripen early. Several remedial measures have been used, but in vain. But if conditions become much worse, steps must be taken to prevent the ravages.

Trees are protected from attack by another insect by the use of "glue rings." In other districts where this pest is more prevalent, dinitro-ortho-kresol is employed with great success. The whole planting must be treated. There are machines, drawn by horses, for this purpose.

In older plantations the soil shows great "fatigue." The trees fail to make growth, the twigs are thin, the tips dry up, sap exudes and later, the tree dies.

Only a rotation of crops can solve this problem. If a new cherry tree is planted in this soil it will grow more slowly and will die a few years later. But an apple or pear tree will grow as well as if it were planted in a virgin soil.

There is a question whether this soil could be better utilized by planting peach trees or certain kinds of berries. The many small parcels of land, however, make larger plantations quite impossible. This difficulty might be overcome by arranging a community plan (Gemeinschaftsanlage). Choice of varieties, cultivation, and protection of the plants might be organized according to a uniform plan. Under no circumstances should good soil be neglected since economy of our natural resources is of the greatest importance.

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Parathion Injury to Apples. A careful check of this material shows that the foliage injury is restricted to new growth. Young, immature leaves may be burned at the margins or even completely killed. Leaves frequently become wrinkled and goose-necked. The damage resembles that caused by lime sulfur. Trees are most susceptible to injury before or just after bloom. Parathion is also responsible for fruit injury and there appear to be varietal differences. Injury has been observed only on McIntosh and Cortland while Baldwin and others are more resistant. Injury takes the form of brown spots beneath droplets leaving heavy spray deposits. In storage such apples lose moisture and become dimpled at the injured points. Rain following within one or two days of spraying seems to influence the amount of injury. Sometimes a single spray may cause as much fruit injury as five dosages.

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Borrowed Pointers From Connecticut spray messages we borrow two bits of wisdom. Our good neighbor, in turn, may have borrowed them from someone else. (1) This striking comparison to illustrate the immense number of scab spores in an orchard, - "It has been estimated that any single individual in the U. S. has a better chance of becoming President than an apple scab spore has of starting an infection. And suppose these scab spores grew to be the size of baseballs as fast as they are released. If you were to go into an apple orchard after a spring rain started, in about 15 minutes you'd be wading in baseballs up to your knees." (2) A timely ditty, - "I spray by day. I spray by night. And in between I dust 'em. And if these experts paid the bill, I'm very sure 't would bust 'em."

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Some Changes in U.S. Apple Grades Here are the principal changes in the newly revised U.S. standards: addition of a U.S. Extra Fancy grade, stricter color and russetting requirements for U. S. Fancy which is otherwise the same as U.S. No. 1, change of U.S. Commercial designation to U.S. No. 1 Cookers, and deleting of U.S. Utility Early grade. A simple statement of the requirements of the three upper grades (U.S. Extra Fancy, U.S. Fancy, and U.S. No. 1) each on a single sheet, has been prepared in Amherst and will be available to interested growers soon.

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Fruit Notes

AUGUST 30, 1951



Prepared by the Departments of Pomology, Entomology, and Botany, and
Other Staff Members
Compiled by W. H. Thies, Extension Horticulturist

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DOES IT PAY TO PICK UP DROP APPLES?

There are several reasons why some growers consider it worthwhile to gather up drop apples, even though they do no more than dump them over the fence. Among the reasons given are (1) gathering up the early season drops before the harvest time simplifies the job of salvaging the mature drops, (2) the apples are salable at a price and therefore justify the labor involved, (3) the drops may harbor maggot or other pests, and (4) after the clean-up, the orchard floor looks better.

Last fall many thousands of bushels of usable apples were left to rot on the ground because there seemed to be no market for them. By-products plants didn't want them. More were being offered at the roadside than could be sold profitably, and growers were unwilling to risk the additional expense of storing drops for a future market. So they were left under the trees instead of investing more money in them, for fear that the additional investment might be lost in a glutted market. In 1950 that procedure probably paid off in some orchards in terms of net profits on the entire crop.

Suppose we examine the question of drop disposal and ask ourselves whether or not we should pick up every apple every year. The answer is not the same in all orchards. Certainly the sales value of the apples which drop from the tree around harvest time varies tremendously. In one orchard the drops are very largely of Fancy grade except for bruising, and are ideal for immediate use. In another, they are culls, where one could scarcely make a day's pay picking them up and transporting them to a cider mill. And so the condition of the drops is an important factor. Apples on the ground must be better than average to justify any additional investment, unless they harbor insect pests. Then prompt disposal may return good dividends.

To hire a worker at a dollar an hour in November for the purpose of gathering up every frozen apple in the orchard, as we have known growers to do, is the height of futility, to say the least. We pride ourselves on neatness and orderliness in the orchard, but apples on the ground may be overlooked unless they are a pest menace. Then they should be gathered up every week and disposed of in such way that they are no longer menacing. Maggot infested apples become a problem in late July and continue so until late fall.

In brief, drop disposal is an individual problem. What is best in one orchard may be unprofitable in a neighboring orchard, for the reasons suggested above. The smoothness of the orchard floor and the nature of the cover crop enter into the picture. What one might do on a lawn-like floor would not be feasible in a dense tangle of poison ivy.

Good apples on the tree at harvest time deserve every attention. They must be carefully picked, transported and stored. The others may or may not justify additional investment. And if an uninfested apple is left on the ground, it not only does no harm, but actually has a slight value from a mulching standpoint.

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CAN ORGANIC MATTER BE INCREASED?

We sometimes speak of "building up the organic matter in the soil", as though it were a simple task like raising the level of the silage in a silo, or filling the coalbin. A build-up does occur in a swampy area. But the rate of decomposition in a well-drained soil under our temperature and moisture set-up, may be

almost as high as the rate of accumulation. This is especially true where cover crops and cultivation alternate.

In a permanent sod, the story is different. Here the soil is less well aerated, and with plants growing throughout the season, at no time is an accumulation of plant residues turned under and allowed to decay. The net gain in organic matter on a sandy soil where one cover crop after another is grown and plowed under, is relatively small. But that does not mean a lost investment as regards seed, fertilizer, labor, etc. In the process of decaying, the organic matter has greatly benefited the crop which happened to be growing on the soil while decomposition was taking place, since mineral elements in available form were being released and the physical texture of the soil was greatly improved.

It is a mistaken notion that the actual content of plant residues must be increased markedly if benefits are to be obtained. If that were essential, we would probably plow under, or apply as a mulch, woody materials which are more resistant to decay. A material such as cranberry vines, for example, would tend to remain intact much longer than alfalfa. And if the sole purpose of the organic matter were to provide a bulk of material resistant to decay, we would certainly seek out those plants of low nitrogen content, such as sawdust, because a fair amount of nitrogen in the organic matter tends to speed up decomposition.

Since an actual buildup of organic matter, except in a permanent sod or where drainage and aeration are poor, is out of the question, the real value is found not in conserving it, but in using it. While it is in the process of disappearing, the chemical and physical properties of the soil are greatly improved. The decaying material not only supplies a reservoir of fertility, but it acts as a soil conditioner, a stabilizer, a moisture conserver. In short, the decaying organic matter makes the difference between a fertile, productive soil and an unproductive conglomeration of rocky material of assorted sizes, commonly known as stones, sand, silt, and clay. Organic matter should be used, not hoarded.

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NOTES ON SMALL FRUITS

Blueberries and Soil Acidity. Ask any amateur gardener what he considers to be the most important factor in blueberry growing and he'll answer without hesitation, "an acid soil". Acidity is important, and blueberries are a little more sensitive to a lack of it than some other fruit plants. But it isn't so important that we can forget about fertility, water supply, weeds, etc., if only we can establish the optimum plane of acidity. If other factors are favorable, blueberries can be grown on most garden soils. And while we strive to maintain an optimum pH, let's not neglect the other things essential to the development of good vegetative growth.

Are Wild Blueberries Sweeter than Cultivated? This question is frequently asked. The answer, in terms of the way in which cultivated blueberries are picked in the average garden, is necessarily, "Yes". But fundamentally, the two are equally sweet. Where one has only a few shrubs in the backyard, he is likely to pick most of the berries soon after they have turned blue, to avoid losing them to the birds, particularly catbirds. But when one goes out to pick wild blueberries, many of the berries have been ripe for two or three weeks, time enough to develop considerable sugar. Leave the cultivated berries on the plant the same length of time and they will be, on the average, as sweet as the wild berries.

The 1952 Strawberry Planting. It is not too early to begin planning the strawberry bed to be planted next spring. In fact, some of our most successful growers take a full year in preparing the soil, by growing two or three fertilized cover crops to provide a reservoir of fertility and improved texture for the newly set plants. Where this is done, perennial grasses are eliminated and the plants get off to a flying start. In late summer there is still time to plow and harrow, lime if necessary, and sow rye in September in preparation for plowing under early next spring. The resulting organic matter will be a partial substitute for barnyard manure. And where poultry manure is available, it can be used to excellent advantage before sowing the rye, since it will encourage a rank growth which will decompose readily next summer. On a light soil, a larger amount of poultry manure can be used safely in this way than as a direct application to the growing plants.

Blackberries, an Inch in Diameter. A small patch of blackberries, with fruit of unusual size, was visited a few days ago and a quart of berries was picked in about the time it takes to write this paragraph. Twelve of the largest berries, laid side by side in a row, measured 11 inches. Laid end to end, they measured 13 inches. And that's an average diameter of about one inch. These plants are probably "escapes" from a former garden. From an old cellar hole in the vicinity, it appears that the area has been unoccupied for many years, perhaps a century.

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LEAVE THE POOR APPLES AT HOME

(A borrowed editorial from The Produce News, August 11, 1951)

"The third consecutive big apple crop is coming up. The last two were unprofitable to many growers. Does the third crop have to be unprofitable? Not necessarily so. Business is good and consumers want good apples. Good apples can be marketed profitably - if a lot of poor apples are kept off the market. This sounds simple, but there are some complications.

"It costs a lot of money to grow and distribute apples nowadays, even poor apples. The poor apples discourage buying and reduce apple consumption. One of the first steps on which action is needed is the elimination of poor quality and poor-condition apples from retail channels. This calls for some concerted action. The first point of attack is on grade enforcement. Grades must be enforced better than they have been in the past. The grade mark on the package must mean what it says, if trade and consumer confidence is to be restored.

"However, grade enforcement alone is not enough. Poorly graded apples can still be marketed as unclassified, or under some evasive term. About October or November, in recent years a great mass of ungraded fruit has descended on our markets, large and small alike, pushing down the price of all apples and killing the consumer desire for more apples. These ungraded apples practically always lose money for the producer. He would lose little or nothing by not marketing them at all. Container and hauling charges, for example, are just as much for poor fruit as for good. Yet these apples are always expensive to the consumer. The poorest consumer would not lose anything if these apples were eliminated entirely. When a consumer buys poor apples, there is always enough waste to offset the difference in price.

"The apple industry has more problems than other types of fruits and vegetables. Growers are spread over such a vast territory that collective action is immensely more difficult than with citrus or cranberries. Then there are the complications of varieties, sizes and grades. Yet the message must be put across to the countless growers that their financial safety lies in concerted action to improve the quality and condition of the fruit they sell. The slogan for 1951 should be: 'Leave the poor apples at home!'"

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THIS AND THAT

Delicious Variety Makes Up One-Fifth of U. S. Crop. During the period 1943-48, 21% of the commercial apple crop in the U. S. was of the Delicious variety. Four varieties made up nearly half, the others being Winesap, 12%; McIntosh, 8%; Jonathan, 7%. During this period, the state of Washington produced 29% of the commercial crop. The next three states were New York, 12%, California and Virginia, 8% each. Massachusetts, in 11th place, contributed 2%.

Baking Apples in an Earthen-Ware Crock. A Virginia housewife says we don't know baked apple until we have tasted them baked in a slow oven in an earthen-ware crock, where they cook down thick and rich and develop a flavor no other method can produce. Sounds out of this world! She says her friends have practically exhausted the supply of earthen-ware crocks in her home town. We pass this idea along for whatever it may be worth, with an offer to help sample the wares of our "second to none" cooks in Massachusetts.

Storage Humidity. The harvest season is a good time to begin thinking about the relative humidity of the apple storage, and doing something about it. Dry boxes will draw water out of the apples, with some shrivelling as a result. Apples in each box may lose a pound of water in that way. To insure adequate moisture in the storage, every operator should have a simple device for measuring the relative humidity, such as a wet and dry bulb thermometer. It is an inexpensive gadget. If several requests come in to the county office, arrangements can undoubtedly be made to pool the orders as was done last year. A simple table showing the relation between the readings on the wet and dry bulb thermometers and the relative humidity will be included in an early issue of FRUIT NOTES.

Getting Ready for the Pruning Season. Late summer and fall is an ideal season to detect mistakes in previous pruning and to improve the pruning technique during the next dormant season. As a start, the writer suggests tagging a few branches before harvest time to identify those parts of the tree producing small, green apples. When the load of fruit is removed, these branches will tend to spring upward and will look quite different than at present. With an identification tag attached this month, our courage may be bolstered up enough at pruning time to bring about a more effective job of removing shaded, submerged, drooping or downward growing branches. Pruning a bearing tree has as its principal objective the development of a more valuable crop of fruit. We can do much with a pruning saw to eliminate poor apples at the source, by cutting off the branches which produce them.

Why Do Remaining Trees Appear Yellow After Fillers Are Removed? It is a matter of common experience that the removal of every other diagonal row of trees in a crowded orchard, in sod, does not invogorate the remaining trees the first season, as one might expect. On the contrary, unless these trees are given additional nitrogen, the foliage may appear decidedly yellow. The reason is probably this: When a mature tree is removed with a tractor or bulldozer, a large proportion of the root system remains in the ground. Many of the broken roots are in close proximity to the roots of the trees left standing. And before this wood can decay, wood rotting fungi must have a supply of nitrogen. The situation is similar to that existing under a sawdust mulch. The organisms which bring about decay become competitors with the tree for nitrogen. But if enough nitrogen is applied to take care of both the tree and the obscure organisms, decay is rapid and the tree proceeds to take advantage of its newly acquired "elbow room", both above and below ground level.

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Will Chemical Thinning Make Biennial Varieties Annual? A. E. Murneek, in the Missouri Horticultural News, says "Growers interested in chemical thinning of apples frequently ask whether this type of thinning will change the alternate year bearing of such pronounced biennial bearer as Yellow Transparent, Duchess, Wealthy, York or Golden Delicious. The answer is 'Yes' if the expected neavy crop in the 'on year' is reduced to an average, or preferably below average, size by early chemical thinning. By 'early' is meant not later than 2 weeks, or at most 3 weeks after bloom. Thinning must be so heavy that the fruit set in the 'on year' will be not much more than 1 apple per 10 flower clusters on heavily blooming trees. But unless trees are maintained in good vigor, there is no assurance that when a thinning spray is used in the 'on year', biennial fruiting trees will snap into heavy production the following year. When trees are devitalized due to over-bearing, lack of soil fertility and poor pruning or spraying, production may be meager in the 'off year' and not much will be gained."

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An Amazing Fly. The apple maggot or railroad worm fly is a good example of specialization in the insect world. After one, and in some cases two, winters in the soil in the pupal stage, the fly works its way to the surface and begins a brief span which may, and frequently does, completely offset the grower's previous pest control measures by ruining an otherwise good crop. The fly seems able to tell one variety from another, favoring sweeter or non-acid varieties, and invariably laying a large proportion of its eggs in those varieties which soften early, thus insuring the development of numerous progeny. The ovipositor is perfectly designed for puncturing the skin of even a very hard apple. That a creature so small can exert pressure enough to place its egg beneath the skin is partially explained by the nature of the puncturing mechanism. The ovipositor, of hard material, appears under a microscope to have a taper at the tip of no more than 10 or 12 degrees which puts it in the class with the finest of needles. Here is a resourceful enemy which must be met with detemination and persistence.

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Those Red Chokecherries. Along many Massachusetts roadsides may be seen diseased chokecherries with leaves ranging in color from reddish yellow to varying shades of reddish brown. Here are the first plants to take on an autumn color. They are abnormal because of X-disease, and the reddish color should be a danger

signal to any present, or prospective peach grower, It is a waste of time and money to plant peach trees in the vicinity of this particular menace. Anyone interested in the identification of the chokecherry, or its elimination, may obtain full details from your county extension office.

Vegetative Growth and Fruit Size. R. H. Roberts, in Wisconsin Horticulture, says "Apple size is strikingly related to vigor of branch growth". He points out that 2 and 2 1/2 in. apples are generally borne on branches making less than 2 in. of growth; 2 1/2 in. apples on those making 4 to 6 in. growth; 2 3/4's on 11 to 14 in. and 3 in. apples on branches making a growth of 18 in. or more. Large apples are often found on outside branches with good exposure to light and with good terminal growth because they are young and vigorous in comparison with inside branches. This offers a clue to the right kind of pruning. To maintain good average size, eliminate those branches making poor growth. Save the younger, well-placed outside branches, instead of cutting them out in hopes of invigorating the former.

Some Field Grading Essential This Year. Good apple boxes are scarce and expensive. There may not be enough to go around. And even though every grower has as many boxes as he has bushels of apples, no one can afford to store and sell "dollar apples in a forty cent box". The cost of the container in relation to the value of the contents is higher, on the average, with apples than with many other farm products. This situation would not be so bad if all apples stored and sold in these expensive boxes were of Fancy grade. But last year many orchard run lots averaging no better than U. S. No. 1 went into storage and later were sold at a loss. This year it would be good business to put only good apples in storage, leaving low grade stuff in the orchard if necessary. Certainly the culls should be removed before storage and that means some grading at harvest time. If it can be done in the orchard, so much the better. In the September rush, it may be impractical to move the crop over the grading table. But if the crop is good enough to qualify for the Red Apple Club, it should be a simple task to weed out the small percentage which ought not to occupy those boxes costing 35¢ or more.

* * * * *

SOME SUGGESTIONS ON ROADSIDE SELLING

Roadside stands and orchard salesrooms have a place in apple marketing. The big fall job of the apple industry is to get the public eating apples again. This change in the housewife's buying habits has to be accomplished in the short space of a month's time. Fortunately, people like apples and change willingly, provided the apples and the price are attractive and apples are readily available.

This means:

1. Selling apples that are ready to eat and use - crisp, good-looking, full of aroma and flavor and in good usable condition.
2. Selling apples in quantities and in packages that fit the needs and convenience of consumers.

3. Having apples on display at all places where food is usually sold and many other places where displays can be seen and purchasing made easy.
4. Using publicity to call attention to the fact that apples are available again, the crop is good and that there is an ample supply. Using advertising to state where they can be bought.
5. Having a price that is competitive with other foods and looks appealing for the kind, quality and condition of apples offered for sale.

Roadside stands and orchard salesrooms provide an opportunity to display apples and offer them for sale. Rides into the country are enjoyable as fall colors and harvest time make the country attractive. Consumers can see, smell and touch the apples on the harvest time rides. Roadside stands and orchard salesrooms provide consumers with an opportunity to get apples at their best - tree ripened, free of bruises, crisp, juicy and with full aroma.

These things combine into making roadside stands and orchard salesrooms a happy combination which fits into the growers' needs for building apple sales quickly and substantially to a volume consistent with the size of the crop.

All sales outlets benefit from the increased demand for apples built in part by country sales.

Consumers benefit by having and using more apples of tree-ripened, orchard fresh quality.

Growers benefit by increased sales of apples, a higher rate of consumption, a more healthy demand for the rest of the apple marketing period, and incidentally, by getting for a short time, for a part of the crop, a taste of the margin between the wholesale and retail price.

Make sure that signs are easy to read by a passing motorist and help to create a desire to buy apples. Are advance signs far enough away? Be sure that the appearance of the stand or sales building implies quality - tasty, flavorsome products of good eating. Buildings neat, clean and painted. It's food you're selling.

Do all you can to make stopping and parking convenient and safe. Have the selling area easy on high heels - smooth, level, easy steps and safe.

Have readable price signs on the apples. Use the signs to help tell the apple story. People are interested to know what variety they are buying and its special use. Have "Eating apples" in eatable condition; "apples for pies" in apple pie condition; "apples for the table" attractive; "apples for salads" crisp and juicy; "apples for special desserts" free of unnecessary waste; "apples for the children" kid size and appealing; "apples for lunch" good to eat out of hand.

Have each package consistent in quality and in size. (This means, just the same on the bottom and in the middle, as on the top.) Make sales easily, quickly, not rushed, but with little waiting. Make change correctly. Settle complaints quickly and satisfactorily. Give samples freely. The kids are frequently your best salesmen.

Make sure the customers know who you are, where you are located and how to tell their friends where to find you - in fact, how to come back to you themselves when they want more. Customers like to talk to the grower. This is a pleasure trip to the country, too, you know. The women would love to have some of the recipes used by Mrs. Orchardist.

Make sure the sales area is well lighted - not glary but light enough to see the quality you are offering. Do what is necessary to get the purchases into the car safely and conveniently. More than half, probably more than three-quarters of your business, will be to "repeat" customers. Make sure they want to come back! Be sure that displays are attractive and customers can see apples, not just boxes.

Roadside stands and orchard salesrooms can make a good apple year better. Start early, build carefully, make friends for apples.

-- F. E. Cole

RED APPLE CLUB -- This is the 5th and probably the last year of our unique Ifraternity, The Red Apple Club. Membership is based on meeting three requirements as regards freedom from blemishes, grade and yield. Any commercial grower who feels that he has a chance to qualify should contact his County Agricultural Agent immediately and ask for an official inspection.

DO YOU HAVE THE TIME?

Some growers say that they do not have time for marketing.

Let's take three figures:

1. apples, \$1.20 a bushel, 3¢ a lb. at the farm.
2. 4 lbs. for 29¢ at retail, 7 1/2¢ a lb.
3. 10,000 bushels of apples.

If the grower could add just 1/2¢ a lb. to his return on the 10,000 bushels, how much would it be?

LET'S FIGURE IT OUT --

10,000 bu. at 40 lbs. per bushel = 400,000 lbs.
1/2¢ per lb. = \$2000.

NOW FOR THE TIME --

If he spent 8 hours a day, 5 days a week for 5 months to get that 1/2¢ more per lb., how much would he get per hour?

8 hrs. a day x 5 days = 40 hrs. x 20 weeks = 800 hrs.
\$2000 divided by 800 hrs. = \$2.50 an hour, for all 800 hrs.!

Surely, if he has other things to do, which earn more per hour, he does not have the time. HOW DOES THIS FIT YOU?

-- F. E. Cole

CONSERVE YOUR MACHINERY. IT MEANS MONEY TO YOU!

In the Nation's present mobilization effort, some of the most essential production machinery is on farms. To meet defense needs for agricultural products, you will need to get the most out of your farm machinery. Conserving both machinery and parts now on hand is a thrifty measure if you have an eye on your account book -- and one that will help assure having the right machinery for the job when it is needed for best results.

You 'Did It Before'--You Can 'Do It Again' The present need is for the same careful maintenance and efficient use you gave machinery during World War II. Here's some pointers on doing it again:

1. Good Management - Keeping Machinery Ready Ahead Of Time To Do Each Job - Results from periodic and systematic inspection of all equipment. This includes not only visual inspection, but actual operation of all working parts. A good rule: Test machinery before putting it into use.
2. Anticipating Common Replacement Needs and Having Repair Parts On Hand - An adequate farm shop, well stocked with spare parts for replacing worn or broken machine parts or making common repairs, provides the means of saving critical time. Arrange for major repairs well ahead of time.
3. Adjustment of Parts for Maximum Efficiency and The Least Wear and Breakage - All Moving Parts of Farm Machines Must Be Checked and Properly Adjusted for Maximum Efficiency of Operation, and for Least Wear.
4. Regular Servicing - Checking and Lubrication - Oiling, greasing, painting and cleaning prevents rust, corrosion, and unnecessary wear. The right grade of clean lubricant applied at the right time increases machinery life.
5. Skilled Handling in Operation for Maximum Efficiency and the Least Wear and Breakage - Skilled conservative handling of farm machines prolongs their life. The experienced operator knows the capabilities of his equipment and uses it to do the most efficient job.
6. Attention to Safety in Operation - Skilled farm manpower is a premium in this period of defense mobilization, and methodical checks to see that all power take-off shields and guards for moving parts are in place will prevent injury and provide greater production of food and fiber.
7. Sharing Among Neighbors - Exchange of machine work among owners can frequently save time and money and extend the effective use of farm equipment.

-- R. E. Moser

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PACK FOR TOP MARKET!

A PRACTICAL INTERPRETATION OF THE U.S. NO. 1 GRADE FOR APPLES

ONE VARIETY — MATURE, but not overripe — **HAND-PICKED**, showing no evidence of rough handling or having been on the ground — **CLEAN**, free of dirt, residues and other material — **WELL FORMED** — **FACE OF THE PACKAGE** shall represent size, color and quality of the contents — Packages shall be **WELL FILLED** — The **COUNT** or **MINIMUM DIAMETER** shall be stated on closed containers. If count is stated, maximum size variation shall not be more than $\frac{1}{4}$ inch in diameter. **Size Tolerance:** minimum not more than 5% — maximum, if used, not more than 10%.

COLOR — minimum requirements:

- **RED SPORT VARIETIES** such as Red Rome 25% of surface.
- **McINTOSH, CORTLAND** and similar varieties 25% of surface.
- **BALDWIN, DELICIOUS, WEALTHY** and similar varieties 15% of surface.



DAMAGE — maximum limits permitted in this grade:

- Group 1 - SMOOTH, NET-LIKE RUSSETTING** total area 25% of surface.
SOLID RUSSETTING total area 10% of surface.
SLIGHTLY ROUGH RUSSETTING total area $\frac{1}{2}$ inch in diameter.
ROUGH RUSSETTING total area $\frac{1}{4}$ inch in diameter.



- Group 2 - SCAB AND CEDAR RUST** total area $\frac{1}{4}$ inch in diameter.
HEALED INSECT STINGS total area $\frac{3}{16}$ inch in diameter.
LIMB RUB total area $\frac{1}{2}$ inch in diameter.



HAIL or DROUGHT SPOT, none more than superficial or total area of $\frac{1}{2}$ inch in diameter.
 Free from noticeable **SOOTY BLOTCH, SUNBURN, SPRAY BURN, or RED SPOTS** from Scale.
 Free from **OTHER INSECT, DISEASE, and MECHANICAL** damage. A combination of defects in this group is allowed if total seriousness does not exceed that allowed for any one defect.

Group 3 - Free from all except a few shallow and inconspicuous BRUISES.

Group 4 - Free from DECAY, INTERNAL BREAKDOWN and BROWNING, BITTER PIT, JONATHAN SPOT, SCALD, FREEZING INJURY, WATER CORE, BROKEN SKIN, WORM HOLES, and APPLE MAGGOT.

GRADE TOLERANCE: - Not more than a **TOTAL OF 10%** of the apples in any lot may be below the grade requirements.
 Provided that: - Not more than 1% may be affected with decay or internal breakdown.

and: - Not more than 5% may be damaged by insects in excess of the limits stated for this grade.

The percentage out-of-grade shall be calculated on the basis of count when count is stated, on the basis of weight when size is stated.

FOR COMPLETE INFORMATION SEE OFFICIAL GRADE SPECIFICATIONS



PACK FOR TOP MARKET!

A PRACTICAL INTERPRETATION OF THE U.S. FANCY GRADE APPLES

ONE VARIETY — MATURE, but not overripe — **HAND PICKED**, showing no evidence of rough handling or having been on the ground — **CLEAN**, free of dirt, residues and other material — **WELL FORMED** — **FACE OF THE PACKAGE** shall represent size, color and quality of the contents — Packages shall be **WELL FILLED** — The **COUNT** or **MINIMUM DIAMETER** shall be stated on closed containers. If count is stated, maximum size variation shall not be more than $\frac{1}{4}$ inch in diameter. **Size Tolerance**: minimum not more than 5% — maximum, if used, not more than 10%.

COLOR — minimum requirements:

- RED SPORT varieties such as Red Rome 50% of surface.
- MCINTOSH, CORTLAND and similar varieties 33% of surface.
- BALDWIN, DELICIOUS, WEALTHY and similar varieties 25% of surface.



DAMAGE — maximum limits permitted in this grade:

- Group 1 - SMOOTH, NET-LIKE RUSSETTING total area 15% of surface.
 SOLID RUSSETTING total area 5% of surface.
 SLIGHTLY ROUGH RUSSETTING total area $\frac{1}{2}$ inch in diameter.
 ROUGH RUSSETTING total area $\frac{1}{4}$ inch in diameter.



- Group 2 - SCAB AND CEDAR RUST total area $\frac{1}{4}$ inch in diameter.
 HEALED INSECT STINGS total area $\frac{3}{16}$ inch in diameter.
 LIMB RUB total area $\frac{1}{2}$ inch in diameter.



HAIL or DROUGHT SPOTS, none more than superficial or total area of $\frac{1}{2}$ inch in diameter.
 Free from noticeable SOOTY BLOTCH, SUNBURN, SPRAY BURN, or RED SPOTS from Scale.
 Free from OTHER INSECT, DISEASE, and MECHANICAL damage. A combination of defects in this group is allowed if total seriousness does not exceed that allowed for any one defect.

Group 3 - Free from all except a few shallow and inconspicuous BRUISES.

Group 4 - Free from DECAY, INTERNAL BREAKDOWN and BROWNING, BITTER PIT, JONATHAN SPOT, SCALD, FREEZING INJURY, WATER CORE, BROKEN SKIN, WORM HOLES, and APPLE MAGGOT.

GRADE TOLERANCE: - Not more than a TOTAL OF 10% of the apples in any lot may be below the grade requirements.

Provided that: - Not more than 1% may be affected with decay or internal breakdown.

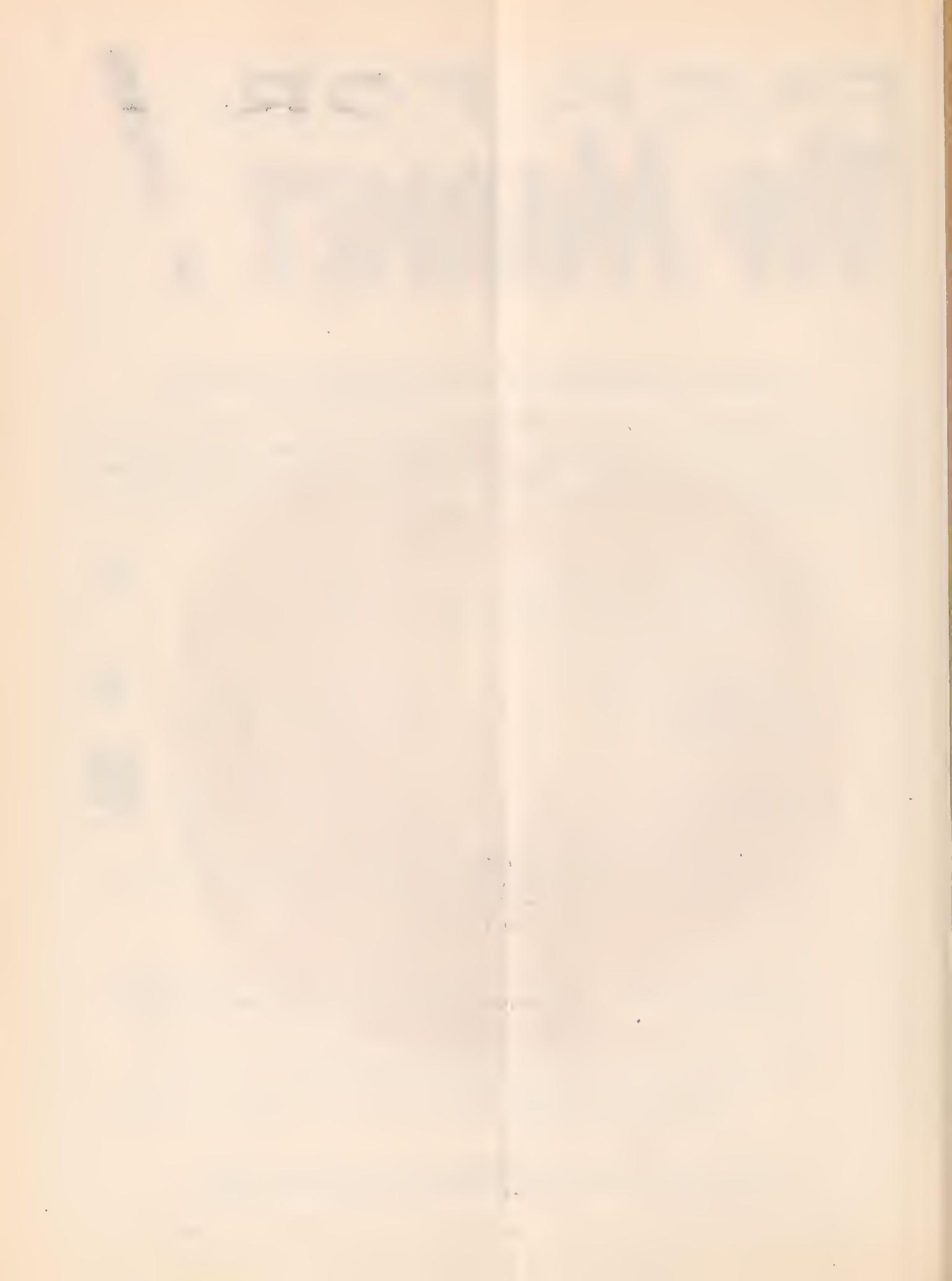
and: - Not more than 5% may be damaged by insects in excess of the limits stated for this grade.

The percentage out-of-grade shall be calculated on the basis of count when count is stated, on the basis of weight when size is stated.

FOR COMPLETE INFORMATION SEE OFFICIAL GRADE SPECIFICATIONS

A PACKING HOUSE POSTER

United States Department of Agriculture & University of Massachusetts and
 County Extension Services Cooperating



PACK FOR TOP MARKET!

A PRACTICAL INTERPRETATION OF THE U.S. EXTRA FANCY GRADE FOR APPLES

ONE VARIETY — MATURE, but not overripe — **HAND PICKED**, showing no evidence of rough handling or having been on the ground — **CLEAN**, free of dirt, residues and other material — **WELL FORMED**, typical of the variety— **FACE OF THE PACKAGE** shall represent size, color and quality of the contents — Packages shall be **WELL FILLED** — The **COUNT** or **MINIMUM DIAMETER** shall be stated on closed containers. If count is stated, maximum size variation shall not be more than 1/4 inch in diameter. **Size Tolerance**: minimum not more than 5% — maximum if used, not more than 10%.

COLOR — minimum requirements:

- **RED SPORT VARIETIES** such as Red Rome 75% of surface.
- **McINTOSH, CORTLAND** and similar varieties 66% of surface.
- **BALDWIN, DELICIOUS, WEALTHY** and similar varieties 50% of surface.

●
1/8 inch

DAMAGE — maximum limits permitted in this grade:

- | | | |
|---|--|-----------------------|
| <p>Group 1 - SMOOTH, NET-LIKE RUSSETTING</p> <p>SOLID RUSSETTING</p> <p>SLIGHTLY ROUGH RUSSETTING</p> <p>ROUGH RUSSETTING</p> | <p>total area 5% of surface.</p> <p>total area 1/2 inch in diameter.</p> <p>total area 1/4 inch in diameter.</p> <p>none</p> | <p>● 1/4 inch</p> |
| <p>Group 2 - GEDAR RUST</p> <p>HEALED INSECT STINGS</p> <p>LIMB RUB</p> <p>HAIL or DROUGHT SPOTS, none DISCOLORED or more than superficial or total area 1/4 inch in diameter.</p> <p>Free from noticeable SOOTY BLOTCH, SUNBURN, SPRAY BURN, or RED SPOTS from Scale.</p> <p>Free from OTHER INSECT, DISEASE, and MECHANICAL damage. A combination of defects in this group is allowed if total seriousness does not exceed that allowed for any one defect.</p> | <p>total area 1/8 inch in diameter.</p> <p>total area 1/8 inch in diameter.</p> <p>total area 1/8 inch in diameter.</p> | <p>● 1/2 inch</p> |

Group 3 - Free from all except slight *BRUISES*.

Group 4 - Free from **DECAY, INTERNAL BREAKDOWN** and **BROWNING, BITTER PIT, JONATHAN SPOT, SCALD, SCAB, FREEZING INJURY, WATER CORE, BROKEN SKIN, WORM HOLES, and APPLE MAGGOT.**

GRADE TOLERANCE: Not more than a **TOTAL OF 10%** of the apples in any lot may be below the grade requirements.

Provided that: Not more than 1% may be affected with decay or internal breakdown.

and: Not more than 5% may be damaged by insects in excess of the limits stated for the grade.

The percentage out-of-grade shall be calculated on the basis of count when count is stated, on the basis of weight when size is stated.

FOR COMPLETE INFORMATION SEE OFFICIAL GRADE SPECIFICATIONS

A PACKING HOUSE POSTER

United States Department of Agriculture & University of Massachusetts and
County Extension Services Cooperating



Fruit Notes

Prepared by the Fruit Program Committee of the Extension Service
W. H. Thies, Extension Horticulturist

JULY 25, 1952

*Give fools their gold and knaves their power
Let Fortune's bauble rise or fall
Who sows a field or trains a tree
Or plants a flower is more than all.*

— Whittier

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 * We Resume Publication After several months of dormancy, *
 * FRUIT NOTES appears again with the July issue. We hope it *
 * contains something of interest. If further enlightenment *
 * on any of the items is needed, a postcard will bring that *
 * information. *
 * * * * *

LOWERING TALL TREES

An apple tree is frequently about as high as it is wide. A height of 30 to 35 feet, particularly in a crowded orchard, is not uncommon. The problem of spraying the topmost branches and of harvesting the choice apples in that part of the tree is a good reason for lowering these trees to a reasonable level and for replacing older orchards with young ones.

A few days ago a good grower in Vermont discussed his method of keeping trees within bounds at one of our twilight meetings. He prunes his trees back to a height of 12 feet and believes it pays to do so. His method of slashing trees back so drastically reminds one of the "hat rack system" of pruning peach trees in Georgia. But he gets a high percentage of Fancy fruit and both spraying and harvesting are simplified.

The reader may wonder why such trees do not develop a large number of sprouts and excessively vigorous growths. The reason is that little or no nitrogen is applied. In fact, under the soil conditions in this orchard, good tree vigor is stimulated through heavy pruning alone. With this system of management, trees requiring only 8-foot ladders are maintained year after year.

But before we decide to adopt this method in our own orchard of towering trees, we should bear in mind that our Vermont friend did not accomplish his goal in one year. He has been keeping his trees low from the time they came into bearing. It is his suggestion that tall trees be lowered only three feet per year instead of trying to do it all at once. This raises a question-- Is it better to cut all branches back to a given level, or will a few heavy cuts be preferable the first year? The writer favors the latter method.

Assuming a tree 30 years old and about as many feet tall, the extreme top may be made up largely of two or three heavy upright growths. By first removing these, many other shaded growths within 15 or 18 feet of the ground get a chance to develop. The second year, we merely take advantage of that layer of potential fruiting wood and again eliminate other strong growths which threaten to over-top them. There is little excuse for an apple grower to struggle throughout the season with fruit which is more than 20 feet above the ground.



NATIONAL FARM SAFETY WEEK July 20-26. Check danger spots. Clean up fire hazards. Store chemicals safely. Provide safeguards for equipment. Watch your step. Let's reduce loss of time from injuries and property loss from fire, to say nothing of crippling accidents or loss of life. 1952 will be a safer year on American farms if farmers will make every week a safety week.



FACTS ABOUT LATE SEASON SCAB AND ITS CONTROL

From artificial inoculation studies in New York State, it was found that continuous wet periods of 28 hours following inoculations did not cause scab infection to the fruits in late June, July or to mid-August.

In early August, wet periods of at least 40 to 45 hours are needed for scab infection.

In late August and early September, the fruit must remain wet for 3 or 4 days for infection.

So-o-o! After a wet period of 30 to 35 hours, which looks like it will continue to stay wet, in July and up to mid-August, fruit can be protected by using sulfur dust or wettable sulfur spray. In late August and early September scab can be headed off by applying the fungicide after a 2 or 3 day wet period.

Spray residues of wettable sulfurs or sulfur plus Fermate outlast Fermate alone for leaf protection and probably also for fruit protection.

C. J. Gilgut, Extension Plant Pathologist

GRADING APPLES IN THE ORCHARD

Orchard grading of apples is an old practice. Forty years ago much of the commercial crop was handled on portable sorting tables. With the development of power driven graders the operation was transferred to stationary packing houses. This system, with all of its advantages, involves more handling and seemingly unavoidable mechanical injury.

A study of orchard grading was undertaken in Michigan three years ago to obtain answers to the following questions: (1) Will the use of a mobile orchard grader reduce the amount of bruising which would otherwise occur during handling and grading operations? (2) Will the use of such machines enable growers to handle their fruit more rapidly and economically? (3) Will the use of mobile graders increase net returns?

The mobile orchard grader used in the trials consisted of a feed belt, eliminator section, sorting belt and filling station. The moving parts were driven by a 1-HP engine and the entire assembly was mounted on 3- by 4-inch skids. The unit was 14 feet long and weighed about 450 pounds. The outfit was tested during the 1949 and 1950 seasons to field-grade 7852 bushels of apples. McIntosh, Delicious, Jonathan and Spy were included. After the 1949 season it was moved to the central packing house and used as a stationary unit in grading an additional 4100 bushels. At the end of the 1950 season it was used in the same way in grading an additional 3800 bushels.

To operate the orchard grader, the crew consists of a sorter, a filler, a crate liner, and a stacker. This crew was able to sort from 56 to 61 bushels per hour. One foreman supervised both the picking and grading crews and also inspected the apples as they flowed over the receiving belt. Six or 7 good pickers were needed to keep the grading crew supplied.

The grading unit cost approximately \$500 and should be good for 100,000 bushels before replacement. This means a per bushel cost of .5¢ for depreciation.

The labor cost was 5.35¢ per bushel and the gasoline cost .05¢ or a total of 5.9¢ per bushel for orchard grading.

Of the 7852 bushels sorted in the orchard, 1049 bushels of small or defective apples were eliminated and sent immediately to a processor. If they had been stored orchard run, the grower would have paid charges amounting to 50¢ per bushel (storage, 30¢; cartage, 5¢; crate rental, 10¢; crate liner, 5¢). The savings effected by eliminating the inferior fruit amounted to \$524.50. And because the field-graded apples were not so badly bruised, they brought an average premium of 14¢ per bushel, or a total of \$952.42. When the savings and premium were added, the total was 19¢ per bushel on all apples graded in the orchard.

These trials led to the conclusion that under the conditions existing in many Michigan orchards, a mobile grader will substantially increase net returns. It is most useful in orchards where the fruit is stored orchard run and marketed in unfaced packages. Several concerns are manufacturing mobile graders and they are reasonably priced. (The above report was taken from Michigan Quarterly Bulletin of May, 1951)

With a higher percentage of scabby or otherwise blemished apples in some of our Massachusetts orchards this year, orchard grading should be carefully considered. The cost of transporting, storing and handling inferior fruit may bring about a serious reduction in net returns. We cannot afford to pay 30¢ per bushel to store apples which will be discarded later.

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THE APPLE MAGGOT SITUATION

The month of July never fails to bring to Massachusetts apple orchards an unwelcome visitor, the apple maggot fly. This year there promises to be one of the heaviest visitations in years. The stage is set for an abundance of flies, the vanguard of which is already at work as this is being written (July 3). Why more flies than usual? Because more drop apples were left on the ground last fall. The poorer the apple, the more likely it is to remain on the ground. Among the thousands of bushels left last fall and summer, a sizable percentage served as breeding places for the apple maggot. Not all, by any means, of the flies emerging this summer will appear in orchards without care in 1951. Some are almost certain to show up sooner or later, wherever trees are bearing apples in which the flies can lay their eggs. They have a habit of showing up unexpectedly and unobserved. We look for the worst maggot infestation in years, but hope our expectations will not be realized. The solution to this problem is within reach of every grower. No pest is more completely controlled if the grower will carry out a few simple control measures, known to be effective.

Only a very small proportion of the flies are believed to remain in the ground more than one year. Thus we have reason to expect most of the maggots entering the ground in 1951 to appear as flies this summer. They will be inclined to fly no farther than necessary to find apples in which to lay their eggs. The peak of emergence, on the average, comes in late July, generally around July 20 to 25. Late emerging flies and migrants will present a problem throughout the summer. Best results will be obtained by spraying or dusting all mature trees, whether bearing or not. Those biennial bearing trees which bore a crop of maggot infested fruit last year will require special attention. A tree of a summer or fall variety, now

in the off year, may provide from last year's crop enough flies to infest the whole orchard. And the flies emerging from beneath such a tree will soon seek out a bearing tree. We should destroy them where they emerge and not wait until they have reached their destination and are concerned, not with feeding, but with laying eggs.

Apple maggot flies are sluggish. They fly from place to place by short hops. Spraying or dusting the whole orchard as well as the bordering trees and shrubs will prove effective. And let's not neglect those scattered apple trees within infesting distance (about 200 yards). If controlled 100%, and that is a practical goal, we not only simplify grading and marketing but simplify our job next year. No insect renders an apple less usable than apple maggot and none is less influenced by the spring and early summer program. It appears in late summer and must be combatted after it appears. July is the critical month. Let's make the most of it.

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POMOLOGICAL PRARAGRAPHS

Apple Storage Air Purifier Plans for a home-made device which will purify the air in a storage will soon be available from the University. These plans are intended for storages of two sizes, the smaller, around 1500 bushels, and the larger 10- 15,000 bushels. One of the advantages of this type of equipment is its cost, which will be considerably less than the manufactured Air Purifier. Two of these pieces of home-made equipment are now in successful use in Massachusetts. Interested growers may contact F. W. Southwick of the Pomology Department. The new plans should be available before the next storage season.

MFGA Archives The Massachusetts Fruit Growers Association was organized in 1894 and the Worcester County Horticultural Society was the sponsoring organization. A committee has been appointed, with George Mingin as chairman, to be known as the Archives Committee for the purpose of assembling all sorts of documents, mementos, and records having to do with the history and development of the fruit industry in Massachusetts, in which the MFGA has had an important part. Readers of FRUIT NOTES are asked to check their files and forgotten storage places to see what contributions can be made to the archives of the MFGA. Whatever you find, however trivial or unimportant it may seem to be, should be made available to the Committee.

Poison Ivy Mid-summer is the time to eradicate poison ivy. Spraying with a material such as ammonium sulfamate when the plant is in full leaf is effective. A new publication, Special Circular No. 190, by J. S. Bailey, tells how to proceed with the various materials and what may be expected from them. It also tells how to treat for ivy poisoning. Poison ivy is altogether too common in fruit plantings. One grower has difficulty getting apple pickers because so many of his trees are embellished by this plant. July is a good time to embark on an eradication campaign.

The Small Apple Problem Commenting on the need for thinning, the Maryland Fruit Grower says, "The volume of a 2-inch fruit is 3.77 cu. in., and of a 3-inch fruit, 12.72 cu. in. A 3-inch fruit is 3 3/8 times as large as a 2-inch fruit so it would require over 3 times the labor to pick, grade and pack the smaller fruits. Generally the color is less on the smaller fruits and the price is at least a dollar, or about 40%, less. So we pack smaller fruits at higher labor cost and receive less money, which is rather poor business." The numbers of apples of different sizes in a bushel are as follows: 2 1/4, 234; 2 1/2, 198; 2 3/4, 150; 3, 113; 3 1/4, 100; 3 1/2, 80.

Stem Punctures Would you like to know what happened to 359 stem punctured apples kept for 10 days at room temperature? Then you should read a report prepared by F. E. Cole and O. C. Roberts. Only one out of six apples with broken skin was salable after six days. Only one out of 20 was salable after 10 days. Blue mold, causing soft rot, is one of the most common and destructive of all rots. Careful handling, from orchard to kitchen, is the only practical control.

Silver Leaf We occasionally see one branch of an apple tree with a silvery appearance, while the rest of the tree has foliage of normal color. The difference is so striking that it is apparent from a distance of a hundred feet or more. This abnormal condition, Silver Leaf, is caused by a fungus (*Stereum purpureum*) and affects not only apple trees but other tree fruits as well, being common on plums. Trees probably become infected through wounds, either below or above ground, and the fungus lives in the woody tissue. Seldom does the whole tree show symptoms, and the evidence is more apparent some years than others. No remedy is known for this mild ailment.

Summer Control of Woodchucks Carl Henry, Rodent Control Agent, offers these tips on woodchuck control, - "It is occasionally necessary to stop woodchuck damage during the summer. When this is necessary, gassing of burrows is usually effective only when done immediately after observing the woodchuck entering a burrow. For this purpose, U. S. Fish and Wildlife Service Woodchuck Cartridge or cyanogas may be used. During the summer months, woodchucks travel considerable distances. The older woodchucks are usually well acquainted with all the burrow sites within 300-500 yards of their winter hibernating quarters. During the months when vegetation is at its peak, woodchucks may feed over a wide range and use a burrow site only for convenience in escaping when alarmed; in a very short time they may continue on to another nearby burrow site."

How Old Is A Curculio? The curculio beetle, unlike most of the other fruit insects, lives over winter as an adult. And when it gets around to laying its eggs in young fruits during late May or early June, it is actually about nine months old, - a veritable patriarch. Larvae of the next generation enter the ground in mid-summer, pupate, and then emerge in early fall to do a little feeding before seeking a winter hiding place. And so the beetles which we must fight in 1953 will get an early start by wintering in or near the orchard. This suggests the importance of getting rid of nearby stone walls, brush and other favorite places of hibernation.

X-Disease of Peaches Many of the roadside chokecherries in Massachusetts will soon take on varying shades of red, yellow, orange and intermediate colors. By the first of August, this touch of color on the landscape will again remind us of the X-Disease, the most serious scourge of peaches in this area. Only diseased chokecherries show this premature autumn coloring. And other species of cherry are immune. It is a losing venture to get a peach orchard in close proximity to diseased chokecherries, for sooner or later they too will show the typical symptoms, ragged foliage which drops from the tree in late summer, and fruit of poor quality. Any peach grower needing help in identifying the chokecherry or advice on how to eliminate it may drop a line to J. S. Bailey of the Pomology Department.

Costs of Pest Control With an apple crop of at least 300 bushels per acre, and a sufficient acreage to justify a modern power sprayer, the total cost of pest control need not exceed 30¢ per bushel. A single application, using relatively expensive materials, should cost no more than 3, or at most 4¢ per bushel. This includes materials, depreciation on equipment, labor, gas and oil. If, with an investment of 30¢ per bushel, an apple crop can be transformed from worthless culls

to a Fancy grade, no one would question the outlay. But frequently a grower is tempted to omit a spray or two without realizing that a 3¢ per bushel saving may become a 50¢ per bushel loss. A good example is found in the control of apple maggot or of second brood leafroller.

Mist or "Missed" Sprays? In this hurry-up age with its emphasis on timing and speed, the basic idea of covering each leaf and fruit with spray material so thoroughly that it provides a protective film, is overlooked. One grower with a sprayer too small for his orchard takes pride in the fact that he completes (?) a spray in two days. In reality, he merely pilots the sprayer through the orchard in two days. With good intentions, his mist spray becomes a "missed" spray. This helps to explain why some growers get better control with 8 applications than others get with 16.

Sawdust Mulch Sawdust and other wood wastes are useful for mulching or soil improvement if they can be obtained at little cost other than hauling. Addition of nitrogen is necessary, however, to offset the depleting effect on the nitrogen in the soil. Sawdust is very low in nitrogen. Soil bacteria and fungi which cause decay need nitrogen to carry on their activities and if necessary will take it from the soil, thus depressing plant growth. Approximately .5 pound of ammonium nitrate or its equivalent per bushel of loose sawdust is needed to supply these organisms alone. It is a safe rule to double the amount of nitrogen where sawdust is used, over that normally applied.

Note on Grafting If less than 90% of the grafts make satisfactory growth, the "grafter" should check these possible causes: Does the scion or bridge make intimate contact with the tree and is it held firmly in place until the union is complete? Is the wound properly waxed to prevent drying? Were the scions or bridge material in good condition, with no trace of drying? Were vigorous branches selected for top grafting? (The scion will make no better growth than the branch made before removal.) In bridge grafting, is each bridge of sufficient length to insure good contact at either end? Carelessness is responsible for most of the failures in both top and bridge grafting.

How Acid Is Your Orchard Soil? The ideal plane of acidity for orchard soils in New England is around pH 5.5 to 6.5. But many soils are below pH 5, some of them as low as 4. And where only moss is growing beneath the trees the pH is as low as 3.7. Our soils are getting more acid year by year, due in part to the use of sulfur in scab control. It takes about 3 lbs. of lime to offset 1 lb. of sulfur. Thus if 400 lbs. of sulfur are used per acre per year, 3 tons of lime are needed every 5 years just to counteract the added sulfur. High magnesium lime (about 20% magnesium) not only adds two important mineral elements, magnesium and calcium, but if applied in sufficient quantity to bring the pH up to at least 5.5, it acts as a soil conditioner and sets the stage for an improved chemical and physical set-up. Essential elements become more readily available, the cover crop is improved and the trees take on new life. A few years after the natural cover declines, the yield does likewise. We should find out how acid the soil in each block has become and then order the needed high magnesium lime. Many soils need 2 tons per acre immediately and an additional two tons per acre in a year or two.

Soil Drainage and Tree Behavior This season we have had a good chance to observe the effects of a high water table in the orchard. Aside from the inconvenience of getting mired with the sprayer, a water-logged root system has a real influence on tree behavior. When the oxygen content of the soil air falls below

a certain critical minimum, the roots in that zone no longer function and they ultimately die. Later when the soil becomes dryer the tree is literally left "high and dry" and may show drought symptoms. The smaller size and disappointing performance of trees on a poorly drained soil are evidence of the oft repeated adage that "fruit trees don't like wet feet." In extending many of our orchards, trees have been planted on hopelessly wet areas and on others which are too dry. Heavy mulching will improve the latter. But only the removal of excess water and a permanent lowering of the water table will make the latter suitable for fruit production. Where a wet area cannot be drained properly, the trees should be removed and the land used for growing mulch.

10-Year Capital and Inventory Record This is the title of a record book available to any interested farmer. If any reader of FRUIT NOTES wants a copy, he may have one for the asking. A supply is available in the office of R. E. Moser at the University. This book is an improvement over others in that it permits the keeping of all essential data over a 10-year period.

Pear Cannery Waste Becomes Valuable Feed Pear cannery waste has finally yielded to processing research. A new continuous process developed over a period of three years at the Western Regional Research Laboratory at Albany, California, converts the waste output of canneries to feed molasses and dried feed pulp, thus promising new sources of feed for livestock. Feeding trials have revealed a high degree of palatability and good gains with cattle, for both types of feed.

Quality Apple Grower. A new goal for commercial apple growers has been arranged as a follow-up of the Red Apple Club which operated successfully for the past five years, 1947-1951. A committee is at work on the details to be announced soon. One feature will be the inclusion of all apples of a major variety produced by the grower, instead of one block comprising 20%, as in years past. And since it is more difficult to produce a uniformly clean crop on the whole farm, the requirements as regards freedom from blemishes will be reduced to 85%. Other details will be available before harvest time.

RANDOM NOTES ON SMALL FRUITS

Raspberry Spur Blight The browning of fruiting raspberry canes at this time of year is a common occurrence. If we examine the stem itself we find it rough and irregular the result of spur blight infection a year ago. In the raspberry planting, we must look a year ahead and treat the new canes in such way that they will perform normally a year later. May is a critical month, and if two sprays of ferbam are made beginning when the new canes are about 10 inches high and again 10 days later, the spur blight problem will largely disappear. In preparing for 1953, raspberry growers should read a mimeographed leaflet available from the Extension Service. It covers control measures in detail. A copy may be had for the asking.

Grape Tomato Gall Some new information is now available on the peculiar swellings found on the new canes, leaves and tendrils of grapevines. The name given to these galls suggests their resemblance to small tomatoes. They result from either a toxin injected with the egg or irritation caused by the breeding of

the maggot. The adult form is not one, but a group of tiny midges. At least four different species of midges have been reared from the same gall. According to W. D. Whitcomb, there are at least two generations in this area with the flies appearing May 10-15 and July 1-5.

Spraying with organic phosphates has given reasonably good control when applied just as the first maggots are hatching. This is determined by a slight swelling, accompanied by a twisting and curling of the terminals. In 1951 this occurred May 25 and July 6 in the Hudson Valley.

In most vineyards these galls appear only now and then and are a mere novelty. But in recent years a very heavy infestation has been noted in at least one vineyard in Plymouth County. It was serious enough to cause a crop failure. Hence our interest in a new method of control. The ordinary grape spray program is quite ineffective.

Growth - Fruitfulness Relationships In all kinds of fruits the relation between the way a plant grows and the way it bears is very evident. Blueberries offer a good example. All of the berries are produced on short growths arising from buds on the previous season's growth. For a full crop each year we must therefore encourage the kind of growth which is associated with a heavy crop. A grapevine performs in much the same way, in that all of the clusters develop on shoots which come from nodes on last year's growth. If a raspberry plant fails to grow any new canes, it produces no berries the next year. What happens in a strawberry planting is too familiar to require further comment.

A "fruit grower" is in reality a "plant grower." He cooperates with nature in getting the right kind of vegetative growth. He does whatever is necessary to develop in each row of strawberries a good stand of early rooting runner plants which he puts to bed for the winter under a mulch. And having grown the plants with good roots and good tops, nature does the rest. This assumes, of course, that unwanted growths are eliminated by spacing of plants, or in the case of woody plants, by the right kind of pruning.

Sluggish Strawberry Plants Mid-summer is a good time to stimulate growth in the strawberry planting set last spring. Runner plants should now be developing and as they take root they should find a fertile soil in which to develop a strong root system. A side dressing of complete fertilizer, such as 5-10-10, cultivated in, may provide the needed stimulus. Many strawberry growers spread fertilizer along the row twice during the growing season. This seems to be a wiser use of fertilizer than to wait until fall or early spring. What a strawberry plant does in the way of producing berries in June depends upon the number, size and vigor of its leaves the previous September. The way to get good plants by September is to encourage growth during the summer. No amount of fertilizer applied the following spring will make up for time lost during the first summer.

The 1954 Strawberry Crop It is not too early to plan for the strawberry planting to be established next spring. A piece of sod land, fertilized and fitted in mid-summer for a late season cultivated crop or at least a cover crop of rye to be sown in early fall, will leave it in better condition than if merely plowed this fall. Here is an opportunity to use a liberal amount of poultry manure to good advantage and to eliminate perennial grasses before the strawberry plants are set. Nothing is more discouraging to the would-be strawberry grower than to fight witch grass throughout the summer. Every trace of this and other persistent weeds should be completely subdued in advance of planting. Some of the best strawberry plantings in the state are preceded by a well fertilized cover crop of rye.

Fall vs. Spring Planting of Strawberries If fall set plants are properly mulched to carry them through the winter uninjured, they get their roots established much earlier than plants set in late spring and the runner plants develop earlier. By mid-summer a difference in favor of fall set plants is very noticeable. But a comparison with plants set in early spring shows less difference. From the nurseryman's standpoint, fall setting is desirable because it helps to avoid the "spring rush." From the grower's standpoint, there is a little more expense because the planting must be mulched twice in order to obtain one crop.

The Black Root "Bugbear" More strawberry plantings are below par because of the encroachment of fungi on the roots than we are inclined to believe. The writer has just dug out of his files an article written in the Michigan Quarterly Bulletin in 1924 which points out the relation between Rhizoctonia, a disease of certain crops including potatoes, and strawberry root rot. The author, C. H. Coons, says the only fungus constantly associated with diseased plants is Rhizoctonia, which would seem to be an important factor in black root. It is worse where strawberries follow strawberries closely and in very rich soil. In seasons when the spring is excessively wet, new plantings suffer. Also, cold and poorly drained soils or those of fine texture which compact readily show a high amount of the disease. These conditions under which black root is most serious are exactly the ones which favor Rhizoctonia. The lesson to be learned from these observations is briefly this: Select a favorable soil. Practice a suitable rotation. Mulch to prevent winter injury. Provide growing conditions less favorable for Rhizoctonia, and more so for strawberries. And since grain crops of various kinds tend to reduce this fungus in the soil, a rye cover crop preceding strawberries is recommended.

Growing Fruits for Home Use A newly revised leaflet by this name (No. 208) is now available from your County Extension Office or from the Mailing Room at the University. It covers all of the fruits which thrive in New England, with particular emphasis on small fruits. Most home owners have an ambition to grow an assortment of fruits for the home table. But instead of starting with strawberries, they are inclined to start with a mixture of fruit trees. All too often an apple tree, from which little more than the blossoms are realized, occupies an area capable of producing vegetables, and one or more small fruits. Leaflet No. 208 attempts to analyze the situation and then suggests a feasible fruit planting plan.

Improving Soil Texture With Krilium The highly publicized material, Krilium, is said to be more effective in improving soil structure than peat moss, compost or manure. The present cost, around \$2.00 a pound, prevents its use except on a limited experimental basis. Briefly stated, Krilium tends to increase the clusters of tiny soil particles in clay type soils, thus making them crumbly and less sticky when wet and less crusty and cloddy when dry. Krilium is not a fertilizer but may find use as a soil conditioner in home gardens and greenhouses.

Beach Plum Growers Meet That there is an association of people interested in beach plums is not very generally known. Such an organization is active on Cape Cod. At a recent meeting, Kirby M. Hayes discussed methods of making beach plum jelly to conform to the new state standards and exhibited two lots of jelly made from beach plum juice two years old. One lot was made with powdered citrus pectin and the other from apple pectin. It was significant that the lot made from apple pectin, which was in liquid form, yielded about 50% more jelly than that made with the dry citrus pectin.

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Fruit Notes

Prepared by the Fruit Program Committee of the Extension Service
W. H. Thies, Extension Horticulturist

AUGUST 15, 1952

*I have gathered a posie from other men's
flowers and naught but the thread that
binds them is mine own.*

*Familiar Quotations,
John Bartlett*

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HORMONES FOR PRE-HARVEST DROP CONTROL

We now have two materials that may be used for pre-harvest drop control: (1) the standard naphthaleneacetic acid (NAA), or (2) 2,4,5-trichlorophenoxypropionic acid (2,4,5-TP). Also, 2,4,5-TP is of interest to some because of its possible influence on color and maturity. Since the use of these materials depends upon one's objectives, it is best to consider their use under two headings.

1. Where Drop Control is the Primary Objective.

A. On McIntosh both materials should be used at about the time the drop of sound apples commences.

B. 2,4,5-TP will delay drop longer than NAA materials but growers should pick McIntosh trees sprayed with either hormone before they get too ripe if one wishes a good storage apple. 2,4,5-TP may delay drop 3 weeks, as compared to 7-10 days for NAA materials. Fruit sprayed with 2,4,5-TP should probably be picked within about 2 weeks after spraying in order to have a good storage apple.

C. Because of the inherent ripening possibilities following the use of materials containing 2,4,5-TP, NAA is still advised where it has given satisfactory drop control. Also, with a relatively short crop of McIntosh, the need for extended drop control is not as essential as in a heavy crop year.

D. 2,4,5-TP should be used at a concentration of 20 ppm and no higher on our varieties. It may be concentrated safely up to 3X.

E. On late varieties, such as Baldwin, which may drop badly in some years, 2,4,5-TP does not have to be as carefully timed as it needs to be with McIntosh. On Baldwin an application 2 to 3 weeks ahead of harvest may be satisfactory and desirable (since foliage may be injured from frost or quite senescent in October) without influencing maturity very much.

F. Some formulations of 2,4,5-TP have been changed this year. One common commercial brand has been doubled in concentration. In other words, one may need only 4 oz. per 100 gallons to give a 20 ppm solution as compared to 8 oz. a year ago. Remember to read the label. It takes about 8 grams of actual 2,4,5-TP per 100 gallons to give a 20 ppm spray.

2. Where Hastening Maturity and Improving Color with 2,4,5-TP is the Objective.

A. In 1952, with a short McIntosh crop, it would appear that interest in this would be less than a year ago. However, some may wish to use it for this purpose on other varieties. Early McIntosh apparently responds quite well. Its effect on Duchess, Gravenstein, and Milton is not too favorable. In some instances 2,4,5-TP has stimulated ripening and color development of Baldwin and Golden Delicious.

B. Treatment with 2,4,5-TP should be used at the same concentration (20 ppm) as is used for pre-harvest drop control. Apply the material at least 3 weeks ahead of harvest on early and midseason varieties and from 5 to 6 weeks ahead of harvest on late varieties. In general, the earlier it is applied the greater the coloring and ripening effect at a given calendar date thereafter.

C. The fruits will ripen unevenly. Some apples will be much more mature and better colored than adjacent fruits on the same tree. Keep your eyes open for over-ripeness, water core, and an increase in cracking of the fruits where this material is used.

D. Use of a material which shortens the ripening period means that loss of fruit size may be expected. Fruits picked a week or two weeks earlier than fruit of the same variety on unsprayed trees are naturally going to lose an opportunity to gain additional size. Therefore, it may not be desirable to spray trees with fruit below good commercial size.

--- F. W. Southwick

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Travelogues Two members of the Pomology Department, privileged to make extended trips, will report on their observations in early issues of FRUIT NOTES. J. F. Anderson journeyed to the Pacific Coast this summer with a group of foreign horticulturists on a tour sponsored by MSA, and O. C. Roberts, on sabbatic leave, is starting on a trip soon. What they see along fruit lines will be of interest to readers of FRUIT NOTES.

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THE X-DISEASE OF PEACH

The X-disease of peach has become extremely serious in the State. If fruit growers are to continue growing peaches, something must be done now to control this disease. Prompt action is needed. The chokecherry is the most important source of infection. This is the time of year when diseased chokecherry leaves are red and yellow and easy to spot. Peaches are also showing X-disease symptoms; small yellowish or brownish spots which drop out to give a lacy look to leaves; curling, twisting, and dropping of the older leaves until only a tuft is left at the end of the shoot. And don't forget that sour cherries can also be infected with X-disease

If you find peach trees infected with X-disease look for chokecherries around the orchard. If there is no X-disease in your peaches, you are lucky but don't push your luck any farther. Look for chokecherries.

If you find chokecherries within 500 feet of your orchard, get busy at once. Get out the sprayer and go after them with a weed killer. Either Ammate or one of the brush killers containing a mixture of 2,4-D and 2,4,5-T may be used. The chokecherry is one of those plants which sprouts freely from the roots. Control by cutting is impossible; by spraying with herbicides is difficult. Don't be surprised or discouraged if you don't "get" all the chokecherries the first time. Keep after them. It's chokecherries or peaches.

You'll have another chance to "sock" the chokecherries next winter. The ester form of 2,4-D + 2,4,5-T in oil may be used for basal stem treatment at that time. Chokecherries can be identified in winter by bud and stem characters. However, if it's a wild cherry and you're not sure which, spray it.

For more detailed information about X-disease and the identification and elimination of chokecherries, write the editor of FRUIT NOTES and ask for copies of "The X-disease of Peach," Identification of Chokecherries," and "Getting Rid of Chokecherries."

Allow no chokecherries within 500 feet of the peach orchard. If you're planting a new orchard, get rid of chokecherries first. If your orchard is already planted, get after those chokecherries now.

-- John S. Bailey

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SOME SELLING SUGGESTIONS

"Normal Peach Crop", states the Crop Report

That means a normal amount of the most powerful pull yet experienced to build trade at roadside stands and stores for fall business.

These nearby tree ripened peaches are truly a delight. They are packed full of customer satisfaction - when the customer gets them right, and thereon hangs this tale - when the customer gets them right!

Have you ever seen people stop at a roadside stand to get some peaches to eat, and see them get a basket with some ripe and some green ones?

Have you ever seen a basket of canning peaches sold that varied from ripe to green? Did you wonder how the housewife was going to can them? How many starts she would have to make to get the basketful put up right?

Have you ever seen people pick over a display of peaches in a store, handling them too roughly and too much, to get what they wanted?

Peaches can help to build stand reputation, build repeat business, make sales volume, and start the word of mouth advertising that is so valuable. Yet too often this valuable crop is handled carelessly.

The peaches are frequently "put up" fast with the comment, "Oh, these will sell anyway."

Surely they will sell, but are you, the grower, getting all you can out of them? Are you making all the customer friends that you can? Are you using them for all the advertising they are worth?

Just a little extra care makes the difference. Just a little of putting yourself in the customer's place - of putting yourself on the other side of the counter - is the difference between a sale and a sale with extra dividends.

Peaches have these extra dividends. Put some "interest" to work to get the last dollar from the crop.

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Do You Know What Goes Into the Box?

Last winter a check of 27 packed boxes was made just to see what was inside and to develop a method for checking packed boxes.

There were several discoveries:

1. Most of the packers did not know - except generally - what qualities were in the box. Several were amazed at what was found.
2. Bruising and skin breaks were by far the most serious handicap to customer satisfaction.
3. A great deal of the bruising and skin breaks found in the boxes were caused at harvest time.

This apple crop is a short one. The price may not be high enough to yield as big a net return as last year. Every harvested apple needs to be sold well. Loss by bruising or skin punctures will be a more serious handicap this year than usual.- during harvest or afterwards.

Watch the picking carefully. Handle them carefully. Pack them carefully.

Every apple has a job to do this fall!

If you want an impartial check on your packed boxes, to see how you are doing, ask your county agent about it. Take a careful look yourself, anyway.

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Color Picking

A box of well colored apples may bring 35 to 50 cents more a box than a box of "green ones."

A box of apples with a liberal sprinkling of "green" apples usually sells for less. The green ones are a handicap to the red ones.

All market studies of the McIntosh apple have concluded that color is the most important single factor making the price.

If these things are so, and we think they are, certainly extra care to pick red apples is due this fall. The extra cash will come in handy.

A smaller crop allows for better harvesting. A few extra cents spent to get apples with color can be a good investment.

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Four Months
to 1/25th of a Second

It takes about four months to grown an apple. More than that if the year around operation is considered.

A stem puncture is made in about 1/25th of a second.

A flick of the wrist, a careless toss, a quick dump, a short drop can cause a stem puncture - sometimes many of them.

What a waste it is to spend four months growing an apple and then allow a careless fraction of a second to spoil it.

-- F. E. Cole

* * * * *

Consumer's Dilemma There's not much left on earth that I, or you, or anyone can buy that's fit to eat, according to a few. For when they try to kill the bugs with all these new fandangled drugs, the worms they beat but leave a residue. To eat, or not to eat. Ah, me! The choice is bugs - or drugs. The only dish that's left is fish, as far as I can see.

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FALL VERSUS SPRING PLANTING OF STRAWBERRIES

As a follow-up on the item in the July issue of FRUIT NOTES concerning time of planting, the reader may be interested in the results of our recent tests at the University.

Two similar tests were conducted, one fruiting in 1951, the other in 1952. Howard and Catskill plants were set about October 15th and April 15th, both years, in small replicated plots. The average yields for the two tests were as follows:

| | | |
|----------|------------|--------------------|
| Howard | Fall set | 286.6 oz. per plot |
| " | Spring set | 141.3 " " " |
| Catskill | Fall set | 377.3 " " " |
| " | Spring set | 217.1 " " " |

In every instance the fall set plot outyielded the spring set plot nearest to it and with which it was being compared. Doubtless, the earlier formation of runners is the main reason for the better performance of the fall set plants. If fall setting is to succeed, the newly set plants must be mulched that first winter. Two quarts of sawdust over each plant was used in these tests but doubtless other types of mulch material would be satisfactory where sawdust is not available.

-- A. P. French

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Ideas vs. Dollars You have a dollar; I have a dollar, we exchange.
Now you have a dollar; I have a dollar; neither is benefitted.

But you have an idea; I have an idea; we exchange.
Now you have two ideas; I have two ideas; both have benefitted.

That's co-operation.

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RANDOM NOTES ON SMALL FRUITS

An Old Cuthbert Planting A few days ago a member of the Mount Hermon School staff dropped in with an exceptionally fine branch of raspberries for identification. They were apparently of the Cuthbert variety and were from a planting more than 30 years old. Just why this planting has not succumbed to mosaic is a mystery. In fact, it isn't even seriously infected with spur blight. The owner says he gets big yields year after year and the berries are of good size. There is every reason to believe that the soil is quite ideal, - with no shortage of moisture, ample fertility and an opportunity for deep rooting.

Blueberries and Huckleberries These two terms, like many other common names of plants, are used very loosely. They fail to identify specific plants because they have different meanings in different states. In Michigan, the term "huckleberry" refers to what we, in New England, call the low-bush blueberry. This suggests a need for scientific names, which are the same the world over. Gray's Manual of Botany includes in the Genus Vaccinium the various species of blueberries, whether lowbush or highbush, all of which have many small seeds. The term "huckleberry" is applied to another Genus (Gaylussacia), the fruit of which has 10 hard, nut-like seeds. The reader may recall picking berries with hard seeds,

but very similar to blueberries, from upright plants about two feet tall. Technically, these are Gaylussacia baccata, while the highbush blueberries, both wild and cultivated, and Vaccinium corymbosum. But there is no use to argue about common names. It all depends on where you live.

Are Wild or Cultivated Blueberries Sweeter? About the time we feel sure every blueberry grower knows the facts in the case, we find one willing to debate the relative sweetness of blueberries, cultivated and wild. He insists that the cultivated are sour, and that's that. So we repeat our firm conviction, based on many observations, that it is a question of maturity. When we pick wild blueberries, many of the individual berries have been blue for two weeks or more, and all this time they have been increasing in sugar content. But as soon as berries turn blue on those plants in the back yard, we are tempted to pick them. Maybe we have to pick them promptly to get ahead of the birds. But the fact remains that the average box of cultivated berries is considerably less mature, and consequently less sweet, than the average box of wild berries. If we leave a cultivated bush unpicked for two or three weeks after the berries turn blue, as the writer has done, thanks to a protective covering of tobacco cloth, the berries are surprisingly sweet. It is true that the cultivated varieties vary among themselves in flavor and sweetness, but they differ from the wild in sweetness mainly as suggested above.

Raspberry Cane Borer This is an easily noticed pest of raspberries, the wilted tips of new canes being of fairly common occurrence. The beetles appear in June, girdle the cane at two points, and the eggs are laid singly in the pith about six inches from the tip. The second season the grub continues its burrow through what is now the bearing cane, reaching the base by fall and passing the second winter in its burrow below the surface of the ground. This pest seldom does severe damage but might be more abundant were it not for the practice of cutting off and destroying the wilted tips and cutting out and burning all old canes and thus destroying many of the nearly mature borers.

Other less conspicuous ailments of raspberries causing much more damage are spur blight and cane blight. They get started in obscurity on the new canes. And when they are finally noticed, it is about a year late to do anything. Thorough applications of ferbam before the new canes are half grown are very effective.

Everbearing Strawberries Anyone interested in growing an everbearing variety should know some of the shortcomings of everbearers, in general. Among them are: (1) The June crop is inferior in quantity and quality to that of the June-bearing varieties. (2) The yield is seriously reduced by hot, dry weather. (3) The late summer crop ripens over a long period, thus increasing the cost of harvesting. (4) More hand labor is involved than with regular season varieties. (5) More plants are required in setting a bed. We should also bear in mind that a good fall crop involves the removal of all blossom clusters up to about July 1. Unless this is done, the June crop is likely to be disappointing and the fall crop will be delayed. Beginners will do well to confine their efforts to the old standbys which mature their crop in June, and leave to the specialist who caters to a special market, the finicky, time consuming everbearers

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Increase Your Vocabulary Clone - The aggregate of individual organisms descended by asexual reproduction, used in referring to such animals as aphids and to plants propagated by vegetative means, as cuttings. (Malling stocks are true clones.)

* * * * *

POMOLOGICAL PARAGRAPHS

Looking Forward to the Pruning Season. About the only excuse for pruning is to provide a better harvest. The harvest season is an ideal time to decide what kind and amount of pruning is needed. Are the trees too thick, too tall, or are some of the branches too low? Is there too much old wood producing small green fruit? Should every other row be removed? September will show up the kind of pruning done last March.

Use of Paint Brush in an Orchard. In years past it was a common practice among apple growers to paint pruning wounds in the hope that such treatment would prevent wood decay. Not more than one grower in ten paints even the larger pruning wounds today because fungicidal sprays and dusts seem to help in providing needed protection. In a vigorous tree, it is rare indeed for rot to develop in a pruning wound. Old, winter injured Baldwins are of course, an exception. At the present time a much more efficient use can be made of the paint brush and left-over paint, regardless of color. A paint mark on the trunk of temporary trees designates them for whatever special pruning they need, and it stamps them for ultimate removal. Paint marks on these trees are especially useful in a crowded orchard where the owner is not always sure which are permanent and which are temporary trees. By mapping the orchard carefully at the beginning, painting the temporary trees and then slashing these trees back as conditions require, much of the guess work in an important operation is removed. We recommend a paint mark on every tree in every other diagonal row. This mark should be on the trunk or leader, and preferably on the same side of each tree to permit prompt recognition at pruning time.

Apple Tree Removal in Michigan To stimulate interest in the removal of old and marginal orchards the Michigan Apple Commission has asked growers to pledge themselves to remove 10% of their acreage. It is reported that 75% of the growers in Michigan will have some trees removed before the year is over. This will involve an estimated 2,000 acres or more. Lower net returns, if not an actual loss, on these less desirable blocks is a good reason for their removal. New England has a similar chore clamoring for attention.

Wood Chips for the Land This is the name of a new USDA Soil Conservation Service publication (Leaflet No. 323) which contains some valuable information on the various uses of wood chips in agriculture. The author is A. C. McIntyre, Regional Forester of the Northeastern Region. This leaflet may be obtained from the Superintendent of Documents, U. S. Government Printing Office, Washington 25, D. C. for 5 cents. It contains a section on Richer Soils and Crops, including fruit trees, berries, vegetables and flowers.

Note on Magnesium Deficiency. The leaf symptoms of magnesium deficiency in apple trees are common to most growers. A browning between the veins and a gradual loss of the older leaves in late summer have been noted in many orchards during the past 10 years. Previously the cause of this condition was not definitely known. At the Beltsville Plant Industry Station it has recently been found that these leaf symptoms are more inclined to show up on the spurs of bearing trees than on non-bearing trees. An analysis of different parts of the fruit has revealed the reason. Seeds are fairly high in magnesium content, slightly higher, in fact, on magnesium deficient trees than on normal trees. Thus the fruit on a tree with a full crop creates a heavy demand for magnesium and since the seeds are able to compete with nearby leaves, the latter are likely to "feel the pinch." Two trees of the same variety growing side by side on a magnesium deficient soil, one with a heavy crop and the other without a crop, may look quite different in late summer for the reason stated above. In looking for magnesium deficiency symptoms, it is well to observe bearing instead of non-bearing trees.

Tale of Two Plum Trees. In the writer's yard are two plum trees, a Bradshaw and an Imperial Epineuse, about 15 years old. They bloomed heavily last spring and, thanks to cross pollination, set an unusually heavy crop. Two thorough sprays containing methoxychlor were made in late May and June. Nothing has been applied since. At the height of the curculio season, it appeared that control was almost perfect. Some late appearing beetles, however, were able to feed and lay eggs, and at the present time a considerable number of infested plums, almost full grown, are changing color and dropping from the trees. Nearly a bushel was gathered up recently and there is still a heavy crop of undamaged plums left. The two points to be noted are (1) that the curculio season this year was a long drawn out affair, requiring applications over a period of several weeks, and (2) the very heavy set on both trees illustrates the importance of cross pollination. There are no other plum trees within several hundred yards.

USDA Year Book in Lincoln's Day. We have just browsed through with much interest a copy of the USDA Yearbook for 1864, belonging to County Agricultural Agent Charles Turner. At that time the annual publication was known as the Report of the Commissioner of Agriculture. Among the interesting items are a section on "Popular Varieties of Hardy Fruits." Among the apples discussed and illustrated are Red Canada and Westfield Seek-no-Further. Other fruits include the Orange quince, Early Richmond cherry, Imperial Gage plum and Crawford's Early peach. Roger's Hybrid grapes are also discussed. A section on gathering, ripening and keeping fruit contains advice by an authority of that day, Dr. Warder.

Plums and Prunes. To some people a "prune" suggests a black, wrinkled object, edible and acceptable only when fresh fruits are not available. But in its original form it is also a prune. In fact, a large proportion of the plums grown today are so-called prune plums. Yes, all prunes are plums, but not all plums are prunes. In its simplest terms, a prune is a type of plum of such a chemical and physical make-up that it may be dried without decay. Sugar content is involved. The difference between a prune plum and other kinds of plums is well illustrated by such varieties as Lombard which decays very rapidly, and German Prune which is easily dried.

The Impossible Takes a Little Longer. The age of miracles is still at hand, if by the term "miracle" we mean the accomplishment of something beyond our understanding. A generation ago such things as concentrate sprays, a one-man spray outfit, holding of apples on the tree at harvest time and chemical thinning would have seemed miraculous. In the Sikorsky helicopter plant there appears a sign bearing this statement, - "According to recognized aerotechnical tests, the bumble bee cannot fly because of the shape and weight of his body in relation to the total wing area. The bumble bee doesn't know this, so he goes ahead and flies anyway."

Marketing Pre-Packaged Apples. Pre-packaged apples outsold bulk offerings of apples whenever the former got comparable display space, according to a study in Ohio. Cost of pre-packaging ran from 30 to 75 cents per bushel, the largest single cost item being the bag. Consumers generally liked the type of package in which all apples could be seen and considered the 4- and 5-pound packages not too large.

Report of Mass. Apple Purchase Program. The total number of bushels of apples bought through the PMA Program in Massachusetts between October 5, 1951 and February 23, 1952 was 118,171 (McIntosh, 99,119; Cortland, 18,952; Delicious, 100). The 163 cars were distributed as follows: Massachusetts, 77; Alabama, 21; North Carolina, 16; Tennessee, 14; South Carolina, 13; Georgia, 10; Ill., and Rhode Island, 3 each; Minnesota and Washington, D. C., 2 each. The total expenditure was \$213,196.80.

Apple Crop "Guesstimate" The national apple crop this year is estimated at 103,456,000 bushels compared to 112,935,000 in 1951. The Massachusetts crop is estimated at 2,400,000 this year. Last year it was 3,516,000. Other New England States also show a decline, with the least reduction in Maine, - about 1,150,000 in both years. The total for New England this year is 21,495,000. Last year it was 26,644,000. In the West, a better crop is in prospect. Washington has an estimated crop of 23,068,000, about 3,000,000 more than 1951. California, with 10,565,000 has about 2,000,000 more. Virginia is also in the favored class, with an increase of about half a million, - 10,577,000 this year and 10,064,000 in 1951.

2824 MAGGOT FLIES PER TREE

The crop carried in 1951 by a group of unsprayed McIntosh trees in central Massachusetts fell to the ground and remained there. This June a cheese cloth cage was constructed to cover 24 square feet of the area under one of these trees.

Maggot flies began to appear in the cage soon after July 4. On July 25, a peak catch of 21 flies was taken from the cage. Previously the highest for any one day had been 11.

Through July 28 a grand total of 104 apple maggot flies had emerged in that cage -- over 4 flies per square foot.

Each tree in this block covers approximately 700 square feet -- over 2800 flies per tree or 84,000 flies from an acre growing 30 such trees -- and the 1952 emergence is not yet complete!

-- E. H. Wheeler

Quality Fruit Grower

First call for "Quality Fruit Growers." If interested, consult your County Agricultural Agent.

* COUNTY AGENT'S CORNER

* Max Fultz, Middlesex County

* The difficulty of pest control this year emphasizes some of the fundamentals that have been connected with spraying operations since the modern conception of the fruit business. With scab and curculio both at their worst this year and with codling moth increasingly serious the value of complete coverage has had a pronounced influence on pest control.

One can get a terrific story from observing a tree from bottom to top. Gradual increase of the height of trees, excessive rain and continuous, windy conditions have emphasized the situation this year. Primary infection in the top of trees even though it may have started with only a few spots, spreads to apples and lower leaves with great rapidity, when rainfall is excessive. As a matter of fact if tops are not kept clean, normal weather conditions will cause serious spread and build-up.

That nasty little curculio is adept at finding holes in the spray cover. If lower apples are too well sprayed, he will seek those in the tops on which the cover is not sufficient. For curculio, the cover must not only be there, but it must

be ample and a lightly sprayed top may be as vulnerable as one that has been missed.

Codling Moth and Bud-Moth likewise find those vulnerable areas in the top. Codling Moth is about as notorious as the "curc" at finding weak spots in the protective armor.

Growers are probably very much aware of the cost in off-grade apples due to inaccessible portions of the tree. They are also aware of the increase in cost of materials due to covering such portions. The difficulty has been in really knowing just how high some trees are and actually adopting an all out program of doing something about it. The Extension Service has adopted a practical goal of 18-20 foot trees for a number of years. It is willing and ready to give you practical help in attaining this goal by a minimum of extreme measures. Why not get together on a program to get this most vital job done?

* * * * *

Some Points of Interest in Field Station Orchard. This note from E. F. Guba of the Field Station suggests some things which nearby growers may want to visit and look over. "Please post the men who are interested that in my part of the orchard this year may be seen severe scab on unsprayed McIntosh; Phygon foliage chlorosis; hail injury; russet on Delicious apples from sulfur and lead arsenate; injury on Baldwin apples from combined sulfur and high temperatures; and mite control with Crag fungicide. Comparisons are made of 2 oz. Phygon formulation of Stauffer Sulfur Paste; Kolofog and Thiuram combined; Crag Fungicide 341, Thiuram, Ferbam and Ortho-cide 406. The materials may be appraised by examining the trees for scab control, finish of fruit, and condition of the foliage. The severe drought and the temperatures this season have aggravated injury."

* * * * *

A Heavy Drinker. The following quotation from "This Green World" by Rutherford Platt was sent in by R. W. Wesson of Grafton. "It takes a good deal of imagination to think of water traveling up the long tapering cylinder of a tall tree in an unbroken column from the deepest rootlet to the topmost twig and spraying out through the perforations of the leaves as from a fine nozzle. Yet every leaf of the several millions of a great elm -- and every blade of grass -- is constantly performing like a nozzle. The spray is so fine that it is invisible. An orchard of 40 mature apple trees will be equipped with about 100,000 leaves each. Those 40 trees, through a highly efficient mechanism, will lift 16 tons of water a day -- four gallons per tree per hour. And as trees go, apple trees are comparatively small!"

* * * * *

An Echo from the Past. At a meeting of fruit growers in Michigan about 75 years ago, a speaker discussed at some length the disease of plum trees, commonly known as Black Knot, assuming it to be of insect origin. It had been noted that a particular insect was frequently found inside the "Knot". But instead of being the cause, the insect had arrived later and taken up its abode within the spongy tissue. This mistake on the part of the speaker suggests that at any given time, an authority imparts only what he believes to be true. As our knowledge increases, our interpretation will necessarily change. Thirty-five years ago, it was thought that apple scab was uncontrollable. Today we have control measures undreamed of at the time of the First World War.

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Fruit Notes.

Prepared by the Fruit Program Committee of the Extension Service
W. H. Thies, Extension Horticulturist

SEPTEMBER 15, 1952

*When an apple tree is ready for the world to come and eat
There isn't any structure in the land that's got it beat.
There's nothing man has builded with the beauty or the charm
That can touch the simple grandeur of the monarch of the farm.
There's never any picture from a human being's brush
That has ever caught the redness of a single apple's blush.*

— Edgar Guest

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THIS IS NO YEAR TO BOUNCE 'EM

Every apple has a place in the "returns" column in a short year. Probable higher prices also makes each apple important.

A three inch McIntosh dropped one inch onto a hard flat surface gets a half-inch bruise. A skin break can be made by a short drop on a sharp corner.

The larger the apples the easier they are to bruise. When a falling apple strikes other apples, they all get bruised. The longer the drop and the more apples beneath, the more bruises.

These things are known to fruit growers. H. P. Gaston and J.H. Levin of Michigan measured the results with a ruler and a sharp eye.

The difference between careful handling and careless handling was amazing when the counts were all in.

Bruises of any kind do not help to sell apples and do not help to get the highest prices.

Finger bruises are probably the most common bruise on apples and most of them can be prevented.

What does all this mean in a practical operation? It means:

- Careful training and supervision of pickers.
- Padding of baskets and buckets, when necessary careful supervision of loading and hauling.
- Cleaning and smoothing out conveyers and padding, sorting and packing machinery.

It means careful handling - all along the line to keep the apples in the most salable conditions possible. Every nickel counts in a year like this one.

This is no year to bounce 'em!

-- Frederick E. Cole

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The Defense Bond Way. Here is how a depreciation reserve can be planned in Series "E" United States Defense Bonds. Take, for example, a tractor that costs \$2,250 and is good for about 10 years' use. The depreciation each year will average \$225. You can build a reserve for this depreciation by buying each year three \$100 United States Defense Bonds at a purchase price of \$75 each.

You would buy \$225 worth of Bonds each year for 10 years. These Bonds would be held until needed to replace an old or worn-out tractor. In this replacement plan, the \$2,250 you invested in U. S. Defense Bonds would have a cash value of \$2,537 at the end of the 10 years. THIS WOULD COVER YOUR FULL DEPRECIATION ON A \$2,250 TRACTOR AND LEAVE YOU \$287 ADDITIONAL. This "extra" is what your replacement dollars earned the Defense Bond Way.

-- Roy E. Moser

POMOLOGICAL PARAGRAPHS

Water Core. This condition, frequently found in some varieties, including Delicious and King, is said to be brought about by high temperatures resulting in what is known as hydrolysis of the starch. Absorption of water increases the osmotic pressure in the cells, causing them to rupture. Briefly stated, healthy leaves manufacture starch, some of which goes into the apple. But instead of functioning normally, high temperatures and intense sunlight almost literally cause the cells to become "drowned out." More water core is likely to occur in apples with direct exposure to the sun. However, it is interesting to note that, under good storage conditions, the water core in otherwise good apples gradually disappears.

Residual Effects of Heavy Mulching. In 1922 an experiment to measure the effects of a heavy mulch in an orchard was established in Amherst by J. K. Shaw. One half of the area was cultivated each year and the other half received a heavy mulch. In 1939 the differential treatments were discontinued in that no more mulch was added and the cultivated plot was allowed to establish a rather poor sod. The mulched plot received no more fertilizer while the other had some nitrogen and potassium in 1948, before removing the trees to plant a peach orchard, soil samples were taken and analyzed. The number of pounds per acre of available nutrients to a depth of 13 inches were as follows - (The first figure in each case represents the mulched plot, the second the cultivated plot): Phosphorus, 510, 78; Potassium, 728-398; Magnesium, 184-42; Calcium, 2,680, 2,080. These data clearly demonstrate the ability of a heavy mulch to supply and maintain a larger reserve of available nutrients than cultivation and sod.

Mechanical Apple Picker. Visitors at the summer MFGA meeting in Amherst, July 24, had an opportunity to see a mechanical apple picker in operation on a tree of the Lodi variety. Some bruising was apparent. A recent letter from the manufacturer brings this information: "You will be interested to know that we have checked the elbow on the picking head closely and find that it did cause some bruising. We have padded the back of the elbow and drilled a small hole which creates an air buffer and prevents the fruit from hitting the back of the elbow. We have spent considerable time this week testing the head on Yellow Transparent apples, and find that there is no bruising. It is unfortunate that we had not tested the elbow thoroughly before the demonstration. However, those things we learn by experience."

Rate of Ripening of Fruits. Do you know that the rate of respiration and evolution of heat in an apple is about twice as great at 40°F. as at 32, and ten times as great at 85? The data for these three temperatures, expressed in milligrams of CO₂ per kilogram per hour are 3, to 4, 5 to 8, and 30 to 70 respectively. For peaches, at 35 and 80°F. the corresponding figures are 7 to 9 and 70 to 100. Raspberries ripen at an even faster rate. At 35 and 60°F. the figures are 20 to 30 and 70 to 80. With strawberries, doubling the temperature just about quadruples the rate of ripening. At 32 and 60°F. the figures are 15 to 17 and 49 to 68. No wonder we recommend a suitable storage temperature for fruits.

Device for Stacking Boxed Apples. A new portable device for stacking in boxes apple storage has been developed in research directed by the USDA. In most of the older packing houses in the Northwest, boxes of apples are stacked 10 or 12 high. The lower 6 boxes are placed in position by use of two-wheeled hand trucks, but stacking the additional 4 to 6 boxes on top is a slow, laborious job. One or two men work in cramped position while others hand up the boxes. The new lift, operated from a storage battery, has hydraulically operated clamps for gripping the lower box in the stack to be lifted. Only one man is required, instead of two or four, in

picking up 4 to 6 boxes and placing them on top of the 6 in the lower part of the stack. The device costs about \$600 plus the cost of the storage battery. A detailed report entitled "A Portable Mechanical Lift for High-Piling and Breaking Out High-Piles of Apples" may be obtained from the Office of Information Services, E. A., USDA, Washington 25, D. C.

Costs of Pest Control. In a number of New York orchards where spraying costs were studied, the average cost per tree for all blocks was \$2.86. One man got the job done for 89¢ per tree and his pest control was only slightly below average. Another paid \$5.73. His control was good, but no better than average.

Have You a Rat Problem? Fruit growers are likely to think of mice as the principal rodent requiring attention in orchard or storage. And mice have done untold damage in the form of girdled trees. But no rodent will more completely ruin apples in storage than a rat, to say nothing of feeds in storage or in a feeding area. A new leaflet issued cooperatively by several federal agencies, "Grain is Food, Keep It Clean", contains suggestions on trapping rats and mice, poisoning rats, rat-proofing, gassing rat burrows and cleaning up. Also, Leaflet 229, "Rats and Mice in the Home", available from the Extension Service, should be read by everyone with a rodent problem.

Two Ways of Storing a Barrel of Apples. In Agronomic Review we find these suggestions on storing a small quantity of apples out of doors. (1) In a well drained location, dig a hole half as deep as the height of a barrel. Set barrel of apples in hole with straw filled bag on top. Place straw around and over the barrel and cover with soil. Increase soil as weather gets colder. (2) Lay barrel on ground with straw under open end. Plug end with straw filled bag. Cover barrel with straw and soil. Add more soil as freezing occurs. (A barrel of Roxbury Russets stored in this way would probably emerge in very good condition next April, and without the usual storage charge.)

Baldwins at a Dollar a Barrel. From a farm magazine in the late Seventies: "Those who planted largely of the Baldwin apple in years gone by are reaping the benefit of choosing 'wisely and well'. Even at the low rate of a dollar per barrel there is a handsome profit to be secured from a properly managed orchard of Baldwins. Can as much be truthfully said of any other variety of apples?" (Not so long ago, the Baldwin was referred to as "the mortgage lifter of New England." Maybe we're missing a good bet.)

Roadside Markets. Success at a roadside market is the result of careful planning. Here are a few suggestions: Stands should be visible from a distance to allow time for cars to slow down. Have adequate space for cars to park off the road. Let customers know there is a stand ahead and indicate what they may buy. Signs should be prominent and easy to read. Shade helps maintain quality. Have a place to keep empty containers and rubbish out of sight. Feature items for home canning and freezing. Massive displays on heavily travelled roads attract attention. Keep displays neat and orderly. A splash of color helps to increase sales. Keep ripest produce in front for quick sale. Stands located near orchard or other producing area give impression of home grown produce. "Home grown", to many people means better quality. Nickel pricing, 25¢, 30¢, etc., is favored for rural stands. Repeat customers are the key to a successful roadside stand. Treat every customer in such a way that he or she will want to come back.

Increase in Fruit Juices. Since 1930 there has been an increase of about 800% in the output of fruit juices in the U.S. In fact, the quantity of pineapple juice today is about equal to the total of all fruit juices in 1930. The 1950 output of all juices was 105,000,000 cases, 10,000,000 cases of which were

pineapple juice. Present day competition among the different kinds of juice is very keen. A product must be good if it is to find a ready sale on the market. People who form a habit of drinking orange juice will not change to apple juice unless it is either more palatable, cheaper, or both. And the tremendous variation in the apple juice or cider offered for sale has created a "buyer beware" attitude. We need new standards for apple juice and elimination of some of the drinks sold under that name.

Plant Patents. During the 20-year period, 1931-1951, a total of 1058 Plant Patents were issued, practically all on fruits and ornamentals. The largest number was on Roses, 529. Peaches were next with 67. Other fruits were as follows: Apple 32; Strawberry, 18; Nectarine, 13; Plum, 13; Apricot, 10; Cherry, 9; Grape, 7; Pear, 7; Raspberry, 6; Pecan, 4; Blackberry, 3. The ultimate value of a Plant Patent is debatable. With the variation within a variety, it is difficult to imagine an illustration or a description, however accurate and painstaking, that will identify beyond question a particular variety out of the thousands in a particular species.

Five Years of the Red Apple Club. After five years (1947-51) of useful service, the Red Apple Club of Massachusetts has been discontinued. In its place, a Quality Apple Grower project is planned. This will involve all of the apples of a major variety instead of a single block. Emphasis on yield, color and pest control in the Red Apple Club project has helped to focus attention on three things which have a direct bearing on profits in the apple business. Membership during the 5-year period has varied from 21 in 1947 to 48 in 1950. In the other three years it totalled 25, 33, and 37.

Things Which Count. The expression "putting first things first" finds many illustrations in the fruit business. We occasionally see a beginner who has a mistaken notion of the value of certain practices. They may seem important, but if viewed at a later date they are found to lower, instead of increase, the profits of the owner. Here are 3 illustrations: (1) A grower may decide to burn over a grassy area, little realizing that he is destroying a valuable material, worth perhaps 8 or 10 dollars per ton for mulching purposes. (2) Impressed by the power of his new tractor and the ease with which a disc harrow is pulled through the orchard, the soil is disced over and over again to the extent that erosion is encouraged and most of the organic matter burned up. (3) Another grower with some extra labor available decides to remove the sod from around the trunks of his trees but he chooses the wrong time, - the month of October. (September or November might be just as bad.) The result? Exposure of the lower part of the trunk and adjacent roots to cold weather in late fall sets the stage for injury. Two years later they show collar rot around the base of the trunk and an unhealthy appearance. Lingering unprofitableness or loss of trees follows.

Mixed Planting of Fruit Trees. For gardeners with enough time and ambition to spray the home orchard, the "All-Purpose" Home Orchard Spray Schedule should be of special interest. In previous years, a separate schedule was prepared for each of the tree fruits. But today we have some new materials which are both safe and effective. Methoxychlor, for example, may be used on both peaches and apples for the control of curculio, whereas, the older material, lead arsenate, would have caused severe injury to peach trees. The "All-Purpose" Schedule offers real possibilities for the gardener who carries out the recommended program.

Fruit Tree in a Lawn. (This paragraph is taken from the August, 1935 issue of FRUIT NOTES. The statements are as true today as they were 17 years ago.) "A thrifty peach tree growing without cultivation is of uncommon occurrence except where the grass is clipped regularly and left lying around the tree. In fact,

Some of the mistakes made by growers have been the use of southern plants that have failed to live up to catalog advertising. Those who have used their own plants or purchased plants from recommended growers in Massachusetts have established good plantings. Some have made the mistake of planting more acreage than they have been able to take care of properly. **Smaller plantings** with good cultural practice would have undoubtedly produced more berries with less work.

One grower in particular has demonstrated the value of planning ahead a year or two in preparing the site for the future strawberry bed of one-quarter acre.

He has grown three cover crops in a season, thereby building up the organic matter so important to strawberries and at the same time gotten very good control of weeds. When plants were set weed control was not much of a problem.

This grower had as fine a bed of strawberries as I have ever seen in this area. Varieties grown were Temple, Sparkle and Fairland.

Paying attention to some of these details which are well outlined in Extension Leaflet #29 - Strawberry Growing - makes the difference, it seems, between a mediocre crop and one that is high yielding.

* * * * Bert Tomlinson, Barnstable Co.

From what I was able to observe of our Falmouth situation, I would say that the serious Black Root trouble was caused by a combination of weather and soil conditions. In the many years that I have been on the Cape I have never seen anything just like it. Of course, in the past I have seen strawberry plants affected by Black Root here and there, but nothing like the serious situation we had this year. I estimate that Black Root cut the yield in Falmouth about 50%, and some growers have lost a much higher percentage than that.

I think the long period of cloudy weather prevailing in the early spring had something to do with it; then too, we had a very cold, wet spring which retarded growth fully a week or ten days. Ordinarily, we never consider this situation very serious, but it was apparent early in May that the plants were not developing right, and some fields that started out quite promising were almost a complete failure. For example, in connection with the strawberry festival we had selected one good grower as the site for the strawberry-picking contest. Up to the middle of May the strawberry plot looked very promising and remained promising until the latter part of that month, when it commenced to deteriorate very fast. About three days prior to the date scheduled for the event, this field had so deteriorated that we were obliged to select another location.

It is also quite possible that the heavy amount of snow may have had its affect, too. This snow came the latter part of February and at that time the soil was not frozen. It was followed by mild weather and the snow went very fast, and I have a notion it caused considerable leaching of plant food. At any rate it is rather interesting to note that the fields that have the heaviest infection gave very low pH readings, down around 4.5 or lower. I am also rather certain that the growers who have the worse trouble were those that were not building up the organic matter as fast as they should.

I was also interested and somewhat surprised to learn that the Howard 17, which has proved so hardy in the past to all our various troubles, was quite susceptible to injury by Black Root. This observation was made by a number of growers, and of course they are satisfied now that the Howard 17 has run out just like the old Echo, so they need to get some new variety in.

It is true that they have been trying out a number of varieties, and the Robinson or Scarlet Beauty is now increasing in popularity very fast, and while it is far from an ideal variety it certainly has some advantages over the Howard 17. One notable characteristic of the Robinson under our conditions, is that it is very vigorous and prolific. It was not uncommon this year to see the Robinson produce quite well and in the same field Howard 17 was hard hit and almost a complete failure.

Just why this trouble should hit so hard this year perhaps will never be known. I do know that it was not confined to Falmouth. I have seen this trouble in small strawberry patches in Chatham, Harwich, and Dennis. In talking this matter over with Dr. Gilgut, who was down to observe our situation, he made the statement that Black Root was a serious problem throughout the state. He also said many growers had confused it with Red Stele.

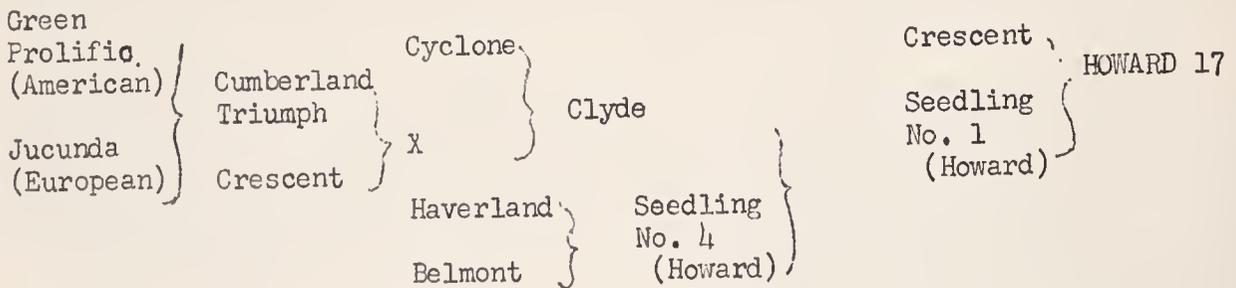
It is a fair statement to say that while plant pathologists associate Rhizoctonia organisms with a condition known as Root Rot, they also agree that this trouble is usually a very minor one under ordinary circumstances. However, when conditions unfavorable to strawberries growth develop, these organisms take over and succeed in doing a serious job on the strawberry root system.

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RANDOM NOTES ON SMALL FRUITS

Geese in a Strawberry Planting. A recent letter from Walter K. Morss of West Boxford reports his experiences with geese this season. He writes, - "There is no question about geese being helpful in a strawberry planting, if properly managed. Not over 3 or 4 to an acre is best. Fences must be kept tight at the bottom, and one wing clipped when full grown. I usually went down to one of our plantings (about an acre) where 3 birds were enclosed, an hour or two each night before dark to train the plants and watch the birds at work. They would average taking small weeds at the rate of 25 per minute. I figure that if the 3 geese work even an hour a day at that rate, it would be quite a help. This particular piece of land was full of weeds that went to seed year before last. We harrowed and fertilized it last year knowing well the weed seeds that were there. We think these 3 geese saved us more than half the work of weeding this year. It costs time and money to fence, but feel it paid off. We have 18 geese."

Pedigree of the Howard 17 Strawberry. Going back six generations, the genealogy of the Howard 17 strawberry, from a somewhat confused record, looks like this:



The Crescent variety, prominent in the development of the Howard 17 and said to have been very important previous to 1890, contributed about 70% to the characteristics of the Howard 17.

Older Strawberry Varieties Being Replaced. Only one commercial variety of strawberry, the Klondike, among the top 5 in the U. S., 35 years ago, is still there. In 1916, it was grown on 28% of the strawberry acreage. It is now the low berry of the present high 5, with 5% of the acreage. Of the 15 varieties that made up 80% of the acreage 35 years ago, only 4 are being grown commercially today. Blakemore now makes up 32% of the acreage, Klommore, 13%, and Catskill, 3%. Changes come rapidly as varieties with superior qualities appear. Among those recently introduced are, 4 resistant to red stele, Redcrop, Sparkle, Vermilion, and Fairland, and 3 high-flavored berries, Fairpeake, Midland, and Suwannee. Interest in strawberry breeding centers around these superior qualities: better flavor and aroma, bigger size to speed picking, firmness, better adapted to freezing, flowers resistant to early spring frost, plant hardiness and resistance to the destructive red stele disease.

Strawberries or Apples in the Backyard?

In at least 9 cases out of 10, the wise choice is Strawberries. For unless one is satisfied with a crop of apple blossoms and is not concerned about the fruit, apple trees are likely to be more of a liability than an asset. They require several thorough, well-timed sprays, and if a spray is delayed even a day or two at a critical season, the results are likely to be disappointing. Apple trees are attacked by more pests than most of the other fruits. For this reason, apples are best grown by someone who specializes in that fruit, and owns a power sprayer. Strawberries, on the other hand, are often grown successfully with no spraying or dusting at all.

Starting a Strawberry Planting. It pays to make a good start. Instead of ordering the plants, setting them in a shady or crowded location, and hoping to nurse them into productivity later on, the best spot in the garden is none too good. The soil should be in a high state of fertility, well supplied with organic matter and free from perennial grasses. Well-rotted manure is an ideal fertilizer, and April is better than May for setting the plants, provided the soil is in good condition. At least one quart per original plant, to be harvested in June, 1954, is a reasonable goal. All blossoms should be removed from the "mother plants" in order that they may use their resources in developing new plants for next year. A crop of strawberries is harvested 13 months from the time the plants are set. No other fruit rewards the owner so promptly.

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Geese in Strawberries and Blueberries. Our experience over the past two years with geese as weeders of strawberries has not left us as enthusiastic for this method of weed control as some growers seem to be. Geese are tremendous consumers of grass. If the weed problem in the strawberry bed were mainly grass, geese would be ideal. But when it comes to smartweed and some of our other serious broad-leaved weeds, they apparently prefer to eat strawberry leaves or starve. Where broad-leaved weeds, like pigweed, lambs' quarters, purslane, and smartweed, are such persistent weeds as they are in Massachusetts, it appears that geese are not ideal weeds for strawberry beds. Perhaps they should be combined with other control methods which will keep the broad-leaved weeds out of the bed.

Weeding cultivated blueberries with geese has some disadvantages. In the summer of 1951 geese were placed in a small plot of cultivated blueberry bushes late in the season after most of the crop had been harvested. They did a good job of keeping witch grass down and bothered the blueberries very little. This summer some younger geese were placed in the same planting earlier in the season just before the berries started to ripen. For some unaccountable reason these young geese developed a tremendous appetite for both the green berries and blueberry leaves and had to be removed after a couple of days in the field.

New Blueberry Varieties. The introduction of new varieties of blueberries is being speeded up by the breeding program of the U. S. Department of Agriculture. The two excellent new varieties, Berkeley and Coville, were introduced in the winter of 1950-51. They are both worthy of trial. Berkeley has very large and very attractive silvery blue fruit which ripens with Concord. Both flavor and scar are good. The bush is vigorous and productive. Coville berries are not quite so large as Berkeley and are slightly darker blue. The flavor is more spicy and more tart. Unless they are very ripe they are a bit sour for the average taste. They make excellent pies. The bush is very vigorous and productive. Ivanhoe was introduced last winter, but not enough is known about it under Massachusetts conditions to make recommendations. It is expected that three more varieties will be named and introduced this coming winter.

The Massachusetts Agricultural Experiment Station and several Massachusetts growers are cooperating with the U. S. Department of Agriculture in their blueberry breeding program. In addition to testing a number of promising selections, a large number of seedlings are being grown in the state for trial. Among these seedlings, two look quite outstanding. It is expected they will be under row test next year and will prove worthy of introduction and naming. These selections and seedlings are under the control of the U. S. Department of Agriculture and neither propagating wood nor plants can be given away or sold without the written permission of the U.S.D.A. official in charge.

-- J. S. Bailey

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ORCHARD MOUSE CONTROL

The most efficient time to conduct an orchard mouse control program is during October and November. However, there are exceptions to every rule. During this past season, many fruit growers have found it impractical to employ high-priced labor to hand mow or to grub about tree bases; the August rains caused renewed grass vigor. The combination of these two factors have created, in many orchards, an ideal condition for mice to multiply and to work in close proximity of the tree base. Fresh girdling now can be found in some orchards, and it would be advisable, prior to the main apple harvest season, to examine areas where tall, dense grass and weeds or mulch lay directly against the tree base. If heavy mouse activity is noted, such as trails encircling the tree base, holes extending under the crown, or girdling, then baiting these trouble spots now would undoubtedly pay dividends, especially in young orchards which are more vulnerable. Do not treat the entire orchard until after harvest.

The number of mice caught in traps during the month of July indicated the beginning of a sharp upward trend in the mouse population--the average litter size being six. This does not include Pine Mice which maintain a more constant trend--their average litter size being two.

Meadow Mice born in July will be ready to reproduce the latter part of September. It is also possible, and highly probably, that the adults will have had two more litters; this should explain why a thorough mouse control program is necessary every year. The progressive fruit grower examines his trees regularly for prevalence of red-banded leafroller, mites, flies, codling moth, and other pests; he also looks for orchard mouse activity with equal thoroughness, realizing that a tree lost or damaged due to mouse injury, is most costly.

Last year many growers stated that due to the unusually large apple crop and the consequently long harvest and packing season, they were unable to conduct a fall mouse baiting program. Apparently, this excuse will not be valid this year!

Carl B. Henry, Ass. District Agent
U. S. Fish & Wildlife Service.



Fruit Notes

Prepared by the Fruit Program Committee of the Extension Service
W. H. Thies, Extension Horticulturist

OCTOBER 15, 1952

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POMOLOGIST ON FOREIGN ASSIGNMENT FOR F.A.O.

Wilbur H. Thies, Extension Horticulturist (Pomology), has been granted a leave of absence to serve on a horticultural mission in Yugoslavia, Director James W. Dayton has announced. Mr. Thies' services were requested by the Food and Agriculture Organization of the United Nations for a 12-months period. He left by plane for Europe, with a stopover for briefing at FAO headquarters in Rome.

His specific duties in Yugoslavia will be to advise on the kinds and varieties of fruits which may be profitably grown in the regions naturally suitable for fruit growing, and to assist in increasing the production of such fruits in different regions. He also will supervise site selection, varieties, cultural practices, control of insects and disease, and local expert training.

-- H. Sidney Vaughan

CHANGES IN POMOLOGY STAFF

The above announcement from the Extension Service will not be news to many Massachusetts fruit growers, but it does explain why the nature of FRUIT NOTES is likely to be somewhat different for the next few months. No one of us can do the kind of job that he has done, but collectively the members of the Pomology Staff with the continued assistance of our associates will attempt to provide the readers of FRUIT NOTES with timely Pomological articles during his absence. Similarly an Extension program is being planned with research and instruction members of our staff carrying the ball during the next twelve months.

Professor John S. Bailey as many of you know will in the next few months move to the Cranberry Station at East Wareham. He will not however be working on Cranberries. His job will be as it has been mostly in the last few years, to do the bulk of our small fruit research. The greatest concentration of strawberry and cultivated blueberry planting is located in that part of the state on soil types quite different than those at Amherst. Therefore we expect his research work that will be done in that area will be of greater value to the majority of the small fruit industry than it has in the past. We shall still continue some small fruit research at Amherst.

Professor Oliver C. Roberts is on leave of absence until February 1953 to visit as much of the fruit industry of the country, particularly the west coast, as possible during that period. His itinerary also includes stops at many of the leading fruit experiment stations in the country. You will hear more of his trip from time to time.

-- A. P. French

Extension Service TV Program

"DOWN TO EARTH"

What--Interpreting to the television viewers various phases of Massachusetts agriculture, homemaking and youth activities

Where--WBZ-TV Channel 4

Who--Farmers, homemakers, 4-H Club members along with Extension Workers

When--Each Thursday--9:30 - 10:00 A.M.

SOME POINTS OF INTEREST ON HARVESTING AND STORAGE OF APPLES

Pre-harvest drop hormones: Introduction of new hormones for pre-harvest drop control during the past few years is rapidly changing the materials picture. It is possible that 2,4,5-trichlorophenoxyacetic acid (2,4,5-TA) may be useful in this regard. Present results indicate that it will delay drop on McIntosh longer than naphthaleneacetic acid and will not hasten ripening as much as 2,4,5-TP (Color-Set, Color-Lok, etc.). We have just completed a test on McIntosh comparing 2,4,5-TA with 2,4,5-TP and will report the results when we have the data in shape.

Importance of quick cooling of fruit after harvest: It is important to cool our apples to 32° F. as rapidly as possible after harvest if one is to get the longest possible marketable life from an apple. A test run last year showed that if apples are stored for the first month at 40° F. instead of 32° F. they will lose much of their storage life. McIntosh held at 40° F. for the first month and 32° F. thereafter were 1.2 lbs. softer on February 4 than comparable apples held at 32° F. all season. This represents a loss of 24 days of storage life. Cortland held in similar fashion were 1.7 lbs. softer on February 7 than comparable fruits at 32° F. This represents a 43 day loss in storage life. The inability to cool the fruit rapidly to 32° F. in storages is a real problem and often is a primary reason for the presence of soft apples which come from storages in January and February.

Present ideas on ripening gases which emanate from apples: Recent research at several Universities indicates that ripe apples not only produce the ripening gas ethylene but also one or more other volatiles which may stimulate the rate of ripening of less mature apples. The production of ethylene and other volatiles is much greater from ripe apples (drops) than from hand picked firm fruits. Consequently, it is desirable to store drops separately rather than in rooms with hand picked fruit which one wishes to keep in storage for an extended period of time. A few bushels of ripe apples may stimulate the rate of ripening and scald development of all the less mature apples in the room.

Present status of air-purification for apple cold storages. Now that air purification units using activated coconut shell carbon have been tested for ten years the following general statements concerning them can be made. (1) Coconut shell carbon is the best of the known adsorbents for adsorbing apple volatiles. Growers should expect to receive coconut shell carbon and should accept no substitutes. (2) It makes little difference whether one uses manufactured units or suitable home-made types. The carbon can be used satisfactorily in cannisters and horizontal or vertical trays. (3) These units have generally added 2 weeks to a month to the storage life of McIntosh. (4) These units do not adsorb much ethylene but apparently they will remove other ripening gases. (5) Air purifiers are outstanding in their ability to remove storage odors which may tend to give apples an "off" flavor. (6) Storage scald cannot always be controlled by these units. On many varieties it is as satisfactory as oiled paper in this regard. However, these carbon units will not control scald on Cortland. Shredded oiled paper is superior to carbon for scald control on Cortland in our tests over the past 3 seasons.

Storage troubles: Scald on Cortland and Greening are serious problems. Also, Baldwin Spot (bitter pit) can be serious on such varieties as Baldwin and Soy.

Scald is usually most serious on the earliest picked lots. In other words, the more mature the fruit when picked the less apt it is to scald. However, some years are more severe scald years than others. Since apples will develop typical scald symptoms much more rapidly at room temperature than under cold storage conditions, it is advisable to take a few apples of scald susceptible varieties out

of cold storage and hold them at room temperature for 4 or 5 days to see if scald is beginning to show up. This might be done every 2 weeks after the first of December.

Baldwin Spot is most serious on large apples. Trees that have been heavily pruned or fertilized with nitrogen are most susceptible to it. This disorder has already been seen this fall in some orchards. It tends to become more severe in storage. Unfortunately, there is no first rate control for this disorder. However, if one maintains a high relative humidity in storage (90-95%) its appearance can be delayed.

Influence of nitrogen on the condition of apples: It is commonly known that when one fertilizes heavily with nitrogen that the apples from such trees tend to have poor color. Such apples have a greener ground color and look more immature than fruits on trees which are lower in nitrogen. However, these green apples on high nitrogen trees are actually softer than less green looking fruits on the lower nitrogen trees. In fact, they may be as much as a pound softer at harvest time. Consequently, high nitrogen apples are not the best ones for long storage. This is another reason for being careful about the amount of nitrogen fertilizer applied to trees.

-- F. W. Southwick

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FIRE PROTECTION ON FARMS

Fires on farm property may be and often are of disastrous proportions. Many of these farm fires are of a crippling nature in that the operations are halted for long periods of time and sometimes permanently. This usually means that the income stops until the business is resumed.

While the loss of income for periods of six months to one year is serious particularly if the owner has outstanding notes, mortgages or other forms of debt, the capital losses of buildings, equipment and crops is infinitely more serious and may be of such magnitude that the owner must seek another farm with appropriate buildings, suffer considerable inconvenience or reconstruct his buildings at a time when building costs are the highest in history.

Some owners who have never experienced a severe loss by fire are content to relax their vigilance, thinking they are fully protected by insurance. Such protection is excellent as far as it goes, but few if any property owners are fully compensated for their financial losses, inconveniences, troubles, worry, and extra work occasioned by a fire.

Often times lives are lost in a fire. These may be children or aged members of the family particularly if the fire occurs in the dwelling at night, house pets, or it may be a herd of cows or poultry flock particularly where the owner has two or more projects. Even when the payments for lives lost are high, the torture, anguish and suffering, occasioned can never be translated into money.

Fires can be prevented only by constant vigilance. When planning new buildings or remodeling old ones much can be done to lessen the fire hazard, and thereby lower the insurance rates. Among them are:

1. Locate the structure if possible on a hard road accessible to travel at all times of the year. If the building is within 500 feet of a hydrant and within 3 miles of a Fire Department there is a reduction in the insurance rate. There is also a credit if the structure is within 1000 feet of a hydrant and 5 miles of a fire

department. A convenient and accessible water hole nearby may not only help in saving a building but may prevent a conflagration.

2. Buildings should be separated from each other by at least 50 feet. Closely grouped or attached structures are a greater hazard. Incombustible and fire resistant building materials for floors, walls and roof coverings reduce the hazard from fire. If there is a stove or heating plant the furnace room should be made or lined with incombustible material and the chimney should have a clay flue lining. Tile and unapproved metal chimneys should be eliminated. Unattended heating plants increase the hazard. Smoking should be prohibited and "No Smoking" signs posted conspicuously throughout the premises. A garden hose of sufficient length to reach all parts of the premises and at all times connected to an approved water supply is an inexpensive form of protection. Buildings should be adequately and safely wired by a licensed electrician and the work should be inspected periodically. A telephone should be provided if for no other reason than for protection. Lightning protective systems are advisable in rural areas particularly for tall, large, isolated structures located on elevated sites as on a hill or knoll and in areas where lightning storms are frequent and severe.

-- W. C. Harrington

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BRUSH REMOVAL

There are several reasons why fruit growers wish to remove hedge rows and other brush around their orchards. Apple growers want to get rid of hibernating quarters for curculio. Peach growers want to get rid of chokecherries. Low bush blueberry growers want to get rid of brush which interferes with picking or serves as congregating quarters for fruit flies. Whatever the reason may be now that the rush of summer work is over is a good time to do something about it.

In many situations the cheapest and quickest method of brush removal is the bull-dozer. Where this is not feasible mowing by machine or by hand is often practiced. This requires little outlay in cash but is expensive in time because the mowing must be repeated at least once a year to keep the brush in check. The use of herbicides for brush control offers a method which, although it requires some cash outlay for herbicides, is much cheaper in the long run because resprouting is prevented or retarded. The economy of the use of herbicides is attested to by the fact that many utility companies are turning to herbicides for brush control on thousands of miles of right-of-way.

There are three types of herbicidal brush control in general use, the overall summer spray, the basal stem treatment and the cut stump treatment. For the overall summer spray a relatively weak solution of the herbicide in water is sprayed over the foliage of the brush to be controlled. This means high volume spraying and is done only in summer when plants are growing actively.

The basal stem and cut stump treatments are used in fall and winter when the brush is dormant. For these treatments a hormone brush killer composed of a mixture of 2,4-D and 2,4,5-T in relatively high concentration in oil is generally used. For mixing with oil the 2,4-D plus 2,4,5-T combination should be in the ester form because the salt and amine forms will not mix with oil. Since the formulas put out by different manufacturers vary, the label on the container should be read and the manufacturer's directions for dilution followed.

The basal stem treatment is used for brush less than two to three inches in diameter. The spray is applied to the base of the brush from ground level to knee height. Spraying should be thorough so that all sides of the brush are wetted and spray runs down onto the crowns.

The cut stump treatment is for trees two to three inches and up, which are more easily cut when green. As soon as the tree is cut, the cut surface and bark are thoroughly wetted with the herbicides. This may be done by painting or spraying.

For the latter two methods a small power sprayer, or a hand outfit such as a knapsack or compressed air sprayer is ordinarily used. Very low pressure is desirable. A weed nozzle with a narrow flat fan saves material.

Not all species of brush are equally sensitive to herbicidal sprays. The root sprouting species such as chokecherry and poplar sprout from live sections of root and will almost certainly need retreatment. Other species, such as red maple, which are very resistant, will not be eliminated by a single spray. Even though respraying is necessary the amount of time and material required will be greatly reduced.

A word of caution, 2, 4-D and 2,4,5-T are very difficult to wash from spraying equipment. Even after thorough washing there may be enough herbicidals left in the sprayer to injure such sensitive plants as grapes. An advantage of these dormant season treatments is that inexpensive equipment can be purchased and used for this kind of spraying only.

-- John S. Bailey

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STONY PIT DISEASE OF BOSCO PEARS

A deformity and pitting of Bosc pears has come to our attention. With the help of Dr. John L. Dunegan, United States Department of Agriculture, the disease has been identified as Stony Pit, a serious transmissible virus disease. It has the appearance of injury caused by tarnished plant bug and even curculio. The disease has been known only in the Pacific Coast States since 1925. The fruit becomes gnarled and pitted and is considered worthless. It has been reported that from 10-80% of the Bosc culls at the packing houses there are due to stony pit, and surveys in the Hood River Valley have shown almost every Bosc orchard to contain from a few to as many as 70% of trees affected. The variety Anjou is also seriously affected.

The disease was observed in a Bosc pear orchard in Ashland. It has been recognized here by the grower for several years, first on a single tree and more recently on other trees which confirms report from the Pacific Northwest that there is a slow spread of virus from tree to tree by means other than budding and grafting. We also have confirmed the occurrence of the disease in a Bosc pear orchard in Hamden, Connecticut. The occurrence of the disease far remote from its known range of distribution would indicate that the trees or scion wood used in making the trees originated in the far west, although we have no definite information from the growers involved.

In addition to fruit pitting, pimples appear on young twigs which crack to form target canker effects. Older branches show rough bark like the bark of an oak tree and much different from natural bark cracking of healthy Bosc. Trees with this advanced stage of disease are not considered profitable. A leaf symptom consisting of a veinlet chlorosis is associated with pitted fruits, but this occurs only on occasional leaves and may become masked as the season progresses.

The Bartlett variety is not affected and Bartletts top-worked on diseased Bosc trees have always produced healthy fruit. Therefore to reduce losses from stony pit, Brown, Oregon Sta. Bul. 438, 1946, advocated placing buds or grafts throughout the framework of infected Bosc trees. By this method the Bartlett variety is tolerant of the virus. Buds or grafts from Bartlett on diseased Bosc put back into healthy Bosc will transmit the disease.

-- E. F. Guba

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MOUSE CONTROL IN ORCHARDS

The season of the year is here when all hands turn to Orchard Mouse Control. As yet, no new satisfactory method has been found for controlling this rodent so our usual method is still recommended.

The most satisfactory method of controlling orchard mice is by the use of poisoned baits. The recommended poison is Zinc Phosphide Rodenticide dusted on cut-up apples. This rodenticide may be procured from the County Agricultural Agents. Firm, ripe apples which do not bruise easily should be used. Apples should be cut into one-half inch cubes (1000 cubes to 1 quart, approximately). Place a definite number of quarts of apple cubes in a large enameled pan or pail and gradually sift the correct amount of rodenticide (1 level teaspoonful of rodenticide to 1 quart of apples). Place a cover over the pan and shake with a rolling motion until all pieces of apple are evenly coated. One man can usually expose 5 quarts of poisoned bait in a half day. The bait must be prepared fresh daily.

The middle of October is the preferred time for bait placement. When possible, select warm, clear, quiet days, as the mice are most active under these conditions. The period of greatest mouse activity is from 2 to 4 o'clock in the afternoon, so expose the bait in the morning or early afternoon. Baits should be placed in at least 3 active runways around each tree.

Indications of active runways are piles of fresh grass cuttings, excrement piles, freshly nibbled drops, and burrows or holes in the ground.

In young orchards, or in areas of dense cover, bait should be placed between tree rows and also along drainage ditches, rock walls, rock out-crops, fence rows, and low spots in the orchard. The bait is more readily accepted by the mice if it is covered. Treatment of marginal lands will prevent movement of mice into the orchard.

If Pine Mice are present, use both poisoned apple and Zinc Phosphide-treated Steam Crushed Oats. Work from the drip line, being careful not to trample the burrow system. Start baiting the areas of the orchard where the crews first picked the fruit. This allows time for the Pine Mice to reestablish their burrow systems.

-- C. E. Faulkner, Mammal Control Supervisor
Western Mass. U. S. Fish and Wildlife
Service

MASS. C-31, AN EARLY APPLE OF THE FUTURE

Mass. C-31 is a seedling from a McIntosh x Red Astrachan cross which the late Professor Sears made about 1929. The tree has fruited for several years and shows much promise as an early red apple. C-31 is an attractive, well colored red apple of medium size which ripens just ahead of Early McIntosh. It has good quality for an early apple although it is somewhat on the tart side. It has a crisp white flesh which does not discolor readily. C-31 has a short storage life as all early apples, but it holds up fully as well as Early McIntosh.

The tree of C-31 is vigorous and produces branches with wide crotch angles. Its most serious weakness is its tendency toward biennial bearing, but it appears to be easily thinned by chemical thinning sprays of naphthalene acetic acid, so it is quite possible that some degree of annual production may be obtained from chemical thinning.

We are not in a position to supply trees of C-31 at the present time, but will be glad to supply scions to anyone interested in giving C-31 a trial.

-- W. D. Weeks

CHEMICAL WEEDING OF STRAWBERRIES

Grower trials of CH#1 for weeding strawberries have been very encouraging. It hasn't eliminated all weed troubles but those who have tried it feel that it is worth trying another year. It has reduced the number of hoeings necessary as well as the time required for each hoeing.

At this time of year chickweed is the number one problem in strawberries. If it isn't controlled in the fall, it can become extremely serious in the spring. It has been found that certain dinitro herbicides can clean up chickweed in good shape if properly used.

The time to use these DN sprays is after the strawberry plants become dormant and before the winter mulch is applied. For much of the state this will be between November 1 and 15. Since these DN sprays are "burning" sprays, they work better on warm sunny days. Also they work better if they can be applied when the weeds are small, before they get beyond the second true leaf stage. The weeds must be thoroughly wetted with the spray. Hence, the amount of spray needed per acre will depend on the size of the weeds and the density of the weed population. Somewhere between 25 and 100 gallons per acre will usually do the job. If the DN is water soluble, one pound of actual DN per acre is sufficient. If it is oil soluble, use one quart of 75% material plus fifteen gallons of kerosene and sufficient water to make 100 gallons of spray. These sprays will burn the strawberry leaves as well as the weeds but after the plants have become dormant this will do little if any damage. Do not use more than one application.

The DN's to use are DNOBP or DNOSAP or their salts. For brand names consult your county agent.

-- John S. Bailey

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TOBY'S TRAVELS

Having been granted a leave of absence for five months to enable me to study the fruit industry of the United States by visiting fruit producing areas and experiment stations, the Editor of FRUIT NOTES suggested that I write a series of articles describing some of my experiences along the way. This is the first contribution.

Mrs. Roberts and I left Amherst August 31, and, after spending a week with our son and family in Connecticut, travelled through the picturesque Catskill mountains to Ithaca, New York to attend the meeting of the American Society for Horticultural Science. The sessions of this meeting consisted chiefly of a series of scientific papers on various horticultural subjects presented by experiment station workers from all parts of the United States.

Since, in the field of Pomology alone, papers were being presented simultaneously on different subjects in different rooms, one had to choose which session he would attend. I chose to attend the session dealing with post-harvest physiology or the handling of fruit after it is harvested. Many of these papers dealt with new developments in the use of controlled atmosphere storage and air conditioning by the use of activated coconut shell carbon. There seemed to be no argument among the scientists but that these were effective means of delaying ripening. However, some questions as to why these methods are effective have not been answered. The ultimate result of this research will be to enable growers and handlers to get fruit to consumers in better condition than ever before and thereby increase demand.

The next stop of our journey was at the Agricultural Experiment Station at Geneva. Extensive breeding work is in progress there. Of particular interest were hundreds of seedlings of raspberries with special emphasis on fall bearing varieties. A few new plum seedlings show particular promise and may be named in the near future. A new sweet cherry seedling which is late and hardy shows considerable promise. The trend in grape breeding is toward the production of varieties with the characteristic of the European type, and from the samples which we were shown considerable progress seems to have been made in this direction.

In addition to the fruits mentioned, which could be seen and sampled, there are extensive plantings of seedlings of other fruits such as apples, pears, strawberries, blackberries, and apricots.

After leaving Geneva, we travelled through the fruit producing area along the shore of Lake Ontario in Canada. One outstanding characteristic of this area is the trend towards diversification in fruits. While grapes seem to predominate, there are numerous orchards of apples, pears, plums, and peaches in addition to many of the small fruits. I was somewhat amazed at the large number of peach orchards laden with fruit until I was told that the winter temperature in this area rarely goes below 5° F. below zero.

At Beamsville, Ontario, we were shown a new grader designed for grading pears, peaches, cucumbers, carrots, etc. Its simplicity and reasonable cost has much to commend it.

One of the most notable observations made thus far has been the great number of neglected and apparently abandoned orchards. These observations apply more to orchards seen in the United States than in the Ontario section of Canada.

At present we are stopping briefly near Lexington, Michigan on the shore of Lake Huron, and, looking from the cabin window, I can see the broad expanse of the lake with ore boats plying back and forth in the distance. Tomorrow we head for East Lansing and points west.

-- O. C. (Toby) Roberts

- - - - -

YOU CAN AT LEAST FOLLOW THE MARKET!

The out of storage movement chart for McIntosh has been distributed and used for several years. It has helped to follow the rate of movement out of storage and into consumption.

This year a new chart has been added. This new one was designed to help in following prices.

It is the change in price that is of main interest and also of main importance on the buying and selling of the crop.

The base line is the twenty-five year average change in price for Boston. This average shows that in the long run, the McIntosh price increases enough to pay the storage bill and allow for some shrink. Then the change in price for two years, 1948 and 1951, have been added. 1948 was used because that was a short year. It was not as short as this one, because there have been only three years since 1924 when the crop was as short as this one, 1952. 1951 was added because it is the one most people will remember best.

You can follow the price changes as well as anyone else.

All you have to do is take Warren Clapp's price for U. S. Fancy, 2 1/2 and up, McIntosh from the October 16 Special Apple Market report and call that 100 percent. Then every week or two week period you place a dot on the chart on the correct point for the percent of increase or decrease (excuse it please) that has taken place. You can do this throughout the season. A line connecting the points will give you the trend.

The handling of a short crop to get the greatest total returns requires unusual skill. It is not the simple matter of putting the crop in storage and waiting for just the right moment to sell on a sunny day in the future.

The thin distribution of a short crop to a trade more interested in items which are available in volume for fast turnover and profitable margins is more difficult than marketing a normal crop to an enthusiastic trade.

It is easy to sell for more money than last year but the last nickel comes from careful planning and good judgment. A short crop has to be sold well to give a total net return of satisfactory proportions.

Lucky is the man with a full crop in a short crop year.

You may get either or both of these charts (8 1/2 x 11) from your County Agent or you can write to Fruit and Vegetable Marketing, Stockbridge Hall, University of Massachusetts, Amherst, Massachusetts.

1. The Cut of Storage Movement Chart for McIntosh.
2. Price Changes for McIntosh in Boston.

-- F. E. Cole



TRENDS IN FRUIT VARIETIES

Perhaps the most significant indicator of the popularity of various varieties can be found by the relative proportions of these varieties that are being grown in nurseries. Members of the Pomology Department who visit many nurseries inspecting trees for trueness-to-name have an unusual opportunity to note trends in the popularity of fruit varieties and this contribution to FRUIT NOTES is an endeavor to share with its readers some of these observations.

Trends in varieties will vary depending upon whether the nursery is serving primarily northern or southern growers. In the case of apple varieties for north-eastern growers popularity, as indicated by relative number of trees grown may be divided into three groups as follows:

MOST POPULAR

MODERATELY POPULAR

LESS POPULAR

McIntosh
Red Delicious
Cortland
Northern Spy
Yellow Delicious
Lodi

R. I. Greening
Yellow Transparent
Gravenstein
Early McIntosh
Rome or Gallia

Wealthy
Macoun
Milton
Kendall
Wagener

For nurseries serving southern growers the lists would be somewhat as follows:

| <u>MOST POPULAR</u> | <u>MODERATELY POPULAR</u> | <u>LESS POPULAR</u> |
|---------------------|---------------------------|---------------------|
| Stayman | Turley | Winesap |
| Jonathan | Grimes | Lowry |
| York | | |
| Yellow Delicious | | |
| Rome or Gallia | | |
| Red Delicious | | |

Without consideration for geographical differences the popularity of varieties of other fruits, as seen in the nurseries, suggests the following classifications:

| | <u>MOST POPULAR</u> | <u>MODERATELY POPULAR</u> | <u>LESS POPULAR</u> |
|-----------|---------------------|---------------------------|---------------------|
| | Eartlett | Gorham | Cayuga |
| | Clapp | Anjou | |
| PEAR | Bosc | Flemish | |
| | Kieffer | Sheldon | |
| | Seckel | | |
| * * * * * | | | |
| CHERRY | Windsor (Sweet) | Governor Wood (Sweet) | Seneca (Sweet) |
| | Schmidts " | Hedelfingen " | Giant " |
| | Napoleon " | Emperor Francis " | |
| | Bing " | Yellow Spanish " | (Sour) |
| | Montmorency (Sour) | Lambert " | Early Richmond |
| | | | Morello |
| * * * * * | | | |
| PLUM | Stanley | Reine Claude (Bavay) | Imperial Epineuse |
| | Burbank | Fellemburg (It. Prune) | Grand Duke |
| | Abundance | Yellow Egg | Hall |
| | | Monarch | Albion |
| | | Lombard | Formosa |
| | | | Santa Rosa |
| * * * * * | | | |
| PEACH | Elberta | Belle of Georgia | Vedette |
| | J. H. Hale | Champion | Rochester |
| | Halehaven | South Haven | Shippers |
| | Red Haven | Golden East | Lizzie |
| | Early Elberta | Rio-Oso-Gem | Mikado |
| | Tricgen | Veteran | |
| | Valiant | | |
| | Golden Jubilee | | |

Some of the more notable changes in apples varieties over the past few years have been the increase in Cortland, Lodi, Yellow Delicious, and Turley with a decrease in Wealthy, Early McIntosh, Wagener, Milton, and Winesap. The popularity of pear varieties has remained rather static with the possible exception of the increase in Gorham. The most notable change in cherry varieties has been the increase in Hedelfingen. The outstanding change in plum varieties has been the marked increase in the popularity of Stanley with a marked reduction in the case of Fellemburg. Formosa and Santa Rosa merit more attention than they appear to receive. By far the most popular variety of peach is Elberta, but Golden Jubilee, Halehaven, Red Haven, and J. H. Hale are found in considerable numbers. Radical changes in the popularity of peach varieties are likely to occur as some of the new varieties become better known.



Fruit Notes

Prepared by the Fruit Program Committee of the Extension Service
W. H. Thies, Extension Horticulturist

NOVEMBER 15, 1952

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THE MCINTOSH PROBLEM IN 1953 and 1954

With a light crop in most orchards this year and the present evidence of a heavy bud set on well managed trees, the stage is set for another heavy crop in 1953 which is likely to be followed by a light crop in 1954. Every effort should be made therefore to handle our orchards in such manner that some of the anticipated surplus crop of 1953 will not materilize and that the bloom for 1954 will be increased thereby. To that end FRUIT NOTES as well as our Fruit Extension Program for the next several months will emphasize "The McIntosh Problem in 1953 and 1954."

Some of the specific parts of this overall problem of attempting to more nearly equalize 1953 and 1954 crops include: pruning practices, tree removal, fertilizers, pollination, chemical thinning. The first of our series of articles dealing with this problem appear below.

-- A. P. French

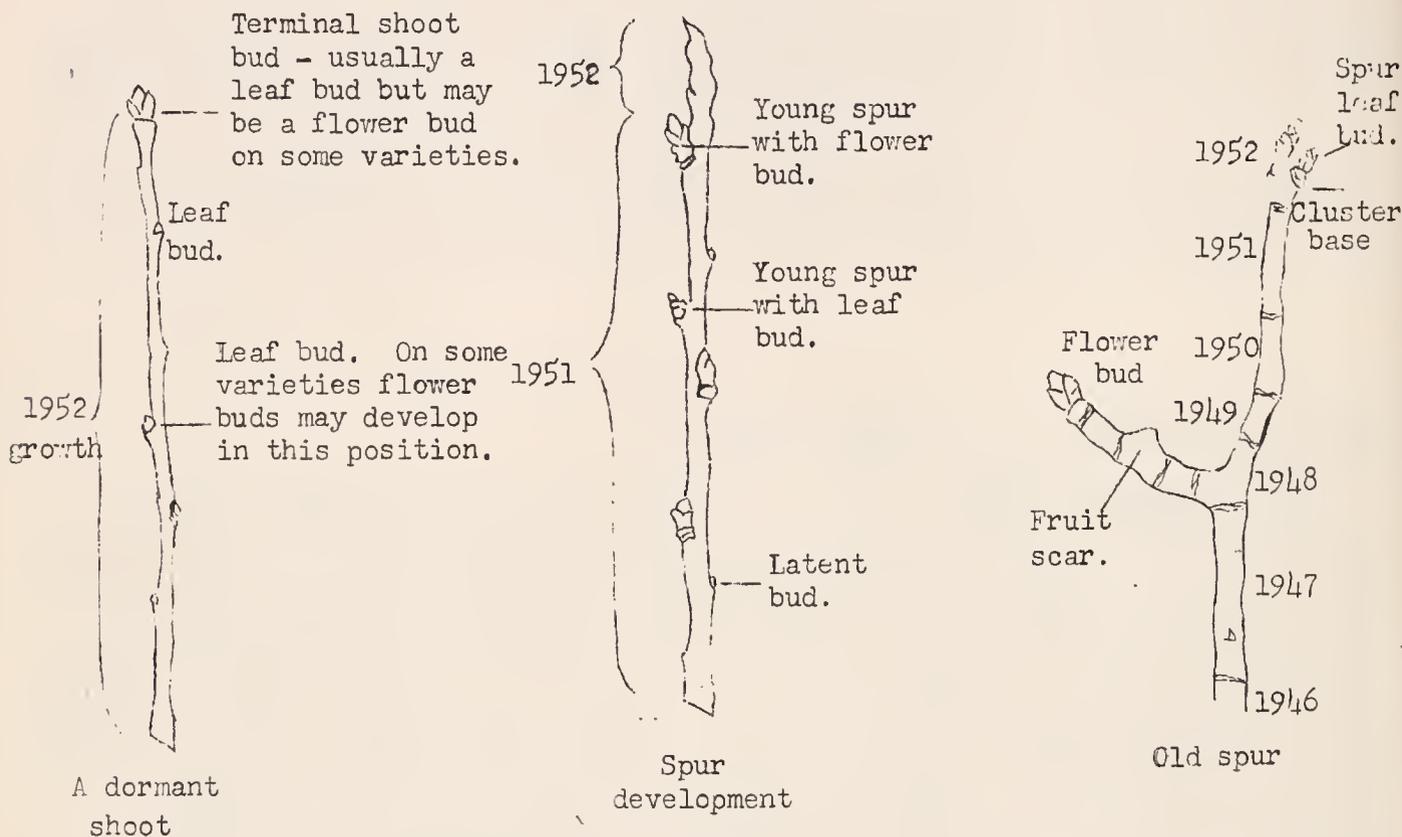
RELATION OF PRUNING TO THE MCINTOSH PROBLEM

Why a McIntosh Problem? As you all know, a short crop of apples was the general situation in a great many of our orchards in 1952. The primary reason for our short crop was due to the failure of many McIntosh blocks to bear. Failure of McIntosh to bear in many cases was due to lack of bloom. Failure to bloom we believe was due primarily to the fact that many McIntosh trees carried excessive crops in 1951 and the weather in June and July, 1951 when flower differentiation commences, was poor. At Amherst, in June through July, 1951 there were only 415.3 hours of bright sunshine, as compared to a normal of 525.0 hours. In those orchards where McIntosh bloomed in 1952 to a slight or adequate degree the crop in 1951 was probably not excessive. Failure of McIntosh to set in 1952 where the bloom appeared sufficient for a commercial crop may have been due to the fact that the pollinating weather was poor, there were insect or scab blemishes on the fruit or stems, or some caustic spray materials which caused considerable foliage injury were used at or near blossom time for scab control.

As a result of a McIntosh crop failure in cared for orchards, it is logical to expect a heavy bloom and set if the pollinating weather is good in 1953. We had above normal sunshine in June and July this year. Obviously, many McIntosh are in an alternate bearing cycle and it is desirable that it be broken so that a good crop of McIntosh can be produced not only in 1953 but also in 1954.

Why is it important that growers get their pruning done prior to the 1953 season? With the prospect of a large crop of apples in 1953 it seems desirable to emphasize the importance of thorough pruning of trees which are going to blossom heavily. The primary reasons for advocating that more pruning be done in the situation we now face are: (1) With a large crop only those fruits which are of good size and color are apt to be worth raising - pruning out the shaded, inside wood will tend to remove a lot of potential culls; (2) Pruning out of thick trees should help materially in improving the extent of insect and disease control obtained. With the common use of concentrate rigs, one almost has to have a tree pruned to fit the sprayer. Pruning, as generally practiced, cannot be expected to influence biennial bearing to any marked degree, however.

The Fruiting habit of apples. It is the purpose of the remainder of this article to discuss some of the fundamentals concerning the bearing habit of apple trees, an understanding of which is essential to an intelligent job of pruning. Other phases of pruning will be discussed in coming issues. Apple flower buds are formed terminally on spurs although with some varieties quite a few may be formed terminally or laterally on shoots. These flower buds are known as mixed buds



because they contain not only flowers but leaf parts in contrast to leaf buds which contain only unexpanded leaves or the flower buds of peach which contain only flowers. If it were not for the presence of the unexpanded shoot within the flower bud no leaves would be formed on the flowering spurs, and the chances are that such a spur would die following flowering and fruiting. This axillary shoot which arises within a flower bud will grow off to the side from a fraction of an inch to several inches long. It is the growth of the axillary shoot formed within a flower bud which causes the so-called zigzag growth which occurs when a flower bud is formed on a spur. Sometimes two shoots arise from the cluster base and the spur becomes forked. If no flower bud is formed the growth is in a straight line. Of course, no matter how old a spur may be the flower buds are always formed on the one-year growth even though the growth may be but a fraction of an inch long.

In considering how much pruning to do on a variety, one should take into account the number of flower buds present and where the bulk of them are located. Generally they can be detected in the fall and winter because of their large size. However, on Baldwin it is often difficult to distinguish flower buds from leaf buds by any difference in size. With Rome Beauty a large proportion of the flower buds are borne on the ends of shoots. On vigorous Wealthy trees large numbers of flower buds are formed along the sides of the vigorous shoots in the tops of the trees. Fruits formed from these lateral flowers on shoots are generally smaller than terminally borne fruits on spurs or shoots since lateral flower buds bloom later than spur buds and the fact that so many are produced in a limited area. Hence, the bearing habit of a variety is one factor to consider in pruning.

Spurs arise from some of the lateral leaf buds on the one-year wood so that by the time a branch is 2 years old it has flowering spurs on it. Generally, if a spur flowers one year it will not do so the next. However, spurs do not necessarily flower every other year. How often they flower will depend largely on their position on the tree. Naturally, as a spur or spur system (in case a spur has branched) becomes older it tends to become more heavily shaded by new shoots and spurs which are of more recent origin. Once a spur is formed its position is pretty definitely fixed since they generally grow only a short distance each year unless it is stimulated into becoming a shoot by such things as elimination of branches around it. Consequently, as spurs get older they tend to produce fruit which is inferior in size and color to fruits on younger spurs that are nearer the periphery of the tree and better exposed to light. It is the old weak spurs that should be among the first to go when a tree is pruned.

-- F. W. Southwick

TREE REMOVAL FOR EFFICIENT PRODUCTION

Much has been said about the removal of crowded trees from Massachusetts orchards during the past few years, but we still have too many trees which are not paying their way. With the prospects for a potentially heavy bloom and large crop in 1953, it appears that consideration of the removal of crowded and unprofitable trees is in order.

The question immediately arises, when are trees crowded? The answer cannot be given in terms of tree spacing or age of tree, but must be considered on performance of the tree and the quality of fruit it produces. Just as soon as any tree is shaded by its neighbors so that it produces small green apples, weak shoot and spur growth, few fruit buds, and the top starts to reach for the sky, it is crowded. The ideal practice is to remove trees before this condition develops, but few of us have the courage to do so.

The longer the tree has to tolerate shade and competition from its neighbors, the longer the period of recovery for the shaded portion of the tree after the crowding trees are removed. A tree which has been shaded on two sides for several years is for all practical purposes only half a tree and it may take 3 or 4 years before the shaded half can come back into full production. The temporary loss in total production from removing crowded trees is largely compensated for when consideration is given to the decrease in the volume of poor quality fruit and the increase in the volume of fancy fruit.

The age at which a tree should be removed because it is no longer profitable cannot be determined by any fixed age group. A tree may be profitable at 45 years while another may be a total loss at 30 years. It is the condition of the tree and kind of fruit it produces which determine the age at which it ceases to be a profitable investment. When a tree is so tall that it cannot be lowered by pruning, and is making weak growth which in turn produces small poorly colored apples of low quality it is too old and should be removed. A tree which cannot be pruned so it can be sprayed with modern spray equipment is too old and should be pruned with a chain saw or bulldozer. Trees which have 1/3 or more of their branches killed or weakened by winter injury are of questionable value. A vacant space in an orchard is cheaper than a decrepit old tree which breeds disease and insects.

Any program of tree removal will temporarily reduce total yield, but it will also increase the yield and decrease the cost of growing fancy fruit.

Fruit growers do not regret that they started a tree removal program, but many regret that they did not start their program soon enough.

-- W. D. Weeks

"ORPHANS"

Have you some "orphans" in your orchard? "Orphans"? What do you mean "orphans", in my orchard?

I mean those trees which you can only half take care of. That makes them an "orphan", doesn't it?

It also makes them a nice place for insects to find a safe spot to continue their destructive ways. That tree beside the wall which you can't possibly spray or dust well with that new air-blast machine affords a fine place for egg-laying by plum curculio. There's nothing to stop its development and the wall makes a swell place to hibernate. Bud moth can get along very well in just half a tree and produce enough new moths each summer to reinfest the remainder of the orchard.

There's no better place than in an "orphan" tree for codling moth to get a merry start in your orchard. Just enough spray reaches the back side of the tree to keep scab from knocking off all the leaves and apples, so there's a fine chance for codling moth as well as the others I've mentioned to get a head start.

And what a perfect setup for maggot. No one ever thinks of going under that side of the tree to pick up the drops.

The list could be extended a great deal further, but instead of taking time to read more, why don't you take the time to mark those "orphan" trees and make sure that they, or the objects which make them "orphans", are removed.

Back in the old days when we went under each tree with a handgun at the end of a long hose, we didn't have "orphan" trees in our orchard; we could reach them all.

The situation is different now. Our air-blast machines of various types and even the hydraulic rigs with masts or fixed guns are not capable of reaching all sides of trees backed up against stone walls or other orchard hazards.

Consider it carefully! Do you get enough fruit -- good fruit, that is, -- from those "orphan" trees to warrant the trouble they cause? I doubt it.

-- Ellsworth H. Wheeler
Extension Entomologist

YOU'LL CRY WHEN YOU READ THIS

The red-banded leafroller is suffering from granulosis.

Professor W. J. Schoene and N. V. Sibold of the Virginia Agricultural Experiment Station have reported the presence of a virus disease amongst the larvae of the red-banded leafroller in Virginia. In 1950, third brood larvae showed as much as 74% disease. Only a few of the early larvae are affected, but the disease seems to become increasingly evident as the summer and fall months go by.

In early September, 1952, the writer collected a number of red-banded leafroller larvae in an orchard in South Amherst and sent them to Professor Schoene for examination. Unfortunately the shipment was delayed enroute and laid over a weekend in a post office so that they did not arrive in Virginia in the best of condition. However, Professor Schoene reported that of 14 larvae examined, 12 of them were diseased.

No one is ready yet to tell you to stop spraying for red-banded leafroller and let the disease take care of them, but at least we know that the virus is present here in Massachusetts and that we do have this natural aid in the fight against this pest.

Perhaps the day will come when you are advised to spray your trees with Virus XYZ at 1 qt. per 100 instead of DDD.

-- Ellsworth H. Wheeler
Extension Entomologist

HORMONES FOR PRE-HARVEST DROP CONTROL (1952 results)

As you know, we have two major materials for pre-harvest drop control, Naphthaleneacetic acid (NAA) the old standby and 2,4,5-trichlorophenoxypropionic acid (2,4,5-TP - as found in Color Set, Color Lok, etc.). NAA materials at single and double strength are capable of controlling McIntosh crop about 7 to 10 days. 2,4,5-TP may control drop for 3 weeks. However, if apples sprayed with 2,4,5-TP are allowed to hang over 2 weeks after spraying they may show distinct signs of hastened ripening which may or may not be desirable, depending on the growers' objectives. We would like to find a material which would delay drop as well as 2,4,5-TP but not hasten ripening as much as it does.

Last year workers in New York State obtained data which indicated that 2,4,5-TA (2,4,5-trichlorophenoxyacetic acid) might be such a material. Consequently, we were interested in comparing it with 2,4,5-TP. In Table 1 are the final results of such a comparison.

Table 1. A comparison of 2,4,5-TP and 2,4,5-TA for controlling pre-harvest drop of McIntosh (1952)

| Treatment | Date applied | Total per cent drop by September 24 | Firmness of fruit at harvest (lbs.) | |
|-------------------|--------------|-------------------------------------|-------------------------------------|------|
| | | | Range | Av. |
| Check | - | 34.6 | 14-16 | 15.2 |
| 2,4,5-TP - 20 ppm | 8/29 | 19.3 | 7-16 | 12.4 |
| 2,4,5-TA - 20 ppm | 8/29 | 13.0 | 9-16 | 13.8 |
| 2,4,5-TP - 20 ppm | 9/8 | 7.2 | 9-16 | 13.3 |
| 2,4,5-TA - 20 ppm | 9/8 | 12.3 | 12-16 | 14.2 |

From our data (not all of which is shown in Table 1) the following statements seem to be justified.

1. Sixteen days after application 2,4,5-TP was superior to 2,4,5-TA for pre-harvest drop control when both materials were applied as natural drop commences (9/8 in this test).

2. However, 2,4,5-TA may delay drop for a longer period than 2,4,5-TP before "running-out." 2,4,5-TP applied on 8/29 held only as well as 2,4,5-TA applied 8/29 until 9/18.
3. In this test there was no significant difference in drop control between an early(8/29)and late(9/8) application of 2,4,5-TA by 9/24. However, as previously discovered, a late application of 2,4,5-TP (9/8) is superior to an early application (8/29) of the same material.
4. It appears that 2,4,5-TA does not hasten ripening or red color development as much as 2,4,5-TP. Fruits from trees receiving 2,4,5-TP on 8/29 were the ripest and the reddest on 9/24. 2,4,5-TA applied on 9/8 did not appear to hasten ripening of these apples any more than NAA may.

From this test it appears that 2,4,5-TA may have a place. It perhaps is not quite as good as properly applied 2,4,5-TP for drop control over a two week period but it is undoubtedly much more effective than NAA in this regard. Also, 2,4,5-TA does not appear to hasten maturity and red color development as much as 2,4,5-TP.

-- F. W. Southwick

M.S.A. PROGRAM FOR EUROPEAN HORTICULTURISTS

This past summer it was my privilege to visit many of the important fruit areas of the West. The visit was in conjunction with a special short course in Fruit Production, sponsored by Mutual Security Agency with the cooperation of the Land-Grant colleges of the states visited. This school had representatives from eight European countries and its purpose was to familiarize the Europeans with our methods of growing and handling the various fruit crops and with the various state and federal agencies that serve the American fruit grower. I served as the team leader and it was my responsibility to direct the travel and make reservations for the team members.

of orientation

Following a three-week period/and study in Massachusetts, the group left by plane for the West. The group spent one week each in Utah, Oregon and Washington and two weeks in California. In each state the group studied methods of soil management, pruning, pest control, harvesting, storage and marketing for the different fruits and also the particular problems of the industry and the methods of attacking these problems. Particular emphasis was placed on the role of the Extension Service as a means of carrying the results of the research workers to the farmers.

Most of the program was conducted in the form of tours. During the five weeks the group visited many orchards, experimental farms, fertilizer and insecticide manufacturing plants, farm equipment plants, packing houses, storages and processing plants. Through the tours it was possible to study the methods used and the problem at first hand.

Some of the problems that confront the fruit growers in the areas that we visited are: The high cost and shortage of labor. The increasing costs of transportation. The virus disease problem in stone fruits and small fruits. Close planting resulting in crowded conditions, especially in older orchards. The problem of mite control. Nutrient deficiency problems in certain soils.

Most of the problems have been overcome, at least in part, and those that have yet to be solved are receiving the attention of public and private research organizations.

To overcome the labor problem many of the operations have been mechanized. During the tour we saw several mechanical raspberry pickers, pickup machines used to harvest nuts, and many other labor saving devices.

The group also learned of the work done by the Washington Apple Commission and the Washington State Fruit Commission in improving the handling and marketing of the fruit grown in that state.

In Washington, we were made aware of a shift from the standard apple box to the tray type carton. The carton is less expensive and handles the fruit better according to the authorities in that state.

I believe that the program was beneficial to all who participated. I am certain that the visitors went home with a much truer picture of conditions in the United States and that we have made many friends as a result of this program.

-- J. F. Anderson

TOBY'S TRAVELS II

Our next stop was at Michigan State College. The first person I met was William F. Robertson, who for many years was Professor Chenoweth's assistant in Horticultural Manufacturing at Mass. Aggie. Professor Robertson is now Head of Department of Food Technology at Michigan State. He has found that bruising of sour cherry fruit is a serious detriment to quality of the canned product.

Talks with members of the Horticultural Staff revealed that parathion is used to clean up neglected cherry orchards infested with cherry maggot since it kills the maggots on the inside as well as the flies on the outside of the fruit.

In Michigan, as in other areas, small orchards are going out and are being replaced by fewer orchards with larger acreage. Total fruit production is being maintained with the smaller number of orchards.

At Fennville, Michigan, we called on Mr. Stanley Wade, a fruit grower, and also visited the large fruit packing plant of the Fennville Fruit Growers Exchange. The visit with Mr. Wade was most interesting for here was a fruit grower with around 100 acres of fruit who didn't have an apple tree in his orchard. He grows nothing but tree fruits other than apples including peaches, pears, plums, and sour cherries. Most of his fruit is sold thru the Fruit Growers Exchange but some of it goes to the Benton Harbor Market. When asked why he grew these other fruits in preference to apples, he replied, "Less work and more money." Possibly he could have added, "less worry" for on September 16th he had just completed harvesting, and his fruit was all sold.

From Fennville we traveled to Muskegon, then across Lake Michigan and on to the University of Wisconsin at Madison. Dr. R. H. Roberts has recently developed a method which appears to have broken the biennial habit of such varieties as Wealthy, Delicious, and Golden Delicious. This method involves considerable detailed pruning and is in marked contrast to the so-called "thin wood" method of pruning commonly used in Massachusetts.

At the University of Illinois, I saw the original Crandall tree. This is a relatively new scab resistant variety, a cross between Rome and Jonathan. As grown in Illinois, the fruit is large, firm, attractive, and has a long storage life. Particular emphasis is being placed on the breeding of scab resistant varieties.

From Urbana we proceeded to Iowa State College at Ames where for many years workers have been studying the effect of Clark's Dwarf, used as an interstock, on the behavior of apple trees.

A planting of the June Rockhill strawberry was observed in the home garden of Professor Cott, Extension Horticulturist. This variety is being recommended for commercial planting because of its high yield and general desirability of the fruit.

A brief stop was made at the Iowa Horticultural Farm at Council Bluffs. The work here consists chiefly of a study of apple and peach varieties and a comparison of apple trees propagated on Virginia and Hibernial crab stock with Clark's Dwarf as in interstock. Also, extensive fertilizer studies on Concord grape are being made since some 700 acres of this variety are being grown in the Council Bluffs area. Many of the vines had been seriously injured by the 2-4-D spray which had been used for weed control in corn fields three-fourths of a mile from the vineyard.

--- O. C. (Toby) Roberts

WINTER MULCH FOR STRAWBERRIES

The use of a winter mulch on the strawberry bed is recognized as good insurance for a better crop next June. If applied at the proper time it will not only help prevent heaving caused by alternate freezing and thawing but will also materially reduce injury to the crown and killing of the overwintering fruit buds.

These fruit buds are relatively tender to cold in the late fall. A sudden drop to a temperature of 15° F. at this time of year can do a great deal of damage to them. Therefore, it is inadvisable to wait until the ground is frozen hard before applying the mulch.

For maximum protection the winter mulch should be applied before the first cold snap which takes the temperature lower than 20°F. In most parts of the state the first half of November is usually the period during which mulch should be applied. By this time the plants will have matured so that there is little, if any danger of growth taking place under the mulch.

--- A. P. French

VIRGINIA REPORTS ON APPLE SELLING

The Virginia Department of Agriculture and Virginia Polytechnic Institute combine an Extension Bulletin 199 entitled, "Sell Your Apples."

Their 14 point summary is as follows:

1. First requirements in economical apple marketing are a quality product, high labor efficiency and high yields.
2. Moderate plantings of preferred varieties of apples on good fruit soils are justified.

3. Principal apple producing regions in Virginia are expected to retain their importance while boarder regions become of less importance for future market supplies.
4. The proportion of the Virginia apple crop used by processors exceeds the national average and this outlet is not expected to continue its recent demand increase.
5. Market demand is expected to continue good for such varieties as Red Delicious and red sports of Winesap, Stayman, York, and Rome Beauty. Also Golden Delicious and Grimes Golden.
6. Wholesalers and retailers prefer apples of high quality, picked firm, placed in cold storage, box packed by count, graded, inspected and kept cold until used.
7. The use of picking tickets, careful emptying of picking bags into field crates, care on the grading table, proper packing with a proper bulge, stacking on the side and proper handling in retail stores will greatly reduce bruising.
8. Apples of U. S. Fancy grade and better should be packaged in N.W. box or tray packed, either placed or wrapped, in eastern boxes. Apples of U. S. No. 1 or U. S. Utility grade, not less than 2 1/2 inch minimum diameter, should be packed in the eastern boxes or bushel baskets.
9. A program of continuous inspection and quality identification is recommended.
10. The use of conveyers reduces labor and bruising and where the entrance into cold storage is protected by a heavy canvas flap, temperatures may be kept low at minimum cost. The use of pallets and fork lifts are recommended for use in packing sheds and cold storages by larger growers or handlers.
11. When apple crops are large, sales in the fall should be such as not to have more than 42,000,000 bushels of apples in cold storage on December 1 of any year under demand conditions similar to the present.
12. A movement of about 6 million bushels of apples out of cold storage should take place each month. Specific varieties should be moved into consumption at their proper time. The first and last apples of each variety placed in cold storage should be moved out first.
13. Retail displays in bulk and consumer packs of from 4 to 6 pounds should be promoted by special displays of Fridays and Saturdays of each week from September to June. Apples should be priced by retailers in 4 to 6 pound units.
14. Advertising of apples should be expanded and be in harmony with the varieties then moving in greatest supply. A great deal could be accomplished with an advertising and promotional campaign directed at retailers.

-- F. E. Cole

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RODENT CONTROL - Common Questions and Answers

1. How long will Zinc Phosphide-treated Steam Crushed Oats retain sufficient strength to kill orchard mice when left in original shipping container?

3 to 4 months.

2. Can Zinc Phosphide Rodenticide be held over for use during succeeding years?

3 years should be the limit.

3. Are Strychnine-treated Steam Crushed Oats recommended for orchard mouse control?

No. Field tests have proven that only 25 percent control is obtained. Acceptance is not as good as with Zinc Phosphide-treated Oats and the total kill is less.

4. Are Zinc Phosphide and Zinc Phosphide Rodenticide identical?

No. Zinc phosphide is the pure poison; zinc phosphide rodenticide contains 37 percent filler, designed to be of assistance in giving an even distribution of poison with bait material.

5. How can one estimate the amount of poisoned bait that will be needed to treat an orchard?

1 can of U.S. Fish & Wildlife Service Rodenticide will treat enough apple bait for 1,000 trees. 10 pounds of Zinc Phosphide-treated Oats will be sufficient for 450 trees. Refer to our leaflet entitled "Orchard Mouse Control."

6. How much Rabbit Repellent 96a is required to protect young fruit trees?

1 gallon treats approximately 400 two to three-year old trees; 150 five to eight-year old trees.

7. How long will Rabbit Repellent 96a give protection after application?

1 full year. CAUTION -- Apply only when tree is fully dormant.

8. What is the cost of Rabbit Repellent 96a?

\$3.50 per gallon, f.o.b. Amherst.

9. Will warfarin give satisfactory control of orchard mice?

No. As yet no means of distributing warfarin baits for this purpose have proven satisfactory.

10. What is the most efficient means of killing rats and mice in an apple cold storage room after the apples have been stored?

The use of poisonous gasses gives the most complete results. However, applications should be by experienced personnel. Some fruit growers are of the opinion that this procedure is a good insurance policy.

Good results can also be obtained by the use of Zinc Phosphide - treated Oats or Zinc Phosphide-treated apple cubes placed in numerous locations throughout the storage.

-- Carl B. Henry



Fruit Notes

Prepared by the Fruit Program Committee of the Extension Service
W. H. Thies, Extension Horticulturist

JANUARY 15, 1953

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LOWERING TOPS THE "ALLEN" WAY



1. Before



2. During



3. After



4. Close-up

FRUIT NOTES

December 1952 - January 1953

We apologize for combining the December and January issues of FRUIT NOTES, but frankly there were just too many things to be done and too few of us on the job to keep ahead of the situation. Consequently something had to be delayed. We hope you will understand.

-- A. P. French

LOWERING TOPS THE "ALLEN" WAY

Judging by the crowd that attended the pruning demonstration at Bill Herman's last month, there is great interest in methods of lowering the tops of mature apple trees. Sherman Allen of Fair Haven, Vermont put on an excellent demonstration of his system which is recorded for you in the four pictures on the adjacent page.

Pictures 1, 2, and 3 were taken from the same spot so that by comparing No. 1 with No. 3 you can see how the tree appeared just before the first cut was made and the same tree after the job was finished. Picture 4 was taken from the barn side of the tree and close-up to give a better idea of the detail of the finished job. As we understand it, the stubs which are a part of the system were left for the purpose of providing water sprouts next summer to shade those exposed large limbs. According to Mr. Allen, these stubs can be removed later if it is desired.

Having seen only one demonstration and no trees previously pruned by this method, it is not possible to evaluate the system properly. Nevertheless, there are several points worthy of comment:

1. Heading back of tall trees appears to be desirable to get better pest control where an air blast sprayer is used and to reduce the cost of harvesting.
2. One must expect a material reduction in yield for the next few years where such pruning is done.
3. Subzero winter temperatures will likely cause more injury on trees so pruned.
4. Stubs like these will doubtless start heart rot if left very many years.
5. Some killing of bark on exposed limbs in the top of the tree is to be expected.
6. If such lowering of the tops was practiced on crowded trees, little, if any, fruiting wood would be left.
7. At best, such pruning should be considered only as a temporary way of handling an old orchard, while a young orchard is being developed to replace it in ten years or so.

Why did this tree grow so tall? The orchard appears to have been planted during the period when it was thought that the way to get a low tree was to head

the newly set tree at knee height or thereabouts. As a result two or more strong shoots started skyward in the center of the tree, competing with each other for light. Two such trunks are in evidence in the picture of this tree.

Perhaps the fillers were not removed until after crowding had added its heightening effect. However, the fact that this tree and others around it have plenty of space for their abundant lower spreading branches now indicates that the fillers have been out for some time.

It is our opinion that trees such as this one speak loudly for proper head formation and adequate planting distance in that young orchard on which you will have to rely when the old one finally has to come out.

--- A. P. French

1953 FERTILIZER RECOMMENDATIONS

This past season many of our orchards had light or partial crops which provided favorable conditions for fruit bud formation, so we now have the situation of abundant fruit buds which, with favorable weather conditions, could produce a large crop in 1953. A heavy set and crop in 1953 could mean that few fruit buds would be formed in 1953 for the 1954 crop. Our goal for 1953 should be a moderate crop of highly colored apples.

Recent results of fertilizer experiments with McIntosh apple trees have shown several responses from high rates of nitrogenous fertilizers. A brief summary of these responses will aid us in determining the fertilizer program for the coming season. High nitrogen trees tend to have a heavier set and are not as easily thinned with hormones as low nitrogen trees. While there is a slight increase in yield from high rates of nitrogen, the volume of highly colored fruit is so seriously reduced as to eliminate any benefit from the increased yield produced by the extra nitrogen. High rates of nitrogenous fertilizers applied alone have produced potassium deficiency. The development of red color in apples appears to be associated with the relative amounts of nitrogen and potassium found in the leaves. The most highly colored fruit was produced by trees with leaves low in nitrogen and high in potassium. Green fruit came from trees with leaves high in nitrogen and low in potassium. Apples from high nitrogen trees are materially softer at harvest time than apples from low to medium nitrogen trees. They have a more rapid respiration rate and consequently a shorter storage life.

In view of the preceding discussion, we submit our fertilizer recommendations for 1953. Due to light or partial crops, many of our orchards will have an abundance of fruit buds and a considerable reserve of nutrients. Because of this situation, we believe that heavy applications of nitrogenous fertilizers should be avoided this season. The maximum application of nitrogen should not exceed one quarter pound of nitrate of soda or its equivalent per year of tree age. Trees with an abundance of fruit buds which have been heavily pruned and mulched might well have their rate reduced $\frac{1}{3}$ to $\frac{1}{2}$. It may be advisable to reduce soil applications of nitrogen to a minimum before bloom and then come in with one or two applications of NuGreen if the trees appear to need stimulation from nitrogen.

Provision should be made to supply the tree's requirement for potassium. This may be met by applying one to three pounds of muriate of potash or a complete fertilizer such as 7-7-7 or 10-10-10. Excessive amounts of potash can hasten the

appearance of magnesium deficiency on light soils which have not had sufficient high magnesium limestone applied to correct magnesium deficiency. Trees which have been heavily mulched should be adequately supplied with potassium.

Magnesium requirements should be adequate where sufficient high magnesium lime has been applied to maintain a soil pH of 6.0 to 6.5. It should be remembered that it takes from 3 to 4 years before magnesium limestone can correct magnesium deficiency. So where magnesium lime has not been applied for that length of time spray applications of magnesium sulfate will have to be made as a temporary protection against magnesium deficiency. Three sprays of 20 pounds of magnesium sulfate (Epsom salts) per 100 gallons commencing with the first cover spray, should prevent magnesium deficiency. We believe that many orchards have not had sufficient lime to correct soil acidity, so we urge every fruit grower to have his soil tested to determine whether or not his orchard needs more lime.

To avoid the possibility of boron deficiency, applications of borax should be made every 3 to 5 years. Suggested amounts of borax for trees of different age groups are as follows: Trees up to 10 years of age, 4 ounces; trees 10 to 20 years, 8 ounces; trees over 20 years, 8 to 16 ounces. Do not apply over fifty pounds of borax per acre. At high rates of application borax is an excellent weed killer.

We realize that these recommendations are of a general nature and will not necessarily apply to every orchard. They are given as a guide. The fruit grower will have to make the final decision as to what fertilizer program he uses for each block in his orchard.

-- W. D. Weeks

USE OF INSECTICIDAL SPRAYS IN RODENT CONTROL

In view of current interest by fruit growers in the possible use of certain insecticidal sprays for the control of tree girdling mice, the following statement from the Fish and Wildlife Service, Wildlife Research Laboratory, Denver, Colorado, is circulated:

"There has appeared within recent months considerable publicity on the use of toxaphene in the control of meadow mice in orchards, hay and other field crops. The use of toxaphene and other chlorinated hydrocarbon insecticides applied as a blanket spray to the ground cover for the control of small rodents is a matter of current research by the U. S. Fish and Wildlife Service and State agencies. Procedures still are in the research category and the method should not be used in operational rodent control at this time.

"The effectiveness of toxaphene in controlling meadow mice (Microtus) varies with the density of the ground cover and the amounts of active toxaphene employed per acre. Field results to date have been very erratic. Currently, large amounts of active toxaphene per acre are being used experimentally. At this rate of application a serious hazard exists to game birds, domestic poultry and livestock that may enter sprayed areas.

"The Fish and Wildlife Service recommends that until research investigations have been completed and appropriate recommendations formulated, no toxaphene or any other toxic insecticide be employed as a ground spray in operational rodent control."

-- Carl B. Henry
Assistant District Agent - Conn.,

Mass., R. I.

PURITAN - A NEW EARLY RED APPLE

There has been so much interest among Massachusetts growers in Massachusetts C-31 seedling that we have decided to name and introduce it in spite of rather limited trial of it in terms of number of trees. Puritan originated from the cross McIntosh x Red Astrachan made by the late Professor F. C. Sears at the University of Massachusetts about 1929. It is an attractive, well colored red apple of medium size which retains its size well even with a full crop. The quality is good for an early apple although somewhat on the tart side. The flesh is crisp, white and does not discolor readily. Sauce and pies made from it have a distinct pinkish color. Its season of harvest is just ahead of Early McIntosh and storage life is fully as good as that variety.

The tree of Puritan is vigorous, with wide crotch angles. Orchard tests indicate that it will pollinate McIntosh satisfactorily. Its most serious weakness is a tendency toward biennial bearing. However, limited tests suggest that it is rather easily thinned with chemical thinning sprays of naphthalene acetic acid, so it is quite possible that some degree of annual production may be obtained.

We are not in a position to supply trees of Puritan, but a limited amount of propagating wood is available to interested fruit growers and nurserymen.

-- A. P. French

TOBY'S TRAVELS

The Federal Experiment Station at Cheyenne, Wyoming, located at an elevation of 6250 feet where the average rainfall is 15 inches and consequently, unless irrigation is employed, most of the vegetation is sagebrush. The principal endeavor at this station is to breed horticultural plants which can survive the rigors of the climate. Not only must plants be somewhat drought resistant, but also they must be able to withstand the terrific winds which prevail there as well as low winter temperatures and early fall frosts.

The apple varieties at this station are chiefly hardy crab apples, but trees of Wealthy and Haralson bearing good crops were seen. Efforts are being made to produce strawberry varieties which will replace Montana and Gem everbearing varieties which are commonly grown at the present time.

Our next stop of horticultural interest was in Idaho. At one time Twin Falls was noted as a fruit producing area, but fruit growing has been replaced by the production of sugar beets, alfalfa, and potatoes. This has been the fate of fruit growing generally in Idaho except in the Boise and Payette valleys. The original Idared and Payette apple trees were seen at the Idaho Experiment Station in Moscow. Idared is now considered to be more desirable than Payette. Both of these varieties are under test at the Massachusetts Experiment Station.

At the Washington Experiment Station, which is only eight miles from the Idaho Station, I saw an entire vineyard completely ruined by the 2,4-D spray which had been used for weed control by nearby wheat farmers. Efforts are being made to have the Legislature pass a law prohibiting the use of this spray within ten miles of a commercial vineyard.

Washington peach growers are so much concerned over the possibility of introducing virus infected peach trees into the State that now all peach trees entering the State of Washington must be inspected and approved at the Experiment Station at Prosser before they may be distributed.

The next objective of our trip was the Experiment Station at Summerland, B.C. This station is located in the Okanogan Valley where the annual rainfall is about 10 inches. It was a common sight in this area to see orchards surrounded by sagebrush. It is impossible to produce fruit here without irrigation. Some of the older orchards are irrigated by a series of ditches, but in many a sprinkler system is used.

At the Summerland Experiment Station breeding of new fruits is a major project. Also, considerable work is being done on the handling and storage of fruits and fruit products. I was particularly interested in the work that is being done here in the identification of fruit varieties by vegetative characters. The objective of this work is to provide to British Columbia nurseries and fruit growers a similar type of service as is now provided in the United States by the Massachusetts True-ness-to-name Inspection Service.

We stopped in the town of Oliver, B. C. to observe the manufacture of a new picking machine. This machine is built with a platform on the end of a crane where an apple picker can stand with an apple box on each side of him. Then, by a system of foot pedals controlling the mechanism he can hoist himself into any part of a tree that he desires. With one of these machines a man could easily pick apples from the top of a 22 foot tree and do it much faster than from a ladder. This same machine is designed for pruning and thinning as well as picking. It seemed to have much to commend it.

Returning to the United States we travelled down the Okanogan Valley with apple orchards dotting the landscape as far as one could see. The word "dotting" is used advisedly because the orchards, consisting of few to many acres are scattered over the hillsides with their location being determined by the availability of irrigation water. As in British Columbia these orchards are surrounded by arid land covered with sagebrush. Almost without exception, fruit production in the Northwest is dependent on irrigation water since the normal rainfall in the area is only 10 inches and most of this comes in the form of snow.

At the southern end of the Okanogan Valley we arrived at Chelan which is noted not only as an apple producing area but also for the fact that it is located at the foot of beautiful Lake Chelan.

In a chain store in Chelan McIntosh apples were selling for 3 lbs. for 25¢ and Jonathans for 10¢ per lb. In general, apples in the stores in the West suffer the same abuse from rough handling as apples in stores in the East. Because of the severe bruises and occasional decay spots, apples are frequently the least attractive item on the fruit and vegetable counters. Could this possibly be one reason why apples don't sell more readily? Aside from the bruises, apples in western stores have fewer blemishes than those in the East because scab, curculio, apple maggot, red banded leafroller, and bud moth are no problem here. With codling moth under control in well managed orchards, the problem of pest control is less difficult for the western than the eastern grower. In fact, I have seen many apples from unsprayed trees that were practically free from blemishes. This is truly a revelation to one who is familiar with the kind of apples an unsprayed tree in Massachusetts would produce.

After leaving Chelan our next stop was at Wenatchee which is noted as one of the most concentrated apple producing areas in the United States. Probably, no area is more apple minded than Wenatchee. The motor court where we stayed was called Apple Lane Motor Court. Across the street a gasoline filling station was named "Appleway," and similarly many commercial enterprises incorporated the word "Apple" in the name of the firm.

A most interesting forenoon was spent at the Birchmont Orchard which is efficiently operated by the Wells and Wade Fruit Company Foundation. This orchard is unique in that the profits are used for community enterprises. This particular orchard consists of 240 acres and produces pears and peaches as well as apples. The spraying is done with a stationary outfit which is capable of delivering 210 gallons per minute and can supply sufficient material for 10 nozzle men to operate at the same time. Stationary sprayers are particularly popular in orchards which are irrigated by a series of ditches since portable sprayers interfere with the flow of water. Another observation in this orchard is worthy of special mention and this is concerned with the freedom from bruises. Regardless of the size of the orchard and the large number of pickers employed, bruised fruit is difficult to find. This is due to the work of one young lady whose job is to check a sample of fruit harvested by each picker and record the number and type of bruises. This record is given to the foreman of the crew who directs the careless picker to be more careful or look for another job elsewhere. While this system may add to the total harvesting cost, Mr. Robinson, Manager of the orchard, feels that it pays real dividends. These are but a few of the many interesting observations made in this orchard.

As the headquarters of the Washington State Apple Commission is located in Wenatchee, I dropped in for a brief visit there and learned that in 1937 the Washington State Legislature passed an act placing a tax of 1¢ per box on all apples shipped from the State. Later, this was raised to 1 1/2¢. The money thus collected is used by the Washington State Apple Commission for advertising purposes. The money is collected by the sale of stamps to shippers who must attach the proper amount to the bill of lading before a car of apples may be shipped. Truckers of apples are required to report to an inspection station and pay the tax before leaving the State. In addition to the promotion of an extensive advertising campaign of its own, the Washington State Apple Commission contributes one-third of the operating budget of the National Apple Institute.

-- O. C. (Toby) Roberts

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PROGRESS IN STRAWBERRY VIRUS CONTROL

Virus diseases have become so common and so serious in strawberries that certain susceptible varieties like Midland can no longer be grown in this area. This situation needed attention.

Several years ago workers in the U.S.D.A. started a search for virus-free stocks of the various strawberry varieties. Such stocks of several varieties have been found and increased for distribution to nurserymen.

A release from the U.S.D.A. dated December 1, 1952, states that "Last April virus-free stocks of 4 varieties--Blakemore, Catskill, Howard 17 (Premier), and Sparkle--were furnished 3 cooperating nurseries." Plants may be obtained from these nurseries. Their names are available from your county agent and will be furnished strawberry plant growers on request.

Special care was used by the cooperating nurseries to keep the stocks virus-free by isolation and aphid control. They appear to have been successful as indicated by the following statement: "We believe these stocks to be substantially virus-free. They have grown vigorously and appear superior to most stocks, particularly the plants of the Catskill and Sparkle varieties. The 4 nurseries have agreed to sell up to one-half their plants to other nurseries as foundation stock plants at prices not over 50 percent above the price of regular stocks for strawberry plants. This is an opportunity to obtain superior foundation stocks from which to propagate

plants for sale to growers. However, purchasers of these stocks should plan to isolate their fields at least 3,000 feet from other strawberries, and to dust the plants regularly with parathion or other material to keep them aphid-free. We believe this stock is worth purchasing for propagation only if it is to be isolated and kept aphid-free.

"Cooperating nurseries will accept orders until March 1, 1953, after which time the plants will be shipped. Stocks are limited and if orders exceed the supply, plant stocks will be prorated. Plantsmen desiring a start of this stock should contact one of the nurseries directly."

When strawberry plants are brought in from Maryland and Delaware, there is always the danger of bringing in nematode-infested plants. However, since nurseries in that area are the only sources of virus-free plants, it is worth the risk.

— John S. Bailey

NEWER GRAPE VARIETIES

Many new grape varieties have been tested in the University vineyards at Amherst. This article will attempt to summarize the findings concerning some of the varieties tested. The varieties discussed in this article with the exception of Cook are introductions of the New York Experimental Station at Geneva.

Athens is an early black grape. The clusters are medium to large and loose. The berries are medium to large, sweet and have good quality. The vine is medium in vigor but productive. Athens has shown some promise and will undergo further testing.

Brocton as grown in Amherst is medium in vigor and only fairly productive. The clusters are medium in size and compactness and many clusters are poorly developed. The berries are white, medium in size, juicy, sweet and of good quality. Brocton ripens with and is inferior to Niagara and is not recommended.

Buffalo is a black grape that ripens a few days after Fredonia. The clusters are large and moderately compact. The berries are large to medium, attractive, sweet with a vinous flavor and are very good in quality. The skin is thick and tough and the berries adhere very well. The vine is vigorous and productive. Buffalo is recommended for trial planting.

Cook was introduced by S. L. Davenport, North Grafton, Mass. Its performance at Amherst has been outstanding. It is an attractive blue grape with medium sized berry and medium sized, compact bunch. The quality is excellent and it has long storage life. It ripens between Worden and Concord. It has recently been added to our list of varieties recommended for Massachusetts.

Dunkirk is a red grape of the Concord season. The clusters are small and compact. The berries are medium to small, strongly adherent and fair to good in quality. The vine is productive and medium in vigor. This variety is not recommended.

Eden is a midseason black grape. The vine is lacking in vigor and production. The clusters are small, loose and unattractive. The berries are medium in size and only fair to good in quality. Eden is an unsatisfactory variety as grown in Amherst.

Interlaken is an early seedless grape. The clusters are of good size and are compact. The berries are small, golden yellow in color, sweet and have very good quality. The fruit has a tendency to rot on the vine. The vine is medium in vigor and productiveness. Interlaken is worthy of trial where a seedless grape is desired.

Kendaia is an attractive black grape that ripens with Athens. The clusters and berries are medium to large in size. The berry may shell and crack during some seasons. The quality is good to very good. The vine is vigorous and productive. Kendaia is to be continued in our trials.

Schuyler is an early black grape that was introduced in 1947. The clusters are large and moderately compact. The berries are medium in size, attractive, soft in texture and fair to good in quality. The vine is vigorous and very productive. Schuyler must be tested further before it can be fully evaluated.

Van Buren in late August or early September. The clusters are medium in size and compactness. The berries are black, medium in size, good in quality but have a tendency to shell. The vine is medium in vigor and productiveness. Van Buren may have a place as an early grape for the home garden.

-- J. F. Anderson



THE CONDITION OF APPLES IN STORAGE

Although the storage holdings this winter may be relatively small, now is a good time to go over what holdings there are to be sure they are still in good condition. A regular check twice a month is desirable on many varieties to determine if they are still in a firm condition, free from scald, bitter pit, brown core, or decay.

Most of our county agents now have available pressure testers for determining the firmness of apples. This instrument, with a 7/16" head, can give one an idea of how well different varieties are standing up and allow one to compare one lot of a variety with another lot of the same variety. Recently Dr. R. M. Smock at Cornell University published a table showing approximately at what pressures various varieties should be sold from storage if they are to remain in marketable condition for about a week after leaving storage. Table 1 covers some of our common varieties.

Table 1. The determination of fruit firmness with a pressure tester.

| <u>Variety</u> | <u>Should be sold before reaching (lbs.)</u> | <u>Unmarketable (lbs.)</u> |
|------------------|--|--------------------------------|
| Wealthy | 10 | 7-8 |
| McIntosh | 10 | 7-8 |
| Cortland | 10 | 8-9 |
| Delicious | 11-12 | 8-10 |
| Golden Delicious | 12 | 8-10 |
| R. I. Greening | 13 | 10 |
| Baldwin | 12 | 10 |
| Northern Spy | 12 | 10 |
| Rome Beauty | 12-13 | 10 |

To get an accurate picture of the firmness of a given lot of fruit, use at least 20-30 apples. Slice off a small area of skin on the unblushed side and force the plunger 1/4 inch into the flesh. The firmness of the flesh can then be read directly in pounds on the pressure tester.

In order to be sure that scald or bitter pit is not developing on such varieties as Cortland, R. I. Greening, Rome Beauty, Baldwin, and Spy, it is necessary to leave samples of fruit at room temperature at least 5 days. Apples may show no scald in storage but within 5 days at room temperature have 100% scald.

McIntosh held at 30-32° F. may show some browning around the core late in the season. This condition, like scald and bitter pit, becomes worse with time and apparently develops most readily in apples held at low temperatures. It is wise to slice a sample of McIntosh and possibly some other varieties for possible presence of brown core or other internal disorders, if apples are held into January and later.

Note. There is now an excellent humidifier on the market which can be connected directly to the water line. This humidifier consists of a nozzle and strainer. When the faucet is opened, assuming you have water pressure of 25-30 pounds, a very fine mist is sprayed into the room. Anyone wishing to know where such equipment may be purchased may have the address by dropping us a letter or card asking for it.

-- F. W. Southwick

DIRECTIONS TO "GOOD PEST CONTROL"

Make all turns to the Right; There is a Right road, but no straight road to "Good Pest Control."

If you don't make the Right turns you go Left with the "bugs" and will get Left by the buyers.

Here are your Right turn sign posts.

1. Right Pruning and Culling

Prune to allow good penetration into trees and complete coverage of tops and tips; cull out those "orphans" you can only half reach. Prune to your equipment!

2. Right Equipment

Maintain present machines at maximum efficiency; adapt for one-man operation; buy new equipment adequate for your acreage, trees and terrain.

3. Right Timing

Know when to hit 'em but be sure they don't get there first; emergency or special applications usually are made necessary by Left turns; prevention is cheaper than cure -- and you will keep more dark hair on your head.

4. Right Material

Don't guess or take everyone's word for it; work out a program of prevention using materials recommended to handle your problems; emergency materials are costly and often of uncertain value; give new, promising materials a well planned trial for comparison with standard practices.

5. Right Man

(If you've taken no Left turns so far there is hope you'll get around this one) Study, learn, keep your eyes, ears, and mind open, pest control warnings in county letters and on radio are for you -- not always for the other fellow; information in Spray and Pest Charts represent the thinking of numerous individuals; their conclusions are based upon research and field observations carried out throughout the northeast and adapted to local problems and conditions.

Know your orchard; check conditions in it frequently; check the penetration and coverage given by your machine while doing the job; make immediate adjustments in method, machine and operator.

-- E. H. Wheeler

PRUNING BEARING ORCHARDS

The pruning season has arrived and it is apparent that the winter of 1952-53 is a good time to do whatever pruning is needed. The prospects of a heavy bloom and crop in 1953 make it more important than usual that the job be done. In large crop years small green McIntosh are not apt to be worth their cost of production. Now is the time to get rid of a lot of them with pruning tools.

Pruning of apple trees is necessary to prevent the trees from becoming so thick that it is difficult to obtain good insect and disease control, to eliminate much of the small, poorly colored fruit which on unpruned trees is borne on weak, shaded limbs in the inner part of the tree, and to keep the trees low enough so that the trees can be picked easily. Trees should be low enough so that all parts of the tree can be reached with, at most, a 20 foot ladder.

Pruning generally is going to reduce total yield. Generally, the greater the amount of pruning done the greater the reduction in total volume of fruit produced. However, pruning will often increase the proportion of high-grade fruit. In other words, pruning out thick trees will eliminate many of the potential culls and thereby increase the proportion of marketable fruit. In addition, through better spray coverage, a higher proportion of blemish-free fruit can be expected.

In mature bearing orchards the amount and manner of pruning will depend upon the variety, insect and disease problems, spray equipment, soil, planting distance, and vigor of the trees.

With mature bearing trees the training period is over. Position of the main scaffold limbs has been previously determined and, except when such limbs are

crowding others, have been heavily shaded by limbs higher up on the trunk or have bent down to the ground, it is not desirable to remove many of them to try to alter the general framework of the tree. To do so would only tend to produce large gaps in the tree's bearing surface and leave large, slow healing wounds on the trunk.

The objective in pruning is to eliminate the weak, downward growing branches in the inner part of the tree. Don't sacrifice a good, vigorous, outer growing branch in an attempt to invigorate a weakly growing inner branch except at the top of the tree when it may be necessary to lower the tree. Remove dead, broken, and crossing limbs. Make the larger cuts first (1" and larger in diameter). After this has been done any fine wood that needs to be removed with hand shears in occasional crowded areas can be done. With some of our varieties, such as Cortland and Rome Beauty, the manner of growth is such that the removal of fine wood is a major part of the pruning operation. The eventual goal of pruning is to obtain a tree of reasonable height with a continuous bearing area over the sides and top of the tree with the weak inner and drooping wood removed. If this is done the fruit will be well exposed to light, more readily covered with spray, and easier to pick.

The problem of lowering trees is serious in some orchards. Obviously, it would have been better to have kept them lower in the first place so that large cuts in the top would not have been necessary. If trees have to be lowered 5 to 10 feet one is going to eliminate some of the best bearing wood, expose large limbs to sun-scald, and reduce the yield of marketable fruit. In orchards where the trees are crowding each other in or between rows, lowering of the top results in even more serious consequences since, in addition to losing good bearing surface in the top, two sides of such trees may already be producing inferior fruit. Some ground level pruning may be the best answer in such situations.

Pruning in large orchards should start in earnest in December if one is to get the job done by spring. Heavy pruning in late fall and early winter is likely to increase the susceptibility of trees to winter injury in the following months. This is particularly true on trees which have just carried a large crop. However, some of our varieties, such as McIntosh, Cortland, and Wealthy can tolerate temperatures below -20° F. Consequently, it is best to start pruning these hardy varieties first and finish up on a tender variety like Baldwin when the most severe winter weather is past. Although it is advisable to get the pruning done during the dormant season, some growers prune up to blossom time and I see no fundamental reason for not doing so if one wishes. A lot more work can be done on a reasonably warm day than can be accomplished in freezing weather.

-- F. W. Southwick

HOW THE PEACH VARIETIES LOOKED IN 1952

New peach varieties are being introduced so rapidly that it is difficult to get first hand information on more than a part of them. However, an attempt has been made to select and test those which seemed to be best suited to Massachusetts conditions. The following observations do not cover all the varieties and selections tested. They cover only those which seem to have most interest to growers. Varieties are listed approximately in order of ripening.

Golden Early Bird. This variety was distributed first under the name Christopherson. It is a very early variety ripening about a week before Marigold, two or three days ahead of Erly-Red-Fre. Although the fruit is medium to small in size, it is yellow fleshed, attractive and fine flavored if ripened on the tree. Like most early peaches it is semi-clingstone. If picked too soon, the flesh softens on the outside first and it clings very decidedly. The flesh is not too firm and softens rather rapidly. In spite of its faults its earliness, yellow color, attractiveness and good flavor should make it worthy of trial in a home garden or to start off the season on a roadside stand.

Erly-Red-Fre. This continues to look like an outstanding, early, white fleshed peach. It ripens four or five days ahead of Marigold. The tree is large, upright and a heavy producer. The fruit is medium to large, round, attractive and very highly colored. The flesh is usually fine textured and smooth, firm, and moderately juicy with a mild pleasant flavor. It is semi-cling to almost free.

Jerseyland. This variety, which was originated in New Jersey, continues to look extremely promising. It is an early peach ripening with Marigold or a day or two later. The tree is vigorous and productive. The fruit is free-stone, large, round, very well colored and attractive. The flesh is yellow, firm, juicy, and notably good in flavor. Jerseyland is outstanding in flavor, firmness, attractiveness and high color but may soften more rapidly than is desirable.

Prairie Daybreak. This is one of the Prairie series of varieties originated and introduced by the Illinois Agricultural Experiment Station. The trees are moderately vigorous. They bore a heavy crop in 1951 at 3 years, but a light crop in 1952. The fruit matures early, 3 to 4 days after Marigold, with Jerseyland. It is yellow fleshed, freestone, large and attractive. The flesh is firm, moderately juicy, and tends to be a bit stringy. The quality is only fair. It softens and gets mealy rather rapidly. It is not so good as Jerseyland.

Prairie Dawn. This is another of the Illinois peaches which ripens a couple of days after Prairie Daybreak and Jerseyland. The trees bore a heavy crop for three-year-olds. The fruit is large, round, yellow fleshed, freestone, well colored and attractive. The flesh is firm but not much better than fair in flavor. It would look more promising if it would develop better flavor.

Early East. This is another early yellow fleshed peach from New Jersey. The tree is quite vigorous and a heavy producer. The fruit, which matures two days after Marigold, is medium to large, round to oval, somewhat compressed, highly colored but not too attractive. The flesh is firm, juicy, usually fine, but only fair in quality. This variety is of doubtful value because of its shape, tendency to cling considerably until fully ripe, and mediocre flavor.

Prairie Sunrise. This is another early, yellow fleshed, freestone in the Illinois series. It ripens just ahead of Red Haven. The tree is moderately vigorous but very productive. The fruit is large, round, fairly well colored and attractive. The flesh is firm, fine, juicy and well flavored. This peach looks promising because of its firmness, size, attractiveness and quality.

July Elberta was originated by Luther Burbank and is, therefore, not a new variety. It is above the average for both canning and freezing. This and its productiveness probably explain why it has not been dropped although it is not widely grown. The tree is none too vigorous although fairly productive. The fruit is medium sized, round, fairly well colored and attractive. The flesh is yellow, firm, a bit stringy and not too good in flavor because it is slightly bitter at times.

Early Halehaven. This is a sport of Halehaven. It resembles Halehaven in every respect except that it ripens earlier, three or four days after Triogen. It is an attractive, yellow fleshed, freestone of fairly good quality, is firm enough to hold up well, but tends to overbear and will need heavy thinning. It is rated below average for canning.

New Day. This is a New Jersey introduction which ripens with Early Halehaven, just after Triogen. The tree is moderately vigorous and a moderately heavy producer. The fruit is large, usually round but sometimes slightly compressed, fairly well colored, attractive and freestone. The flesh is yellow, firm, and usually fine grained. The flavor is variable, fair to excellent. Early Halehaven seems to have the edge.

Starking Delicious. This is a very soft, juicy, yellow fleshed early peach which is almost freestone. It ripens just after Triogen, about with New Day. The tree is fairly vigorous and very productive. The flavor has been variable. It is too soft for a commercial peach and its variable flavor is against it as a home garden peach.

Fairhaven is an introduction of the Michigan Experiment Station. It ripens a few days ahead of Halehaven and after Early Halehaven. The tree is vigorous and productive. The fruit, which is similar to Halehaven, is large, well colored and attractive. Flesh is yellow, firm, sometimes a bit coarse, and has good flavor. It is worthy of trial if a peach is needed so close to Halehaven season.

Prairie Rose. It is a yellow fleshed, freestone from Illinois which ripens three or four days ahead of Halehaven. The tree is upright, vigorous and a heavy producer. The fruit is large, round, well colored, and attractive. The flesh is firm, a bit coarse and moderately juicy. It matures just ahead of Prairie Schooner. It isn't so large as Prairie Schooner but more attractive. The flavor was good in 1951 but had a slight suggestion of bitterness in 1952. Not too promising.

Prairie Schooner, another of the Illinois peaches, ripens a day or two ahead of Halehaven. The tree is fairly vigorous but appears to be a shy producer. Fruit is large, round, not too well colored but fairly attractive. The flesh is yellow, coarse and stringy, medium juicy, and not too good in flavor. It has a large pit which tends to cling. Of doubtful value.

Wildrose. If a good white fleshed peach ripening a couple of days ahead of Halehaven is wanted, this one looks good. The tree is fairly vigorous and productive. The fruit is large, round, well colored and attractive. The flesh is firm, usually fine grained, moderately juicy and has excellent flavor. This is an awfully good peach, but may be a little soft to handle well.

Summerrose. This is another very promising white fleshed, freestone from New Jersey ripening just ahead of Halehaven. The tree is moderately vigorous but a heavy producer. Fruit is medium in size, round, well colored and attractive. Flesh is firm, fine and moderately juicy with good flavor. It is worth trying if a white fleshed peach can be used at this season.

Midway is a yellow fleshed, freestone ripening about the end of the Halehaven season. The tree is moderately vigorous but a good producer. The fruit is large, round, fairly well colored, attractive and freestone. The flesh is firm, has a tendency to stringiness, is moderately juicy, with fair to good flavor. It is not quite so well colored as Halehaven and not so good in flavor. So close to Halehaven its value is doubtful.

Sullivan's Elberta. This is a limb sport of Elberta which ripens about a week earlier. It is very popular in Georgia. It bore its first crop in Amherst last summer. The fruit was large, round, well colored, attractive, and freestone with light pubescence. It merits watching.

Honey Dew Hale is a large, white fleshed, freestone ripening with Elberta. Poor color, poor flavor and many odd shaped fruits are against it. Its value is very doubtful.

Hale Harrison Brilliant. This is a patented peach. It bore a light crop in its third year. The fruit is large, round to oval, well colored, attractive, and freestone. The flesh is yellow, firm, fine grained, moderately juicy, with good to excellent flavor. It ripened with Elberta but was better flavored.

Prairie Rambler is a yellow fleshed, freestone from Illinois ripening two to four days after Elberta. The tree is a fairly vigorous, upright grower and is very productive. The fruit is large, round, fairly well colored and attractive. The flesh is firm, a bit stringy, and medium juicy. Flavor is fair with a tendency to slight bitterness like Elberta. This is a large, not too highly colored freestone with a little better appearance and flavor than Elberta ripening in Afterglow season.

Rio-Oso-Gem is another patented peach. Of several trees planted in 1946 only one survived in 1952 and this was very small for its age. In 1951 it bore a heavy crop for its size. The fruit was large, round, freestone, and fairly attractive although not too highly colored. The flesh is yellow, fine textured, firm, and medium juicy. Quality was fair at best. It ripened with Elberta or later. It is reported to be tender to cold. Lack of tree vigor is decidedly against this variety.

Fowler originated as a chance seedling. The tree is large, vigorous, upright, spreading and very productive but was a little slow coming into bearing. The fruit which ripens three or four days after Elberta is large, round, usually well blushed with red and attractive. The flesh is yellow, fine and smooth, unusually firm and remains firm for some time. The skin is thick and tough with very little fuzz. It should ship and keep well. In spite of a flavor which is little better than fair and a lack of high color in some seasons, this peach looks promising for Afterglow season.

Michigold and Redcrest have been discarded; Michigold because it has had consistently poor flesh texture and flavor; Redcrest because it develops an internal breakdown around the pit.

Two nectarines are under observation. Early Flame is patented. It ripens in early midseason about with Red Haven. The fruit is large for a nectarine, round, quite well colored and attractive. The flesh is yellow, fine textured, firm and quite juicy. The sweet, aromatic flavor is excellent. Unfortunately, it is a decided clingstone.

Garden State ripens in Halehaven season two weeks after Early Flame. The tree is large, vigorous and productive. The fruit is large, round, not too highly colored but generally fairly attractive and freestone. The flesh is yellow, fine textured, firm and very juicy. The quality is excellent. In some seasons the fruit russets and lacks red color. Also, it is very susceptible to brown rot. In spite of its faults, it is an excellent nectarine.

-- J. S. Bailey

MATERIALS FOR FRUIT INSECT CONTROL - 1953

Part I - Apples

Schedule I (DDT, TDE, methoxychlor, etc.) versus Schedule II (Lead Arsenate):
I is best for curculio and codling moth; its use favors mites and possibly aphids; special measures included to control mites, aphids and red-banded leafroller.

II is successful where curculio and codling moth are not too serious; if following Schedule II and you are controlling these insects all right, there is no reason to change; if interested in a better finish, ask your Plant Pathologist about trials with captan: (406) fungicide.

Dinitro compounds for Dormant: Butyl phenol types preferred (Elgetol 318, DN-289); Rosy Aphid and Bud Moth; kills other Aphid and some Red Mite eggs; apply on a mild, quiet day in January, February or March before "mud" time.

Oils: Buy only "superior" type; straight oil to be "tank-mixed" with blood albumen is recommended because of known depositing characteristics and compatibility with ferbam and neutral coppers; use every year in Schedule II (Lead Arsenate); others urged to treat 1/3 their acreage each year or entire acreage every 3rd year; DN's are not substitutes for oil and vice versa.

BHC (benzene hexachloride) or lindane: will control Rosy Aphid when used with oil at Late Delayed Dormant, or with a fungicide soon after Delayed Dormant; BHC much cheaper; a substitute for DN against aphids; useful in Calyx against Apple Curculio (not plum curculio).

DDT: use either 1 1/4 lbs. of 75% or 2 lbs. of 50%; no new uses; still the best for Codling Moth; only 10-day protection against Maggot; do not use in Schedule II except in one, or at most, two applications to clean up leafhopper or Codling Moth outbreaks.

TDE (DDD): specific for Red-banded Leafroller; best used in Calyx or 1st Cover and again in one or two sprays in early and/or mid-August; at same concentration it is equal to DDT against Maggot and nearly so against Codling Moth; in late sprays safer than DDT from residue standpoint; not needed in Schedule II.

Methoxychlor: best for Plum Curculio in 1st and 2nd covers or on fast-growing varieties and in "bad" spots use in Calyx also; use for Maggot in late sprays and pre-harvest dusts; do not use in Schedule II except where Plum Curculio is becoming serious or a late maggot treatment is needed.

Parathion: Be Careful (use approved respirator): do not use in Schedule II; requires special safening materials (charcoal) on McIntosh and related forms; short protective period compared to methoxychlor and DDT; expect resistance in mites after 3 to 4 years; repeated applications of low concentrations favors development of resistant strains; best uses are: for Bud Moth in pre-bloom and mid to late July; for Red Mite and Yellow Mite in Pink, Calyx, and 2nd Cover or Calyx, 2nd and 3rd Cover, for young Red-banded Leafroller in Calyx; when used in Pink through 2nd Cover other insecticides and miticides are omitted but interval must be shortened to handle curculio; may be incompatible with phenyl mercury and captan fungicide.

EPN: Be Careful (slightly less hazardous than parathion) use approved respirator; do not use in Schedule II or on McIntosh and its related varieties; not safened by charcoal on these; on other varieties has same uses as parathion and with longer residual effect against curculio and mites; poorer than parathion against aphids and bud moth.

TEPP: Be Careful, requires special respirator: do not use in Schedule II; useful against aphids in early prebloom fungicide application or in summer; effective miticide in Pink, Calyx and 2nd Cover or Calyx, 2nd and 3rd Covers; results variable in summer applications; no residue hazard; avoid combinations with phenyl mercury; use maximum concentrations to delay development of resistance.

Malathon: a phosphate but hazard to user similar to DDT and TDE; extensive trials of wettable powder are suggested in summer sprays for aphids and mites; superior to parathion and TEPP against aphids; less effective against mites; compatible with materials used at that time.

88R (Aramite, Niagaramite, Orthomite, etc.) strictly a miticide; best used in summer under hot, dry conditions; at least 2 applications necessary for clean-up; non-hazardous for user; compatible and no injury complications; easy on beneficial insects.

K6451 (Ovotran); for limited trial against mites in 3-4 applications starting with Calyx; use at rate of 1/2 lb. of 50% wettable powder per 100 gallons; an excellent, non-hazardous miticide because it kills eggs as well as living stages; safety on all varieties and compatibility with other materials not yet fully understood; not suggested for mid or late summer applications nor at higher concentrations; might be used as a substitute for oil in Schedule II.

DMC (Dimite): a liquid, non-hazardous miticide suggested for limited trial in comparison with others listed; safety on various varieties and compatibility not well known.

-- E. H. Wheeler

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Fruit Notes

Prepared by the Fruit Program Committee of the Extension Service
W. H. Thies, Extension Horticulturist

FEBRUARY 15, 1953

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NEW ENGLAND APPLE INSTITUTE CONFERENCE ON RETAIL SELLING

Hard fighting, aggressive selling ideas were shot with machine-gun rapidity into a discussion of retail selling of apples, as successful grower salesmen from six states told about their operations, at a conference called by the New York, New England Apple Institute in Springfield, Massachusetts, on February 2, 1953.

Otto Wallingford of Maine; Ralph Adams, New York; Donald McCloud, New Hampshire; Harold Rogers, and Robert Josephy, Connecticut; Edward Knight, and George Smith, Rhode Island; Hamilton Lincoln, Dorrence Green, and Elmer Fitzgerald of Massachusetts, were called upon from a group of 41 persons attending the conference.

New cider equipment at the Wallingford Orchard in Auburn, Maine, is setting the pace for clean refrigerated cider prepared in stainless steel equipment. Three thousand cars came to the mill opening and bought cider.

Ralph Adams has a mixed fruit and vegetable stand in Poughkeepsie, New York. Seventy-five per cent of his income is from roadside selling. Five thousand ears of sweet corn sold in one day indicates his operation.

Donald McCloud stated that he is careful to build his repeat trade. "Transient trade will not make a business."

Dorrence Green stated the opinion of the group, that ample parking space is absolutely a necessity. "People will not stop if they cannot park off the road."

Harold Rogers stressed the idea of confidence of people in the stand operator and his products. "Clerks in a roadside stand must be good salesmen." He values his Cadillac as well as his "Big Four" trade.

Hamilton Lincoln stressed the use of seasonal decorations in his sales room.

Elmer Fitzgerald stressed bruise-free apples as a necessity to a healthy industry.

Bill Doe, Stacy Gay, Edward Hartley, Jesse Rice, Walker Cheney, A. Mushenke, Henry P. Kendall, and Ben Drew were among the Massachusetts growers present.

It was an enthusiastic aggressive sales meeting that would have done credit to a group of sales managers as indeed they were.

John Chandler requested suggestions for the use of the Institute in assisting the retail selling part of the industry. The development and sale to growers of attractive point-of-sale-helpers were strongly suggested in addition to the radio, television, and publicity work now carried on.

John Chandler stated that the promotion possibilities of aggressive growers in retail selling were of immense value to the industry.

George Moore of First National Stores stated that the retail selling of apples was a logical method of supplementing sales in a grocery store. "Apples should be sold everywhere."

-- F. E. Cole

TOBY'S TRAVELS

Chapter V.

At Wenatchee the Skookum Apple Packing House was located across the street from the Apple Lane Motel, where we were staying. This afforded me a convenient opportunity to observe the operations in one of the largest packing houses in this area. Inside of this packing house were four huge Cutler graders with eight sorters on each doing the grading.

Except for the immense size of the operation the grading and packing procedures were essentially the same as we find in many packing houses in the East.

However, there were a few unusual features which are worthy of mention. Of particular interest was the amount of automatic machinery employed which reduced materially the need for manual labor. As an illustration, the apples from the receiving platform are stacked six boxes high on a moving truck which takes them to an automatic dumping machine which gently dumps the apples on the grading machine and then delivers the empty box on a conveyor which delivers it to a point where it can be loaded on the trucks returning to the orchards. After the apples are dumped they pass through a washer and then on to the sorting table. While washing is no longer necessary for removal of arsenical residue since lead arsenate has been replaced in the spray schedule by other pesticides, the practice of washing is maintained in order to improve the appearance of the fruit.

Another particularly interesting feature in this packing house was the analysis of culls. As mentioned previously, this packing house has four graders. Each grader may be handling apples from different orchards. However, the culls from each of these graders are delivered into separate bins which are located at a central point. Near this central point is a small laboratory where a lady trained in the recognition of blemishes takes samples from each of the cull bins and analyzes them and thus determines the reasons why these apples are culls. A report of this analysis is furnished the grower. The first three items on the tally sheet are puncture, box cut and bruise. Other items in the list are: worms, scale, cutworms, bitter pit, sunscald, water core, etc. The principal causes of culls on the lots of fruit that I observed were: codling moth, scale, a pitting of the fruit which appeared to be due to boron deficiency, cutworm, and powdery mildew which caused a net-like russetting of the apples.

With a limited amount of rainfall in the Northwest apple producing regions little vegetation except sagebrush can be grown on the land unless it is irrigated. Formerly, the general practice was to cultivate the orchards and irrigate them by means of a series of trenches and rills. At present the trend is towards the use of sod with the irrigation water being supplied by overhead sprinklers. This allows for the use of modern spray equipment in the control of orchard pests.

In this area it is a common sight to see a thrifty green orchard completely surrounded by barrenness except for sagebrush. The presence or lack of irrigation water is responsible for the difference.

From Wenatchee we traveled approximately one hundred miles south over beautiful mountain passes to the City of Yakima. While Yakima does not produce the volume of apples that is produced in Wenatchee the orchards are scattered over a much wider area and some of them are on lower elevations where frost becomes a hazard.

On a visit to one of the larger orchards in this area, the orchard manager told me that a good picker, with good picking conditions, could pick on the average 100 to 150 bushels of apples per day. The pickers at the time were getting 14 to 18 cents a box. The amount received was dependent upon picking conditions. He mentioned also that with Golden Delicious a yield of 1500 packed boxes per acre is not uncommon.

In this orchard the boxes of apples as harvested are picked up in small trucks and carried to a central location where they are transferred to a large platform from which they are loaded onto large trucks which haul them to the packing house in the City of Yakima.

Some of the orchards in the Yakima area are being uprooted to provide space for housing developments.

A considerable volume of pears is produced in Yakima as well as apples.

In the next chapter we shall move on to Puyallup and get a glimpse of the small fruit industry in the State of Washington.

-- O. C. (Toby) Roberts

SUGGESTED RATES OF FERTILIZERS FOR APPLE TREES IN 1953

Last month it was suggested that the application of nitrogen should not exceed one quarter pound of nitrate of soda or its equivalent per year of tree age. As many growers will no doubt be using fertilizers other than nitrate of soda, the following table is given as a guide to determine the amounts to use for different kinds and grades of fertilizer.

Pounds of fertilizer to equal one quarter pound of Nitrate of Soda or its equivalent per year of tree age.

| Tree Age | Nitrate of Soda | Ammonium Nitrate | Ammonium Sulfate | 5-10-10 | 7-7-7 | 10-10-10 |
|----------|-----------------|------------------|------------------|---------|-------|----------|
| 12 | 3 | 1-1/2 | 2-1/2 | 10 | 7 | 5 |
| 16 | 4 | 2 | 3 | 13 | 9 | 6-1/2 |
| 20 | 5 | 2-1/2 | 4 | 16 | 11 | 8 |
| 24 | 6 | 3 | 5 | 19 | 14 | 9-1/2 |
| 28 | 7 | 3-1/2 | 5-1/2 | 22 | 16 | 11 |
| 32 | 8 | 4 | 6-1/2 | 26 | 18 | 13 |
| 36 | 9 | 4-1/2 | 7 | 29 | 21 | 14-1/2 |
| 40 | 10 | 5 | 8 | 32 | 23 | 16 |

-- W. D. Weeks

STRAWBERRY VARIETIES IN 1952

The month of June 1952 was quite dry in some parts of the state. However, at Amherst the rainfall was 4.97 inches or 1.93 inches more than for the same month in 1951. This situation is reflected in the higher yields reported in Table 1 for most varieties in 1952 as compared to the yields obtained in 1951 for many of the same varieties.

Table 1. Yield of varieties in replicated tests - 1952.

| <u>Variety</u> | <u>Ounces per plot</u> | <u>Calculated quarts per acre</u> |
|------------------|------------------------|---------------------------------------|
| Fairland | 745.25 | 10305 |
| Erie | 729.50 | 10089 |
| Great Bay | 715.25 | 9890 |
| Robinson | 706.75 | 9774 |
| Catskill | 641.75 | 8875 |
| Temple | 634.00 | 8767 |
| Sparkle | 487.75 | 6745 |
| Howard (Premier) | 433.50 | 5996 |

It is worth noting that in the past three years Fairland and Robinson have been among the four highest yielding varieties in our trials. Sparkle was among that group in 1950 and 1951 but for some reason did quite poorly in 1952. During the two years, 1951 and 1952, that we have had Great Bay in replicated plots it also has been among the four highest yielding varieties. Catskill and Temple continue to hold their same relative positions as in the past two years among the varieties in these tests.

Erie, which was under replicated plot test for the first time in 1952, has produced very well and is an attractive berry of fairly good quality. However, it is as soft as Howard (Premier) and has a light colored center. The fruit lies mostly on the ground and rots quite badly. So far as is known, this variety is not resistant to red stele disease.

Among the varieties in single plot trial, none was materially more productive than Catskill. Beatrice, Arrowhead, Eden and Redcrop, in that order, ranged from about the productiveness of Catskill down to that of Howard (Premier). Valentine, Van Rouge, Elgin and Fairpeake produced not more than two-thirds as much fruit as Howard (Premier) and will be discontinued in future trials. Plots of Empire, and Vermilion which looked promising in 1951 met with misfortune during the growing season so yield records on these two varieties were worthless. Of the more satisfactory varieties in single plot trials, Beatrice is quite soft and only fair quality; Arrowhead is rather small, unattractive and quite tart; while Eden was not outstanding in 1952. Redcrop is being continued chiefly because of its resistance to red stele disease. Consequently, none of the newer varieties fruited in single plots have sufficient merit to justify further consideration on the basis of their behavior in 1952.

The season of harvest for all varieties which were fruited during at least two of the last three years is given in Table 2. They are arranged approximately in order of season as determined by use of the dates of the first, largest and last pickings. Since one season may differ considerably from another, it seemed advisable to list by themselves those varieties for which no records were available for 1950.

Table 2. Season of Harvest, 1950-1952

| Variety | Date of picking | | |
|--|-----------------|---------|------|
| | First | Largest | Last |
| Valentine | 6-12 | 6-16 | 7-3 |
| Howard (Premier) | 6-11 | 6-19 | 7-5 |
| Van Rouge | 6-12 | 6-19 | 7-3 |
| Catskill | 6-12 | 6-22 | 7-6 |
| Fairland | 6-12 | 6-22 | 7-6 |
| Temple | 6-12 | 6-22 | 7-6 |
| Redcrop | 6-13 | 6-22 | 7-4 |
| Sparkle | 6-12 | 6-28 | 7-6 |
| Great Bay | 6-16 | 6-27 | 7-6 |
| Robinson | 6-17 | 6-30 | 7-6 |
| Elgin | 6-29 | 7-3 | 7-7 |
| <u>Varieties fruited in 1951 and 1952 only</u> | | | |
| Pathfinder | 6-10 | 6-18 | 7-2 |
| Eden | 6-12 | 6-18 | 7-1 |
| Erie | 6-13 | 6-22 | 7-5 |
| Vermilion | 6-12 | 6-26 | 7-1 |
| Aberdeen | 6-13 | 6-28 | 7-2 |

Beatrice and Arrowhead, which were fruited for the first time in 1952, appear to be somewhere between Temple and Sparkle in season.

None of the newer varieties mentioned above shows promise of replacing Howard (Premier) as an early berry. Robinson, in spite of its rather inferior quality and softness, is the latest high producer tested so far. Berries of Great Bay are too rough to be attractive and its quality is only fair. Catskill, Temple, Sparkle, and Vermilion are probably the best quality varieties among those listed here. Where red stele is a problem Pathfinder, Temple, or Fairland, and Sparkle appear to fill the season as far as is possible at present.

-- A. P. French

* * * * *

NOTES ON NEWER PEAR VARIETIES

Cayuga - Medium sized, greenish-yellow with light blush. Fairly attractive. Good quality but has thick tough skin. Harvest early September.

Clyde - Much like Seckel in color and shape but considerably larger than Seckel. Appears to be only fair in quality, but a good keeper. Harvest early October.

Cope's Seedless - Medium size, yellowish green, attractive, good quality, juicy, fine grained, some tendency to russet. Has few seeds. Harvest mid-September.

Covert - Large, green, fairly attractive, good quality, juicy, keeps well in storage. Harvest latter part of September or early October.

Ewart - Large, yellowish green, unattractive, good quality, juicy, fine grained, thick skin. Harvest middle to last of September.

Ovid - Medium size, yellowish green, light blush, fairly attractive, good quality, tendency to russet, thick skin, keeps well in storage. Harvest early October.

Phelps - Medium size, yellowish green, unattractive, fair quality, rather acid. Keeps well in storage. Harvest early October.

Pulteney - Medium size, yellowish green, unattractive, flesh fine grained, fair quality, moderately juicy, rather tart, keeps well in storage. Harvest late September.

Waite - Medium size, greenish yellow, fairly attractive, quality only fair, not juicy, tendency to browning at core. Harvest early October.

Willard - Large, green, unattractive, fair quality, juicy, flesh coarse, shrivels in storage. Harvest middle of October.

-- O. C. Roberts

-- J. F. Anderson

* * * * *

HARDY PEACHES FOR MASSACHUSETTS

For many years one of the first questions asked about a variety of peach for Massachusetts has been, "is it bud hardy in winter?". In spite of this emphasis on bud hardiness, nearly all of the really hardy varieties have been discarded for one reason or another. In other words the hardiness situation in the present peach growing sections of the State is not so critical that just any peach will do, if the buds can survive an unusually cold winter. In this connection, it must be admitted that with some varieties it is necessary to sacrifice a good deal in the way of other desirable characteristics to obtain a relatively slight increase in hardiness --the ability to withstand one or two, or at the most, three degrees lower temperature.

There are many situations in the State where a slight increase in hardiness might greatly increase the chance for successful peach growing. Growers realize this and are asking for information about hardy varieties.

The following list of varieties, some of which are real old timers, has been selected on the basis of winter bud hardiness alone. It is realized that they have some serious defects but where a little additional cold resistance in the fruit buds is the first requirement, they are worth consideration.

Greensboro is an old timer and one of the hardiest peaches in bud ever introduced. The tree is large, vigorous and productive, and adaptable to wide variety of soils. The fruit is about medium in size, fairly well colored and attractive, and matures early, about 42 days ahead of Elberta. The flesh is white, juicy, tender and melting, but not too high in quality. It is a semiclingstone.

Buttercup was one of the early introductions from New Jersey. If a yellow fleshed peach at the season of Greensboro is desired, and one is willing to grow a clingstone, this is a possibility. The tree is vigorous and productive but fruit size is small. Earliness, good flavor and yellow flesh are its only assets.

Marigold is another yellow fleshed early peach. It ripens 37 days ahead of Elberta. The fruit buds are nearly as cold resistant as Greensboro. The tree is fairly vigorous and productive. The fruit is medium in size or a bit larger, semicling, and fine flavored. It's yellow flesh and good flavor recommend it.

Oriole, which ripens 31 days ahead of Elberta, is another yellow fleshed variety which has fruit buds as hardy as Greensboro. The fruit is medium in size, freestone, with firm flesh and good quality. The tree is vigorous, starts to bear young and bears heavily. In fact, it bears so heavily that very heavy thinning is required to get good size. It also has a tendency to ripen on one side first.

Cumberland is a white fleshed peach ripening 28 days ahead of Elberta. It is a large, oval, freestone peach of fair to good quality. Tree is large, vigorous, upright and productive. Not so bud hardy as Greensboro but good in this respect.

Eclipse is a yellow fleshed Elberta type peach. The tree is medium to large, fairly vigorous and very productive. The fruit ripens 22 days ahead of Elberta, is medium to large in size, freestone and fair to good in flavor. The flesh is sometimes a bit coarse and stringy but firm. The skin is rather thin and tender. Severe thinning is necessary to obtain satisfactory size. This would be a pretty fair peach in a situation where bud hardiness is the first consideration.

Veteran, which ripens 18 days before Elberta, was introduced by the Experiment Station at Vineland, Ontario. It is a yellow fleshed freestone of the Elberta type but better in quality. It is medium to large in size, not too highly colored but attractive. It has a tendency to cling in some years. Aside from bud hardiness, it has yellow color, productiveness, and fair flavor to recommend it.

Champion, is an old time white fleshed peach which ripens 11 days before Elberta. The tree is vigorous and productive. The fruit is freestone, very soft and juicy when ripe and very high quality. Eating a Champion is a real taste treat. Because of its white and soft flesh, it makes a very unattractive canned product but the flavor is a delight which one seldom experiences in these days of canned rubbery fleshed clingstones.

Belle of Georgia is another white fleshed, oldtimer. It ripens a week ahead of Elberta. The tree is fairly vigorous and very productive. The fruits are large, attractive, fairly firm, freestone and very high quality. For anyone who can use a white fleshed peach this time of year, Belle of Georgia has much to recommend it. It is firmer than Champion and makes a better looking and nearly as high quality a canned pack as Champion.

Sungoli, which ripens a couple of days ahead of Elberta, is of value mainly because of its cold resistance. The trees are rather dwarfish like J. H. Hale but set very heavy crops. In fact, this is another variety which requires heavy thinning to get size. The fruits are yellow flesh and usually freestone but with a slight tendency to cling in some years. The flesh texture is sometimes a bit coarse and the flavor is no better than fair unless they are well grown. If the fruits are heavily thinned and well grown, Sungold will produce a crop of very acceptable peaches of good size.

-- J. S. Bailey

* * * * *

A NEW SOIL CONDITIONER

The following was published in the Cornell Veg-News:

Erunam Can Be Your'n for the Asking

"Public demand forces us to release our revolutionary new garden product, ERUNAM (pronounced AIR-OO-NAM). ERUNAM is not just an inert soil conditioner. ERUNAM is not only a miracle-type plant food. ERUNAM is everything! One heaping glob of our magic atomic substance will remake your garden. ERUNAM makes light soils heavy, heavy soils light, and steadfastly ignores the medium soils. ERUNAM is a selective pesticide; it kills harmful weeds, bugs, and diseases while fraternizing with the approved ones. Better yet, ERUNAM has the Good Worm-keeping Seal of Approval. ERUNAM contains decomposed chlorophyll; your garden will never smell the same. ERUNAM contains no nasty chemicals; it's purely organic. One pound of this concentrated produce is equivalent to 16 ounces. Most of the world's leading experiment stations are full of ERUNAM.

Write for our trial garden size bucket today.

Remember-- ERUNAM spelled backwards is . . . "

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APPLE ADVERTISING ASSESSMENT

Recently, a bill has been introduced in the Washington State Legislature which, if passed, would permit apple growers to increase their advertising assessment by 1¢ per box per year up to a maximum of 6¢ per box. At present the maximum assessment allowable is 3¢ per box. Proponents of this bill feel that there is an increased need for advertising and merchandising because of the trend toward self-service.

-- O. C. Roberts

* * * * *

WHICH MITE IS ON MY APPLE TREE?

| | | | | |
|--|---|---|--|---|
| | European Red | Clover | Yellow (Garman Spider Mite) | 2-spotted |
| Overwinter- as | Eggs - dull red | Eggs - shiny red | Adults - yellow | Adults - dull orange or pink |
| Where found | spurs, twigs, branches | trunk, stones, vegetation | under loose bark | debris on ground, (loose bark) |
| Hatching per- iod or be- come active | Pink thru Bloom | Silver-tip thru Del.-Dormant | Very late Del.- Dormant to early Pink | On ground cover - Silver-tip to Green-tip |
| First eggs laid by overwintering | adults | adults | About Pink | About early Del. Dor. on grass and weeds |
| First adults mature and lay eggs | About Petal- Fall or soon after | Soon after Bloom | --- | --- |
| Summer eggs laid | Upper and lower leaf surfaces all over trees | On bark of spurs twigs, bran- ches and trunks | undersides of leaves | undersides of leaves - grass and weeds first, and later on trees |
| Egg color | dull red | shiny red | pearly white | pearly white to slight amber |
| Number of broods | 7-8 | 5-6(?) | 4-6(?) | 9-11 |
| Identifying features | brick-red, back rounded, light- colored spots and hairs, legs of equal length | brownish-red, back flattened, front legs much longer than others | pale yellow or lemon yellow, dark spots scattered, body elongate oval | pale yellow or greenish yellow, two large dark spots, body oval |
| Activity of adults and young | move about, on both surfaces of leaves | return to bark to shed skins and lay eggs | among hairs on undersides of leaves | Among hairs on undersides of leaves, webbing |
| Characteris- tic damage to leaves | General over-all dulling of green color and final- ly a bronzed effect | a quick yellow- ing, usually on 1 or 2 branches at first (look for white cast skins on spurs) | Spur leaves crin- kled, mottled yellow and brown; later lvs. cupped from below, yellowed above along veins, greyish below | Similar to Yellow mite, appears later, general yellowing follows, seen first on inside and low- hanging branches, in July or later |

PRACTICAL CONTROL PROGRAMS FOR MITES
(Red, Yellow, Two-spotted and perhaps Clover too)

| Types of Schedules | DDT & organics used regularly | Organic phosphates | Lead Arsenate, the main insecticide |
|----------------------|---|--|--|
| | A. | BB. | C. |
| WHEN | WHAT | WHAT | WHAT |
| DELAYED DORMANT | Oil (once every 3 years) | Oil (once every 3 years) | Oil every year and don't miss 'em |
| PINK | TEPP (Dimite, trial only) | Parathion or EPN (be careful of Mac's) | ----- |
| CALYX | TEPP (Dimite, trial only) | Same | ----- |
| 1st Cover | ----- | Same | ----- |
| 11nd Cover | TEPP (Dimite, trial only) | Same | ----- |
| 111rd Cover | ----- | ----- | ----- |
| IVth Cover | ----- | ----- | ----- |
| Vth Cover (mid-July) | Look for rising "2-spot"; may need Aramite on early varieties | You'd better look for 2-spot | LOOK; TEPP or Aramite if needed |
| V1th Cover | Repeat it or start now if needed; LOOK! | Follow the A column | Finish the job or forget it. |
| V11th Cover | LOOK-ACT with Aramite; it's never too late for "2-spot." | See Column A | It's really too late for Red Mite now unless it's very hot |
| LATER | Watch those Delicious & some others; you may have to act. | Same here | ----- |



Fruit Notes

Prepared by the Fruit Program Committee of the Extension Service
W. H. Thies, Extension Horticulturist

MARCH 15, 1953

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RELATIVE HARDINESS OF NEW PEACH VARIETIES

Twenty-two new varieties of peaches were tested for their relative resistance to subzero temperatures during the third week of February. Several shoots of each variety were placed in our freezing equipment and exposed to temperatures of -10°F . and -12°F . During the freezing run the rate of temperature fall was 3 degrees per hour. As soon as the peach shoots had warmed up to room temperature the fruit buds were cut open and the number of live buds was determined.

While there was considerable variation in the number of dead buds found in each variety at the two temperatures, it was possible to group the varieties into three groups. They were grouped into hardy, medium hardy and tender varieties. The following table lists the varieties according to their relative hardiness.

| <u>Hardy</u> | <u>Medium Hardy</u> | <u>Tender</u> |
|------------------|---------------------|--------------------|
| Early-Red-Fre | Wildrose | Early East |
| Dixigem | Prairie Rambler | Fairhaven |
| Prairie Rose | Redskin | Golden Early Bird |
| Prairie Daybreak | Starking Delicious | Honey Dew Hale |
| Prairie Sunrise | Redhaven | New Day |
| Summerrose | Jerseyland | Sullivan's Elberta |
| Early Halehaven | July Elberta | |
| Prairie Dawn | | |
| Prairie Schooner | | |

The varieties which are listed as hardy and medium hardy all had enough live buds after being subjected to -10°F . to produce a satisfactory commercial crop. At -12°F . the hardy varieties still had sufficient live buds for a crop, but some of the medium hardy varieties did not. Some of the tender varieties had sufficient live buds for a crop at -10° , but none of them had enough live buds at -12° for a crop.

We realize that this report covers only one test and that more testing will be required before the final evaluation of the hardiness of each variety can be determined. However, the report does give some indication of the hardiness of the varieties, so it might be wise for growers to go slow in planting the varieties listed as tender until we have more information as to just how much cold they will stand.

W. D. Weeks
J. S. Bailey

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HARDINESS IN CULTIVATED BLUEBERRIES

In many parts of Massachusetts cultivated blueberries are grown in situations where cold injury is a constant threat. In such places cold resistance is an important quality for a blueberry variety to have. Broadly speaking, there are two types of cold resistance which are desirable - resistance to extremely low temperature in winter and resistance to late frost in spring. Some varieties do not possess both types.

As new varieties are developed, it is important to get information on their cold resistance as rapidly as possible. Since nature doesn't provide temperatures low enough for testing varietal cold resistance every year, shoots must be exposed to artificially produced cold in order to speed up the testing process. Such laboratory testing methods are not a substitute for freezing under natural conditions, but they do yield valuable information. When sufficient laboratory freezing tests have been made, it is possible to predict with a fair degree of accuracy what will happen in the field.

Recently at Amherst a number of blueberry varieties, both new and old and some as yet unnamed selections, were subjected to a laboratory freezing test. The results are given in the following table:

Freezing of Blueberry Buds 2/19/53

| | Variety Percentage of Fruit Buds Killed | | | Relative Position |
|-----------|---|---------------------|--------|-------------------|
| | Unfrozen Check | Minimum Temperature | | |
| | | -23°F. | -27°F. | |
| Jersey | 0 | 15.9 | 13.8 | 1 |
| Dixi | 0 | 13.8 | 19.4 | 2 |
| DK-71 | 0 | 19.2 | 20.2 | 3 |
| Herbert | 0 | 21.8 | 25.5 | 4 |
| Coville | 0 | 28.6 | 32.2 | 5 |
| Pioneer | 5.1 | 50.7 | 24.8 | 6 |
| Pemberton | 0 | 46.9 | 34.8 | 7 |
| T-72 | 0 | 40.2 | 42.0 | 8 |
| Cabot | 0 | 35.9 | 48.4 | 9 |
| X-58 | 6.5 | 43.1 | 41.7 | 10 |
| Rubel | 0 | 34.4 | 54.9 | 11 |
| Berkeley | 0 | 41.9 | 54.8 | 12 |
| Atlantic | 0 | 72.9 | 60.0 | 13 |

The fruit buds of Rubel seems to have resisted cold less well than field experience would lead one to expect. On the other hand Pioneer buds appear to have survived somewhat better. Among the new varieties the fruit buds of Herbert and Coville may have considerable cold resistance while those of Berkeley appear to have much less.

J. S. Bailey
W. D. Weeks

VARIETIES OF FRUITS FOR MASSACHUSETTS

I Apples

| Variety | Recommended For | Harvesting Season |
|-------------------|-----------------|-----------------------|
| Lodi | C | Early August |
| Puritan | T | Mid-August |
| Early McIntosh | C & H | Mid to late August |
| Milton | C & H | Late Aug.-Early Sept. |
| Red Gravenstein | C & H | " " " " |
| Wealthy | H | Early Sept. |
| McIntosh | C | Mid-Sept. |
| Davey | T | Late Sept. |
| Macoun | C & H | Late Sept. |
| Spartan | T | Late Sept. |
| Cortland | C & H | Early Oct. |
| Delicious | C & H | Early to Mid-Oct. |
| Golden Delicious | C & H | Mid-Oct. |
| Melrose | T | Mid-Oct. |
| Baldwin | C & H | Mid to Late Oct. |
| Galbraith Baldwin | T | " " " " |
| Red Spy | C | " " " " |
| Gallia | C | " " " " |

T = Trial

H = Home Garden

C = Commercial. Varieties so marked are not necessarily equally adapted to all sections of the state.

- Lodi Fruit yellow, fair quality, larger than Yellow Transparent. Tree hardy, productive, tendency toward biennial bearing.
- Puritan New promising early red apple. Fruit attractive, good quality for its season, tart. Tree hardy, vigorous, tendency toward biennial bearing, will pollinate McIntosh.
- Early McIntosh Leading commercial variety of its season. Fruit fairly attractive, good quality, small if not thinned. Tree medium vigor, poor structure, biennial.
- Milton Fruit attractive and good quality although often ill-shaped on young trees. Tree early and productive, tendency toward biennial bearing.
- Red Gravenstein Fruit of good quality, excellent for pie. Tree vigorous but often suffers from winter injury, usually biennial.
- Wealthy Fruit medium in quality, often small and poorly colored. Tree hardy and medium vigor, distinctly biennial, requires thinning.
- McIntosh Leading commercial variety. Fruit attractive and of excellent quality, tender, easily bruised. Tree vigorous, hardy, productive, annual, subject to scab. Rogers or an equally good red strain is preferred.

- Davey Fruit attractive, medium quality, may keep longer in storage than McIntosh, tendency to russet and shrivel. Tree hardy, productive, annual, worthy of trial to extend McIntosh season.
- Macoun Fruit excellent quality, color sometimes too dark, keeps better in storage than McIntosh. Tree has poor structure, biennial, requires thinning.
- Spartan A promising new variety, introduced from British Columbia. Fruit of good size, color and quality; should keep better than McIntosh. Tree reported to be vigorous and of good structure, annual, will pollinate McIntosh.
- Cortland Growing in popularity as a commercial variety. Fruit attractive, good quality, very susceptible to storage scald, excellent for salads as flesh does not discolor. Tree hardy, productive, annual.
- Delicious Leading dessert apple. Fruit excellent quality, keeps well in storage, tree medium vigor, may become biennial, often requires thinning for good size fruit. Good pollenizer. Richared is the preferred red strain.
- Golden Delicious Fruit excellent quality, yellow, attractive when well grown, subject to russeting, shrivels. Tree medium vigor, biennial, requires thinning.
- Melrose Promising new winter apple introduced from Ohio. Fruit medium size, well colored, good quality, makes excellent pie and sauce, should keep well. Tree productive, good structure, annual.
- Baldwin Outstanding as a winter apple. Fruit good quality, keeps well, often subject to "Baldwin Spot." Tree vigorous, subject to winter injury, biennial.
- Galbraith Baldwin A red strain. Similar to Baldwin except it is better colored.
- Red Spy Fruit attractive, excellent quality, long storage season, easily bruised, and subject to stippen. Tree vigorous and hardy, slow in coming into production, often biennial.
- Gallia Fruit well colored, fair quality, keeps well. Tree medium vigor, bears early, productive, annual, good pollinator for Spy and Macoun. Growing season too short in some sections for proper maturity.

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WEATHER FACTORS AFFECTING FRUIT PLANTS IN MASSACHUSETTS

The temperatures that fruit buds and small developing fruits will endure are dependent upon many variable factors, such as the kind and variety of fruit, the type of weather preceding a frost or cold spell, the vigor and nutrition of the plant. The following table is a guide for temperatures which approach the critical level. Temperatures below these levels will generally cause severe injury, although under certain conditions temperatures below these indicated may not cause complete killing of blossoms and young fruits.

Critical Temperatures for Flower Buds and Young Fruits

| Fruit | Stage of Development | | | |
|------------|------------------------|-------------|----------------|---------------------------|
| | Delayed Dormant °F. | Pink °F. | Blossom °F. | Calyx to 1st Cover °F. |
| Apple | 20 | 25 | 28 | 29 |
| Peach | 20-23 | 25 | 26 | 28 |
| Pear | 20 | 25 | 28 | 30 |
| Plum | 20-23 | 25 | 28 | 30 |
| Cherry | 20-23 | 28 | 28 | 28 |
| Blueberry | 23 | | 28-29 | 30 |
| Strawberry | | | 30-31 | |

Peach buds are frequently killed by winter temperatures of -15°F . and under some conditions -10°F . will kill dormant peach buds. Periods of mild weather followed by a sudden drop to subzero temperatures will cause more killing than a gradual decrease to subzero temperatures.

Blueberries will stand slightly lower winter temperatures than peaches.

Apples, pears, plums, and sour cherries are seldom injured by subzero winter temperatures experienced in Massachusetts, although temperatures of -20°F . or lower may cause injury in some seasons. Unseasonably low temperatures early in the fall cause more injury than the same temperatures in the winter.

Strawberries will be injured by temperatures of 15°F . in the fall unless they are protected by a winter mulch of straw or hay.

During the months of September and October when the bulk of the apples are harvested, high winds can cause considerable loss to the fruit grower by causing the apples to drop to the ground as windfalls. Excessively high temperatures (70°F . or higher) during this period will also cause an increase in the dropping of apples.

THE POLLINATION OF APPLE TREES

In many well-cared for orchards in Massachusetts there were blocks which bore little or no fruit in 1952, hence, one can expect a heavy bloom in these blocks in 1953.

It is well known that such varieties as McIntosh, Delicious, R. I. Greening, Cortland, and Spy require cross-pollination. Hence, much emphasis in the past, and rightly so, has been placed on the importance of having a suitable cross-pollinizer within 80 to 100 feet of the variety to be pollinated. Experience has shown that an arrangement of this sort is necessary as insurance against a crop failure in years that are not favorable for bee flight. However, if weather conditions at blossom time are favorable for bee flight and pollen germination (warm, sunny, quiet) and a heavy bloom is present, over-pollination and an excessive set is a real possibility. Such an overset leads to small apples, limb breakage, and biennial bearing. Of course, to have an overset on McIntosh the cross-pollinizing varieties, such as Delicious, Cortland or Wealthy, must be carrying a good bloom as well. Since an apple tree with a heavy bloom needs to set but 3 to 4 per cent of its blossoms to produce a full crop, it is not difficult to understand why oversetting may occur in 1953. Also, in the absence of a crop in 1952 the trees are probably high in food reserves which will tend to increase the chances of over-setting.

Many growers are in the habit of having hives of honey bees brought into the orchard to aid in pollen transfer. It seems advisable to consider the removal of such hives after one good day of pollinating weather in those blocks where the bloom is heavy on McIntosh, where there are an abundant number of blooming, cross-pollinating varieties, and if the blossoming season is late enough so that fruit losses by spring frosts are remote. Of course, we are assuming that these trees are in a good state of vigor and are not deficient in the necessary nutrient elements. It has been shown that a few hours of favorable weather for active bee activity is all that is needed for sufficient cross-pollination to provide a good crop of apples. Recently, it has been estimated on the basis of field records of honey bee activity that it would be theoretically possible for 7 bees to cross-pollinate 4000 blossoms on a tree adjacent to a cross-pollinizer in one day or enough to produce 25 to 30 bushels of fruit. This job could be accomplished if each bee made eight trips per day and visited 150 blossoms per trip and spent half the time on the McIntosh tree and the rest of the day on the pollinizer. Under favorable weather conditions the number of bees per tree often greatly exceeds the theoretical 7 that may be needed. Therefore, if conditions in an orchard are very favorable for cross-pollination the removal of hives of bees from the orchard is worthy of consideration after one day of active bee flight in blocks where one is interested in reducing the chances of oversetting. However, even if hives of honey bees are removed from the orchard an overset may still occur since wild bees or even honey bees coming in from neighboring areas may be plentiful in the orchard.

The greater the amount of cross-pollination which occurs the greater the number of flowers that will develop into young fruits. To be sure, a large number of these young fruits may fall during the June drop period but before this time arrives these young fruits, through their utilization of food reserves in the tree, will have an exhaustive effect on the tree. This influence will result in reducing shoot growth, leaf area, and the chances of flower bud initiation for the 1954 crop.

We realize that some may prefer to allow cross-pollination to proceed unhampered and then rely on hand or chemical thinning to reduce an overset, if it occurs. However, hand thinning is usually done too late to influence biennial bearing and chemical thinning is not risk-proof.

F. W. Southwick

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GIFT PACKAGES OF FRUITS - Adapted from an article "Fruit by Mail" - MODERN PACKAGING

The gift fruit package is said to be a ten million dollar business of Western shippers, which means more than two million packages shipped by Express or Mail every year. It is a market for top quality fresh fruit with highly developed advertising and packaging techniques.

The more recent development started with sample packages to ten of the Country's leading business executives with a story as to their desirability as gifts. This led directly to an order of 450 gift boxes. Today attractive catalogues list apples, peaches, grapes, plums, nectarines, oranges, grapefruit, fruit cakes, jams, preserves, dried fruits, and glase fruits, nuts, and a variety of other items. Three quarters of the packages are shipped in the holiday season. Railway Express, and U. S. parcel post handle all but a very small portion of the total business.

Packaging requirements for mail order fruit gifts are highly specialized. Basically the package must protect the fruit in transit against damage and pilferage. This is important to the industry for all shippers guarantee safe arrival, knowing that their future market depends upon customer satisfaction. The package must in addition be easily opened.

Development of visual appeal is the requirement on which most time and effort has been spent. The exterior experience should be attractive. But that is subordinate to its appearance when opened.

Since the fruit is a quality product, the packaging should also have the kind of finished appearance which gives an immediate impression of quality. To fulfill this primary requirement packaging must be fairly expensive. Various packers have estimated that packaging materials account for ten to twenty per cent of the total cost.

The volume business comes on the one and two layer boxes of fruit, priced between three and six dollars, post paid. Wood excelsior pads, green shreaded wax paper, fruit wraps are used to protect and enhance the appearance of the fruit.

Catalogues are used as the practical salesman, but their effectiveness is overshadowed by the packages themselves. A high proportion of the people perhaps one third, who receive gift packages order them themselves later, for their friends. The orders seem to pyramid from satisfied customers.

No-one knows the number of gift packages put up by the Massachusetts growers. Although the number of growers who use this outlet, and the number of packages they sell would probably be surprising. New England apples are sent into every State that will accept apples. The December express bill of some individual growers runs into several thousands of dollars.

There is no valid reason however, why one of the best apples in the world, grown in an area that can grow it well, could not have a much bigger outlet in the gift packages to the advantage of the growers.

OUR OWN NEW ENGLAND AREA WOULD BE A GOOD PLACE TO START BUILDING SALES.

-- F. E. Cole

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TOBY'S TRAVELS - Chapter VI

Puyallup, located in the western part of the State of Washington is noted for its production of small fruits. Many new varieties of strawberries and raspberries have been produced at the Agricultural Experiment Station at Puyallup. Two of the more noteworthy varieties are the Washington raspberry and the Northwest strawberry. The average rainfall in this area is approximately 30 inches. The minimum winter temperature is about 15°F. The lowest minimum temperature ever recorded was 8° below zero. Due to the limited amount of rainfall, irrigation is a common practice.

Strawberry growing is one of the principal agricultural enterprises in this section. At the present time 75% of the acreage is planted to Marshall but the acreage being planted to Northwest is increasing rapidly and this variety may replace Marshall eventually. This shift in varieties is due, in part at least, to the fact that Marshall is susceptible to three virus diseases while Northwest is resistant if not immune to them. As a result of the susceptibility of Marshall to virus diseases the yield per acre has been declining steadily. Formerly the average production was 3-1/2 to 4 tons per acre whereas at the present time it is less than 2 tons per acre. In terms of quarts the present yield is approximately 3000 as compared to 6000 or more a few years ago. At the prevailing price of 15-1/2 cents per pound, the gross income from an acre of strawberries was around \$625.

It is a common practice in this area for strawberry growers to dust every two weeks with parathion or BHC to control the aphids which spread the virus diseases.

A considerable volume of the strawberry crop is frozen. Formerly, the practice was to freeze the berries in barrels but the present trend is towards small packages rather than barrels. The Northwest variety is particularly popular with processors for putting up a sliced pack.

The Puyallup area is also noted for its raspberry production. The two varieties commonly grown are Washington and Willamette with Washington being the more popular.

The average yield for raspberries is around 7 tons per acre or about 20,000 pints. The prevailing price was 18 cents per pound which would give a gross income of approximately \$2500 per acre. The highest yield recorded for the Washington variety was 10.2 tons. At present the yield on Washington is on the decline due to Western Yellow rust disease and an unknown trouble which is killing the plants in some areas. Some root rot disease appears to be the cause of this difficulty.

At the Puyallup Experiment Station the Washington variety was producing a partial fall crop. Considerable breeding work is being done here. Washington 309 and Washington 354 - an everbearer - are two new seedlings which show particular promise.

-- O. C. (Toby) Roberts

SOMETHING NEW ABOUT STRAWBERRIES

Is it all right to plant strawberries on land that was in sod up until last fall or perhaps even this spring?

Because of possible damage to the newly set plants by white grubs, Japanese beetle grubs and possibly wireworms, the answer has always been -- No.

There is a new answer. It is "Yes, if you treat the soil with chlordane before planting."

The best method is to apply the chlordane uniformly to the surface after plowing and at least one discing. Land must be disced thoroughly again immediately after the application of chlordane. This is to mix the chemical with the upper 3 to 6 inches of soil and to prevent its loss into the air.

The amount used is important. Do not expect results unless you make certain that 10 lbs. of actual chlordane are distributed uniformly over each acre. Treat smaller areas with amounts necessary to give an equal dosage.

Chlordane is readily available as 5% and 10% dusts, 40% and 50% wettable powders, and 45% and 75% emulsifiable concentrates. The dusts may be distributed directly by any convenient means at hand. The wettable powders and the emulsion concentrates are best diluted with water and then sprayed on the surface so as to provide the proper dosage. It is possible to mix the wettable powders or the dusts with fertilizers, but the quantities to mix must be carefully worked out to give you the proper amount of fertilizer and at the same time the proper amount of chlordane for the area you wish to treat.

The following table should be helpful:

Rate of Application of Several Formulations to Give Required Amounts of Actual Chlordane (10 lbs. per Acre)

| <u>Commercial Product</u> | <u>Amt. Per Acre</u> | <u>Amt. per 1000 Sq. Ft.</u> |
|---------------------------|----------------------|------------------------------|
| 75% emulsion concentrate | 5 qts. | 1/4 pt. |
| 45% emulsion concentrate | 2 1/2 gals. | 1/2 pt. |
| 50% wettable powder | 20 lbs. | 1/2 lb. |
| 40% wettable powder | 25 lbs. | 10 oz. |
| 10% dust | 100 lbs. | 2 1/2 lbs. |
| 5% dust | 200 lbs. | 5 lbs. |

Note: If some of the above figures don't quite fit mathematically to your way of thinking, just remember that some of the dust may blow away and the square feet in my acre is in round figures. All this is for your convenience.

Waiting until after the plants are set is not recommended. If you do get caught and find grubs damaging your plants after they are set, it is still possible to check them by using chlordane. However, irrigation or a rain following soon after treatment is rather essential when using this delayed method.

Incidentally the amounts of chlordane given above are the amounts needed to control Japanese beetle grubs and white grubs in lawns and other turf. If you have a nice lawn and the Japanese beetle is now in your area, you may wish to save it by making this treatment. Of course, in this case it isn't necessary to plow; just spread the chlordane over the grass and either wash it in or let it rain.

THE RELATIONSHIP OF DDT TO INCREASES IN MITE POPULATIONS

This subject always comes up whenever we discuss the current spray programs being recommended in Massachusetts. No one has a complete answer, but new ideas and contributing factors are being set forth or discovered all the time.

Mr. Donald W. Davis of California finds that DDT causes mites to become more active and to spread about over the food plant. In his studies this seems to be an important reason why mites on plants treated with DDT tend to increase, sometimes very rapidly. Davis worked with a species of mite very closely related to our 2-spotted mite and having much the same habits.

Normally mites of this group tend to gather into small groups and these early colonies slowly expand during the season. Within the colony there is extreme competition for food. As the number of mites increases, their ability to reproduce falls off and no further build-up occurs.

Davis' studies indicate that when DDT is applied to mites or to the host plant there is a definite change. The mites become extremely active and there is a temporary drop in the egg laying.

The increased activity causes the mites to travel away from the original colony and thus they become widely dispersed. This relieves the competition for food and increases the reproductive capacity of the population. Thus more eggs are laid and a more widely scattered and higher peak population is the final result.

This does not mean that killing of predators is not an important factor in mite build-up following the use of DDT. However, this does help to understand better why mites are able to increase so rapidly. A mere killing of the predators has not been a satisfactory explanation for this marked increase in reproductive powers.

-- Ellsworth H. Wheeler
Extension Entomologist

HOME ORCHARD SPRAY SCHEDULE

The annual revision of the "General Purpose" Home Orchard Spray Schedule is now available throughout the State. Obtain it through your local County Extension Service Offices or at the University of Massachusetts and its branches at Waltham and East Wareham. If you are not a commercial grower and have one or more trees of apple, pear, plum, peach, cherry, and quince and perhaps some grapes and raspberries, I am sure you will find this Special Circular 178 very useful.

But remember this! The right material and the right timing for applications is not enough. If you are a home orchardist and wish to bring through a crop of fruit reasonably free from insects and disease injuries, you must resolve to spray thoroughly. Your equipment must be good enough to enable you to drench the fruits and foliage every time you take the trouble to make a spray application. Unless you make this resolve and carry it through, you are going to be disappointed in the end result. It is lack of thorough coverage rather than inferior materials or improper timing which all too often causes the home orchardist to fail.

Why not make sure you have the information contained in this Special Circular for the home orchardist. If you are sincere in your desire to grow some reasonably good fruit, follow the schedule of applications suggested -- and above all -- do a good job.

-- Ellsworth H. Wheeler

* * * * *



Fruit Notes

Prepared by the Fruit Program Committee of the Extension Service
W. H. Thies, Extension Horticulturist

APRIL 15, 1953

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CHEMICAL THINNING

Now that some growth of buds has taken place, it is very evident that apple blocks which carried a light crop in 1952 but had good clean foliage are going to blossom heavily. If the bloom period occurs somewhere near the average date and temperatures at the time are reasonably warm, an overset is very apt to occur this year. Peaches have suffered virtually no bud injury following a very mild winter and are going to blossom heavily, also.

For those of you who may be interested in chemical thinning of apples and peaches, we have prepared Special Circular No. 189, entitled "Chemical Thinning of Apples and Peaches." It may be obtained from your County Agent or by writing to the Pomology Department, University of Massachusetts, Amherst, Mass.

As you may recall from discussions of chemical thinning at the Worcester and county meetings, we believe the amide form of naphthaleneacetic acid may be a valuable material for thinning some early varieties such as Duchess, Red Astrachan, Transparent, and Gravenstein. Also, it may be a good material to try on McIntosh where the variety may need thinning. At the time our special circular on thinning was written it appeared that two manufacturers would be able to supply this area with the amide form. It is now known that "Amid-Thin" will be the only amide form on the market since the manufacturers of "Amid-Thin" hold patent rights to its protection. Hence, the information with respect to "Apple-Thin" given in Special Circular 189 should be disregarded. It will not be available.

Also, the directions for use given on the containers of "Amide-Thin" are not identical with ours. As you will note on the cans of this material (for all varieties but Rome) it is suggested that "Amid-Thin" be applied at petal-fall (calyx). We believe after-calyx treatments are advisable in some cases, however. Hence, if you wish to follow our suggestions refer to the directions in Special Circular No. 189 which deal with "Amid-Thin" rather than to those printed on the container.

We still believe that the old material naphthaleneacetic acid (or its sodium salt) as a spray or dust is valuable for chemical thinning apples. Those of you who have had satisfactory results with them on certain varieties should probably continue to use them and consider "Amid-Thin" on a trial basis. For a more detailed discussion of this subject refer to Special Circular No. 189.

-- F. W. Southwick

WOODCHUCK CONTROL

Spring is here and once again the farmers' burrowing boarder is active. This burrowing boarder, the woodchuck can be controlled satisfactorily. Here are a few pointers on the how and why of WOODCHUCK CONTROL.

1. Gas cartridges are effective in controlling woodchucks. When the fuse of the gas cartridge is ignited and the cartridge is placed in a woodchuck burrow, it produces poisonous gases that kill the woodchuck. Last season many farmers experienced difficulty in getting the fuse to ignite. This year a new fuse has been tested and found to give excellent results, and all cartridges will be supplied with this new fuse.

2. Control can best be obtained during early spring. During April and May, the female 'chuck and her young have not left their burrow. These burrows are easy to locate, due to the short grass in the fields and the active diggings at the entrance.
3. During the summer months, woodchucks may have various burrow systems. They may have two or three different homes several hundred feet apart or further. This again stresses the need for controlling the woodchucks during the spring while they are still using one burrow.
4. After the woodchucks have been gassed, it may not be long before new woodchucks migrate in from surrounding areas and reactivate the old burrows. The woodchucks that were in the gassed burrows have been controlled, but when new woodchucks move in and reopen the burrows, once again the area should be gassed. Much of the reopening of burrows may be eliminated if the farmer will do a thorough job of control, and that requires gassing all active burrows in brush rows and the areas adjacent to cultivated fields.

An item of interest is that the gassing of woodchucks, as practiced in the Northeastern States, has not greatly reduced the number of burrows which may be utilized by rabbits, skunks, etc., particularly during the winter months.

The U. S. Fish and Wildlife Service Woodchuck Cartridge is now available through the Rodent Control Fund, University of Massachusetts, South College Building, Amherst, Massachusetts, at the same price as formerly.

-- C. E. Faulkner
Mammal Control Supervisor

VARIETIES OF PEACHES FOR MASSACHUSETTS

| <u>Variety</u> | <u>Recommended For</u> | <u>Color</u> | <u>Harvesting Season</u> |
|--------------------------|------------------------|--------------|--------------------------|
| Golden Early Bird | T | Y | -46 |
| Erly-Red-Fre | C & H | W | -42 |
| Jerseyland | C & H | Y | -38 |
| Prairie Sunrise | T | Y | -34 |
| Raritan Rose | C & H | W | -31 |
| Red Haven | C | Y | -30 |
| Golden Jubilee | C & H | Y | -28 |
| Triogem | C & H | Y | -24 |
| Early Halehaven | T | Y | -24 |
| Sunhigh | T | Y | -23 |
| Wildrose | T | W | -21 |
| Halehaven | C & H | Y | -18 |
| Fairhaven | T | Y | -17 |
| Summerrose | T | W | -16 |
| Garden State (Nectarine) | C & H | Y | -10 |
| Summercrest | C | Y | - 9 |
| Kalhaven | C | Y | - 7 |
| Elberta | C & H | Y | 0 |
| Fowler | C | Y | + 1 |
| Afterglow | C & H | Y | + 4 |

(See footnotes on top of page 3)

| | |
|---|--|
| T Trial. | Y - Yellow Flesh. |
| H Home Garden. | W White Flesh. |
| C Commercial. Varieties so marked are not necessarily equally adapted to all sections of the state. | - Days before Elberta. + Days after Elberta. Elberta about Sept. 15. |

Variety Notes

| | |
|-------------------|--|
| Golden Early Bird | Fruit medium size, semicling, attractive; flesh yellow, soft, flavor excellent. |
| Erly-Red-Fre | Tree upright, large, very productive. Fruit medium to large, attractive, fine textured, white flesh, semicling to free, flavor excellent. Bud hardiness above average. |
| Jerseyland | Tree large, upright, very productive. Fruit freestone, firm, juicy, yellow flesh, excellent flavor, bud hardiness above average. |
| Prairie Sunrise | Fruit large, attractive; flesh yellow, firm, smooth, juicy, freestone. |
| Raritan Rose | Tree large, upright-spreading, very productive, freestone. Fruit large, round, attractive; flesh smooth, juicy, firm. Bud hardiness above average. |
| Red Haven | Tree tall, upright, very productive. Fruit medium to large, very highly colored; flesh firm, smooth, fair flavor. Requires heavy thinning. |
| Golden Jubilee | Tree medium to large, fairly vigorous, very productive. Fruit large, attractive; flesh yellow, smooth, juicy, excellent flavor, soft, freestone. |
| Triogem | Tree medium to large, fairly vigorous, very productive. Fruit medium to large, freestone, well colored; flesh yellow, smooth, firm, juicy, excellent flavor. Bud hardiness of Elberta. |
| Early Halehaven | Early ripening sport of Halehaven. Like Halehaven except in season. |
| Sunhigh | Tree medium size but productive; fruit large, highly colored, freestone; flesh yellow, smooth, firm, excellent flavor. Excellent canning. |
| Wildrose | Tree medium size, upright, medium to heavy yield. Fruit large, attractive, freestone; flesh white, smooth, firm, juicy, very good flavor. |
| Halehaven | Tree large, upright, vigorous, productive. Fruit medium to large, attractive, freestone; flesh firm, yellow, smooth, very good flavor. Bud hardiness above average. |
| Fairhaven | Tree large, vigorous, productive. Fruit large, attractive; flesh yellow, firm, juicy, good quality. |

- Summerrose Tree medium size, upright, very productive. Fruit freestone, medium size, round, attractive; flesh white, smooth, firm, juicy, high quality.
- Garden State A nectarine. Tree tall, upright, vigorous, productive. Fruit good size, freestone, russeted, moderately attractive; flesh yellow, firm, juicy, quality excellent.
- Summercrest Tree large, spreading, vigorous, very productive. Fruit large, round, fairly attractive, freestone; flesh yellow, firm, smooth, good flavor. Colors poorly on rich soils. Drops when ripe.
- Kalhaven Tree medium to large, upright-spreading, very productive. Fruit freestone, medium to large, attractive; flesh yellow, firm, moderately juicy, fair flavor, texture a bit coarse.
- Elberta Tree large, vigorous, productive. Fruit large, attractive, freestone; flesh yellow, firm, juicy, fair flavor. Has wide soil and climatic adaptability.
- Fowler Tree large, upright-spreading, productive. Fruit large, round, very attractive, freestone; skin thick and tough, flesh yellow, smooth, unusually firm, fair flavor, good shipper and keeper.
- Afterglow Tree large, upright-spreading, productive. Fruit medium to large, attractive, freestone; flesh yellow, firm, smooth, juicy, very good quality.

-- J. S. Bailey

DIELDRIIN AND PLUM CURCULIO

One of the most promising new insecticides for control of plum curculio is Dieldrin, a product of Julius Hyman & Co., Division of Shell Chemical Corporation. Chemically it is a chlorinated hydrocarbon belonging to the same general group as Chlordane, benzene hexachloride and toxaphene. The active ingredient is hexachloro epoxy octahydro dimethano naphthalene, -- nearly everyone is happy to call it dieldrin. Although it is available as an emulsifiable concentrate and as a dust, the 50% wettable powder is suggested for spraying fruit trees. (Until 1953 it was formulated as a 25% wettable powder.)

EXPERIMENTAL TRIALS

During the past two years, entomologists in most fruit growing states have made experimental tests of dieldrin for the control of plum curculio on apples and peaches. The reports have been universally good. As a result, the Production and Marketing Administration of the U.S.D.A. approved labels permitting the sale of this material for use on peaches and apples for combatting the first brood of plum curculio in Calyx and early Cover sprays.

Our own tests at Waltham have given good results as shown on the next page.

| | <u>Percent of fruit stung</u> | | |
|-------------------------------|-------------------------------|---------|--------|
| | Drops | Harvest | Totals |
| 25% Dieldrin w.p. 1 lb.-100 | 4.58 | 1.39 | 3.95 |
| 25% Dieldrin w.p. 1/2 lb.-100 | 7.87 | 2.54 | 5.16 |
| Lead arsenate 4 lbs.-100 | 40.02 | 18.54 | 29.24 |
| Fungicide only | 50.85 | 43.87 | 50.11 |

AMOUNT NEEDED

The most practical concentration for dilute spraying seems to be one-fourth pound of actual dieldrin in 100 gallons of water. This is obtained from one pound of 25% wettable powder or from one-half pound of 50% wettable powder. In many tests twice this amount has been used, but in our experience it does not seem necessary.

ADVANTAGES

At the above strength, dieldrin should give effective control of plum curculio at less cost than that of materials now used. It is also effective against plant bugs and has reduced cat-facing injury to peaches appreciably. Preliminary studies indicate that it is less destructive to beneficial insects than DDT or methoxychlor.

DISADVANTAGES

Dieldrin has not given effective control of most lepidopterous caterpillars. Apparently it is necessary to add DDT, TDE to give satisfactory control of codling moth and red-banded leafroller on apples and Oriental fruit moth on peaches. On apples it would be used with lead arsenate also. Dieldrin has a persistent residue. It is poisonous to warm-blooded animals making it necessary for the operator to wear protective clothing and respirator and to wash skin and clothing after exposure. Spray drift must not be allowed to fall on grazing **land** or streams and ponds.

COMPATABILITY

Dieldrin is compatible with most insecticides and fungicides usually used on fruit trees except alkaline materials such as lime sulfur, Bordeaux mixture and zinc sulfate-lime. The new miticides, Ovotran and Aramite should not be combined with it until further information is available.

SUGGESTIONS FOR USE

In 1953 the use of dieldrin is suggested on a trial basis only. On apples it might be used in one of the three applications aimed at plum curculio, preferably the First Cover Spray. Use 1/2 pound of 50% wettable powder or 1 pound of 25% wettable powder per 100 gallons with the usual fungicides. DDT or TDE can be added but they should not be necessary if methoxychlor is used in calyx and Second Cover applications unless red-banded leafroller is serious.

It could be used with one-half strength lead arsenate or in place of lead in the lead arsenate program (Schedule II) in the FIRST COVER SPRAY to give increased protection against curculio.

In peaches where the Shuck, First and Second Cover applications are critical for curculio control, dieldrin may be used in any or all of the sprays but should be combined with DDT to give protection against Oriental fruit moth.

THE EFFECTS OF A PHENYL MERCURY* COMPOUND ON HONEYBEES

Beekeepers have had to be on the alert for years to avoid losses of bees through improper applications of sprays or dusts. In some states there are laws prohibiting the application during bloom of substances harmful to bees. Various writers as Eckert 1935, 1944, Knowlton 1944 and Shaw 1941 and 1944 have presented data showing the effects of pesticides on bees.

Two types of applications have been permitted during bloom. Certain fruit thinning sprays have been shown to have no effects on bees. Sulfur applications have also been allowed. Shaw 1944 has shown that the toxicity of sulfur to bees is not as serious as many other pesticides.

During this past spring, considerable anxiety was expressed in Massachusetts relative to the use of phenyl mercury compounds during bloom. Such compounds have good apple scab control properties. With the unusually high rainfall, many growers planned to use phenyl mercuries during bloom. Their use had been included in the spray schedule even though no work had been done to determine the toxicity of these materials to bees. Another important point to determine was the possible repellent action of the fungicide to pollinating insects.

In order to obtain information as to the possible danger of these chemicals to bees some preliminary tests were conducted at the University of Massachusetts. In these tests, bees were shaken from brood frames into sleeve cages. These were then taken to the college orchard. Through the cooperation of the Pomology Department, the services of a sprayer and crew were made available. A phenyl mercury compound (Puratized) was used at the rate of 1 pint of this material in 100 gallons of water. The first cage was fastened to a branch of apple blossoms and leaves. Then the tree was sprayed. This was felt to constitute a severe test of the possible contact action of the chemical. After the spray had dried, a second cage was fastened to a branch bearing treated foliage and blossoms. The bees were exposed to any possible residual action of the material for 20 minutes and then the cage was removed. The third sleeve cage constituted the check. Following treatment, the cages and bees were taken to the laboratory. Food was supplied and daily counts of the mortality was recorded.

The data on the next page indicate that no or only slight danger to bees resulted from their contact with the phenyl mercury compound which was tested. Moreover, it was evident from the observation of the behavior of bees in visiting treated blossoms that no repellent action occurred.

In order to secure more complete information, a second lot of experiments was planned. The bees were placed in sleeve cages as already explained. One lot was exposed to possible contact action and a second to residual action. Concentrations of phenyl mercury at the rates of 1 pint, 2 pints and 4 pints per 100 gallons were applied. These concentrations are expressed in the accompanying tables as X, 2X and 4X. Following the treatments, the bees were taken to the laboratory and given food. Daily observations of the mortality of the bees were made for a period of ten days. At the end of this period, living bees were killed with cyanide to determine the total number in each of the cages. The data obtained are presented in Tables II and III.

* "Puratized" was the phenyl mercury tested.

Table I

Preliminary Tests of Effects of a Phenyl Mercury Compound on Bees

| Hours | <u>Number of Dead Bees</u> | | |
|-------------------|----------------------------|------------|------------|
| | Cage 1 (1) | Cage 2 (2) | Cage 3 (3) |
| 24 | 1 | 2 | 2 |
| 48 | 3 | 2 | 2 |
| 72 | 4 | 2 | 3 |
| 96 | 4 | 2 | 3 |
| 120 | 5 | 3 | 3 |
| 144 | 6 | 5 | 4 |
| 168 | 6 | 5 | 4 |
| 192 | 7 | 5 | 5 |
| 216 | 7 | 6 | 5 |
| 240 | 8 | 6 | 7 |
| Total dead | 8 | 6 | 7 |
| Total No. Bees | 124 | 108 | 135 |
| % dead in 10 days | 6.4 | 5.5 | 5.1 |

- (1) Bees exposed to contact action of phenyl mercury.
- (2) Bees exposed for 20 minutes to dried residue of phenyl mercury.
- (3) Check (no treatment).

Table II

Effects of Various Concentrations of a Phenyl Mercury Compound on Bees

| Hours | <u>Number of Dead Bees</u> | | | |
|------------|----------------------------|-------|-------|-------|
| | <u>Concentrations</u> | | | |
| | X | 2X | 4X | Check |
| 24 | 0 | 0 | 0 | 0 |
| 48 | 0 | 0 | 0 | 0 |
| 72 | 1 | 0 | 0 | 1 |
| 96 | 1 | 1 | 0 | 2 |
| 120 | 3 | 2 | 3 | 3 |
| 144 | 4 | 3 | 3 | 4 |
| 168 | 4 | 3 | 3 | 5 |
| 192 | 6 | 4 | 4 | 5 |
| 216 | 7 | 5 | 4 | 6 |
| 240 | 8 | 7 | 6 | 7 |
| Total Dead | 8 | 7 | 6 | 7 |
| Total Bees | 116 | 117 | 49 | 121 |
| % Dead | 6.9 | 5.98% | 12.2% | 5.78 |

Table III

Effects of 20 Minute Exposures of Bees to Residues of Various Concentrations of a Phenyl Mercury

Number of Dead Bees

| <u>Hours</u> | <u>X</u> | <u>2X</u> | <u>4X</u> | <u>Check</u> |
|--------------|----------|-----------|-----------|--------------|
| 24 | 1 | 0 | 1 | 1 |
| 48 | 1 | 1 | 2 | 1 |
| 72 | 2 | 2 | 3 | 2 |
| 96 | 2 | 2 | 3 | 2 |
| 120 | 3 | 3 | 3 | 3 |
| 144 | 4 | 4 | 5 | 5 |
| 168 | 5 | 5 | 6 | 7 |
| 192 | 7 | 6 | 7 | 7 |
| 216 | 8 | 8 | 9 | 10 |
| 240 | 10 | 8 | 11 | 12 |
| Total Dead | 10 | 8 | 11 | 12 |
| Total Bees | 180 | 209 | 213 | 192 |
| % Dead | 5.5 | 3.9 | 5.1 | 5.1 |

A comparison of these data reveal that the mortality of bees during a ten day period following an exposure of honeybees to a phenyl mercury was similar to that of untreated bees. In one instance, the exposure to 4X concentrations as a contact application, the mortality appears to be greater. However this may be explained by the relatively fewer bees in that particular cage. Otherwise there appear to be no significant differences in the death rates of the bees.

In conclusion it seems evident that the exposure to bees to the phenyl mercury compound (Furatized) had little effect on the survival of the bees. No indication of any repellent action was observed.

-- F. R. Shaw

FERTILIZER APPLICATIONS FOR CULTIVATED BLUEBERRIES

What kind of fertilizer shall I use for cultivated blueberries and how much? The table below attempts to answer these questions.

| Years After Plants Are Set | Annual Application of Fertilizer | | | | | | For 10 Bushes Pounds 5-8-7 |
|----------------------------|----------------------------------|-------------|-----|----------|----------|----------|----------------------------|
| | Pounds per acre | | | | | | |
| | 7-7-7 | Combination | | Sul. Am. | Sul. Am. | 10-10-10 | |
| 7-7-7 | | Sul. Am. | | | | | |
| 0 | 100 | 100 | - | - | 70 | 140 | 1-1/4 |
| 1 | 200 | 200 | - | - | 140 | 280 | 2-1/2 |
| 2 | 300 | 200 | 35 | - | 210 | 410 | 3-3/4 |
| 3 | 400 | 200 | 70 | 140 | 280 | 560 | 5 |
| 4 | 550 | 250 | 100 | 200 | 385 | 770 | 7 |
| 5 | 700 | 350 | 120 | 240 | 490 | 980 | 9 |

It is recognized that other fertilizer mixtures may be as good as those listed. Also, that the quantity should be based on the size, vigor and productiveness of the bushes. Therefore, the quantities suggested are intended to serve only as guides.

In column 1, 0 indicates the year the plants are set. At this time soluble nitrogen carelessly used can injure the plant. Wait until the plants are established, about June 1, to apply the fertilizer. Spread it out well around the plants on a clear dry day.

7-7-7 (column 2) has been the standard formula for a number of years. The quantities recommended should be increased or decreased as experience indicates. It may be desirable the second or third year to split the application - half before bloom and half about June 1.

In columns 3 and 4 is given a combination of 7-7-7 to be applied in April and sulfate of ammonia to be applied June 1. Sulfate of ammonia, containing 20 percent nitrogen is too strong for very young plants and replaces only 1/3 of the nitrogen 2 years after planting. Thereafter it can replace more.

The sulfate of ammonia only program in column 5 is for older bushes and for those which have been receiving liberal amounts of complete fertilizer. Since blueberries need all the elements, it is advisable to use an application of complete fertilizer every third or fourth year.

Columns 6 and 7 give the amount of a fertilizer containing 5 or 10 percent nitrogen which would be required to give the same amount of nitrogen as the 7-7-7 mixture.

The last column reduces the quantities of 5-8-7, a common garden fertilizer, to amounts suitable for 10 bushes.

-- J. S. Bailey

There has been much discussion about the development of apple trees this spring. The light snow cover in late winter and the rapid growth of grass following the recent heavy rains have all pointed toward an early season.

Reference to the records for the past 13 seasons show that we are now (April 14) well passed the early and disastrous conditions of 1945 and undoubtedly ahead of the late seasons such as 1940. The average date for full bloom according to these records is May 11-12.

Louis Webster has tentatively picked May 9 and 10 for his Apple Blossom Tour and it looks like a good forecast. But being New England -- Quien sabe! (Ed. The meaning can be found in a good dictionary.)

SPRAY DATES ON MCINTOSH APPLE TREES

| | <u>PRE-PINK</u> | <u>PINK</u> | <u>FLOOM</u> | <u>CA LYX</u> |
|------|-----------------|-------------|--------------|---------------|
| 1940 | May 8 | May 16 | May 20-24 | May 28-29 |
| 1941 | April 23 | May 1 | May 8 | May 15 |
| 1942 | April 27 | May 3 | May 7-8 | May 13 |
| 1943 | May 6 | May 13 | May 18-20 | May 25 |
| 1944 | May 4 | May 9 | May 13 | May 17-20 |
| 1945 | April 11 | April 16 | April 18 | April 26 |
| 1946 | April 18 | April 30 | May 15 | May 20 |
| 1947 | May 6 | May 12-13 | May 19 | May 24-26 |
| 1948 | April 28 | May 4 | May 17-24 | May 27 |
| 1949 | April 21 | April 28 | May 5 | May 9-11 |
| 1950 | May 6 | May 12 | May 16-17 | May 23 |
| 1951 | April 25 | May 5 | May 9 | May 14 |
| 1952 | April 24 | May 6-7 | May 10 | May 16-19 |

-- W. D. Whitcomb

TOBY'S TRAVELS -- Chapter VII

In the Puyallup area of the state of Washington the growing of cultivated blueberries is making considerable headway. One sizeable blueberry farm which I visited in company with Dr. Schwartz of the Puyallup Experiment Station, covered an area of approximately twenty acres. Last year the yield on this plantation was at the rate of eight tons per acre and the berries were sold to a processing plant at the rate of \$140 per ton. The varieties being grown here are Concord, Jersey, and Rubel. The planting distance is eight feet between rows with the plants set six to eight feet in the row. The entire area was covered with a sawdust mulch. Sawdust is so plentiful in that part of the United States that most of the sawmills burn the sawdust to get rid of it. Many homes in that area are heated with sawdust with the sawdust being fed into the furnace by means of an automatic stoker. Many of the sawmills burn sawdust and waste lumber in the boilers which furnish power to make the electricity which in turn operates the mill.

Now let's get back to that blueberry patch that we were talking about. Near this blueberry field the owner had recently dug an artesian well 128 ft. deep with a natural flow of 125 gallons of water per minute. In this area of limited rainfall irrigation is of prime importance so irrigation is supplied whenever the soil begins to dry out. An application of water has been found to be especially important in the fall.

A 16-20-0 fertilizer is used on this plantation at the rate of 60 pounds of actual nitrogen per acre.

I was informed that a 12 acre plantation had been sold recently for \$31,000.

This particular grower propagates his own plants using the mixture of 3 parts of peat and 1 part of sand. Propagating frames are placed under a slat roof and are supplied with bottom heat.

One of the more serious problems with which this grower has to contend is the loss of berries by the birds. Robins and Cedar Waxwings appear to be the chief offender. This grower had one other complaint and that was the competition that blueberry growers in that area are having with berries from the state of Maine. I didn't embarrass him by telling him that I am a native of Maine.

After a most interesting visit in the Puyallup area our next stop of pomological interest was at Salem, Oregon which I will describe in the next chapter.

-- O. C.(Toby) Roberts

POMOLOGICAL PARAGRAPHS

Says Dr. Max Brunk of Cornell University, reporting on his outstanding research on apple selling over New York State Sept.-thru-Jan.:-- "This year we had a short crop and we sold everything on the trees but the leaves. Last year we had a big crop and the leaves were worth about as much as the apples. We get reports on the volume handled by some large grocery organizations and the volume sold in the two years does not reflect the difference in the crop estimate. This year the stores have sold 93.5 per cent as many apples as were sold the previous year and the customers trading in these stores have spent 26.8 per cent more total dollars for apples this year than they did last year. Take into consideration the lower qualities that have been thrown on the market this year and you will realize that it is possible to market at a profit a lot more apples than we had this year.

I hope you will remember this when it comes time to sell next years crop because there will be a lot of talk next fall of how much larger the crop is than it was in the fall of 1952. This can result in a bad psychological situation which can seriously but needlessly depress the market. It's very hard to sell something for more than you think it's worth. Experience this year has demonstrated that we can sell a large quantity at profitable prices."

-- From Appalachian Apple Service

* * * * *

Virginia Loses 14% of Apple Trees--1/3 Million --in Three Years. Commercial apple orchards of Virginia at the close of 1952 had 2,388,600 trees, or 377,200 fewer than in 1949: a drop of 13.6 percent, finds Virginia Department of Agriculture. During this 3-year period 18.2 percent of the trees in the orchards were removed or abandoned and new plantings amounted to 4.6 percent of the 1949 total. These results are based upon 54 percent of Virginia's 1949 apple tree census. A larger percentage of small orchards have been abandoned during the past three years than the larger orchards.

The "middle" of the Virginia Belt took the big cut. The North Valley (Frederick, Clark, Shenandoah and Rockingham counties) decreased about 8 percent; the South Valley Area, including Augusta and Rockbridge, and the Piedmont Area (Albemarle, Amherst, Nelson etc.) declined nearly 30 percent; the North Piedmont and Roanoke Areas both had a reduction of 11 percent.

By varieties, Red Romes increased 39%: Albemarle Pippins decreased 33%. Summer varieties dropped about 11 percent; Fall varieties about 15 percent; and Winter varieties, which make up most of the trees, about 14 percent. "Red" strains of Rome Beauty, Stayman and York Imperial all increased since 1949, while old strains of all Winter varieties dropped materially:-York about 13 percent; Winesaps, 24 percent; Stayman 18 percent. Black Twig, Albemarle Pippin and Ben Davis dropped about 33 percent.

-- Appalachian Apple Service

* * * * *

Thinking About Purchasing Power Pruners? At U. S. Plant Industry Station farm, last winter, it required roughly 99/100 of an hour to prune a tree with hand tools and slightly over 60/100 of an hour to prune a like-sized tree with power pruners. In another orchard, where trees were very thick, and had not been pruned for a long time, thus requiring much detailed cutting, it was almost impossible to use hand tools while it required 79/100 of an hour to prune a like-sized tree with power pruners. In both cases, the power pruners were used from elevated platform with cat-walks into the trees.

-- Maryland Fruit Growers' News-Letter



Fruit Notes

Prepared by the Fruit Program Committee of the Extension Service
W. H. Thies, Extension Horticulturist

MAY 15, 1953

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APPLE TREE COUNT IN MASSACHUSETTS

During 1950 and 1951, the Massachusetts Fruit Growers' Association attempted to get an apple tree count in the commercial orchards in Massachusetts. The tabulation of the count was delayed with the hope that a larger percentage of the trees could be included. Finally the MFGA Industry Committee requested that the usable questionnaires be tabulated. The following figures were taken from the summary of available and useful questionnaires.

NUMBER OF QUESTIONNAIRES, TREES, ACRES, AND PRODUCTION REPORTED BY COUNTIES:

I.

| County | Number useful questionnaires | Trees | Acres | Production 1948 | 1949 |
|--------------|------------------------------|----------------|--------------|-----------------|------------------|
| Barnstable | 2 | 860 | 27 | 755 bu. | 2,460 bu. |
| Plymouth | 4 | 900 | 40 | 2,305 | 5,167 |
| Bristol | 12 | 7,574 | 179 | 15,137 | 23,697 |
| Norfolk | 20 | 11,028 | 296 | 17,257 | 29,537 |
| Essex | 12 | 7,005 | 238 | 8,765 | 13,205 |
| Middlesex | 42 | 68,520 | 1,976 | 306,348 | 419,402 |
| Worcester | 84 | 84,192 | 2,429 | 303,574 | 506,375 |
| Franklin | 23 | 25,971 | 669 | 75,925 | 142,585 |
| Hampshire | 11 | 9,963 | 298 | 37,242 | 44,076 |
| Hampden | 12 | 9,895 | 300 | 28,750 | 52,950 |
| Berkshire | 7 | 3,315 | 104 | 16,103 | 20,298 |
| Total | 229 | 229,223 | 6,557 | 812,161 | 1,259,752 |

The average orchard, according to these figures, would be about 29 acres with 1000 trees or about 35 trees to the acre.

The estimated 1948 and 1949 production is approximately 35% of the apple production as reported by the New England Crop Reporting Service.

A size breakdown of the orchards reported is as follows:-

| <u>Number of trees</u> | <u>Number of orchards</u> |
|------------------------|---------------------------|
| -- 500 trees | 129 |
| 501-1000 trees | 44 |
| 1,001-1500 trees | 15 |
| 1,501-2000 trees | 13 |
| 2,001-3000 trees | 9 |
| 3,001-4000 trees | 7 |
| 4,001-5000 trees | 5 |
| Over -5000 | 7 |
| | <u>229</u> |

The varieties reported by the 229 growers, amounts to 217,458 trees in the following variety groupings:-

| <u>Varieties Reported</u> | <u>No. of trees</u> | <u>Per cent of total trees reported</u> |
|---------------------------|---------------------|---|
| McIntosh | 99,656 | 45.8 |
| Baldwin | 33,569 | 15.4 |
| Delicious | 20,120 | 9.3 |
| Cortland | 17,213 | 7.9 |
| Early McIntosh | 8,165 | 3.8 |

Continuation.....

| <u>Varieties Reported</u> | <u>No. of trees</u> | <u>Per cent of total trees</u> |
|---------------------------|---------------------|--------------------------------|
| Gravenstein | 8,116 | 3.7% |
| Rome or Gallia | 5,578 | 2.6 |
| Wealthy | 4,468 | 2.0 |
| Other | 20,473 | 9.5 |
| Total | <u>27,458</u> | <u>100.0%</u> |

The age of the trees in the variety groups were reported under 5 headings as follows:-

| Variety | PERCENTAGE BY AGE GROUPS | | | | |
|----------------|--------------------------|----------|------------|------------|----------------|
| | Under 5 Yrs. | 5-9 Yrs. | 10-19 Yrs. | 20-29 Yrs. | 30 Yrs. & Over |
| McIntosh | 9.4% | 5.9% | 26.3% | 36.6% | 21.6% |
| Baldwin | 2.3% | 2.0% | 19.6% | 37.7% | 38.4% |
| Delicious | 18.3% | 11.5% | 35.4% | 28.0% | 6.8% |
| Cortland | 27.0% | 10.8% | 24.4% | 35.8% | 2.2% |
| Early McIntosh | 19.7% | 20.3% | 41.4% | 17.1% | 1.3% |
| Gravenstein | 1.4% | 14.3% | 20.8% | 36.6% | 26.7% |
| Rome or Gallia | 59.3% | 19.6% | 8.2% | 2.7% | 10.1% |
| Wealthy | 2.4% | 3.5% | 25.0% | 49.1% | 19.9% |
| Other | 11.0% | 9.8% | 25.0% | 28.5% | 25.8% |

The percentage of all trees reported by age groups is approximately as follows:-

| | | | | |
|-------|------|-------|-------|-------|
| 11.9% | 7.7% | 25.6% | 33.8% | 19.9% |
|-------|------|-------|-------|-------|

-- F. E. Cole
Martha L. Sheirich

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CHEMICAL THINNING OF APPLES

We are in the midst (May 11) of an extremely favorable blossoming period, perhaps the best one in the past 4 or 5 years. Since many of our McIntosh trees, particularly in the eastern part of the state, have a very heavy bloom, the chances of an overset and biennial bearing of this variety is a real possibility of chemical thinning McIntosh, the data in Table 1 may be of interest. These trees are in the University Orchard at Amherst.

Table 1. The influence of chemical thinning of McIntosh 2 weeks after calyx on the set, size, and yield in 1952 and the extent of blossoming in 1953.

| 1952 Treatment (per 100 gals.) | No. trees | Fruits per 100 blossoming clusters | Av. No. fruits per box | Av. yield | 1953-% of growing points blossoming |
|--------------------------------|-----------|------------------------------------|------------------------|-----------|-------------------------------------|
| Check | 7 | 36.5 | 143 | 34.4 | 17.3 |
| App-L-Set-6 oz. | 7 | 13.4 | 113 | 21.7 | 68.8 |
| Amid-Thin-4/5 pt. | 6 | 19.1 | 122 | 28.7 | 59.9 |
| Amid-Thin-1 1/5 pts. | 7 | 20.4 | 124 | 24.5 | 59.6 |
| Amid-Thin-1 3/5 pts. | 7 | 21.3 | 123 | 22.6 | 55.3 |

The set of checks (36.5) in this block was not extremely heavy in 1952. In 1951 some blocks of McIntosh in eastern Massachusetts set over 70 fruits per 100 blossoming clusters. However, the data indicate that even a moderate overset can markedly reduce the amount of blossoming the following season. McIntosh will probably remain annual if the set of a heavy blooming tree does not greatly exceed about 25 fruits for every 100 blossoming clusters.

We suggest where McIntosh appear to need chemical thinning (set over 30 fruits per 100 blossoming clusters) that it be done about 2 weeks after petal-fall if any one of the 3 hormone materials mentioned below are used.

NA Amide (Amid-Thin) looks like a promising material for thinning McIntosh since it causes less foliage injury than NAA sprays and last year it thinned enough when used at the rate of 1 to 1 1/2 pints per 100 gallons 2 weeks after petal-fall. However, we have had only one season's experience with it and we know we need several seasons of experience to determine a material's good points and limitations. For example, Amid-Thin may not thin enough in some years. Therefore, it may be well to use more than one material for thinning. A 0.2% NAA dust applied dry on dry foliage 2 weeks after calyx has given good results on McIntosh during the past 2 years in several tests. Also, NAA sprays at the rate of 6 ounces per 100 gallons 2 weeks after petal fall have been satisfactory in some orchards for thinning McIntosh (although it may thin more than the other 2 treatments mentioned and may cause some foliage injury). Remember that McIntosh is an important variety. Don't thin it chemically unless thinning is definitely necessary. Also, chemical thinning involves some risk so use good judgment before making treatments. For our suggestions on chemical thinning many apple varieties, see our Special Circular No. 189, revised March, 1953, which may be obtained from your county agent or the Pomology Department, University of Massachusetts, Amherst, Mass.

-- F. W. Southwick

EXCESSIVE RAIN VS. MAGNESIUM DEFICIENCY

Past experience has taught us to expect the amount and severity of magnesium deficiency to show a marked increase in years which have excessive amounts of rain in the early part of the growing season. The spring of 1953 can easily qualify as one of excessive rainfall. Our acid soils are low in magnesium content and it is readily leached by excessive rain.

Magnesium deficiency is also generally more prevalent and severe in heavy crop years. With abundant bloom in most McIntosh blocks, we have the potential for a large crop in 1953.

Growers who have not practiced an adequate dolomitic liming program for the past 3 or 4 years stand a good chance of having severe magnesium deficiency occurring in their orchards during late summer and fall. To prevent the occurrence of magnesium deficiency in such orchards, growers should be prepared to apply 3 sprays of 20 pounds of magnesium sulfate (epsom salts) per 100 gallons. These sprays can be applied at about the time of the 1st, 2nd, and 3rd cover sprays. The epsom salts may be combined with the standard fungicides and insecticides, but the compatibility with all the new materials has not been determined. If there is any doubt as to compatibility of epsom salts with the spray materials being used, the epsom salts should be applied as a separate application.

-- W. D. Weeks

WILTED STRAWBERRY PLANTS

Are there areas in your fruiting bed where the plants are wilting and drying up in spite of the wet spring? If so, there is a good chance that red stele disease has attacked the roots. Pull up a few such plants and slice some of the main roots lengthwise just above the junction between the live and dead portion of the root. If red stele is present, the core or stele of the root will be reddish brown in color.

Red Stele thrives on wet weather such as we are having this spring. It has already been found in serious proportions in Robinson and other susceptible varieties. If plants for setting the new bed were taken from an infected area, the disease was undoubtedly carried into the new bed.

This soil borne disease may live for several years in the absence of strawberry plants. It cannot be controlled by spraying. Consequently disease resistant varieties such as Pathfinder, Fairland, Temple, Sparkle, Red Crop and Vermilion should be used for future planting on land infected with red stele.

-- A. P. French

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CHICKWEED CONTROL IN STRAWBERRIES

Chickweed (*Stellaria media* (L.) Cyrill) is one of the worst weed pests of the strawberry bed. The seeds germinate and start to grow in the fall after cultivation has ceased and not infrequently make such a vigorous growth that strawberry plants may be entirely covered up by the weed. In the spring if the weather is cool and wet and cultivation has to be delayed, chickweed makes further growth and sometimes becomes so serious that it is necessary to plow up the bed rather than try to fruit it.

It now appears that a relatively new material called Chloro IPC, sometimes referred to as CIPC, is going to be the real answer to this problem. While the strawberry plants will not tolerate more than 2 pounds of Chloro IPC per acre during the growing season, they appear to be much more resistant after they have become dormant in the fall. They will tolerate 4 pounds per acre at this time. Also Chloro IPC appears to be much more effective when applied in cool weather. It has been found that two pounds per acre applied in mid-November will do an excellent job of controlling chickweed without damaging the strawberry plants.

Early spring application also seems to be effective. Two pounds per acre applied in mid-March did a very good job controlling chickweed with no apparent injury to the strawberries. Two pounds applied in mid-April was not effective.

Thus it appears there are two periods when Chloro IPC is effective against chickweed in strawberries, in mid-November after the strawberry plants have become dormant and in early spring before growth starts. This suggests the possibility of re-treating in the spring if the fall application fails to give satisfactory control.

-- J. S. Bailey

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USE OF CRAG HERBICIDE #1 FOR CONTROL OF WEEDS IN STRAWBERRIES

It has been reported that Crag Herbicide #1 has been used at rates as high as 12 pounds per acre with no apparent injury to strawberries. It is probable that this was done at a time when rainfall was not excessive.

A case has been observed recently where a grower used 6 pounds per acre followed by excessively heavy rain. The strawberries were severely injured. Although they are recovering, it has meant a considerable setback in their growth.

Growers using Crag Herbicide #1 would be wise not to exceed the recommended maximum of 3 pounds per acre.

-- J. S. Bailey

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MULCHING BLUEBERRIES

The use of various kinds of mulch around cultivated blueberries has proved to be a very satisfactory method of culture. Mulching has several advantages. It helps to conserve moisture; if enough is applied, it helps to control weeds; it eliminates the necessity for cultivation; as it breaks down, it adds nutrients to the soil, and it acts as an insulating material to keep the soil temperature more even. The chief disadvantage of mulching is cost. In some areas the mulch itself is expensive and labor for hauling and applying it may be high.

Mulch can be applied almost anytime during the year. It's a job which can be used to fill in when the labor demands are light. However, it is well to be planning ahead and to find out what type of mulch is available, how and when it can be obtained, and what facilities are available for hauling and spreading.

The amount of mulch to be used is quite likely to be determined by the amount available in relation to the size of the planting. If plenty is available and it can be applied at low cost, then it is desirable to put on enough to suppress at least most of the weeds. This will probably be in the neighborhood of 5 or 6 inches with such a material as sawdust. However, if witch grass is present, no reasonable amount of mulch can be expected to control this pest.

A great variety of materials are satisfactory for mulching. Experimental evidence indicates that sawdust is the best mulch that can be used. In some areas sawdust is scarce and highpriced because of its use by dairymen as a bedding material. Other materials which have been used satisfactorily are peat, leaf mold, shavings, and waste hay or marsh hay. Near breweries it may be possible to obtain spent hops for merely hauling them away. They are rather messy and smelly for a time but make an excellent, fire resistant mulch. In the cranberry area of the State cranberry vine refuse and even cranberry pulp from the processing plants is being used. Various kinds of straw have been tried but have not proved as satisfactory as some of the other mulches. Even lawn clippings may be used but they should be allowed to dry out some, else they may heat and cause more harm than good.

Where such a woody material as sawdust or shavings is used as a mulch, it may cause a temporary tie-up of nitrogen in the soil which results in a yellowing and reddening of the blueberry leaves due to nitrogen starvation. This can be prevented by doubling the amount of nitrogen fertilizer applied for a year or two until these materials start to break down.

-- J. S. Bailey

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TOBEY'S TRAVELS

Leaving the fertile Puyallup Valley we drove to Vancouver and then along the northern mountainous bank of the Columbia River to White Salmon, Washington and then to the adjacent town of Hood River in Oregon. Both White Salmon and Hood River are noted fruit growing areas. Hood River is of particular interest to a pomologist as it is one of the oldest fruit sections in the Northwest. The principal tree fruits grown here are apples, pears, and cherries. Quantities of strawberries are produced in this area in fields varying from less than an acre to those of five acres or more in size.

The particular apple varieties grown here are Yellow Newtown, Spitzenberg, Red and Golden Delicious, Ortley, Winter Banana, Arkansas Black, Jonathan and Gravenstein. Some of the trees are fifty to sixty years of age. The severe freeze of '19-'20 caused severe damage to hundreds of acres of trees planted on the lower elevations. This resulted in an important shift to pears. At present about one-fourth of the pears produced in Oregon are grown in the Hood River Valley. The principal varieties are Bartlett, Anjou, and Bosc.

Leaving the Hood River Valley and Majestic Mount Hood, our next objective was to visit Mr. Moses Adams, an elderly New Englander who is now a prominent peach and nut grower in Salem, Oregon.

Three years ago Mr. Adams wrote to the Pomology Department at the University of Massachusetts suggesting that, in his opinion, walnuts could be grown in New England. Subsequently, he sent to the Pomology Department several seedlings from a Manchurian walnut tree which he had obtained about 1926. These seedlings are thriving at the present time. One superior seedling from this Manchurian tree has been named Adams and is now in the custody of the Department of Horticulture at Oregon State College.

A considerable volume of walnuts and filberts are grown in Oregon. Whether or not walnuts can be grown successfully in Massachusetts remains to be seen.

The prune industry is of major importance in Oregon. Twenty-five thousand acres of prunes are grown in the Willamette Valley alone. Practically all of the prunes grown are of the Italian variety.

According to Dr. Hartman, Head of the Department of Horticulture at Oregon State College, the fruit industry of the Northwest started with the early settlers in the Willamette Valley who sold their fruit to the 49ers in California receiving as much as forty dollars per bushel for their apples. This stimulated interest in fruit growing first in the Hood River Valley and then in Wenatchee and Yakima. Later, California began to grow its own fruit. This fact, together with the development of other producing areas, resulted in a decline in apple growing in the Willamette Valley.

In Oregon as in Massachusetts and other sections of the country generally there has been a marked decline in the number of students specializing in Pomology. This trend definitely indicates the probability of a scarcity of trained Pomologists in the immediate future.

-- O. C. Roberts

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VARIETIES OF PEARS AND QUINCES FOR MASSACHUSETTS

| Variety | Recommended For | Harvesting Season |
|------------------|-----------------|-------------------|
| Clapp's Favorite | C & H | Mid-August |
| Bartlett | C & H | Early September |
| Cope's Seedless | T | Mid-September |
| Gorham | C & H | Mid-September |
| Ewart | T | Mid-September |
| Flemish | C | Late September |
| Conference | T | Late September |
| Seckel | C & H | Late September |
| Dana Hovey | H | Early October |
| Bosc | C & H | Early October |
| Sheldon | H | Early October |
| Anjou | C & H | Early October |

T = Trial
H = Home garden
C = Commercial

- Clapp's Favorite Fruit greenish-yellow with a blushed cheek, good quality, large, attractive, tends to blacken at core when over-ripe, does not keep well. Tree hardy, productive, susceptible to fireblight.
- Bartlett Leading commercial pear variety. Fruit yellow, good quality, large size, firm, ships well. Tree medium in size, productive, adapted to wide variety of soils, is susceptible to fireblight.
- Cope's Seedless A relatively new variety, attractive, good quality, firm, has small core and few seeds. Trees too young to evaluate their characteristics.
- Gorham A seedling of Bartlett which it resembles in size, color, and shape. Flesh white, tender, melting, juicy. Can be held in storage six weeks to two months longer than Bartlett. Appears to be a desirable variety to extend the Bartlett season.
- Ewart Fruit large, yellowish-green with some russetting, good quality, keeps well in storage, less attractive than Bartlett. Tree appears to be productive and is highly resistant to fireblight.
- Flemish Fruit large, attractive, excellent quality, highly susceptible to pear scab which can be controlled effectively with modern fungicides. Tree large, vigorous, very productive in alternate years, highly resistant to winter cold.

| | |
|------------|---|
| Conference | Fruit medium to above in size, yellow overlaid with some russet, very juicy, sweet, excellent quality. Tree medium in size, bears annually, productive, resistant to blight. |
| Seckel | Fruit bronze color, small, excellent quality, a popular variety for pickling. Tree large upright spreading, productive in alternate years, immune to fireblight. |
| Dana Hovey | Fruit small, clear russet-yellow, juicy, sweet, good quality. Tree medium in size, bears annually, productive, resistant to blight. |
| Bosc | Fruit russet, large with long neck, excellent quality when ripened properly, excellent keeper and shipper. Tree medium size, zig-zag growth, productive, tendency to biennial bearing. |
| Sheldon | Fruit greenish-yellow with russet streaks, often blushed, large, good quality in spite of pronounced grit cells, good keeper, susceptible to scab which can be controlled with timely sprays. Tree large upright-spreading moderately productive, susceptible to fireblight. A desirable variety for the home orchard if given adequate care. |
| Anjou | Fruit greenish, large, good quality, good keeper and shipper. Desirable as a late market variety. Tree small, often lacking in vigor, only moderately productive. |

Quince Varieties

Quince production in Massachusetts is primarily a home garden enterprise although there are a few scattered commercial plantings. This fruit is used entirely for jellies and preserves. Quince trees are notoriously susceptible to fireblight and quince rust. Both of these diseases are not so serious in Massachusetts as to preclude the growing of this fruit provided adequate control measures are employed. Two varieties only are propagated by nurserymen, namely Orange and Champion. Characteristics of these varieties are as follows:

| | |
|----------|---|
| Orange | Fruit roundish, greenish-yellow, medium size, flesh pale yellow, tender, mild. Ripens in October a few days ahead of Champion. This variety is by far the more popular. |
| Champion | Fruit large, pear shaped, yellowish-green, with considerable pubescence, flesh pale yellow, firm, slightly astringent, aromatic, mild sub acid. Somewhat inferior in quality to Orange. |

Munson Hall



Here is the new home of the Extension Service at the University of Massachusetts, Amherst. It contains the offices of the Director, County Agent Leader, 4-H Leader, Secretary and Information (news, radio, publications, visuals), general office and duplicating service.

This building was formerly Paige Laboratory, home of the veterinary science department. The new name honors a man who has done so much for so many farm people over so many years, Willard A. Munson, former Director of Extension Service.

Associate Dean and Director James W. Dayton extends an invitation to "Come in when you're up our way."



Fruit Notes

Prepared by the Fruit Program Committee of the Extension Service
W. H. Thies, Extension Horticulturist

JUNE 22, 1953

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1953 APPLE PROSPECTS FAVORABLE

The June crop estimates are preliminary but do provide some indication of the job ahead.

A national apple crop somewhat below average but above 1952 seems to be in the making. New York and New England are near normal on first reports. Early indications are for a crop somewhat less than last year in Appalachia. A near "normal" state crop of apples seems to be in prospect with the discount for abandoned acres.

Buying power of consumers is continuing on a high level. These things taken together, can mean a successful marketing season for apples.

As any year can have the bloom brushed off by poor handling, now is the time to really get down to the business of selling in order to get as much from the crop under these relatively favorable conditions as possible.

The following list of topics can be logically considered as a start in an aggressive selling campaign:

1. Harvesting: ample supervision - careful handling.
2. Maturity: one-third for the harvest season, one-third for the Holidays and one-third for winter and spring.
3. Sorting: to give the good apples a chance to hit a good market all season, the medium quality is used to advantage before New Year's and the other saleable apples used by Halloween.
4. Packages: U. S. Extra Fancy - gift packages, special outlets
U. S. No. 1 and U. S. Fancy - in cartons, gift or special packages to take advantage of good buying power.
U. S. Utility - crates
Appropriate sizes to take advantage of consumer preferences.
5. Cold Storage: clean, disinfect, check and repair machinery, prepare for early and adequate cooling.
6. Packing House: clean out, check and repair equipment, get new equipment necessary for economical handling. Check labor saving pallets lift trucks, conveyors and elevators, get stamps, stencils and printing.
7. Cider Press: arrange for bottles, other containers, labels. Check and repair equipment, improve cider room and arrange for washing down easily and for adequate cleaning of press cloths. Prepare for a good cider to sell on a market with good buying power.
8. Store Delivery: line up stores, get the deals ready. Work up ways to improve merchandising.
9. Wholesale: check list of buyers. Let them know what you have for sale. Arrange the kind of deal with details later.
10. Roadside Stand: YOUR OWN: Get the stand, grounds, parking lot, signs and equipment into condition. Prepare early drafts of advertising. Get packages and supplies. Arrange inside for economical handling and effective merchandising.
OTHERS: Line up the stands with definite understandings of prospective operation, including kinds and delivery.
11. Farm Salesroom: get room, including parking lot and display racks ready. Arrange for ample room to work handily. Order packages and supplies. Prepare advertising, prepare schedule of feature weekends with decorations and sales promotion.

APPLE MAGGOT

By the time you read this we will be well into the apple maggot season. Along with plum curculio, the apple maggot enjoys the reputation of being one of the three most serious pests of apples in Massachusetts. Do I need to remind you that the third is apple scab?

The apple maggot is a serious pest in both commercial and home orchards. In fact, the problem is made more acute in areas where there is an intermingling of home orchards, abandoned orchards or individual trees, and commercial blocks.

The period of fly activity -- it is a fly that lays the eggs which hatch into the maggots found tunneling the flesh -- extends from about the 20th of June, well into August or even into September. Our most effective control measures, at present, are directed against the fly. It is important that there be no let-up in control measures during this period.

THE INSECT

Since the full grown maggots crawled out of dropped apples last summer or fall, they have remained in the soil underneath the tree from which the apples fell. Most of them stayed within the upper two inches of duff and soil. They have been enclosed in the hardened skin of the final maggot stage resembling a small kernel of wheat except for the rings encircling the structure.

During the spring and summer the transformation from maggot stage to adult flies occurs, and now, each day brings more flies to the surface. This is what we call fly emergence.

The fly itself is somewhat smaller than a housefly and has wings conspicuously banded with black. On the female there are four conspicuous white bands encircling the body. On the smaller male there is room for but three such bands.

The female flies are not ready to lay eggs immediately. This is very important to you because you have a chance to kill them before they start laying eggs. For about 7 days after emergence, flies feed by lapping the surfaces of leaves and fruit of whatever type of plant they happen to be on. Often there are nearly as many flies in hedgerows beside the orchard as there are actually in the orchard.

A single fly has been known to live about 130 days although it is quite probable that under field conditions 30 days might be considered near the maximum. A single female has been known to lay over 300 eggs with the average, under laboratory conditions, being about 160. Please note that this egg laying occurs after the pre-egg-laying period of about 7 days.

FLY EMERGENCE

This is important because of its relationship to control practices.

Studies made over a great many years have indicated that the time when the first flies emerge each season does not vary much from year to year. However, according to Dr. Ralph Dean of the Poughkeepsie Laboratory of the New York State Agricultural Experiment Station, the date of peak emergence in his cages has varied from as early as July 10 to as late as July 30. We would expect it to be somewhat later here in Massachusetts and I believe Professor Whitcomb's records have shown that the average peak date at Waltham is nearer July 20 than the July 15 date indicated by records at Poughkeepsie.

The time emergence ceases varies greatly and may be well into September. It is interesting to note that female flies tend to appear in greatest numbers before the peak is reached. However, don't let this point cause you to disregard those late females. They too are dangerous.

You can easily see from the above that during the entire period of fly emergence we have female flies waiting around during their pre-egg-laying period of development. At no time are we entirely free of these flies, but of course there are times when more of them are present. To prevent egg laying these flies must be killed during this pre-egg-laying waiting period.

CHECKING FLY ACTIVITY

In addition to noting reports of fly emergence as indicated by emergence cages, individual growers may wish to employ bait traps. Catches in bait traps lag behind emergence cage records, but they are **useful** in measuring fly activity and the presence of flies particularly late in the season.

Apple maggot flies are attracted by the odor of ammonia, but only for a distance of a few feet. Therefore traps should be placed near fruit and about 4 to 5 feet from the ground.

Quart fruit jars filled 1/2 to 3/4 full make satisfactory containers.

Two teaspoons of ordinary household ammonia with 1/4 teaspoon of soap powder mixed in one quart of water makes a suitable bait. It must be changed completely every week.

Another mixture which needs to be changed only when diluted by rain or when it becomes dirty consists of 10 grams of ammonium acetate plus 2 to 3 grams of some detergent powder in 1 quart of water. Add more water as needed to replace that lost through evaporation.

CONTROL

Present recommendations call for the maintenance of a suitable insecticidal cover on foliage and fruit -- including surrounding hedgerows and borders of woods -- throughout the period of fly emergence and activity. The details of timing and materials given in the 1953 Apple Pest Control Chart under the 4,5,6, and 7 Cover Sprays need not be repeated here. Note that the residual activity of various insecticides differs and that some materials cannot be used safely as we approach harvest.

-- Ellsworth H. Wheeler

ECONOMIC STUDY OF FRUIT FARM ORGANIZATION UNDERWAY

Twenty to twenty-five carefully selected Massachusetts fruit farms are being visited currently. These operations have been selected as basically representative of eight different sized fruit farm organizations. The eight different size groups range from the small part-time or diversified farm of less than two hundred apple trees, to the large specialized apple farm of over 6,000 trees. The Massachusetts Fruit Growers' Association survey of 1950 together with the 1950 Census was used as a basis for determining these size groups. Visits are being made by farm management research workers from the University. Information is being obtained on the complete organization of the farms and practices followed.

Farms producing apples in Massachusetts vary greatly. In the present study the variation in farms was considered in their selection. Groups were formed where similar farm conditions appeared to exist and farms were selected to represent these groups. This makes it possible to consider more specifically the conditions which exist on the farms within each group and relate these variables more directly to apple production. Like information for case farms is being gathered on the labor, machinery and other materials used in relation to production secured.

These case studies will provide information for figuring farm adjustments. Using these case studies as a basis, the effect on the overall organization and income of changes in technology and prices can be projected.

For example, one specialized apple farm of 1155 trees on 42 acres which has been visited is employing one full time man in addition to the full-time owner-operator. A nine year old two man hydraulic sprayer is being used. If a new one-man air-blast sprayer was purchased for this farm, the hired man would not be needed for spraying.

Questions involved in this adjustment will concern whether enough can be saved on the labor bill to justify the investment in the new sprayer, and the necessity of having extra labor for the other operations in the overall organization such as pruning, thinning, and fertilizing. Another question is the possible value of better and more rapid coverage. The benefits of additional machinery for these other operations such as power pruner for pruning should also be considered.

The additional costs and returns of particular adjustments in operations will be presented. In addition complete operating statements of alternatives in organization will be established from the information obtained on these selected Massachusetts apple farms. Such financial statements should be of real assistance to the farmer in making the management decisions which daily confront him.

-- R. O. Aines

SPRAYS ON STRAWBERRY PESTS - 1953

Several tests have been run on strawberries this spring with methoxychlor, DDT, aldrin, and dieldrin for weevil control. Both methoxychlor 50% Wettable Powder at 3 pounds per 100 gallons and dieldrin 50% W. P. at 1 pound per 100 gallons controlled weevil injury for at least a week. DDT 50% W. P. at 2 pounds per 100 and aldrin 25% W. P. at 2 pounds per 100 were less effective. None of the sprays injured the strawberry plants.

Since weevil is active until the larger berries are nearly mature and more than one spray may be necessary to control the insect, methoxychlor appears to be an ideal insecticide for weevil control because of its low toxicity to warm blooded animals.

Both Aramite 15% W. P. and Ovotran 50% W. P. at 1 1/2 to 2 pounds per 100 gallons have been tested on strawberries without injury to the plants. Aramite was widely used with good mite control resulting.

Malathon 25% W. P. and 50% Emulsion Concentrate were applied to strawberries for aphid and mite control. The wettable powder at 2 pounds per 100 and the emulsion concentrate at 1 pint per 100 gave 100 percent kill of aphids and an acceptable kill of active two-spotted mites.

-- William E. Tomlinson, Jr.

CHANGES IN CRAG HERBICIDE #1

Crag Herbicide #1, as such, is short lived when it comes in contact with the soil. It is changed in a few hours by bacteria to an "active form". However, the bacteria are not satisfied to leave it in this "active form". They break it down further into 2,4-D. Both the "active form" and 2,4-D are plant growth regulators and can cause the typical plant modifications which result when such materials are used in excess.

On strawberries the first visible symptoms of CH #1 injury is usually a slight bending backward of the leaf stem. As the stem continues to grow, the outer end bends upward. The result is a stem which looks like an elongated letter S and lies close to the ground instead of standing up as a strawberry leaf stem should. This bending back is called epinasty. It is an effect commonly produced on sensitive plants by materials such as 2,4-D, 2,4,5-T, MCP, and other growth regulators.

In severe cases of injury on strawberries, wilting was observed about a week after CH #1 was applied. The wilting was caused by the failure of the injured plants to develop fine, fibrous roots. This type of injury was observed on a very light soil when a 4 pounds per acre application of Crag Herbicide #1 was followed by very heavy rain. It is probable that the 3 pounds per acre rate is risky on such light soils. On a Gloucester sandy loam soil, part of a row of plants was injured by overspraying with a hand sprayer, although the rate of application attempted was 3 pounds per acre.

As a result of these recent experiences, it seems best on very light soils to use CH #1 at not to exceed 2 pounds per acre and only on an experimental basis until more information is available. Two and a half pounds per acre is enough on light soils. On medium and heavy soils, a rate of 3 pounds per acre appears safe.

----- J. S. Bailey

TOBEY'S TRAVELS - Chapter IX

For the period 1940-1949 the average apple production in Oregon exceeded that of Massachusetts by about 200,000 bushels. Since 1949 the annual apple production in Massachusetts has exceeded that of Oregon by nearly 1 million bushels. While production in Oregon has been holding about steady production in Massachusetts has increased.

The relative importance of the various fruits grown in Oregon is shown in the following table:

| <u>Tree Fruits (acres)</u> | | <u>Small Fruits (acres)</u> | |
|----------------------------|-------|-----------------------------|-------|
| Apples | 7500 | Strawberries | 14000 |
| Cherries | 12000 | Red Raspberries | 2000 |
| Peaches | 6000 | Black Raspberries | 3500 |
| Pears | 16500 | Loganberries | 900 |
| Prunes | 26600 | Boysenberries & | |
| Filberts | 20000 | Youngberries | 3100 |
| Walnuts | 23500 | Blackberries | 1000 |
| Apricots | 825 | Gooseberries | 360 |
| | | Cranberries | 285 |
| | | Grapes | 670 |

Regardless of the fact that Oregon does not rank among the larger apple producing states, nevertheless, Oregon does rank high as a fruit producing state due to

the extensive acreage in fruits other than apples.

It was my privilege during my stay at Corvallis to spend parts of two days travelling with C. O. Rawlings whom some will remember as the former Extension Fruit Specialist in New Hampshire who now has a similar position in Oregon. Distances are so great there that in order to attend some fruit meetings he has to travel by airplane.

Leaving Corvallis our next objective was Medford -- the center of the pear industry in Oregon.

While the normal annual rainfall in the Medford area is 18 inches a considerable portion of the year's total must have fallen while we were there. Regardless of the rain, I was able to obtain much information relative to the pear industry at the Medford Agricultural Experiment Station.

The principle varieties of pears grown in Oregon are Bartlett, Bosc and Anjou. They are planted 25' x 25' and the average production is around 300 packed boxes per acre.

With an average rainfall of 18 inches, irrigation is a necessity and the growers pay \$8.25 per acre per year for the water. Cultivation with cover crops is the usual method of soil management.

Freezing temperatures is one of the principle hazards of pear growing in this area. Consequently, every pear orchard is equipped with smudge pots. In some years it is necessary to smudge as many as ten times between the first of March and the first of June.

Considering the fact that the same varieties of pears can be grown in New England without smudge pots, irrigation, or cultivation one cannot help but wonder why more pears are not grown in New England when Oregon growers can raise them at a profit with the handicaps that they have, and in addition, ship them three thousand miles to market.

-- O. C. Roberts

RULES FOR SAFE TRACTOR OPERATION

Tractors can be dangerous and cause serious accidents if safety measures are not employed. Why take chances? The National Safety Council has established a set of rules as a guide for safe tractor operation. They are worth reading and adopting.

A farm tractor is capable of doing its labor saving farm chore only with an alert, live operator in the seat. The National Safety Council gives us a set of rules which if followed will avoid accidents and save lives.

1. Be sure the gear shift lever is in neutral before cranking the engine.
2. Always engage the clutch gently, especially when going up a hill or pulling out of a ditch.
3. When driving on highways, or to and from fields, be sure that both wheels are braked simultaneously when making an emergency stop.
4. Always ride on the seat or stand on platform of tractor. Never ride on draw-bar of tractor or drawn implement.

5. When tractor is hitched to a stump or heavy load, always hitch to drawbar and never take up slack of the chain with a jerk.
6. Be extra careful when working on hillsides. Watch out for holes or ditches into which a wheel may drop and cause tractor to overturn.
7. Always drive tractor at speeds slow enough to insure safety, especially over rough ground or near ditches.
8. Always keep tractor in gear when going down steep hills or grades.
9. Reduce speed before making a turn or applying brakes. The hazard of overturning the tractor increases four times when speed is doubled.
10. Always stop power take-off before dismounting from tractor.
11. Never dismount from tractor when it is in motion. Wait until it stops.
12. Never permit persons other than the driver to ride on tractor when it is in operation.
13. Never stand between tractor and drawn implement when hitching. Use an iron hook to handle drawbar.
14. Do not put on or remove belt from belt pulley while pulley is in motion.
15. Should motor overheat, be careful when refilling radiator.
16. Never refuel tractor while motor is running or extremely hot.
17. When tractor is attached to a power implement be sure that all power line shielding is in place.

TAKE TIME TO BE SAFE

INJURIES are painful and costly. DEATH is unpleasant and very permanent.

POI#OLOGICAL PARAGRAPHS

A study of spray machines in Connecticut shows that as good control of pests at less cost can be obtained with mist blowers as compared with conventional hydraulic sprayers. A complete report of this study is contained in the Connecticut Agricultural Experiment Station Bulletin 567 by Dr. Philip Garman.

In the May 14 issue of New Jersey FRUIT NOTES Dr. A. J. Farley reports injury from Captan (406) as follows: " The new fungicide referred to under the general name of Captan has caused serious injury in a number of apple orchards in New Jersey. The injury at present is confined to orchards in which Captan was used in pre-bloom and bloom sprays, or before the petal fall stage. The injury consists primarily of circular brown spots on the spur leaves, similar in appearance to Frog-Eye spots.

In severe cases the affected leaves fall and weaken the fruit clusters. Usually the leaves lose their green color before they drop. There also appears to be a possibility that Captan applied just before or during bloom may decrease the set of fruit.

"The variety most generally affected is Delicious. Other varieties showing injury are Baldwin, Stayman, Paragon, and Winesap.

" There is a wide variation between different orchards in the amount of injury for no apparent reason as far as number of applications, method of application, tree vigor, weather conditions, and other factors are concerned. An attempt is being made to determine the cause of the injury, particularly in those orchards where it is most severe. In the meantime, for orchards where there is a noticeable amount of injury it is suggested that the use of Captan be discontinued until more is known about the material, and the conditions under which it may cause injury to the fruit or foliage."

Similar injury to that found in New Jersey has been observed in Massachusetts orchards. Also, a similar type of injury was observed on Cortland in a New Hampshire orchard which had not been sprayed with Captan but had been sprayed with Puratized.

While any amount of injury is undesirable, that caused by Captan appears to be less harmful than that caused by liquid lime sulfur.

The Guesstimate of the apple crop made at a recent meeting of the National Apple Institute at Roanoke, Virginia is as follows:

| | <u>1951</u> <u>Final USDA</u> | <u>1952</u> <u>Final USDA</u> | <u>1953</u> <u>Guesstimate</u> |
|----------------------------|----------------------------------|----------------------------------|-----------------------------------|
| Massachusetts | 3,516,000 | 1,224,000 | 3,100,000 |
| New Hampshire | 988,000 | 474,000 | 875,000 |
| Maine | 1,154,000 | 700,000 | 950,000 |
| Vermont | 1,080,000 | 643,000 | 700,000 |
| Connecticut | 1,568,000 | 973,000 | 1,500,000 |
| Rhode Island | 243,000 | 102,000 | 200,000 |
| New York | 18,095,000 | 11,395,000 | 12,700,000 |
| Virginia | 10,064,000 | 9,948,999 | 7,775,000 |
| Pennsylvania | 8,200,000 | 4,914,000 | 5,500,000 |
| West Virginia | 3,780,000 | 3,770,000 | 3,400,000 |
| Washington | 20,034,000 | 22,630,000 | 25,243,000 |
| Oregon | 2,242,000 | 2,700,000 | 2,750,000 |
| TOTAL U. S. (35 States) | 112,935,000 | 92,696,000 | 97,915,000 |

During the last six years the production of frozen concentrate citrus juice has increased from 2,000,000 gallons to 55,000,000 gallons a year.



Fruit Notes

Prepared by the Fruit Program Committee of the Extension Service
W. H. Thies, Extension Horticulturist

JULY—AUGUST, 1953

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HORMONES FOR PREHARVEST DROP CONTROL.

With a good crop of McIntosh on the trees this year, growers are expected to be interested in keeping the drop of sound apples at a minimum. There was a time when one had only a single stop-drop material (naphthaleneacetic acid - NAA) but now one can make a choice between two or possibly three materials. The materials 2,4,5-TP (Color-Set, Color-Lok, Color-Stik, etc.) has been available for the past two years and many of you are acquainted with it. In addition, a new material, 2,4,5-T, will be available from at least one source this fall for trial use on McIntosh only. A discussion of each material follows:

NAA

1. Apply just as the drop of many-seeded, blemish-free fruit commences.
2. It can be applied as dust, spray, or from airplanes. It can be concentrated.
3. Used at single or double strength (4 to 8 oz. per 100 gallons), it will reduce the rate of drop from 7 to 12 days on McIntosh. If single strength is used, longer holding can be obtained by repeat applications every 5-7 days. It causes less direct ripening to fruit than 2,4,5-TP but the higher the concentration of NAA used and the greater the number of applications the greater the ripening effect.
5. It is still a good material for McIntosh if it has given satisfactory control in the past and the block can be picked within 7 to 12 days after spraying.

2,4,5-TP

1. For best drop control of McIntosh apply when drop commences (same timing as NAA).
2. When used at 20 ppm (read the label) it will reduce rate of drop for about 3 weeks after application on McIntosh. Do not use higher concentrations.
3. Can be applied as a spray or from an airplane. Dust may be satisfactory, if available. It may be concentrated safely up to 3X.
4. If you want a good storage McIntosh apple, pick the fruit within 2 weeks of spraying, even though fruit is not dropping, to keep ripening effect at a minimum.
5. For drop control on late varieties such as Baldwin, Rome, and Delicious, apply before the leaves become injured by frost. It can be applied to such varieties 2 or 4 weeks before harvest.
6. If used to hasten ripening and improve color of early and midseason varieties, apply about 3 weeks ahead of harvest date. Apples from trees high in nitrogen will be ripened more than fruit from trees at lower nitrogen levels. Do not use 2,4,5-TP for improving color on regular Gravenstein, Duchess, and Milton since color is not greatly improved and the fruit may become mushy and worthless. It has been used for this purpose with some success on Early McIntosh and Wealthy. To hasten ripening of late apples apply 5 to 6 weeks ahead of harvest. Beware of over-ripeness, splitting, and water-core when used as a ripener. The ripening effect is

not uniform over the entire tree. Some fruits will be ripened much more than adjacent fruits.

2,4,5-TA - For Trial on McIntosh.

1. Apply when drop commences. (Same timing as NAA.)
2. Apply at 20 ppm (read label) as a spray (may be made available on request for airplane use).
3. Will delay drop for more than 3 weeks but not quite as effectively as 2,4,5-TP for the first 3 weeks.
4. 2,4,5-TA does not hasten ripening as much as 2,4,5-TP and perhaps not appreciably more than NAA. Remember that the longer apples hang the softer they become even if no hormone is used. Don't let the fruit remain unharvested too long if a good storage apple is desired.
5. At least one supplier will offer 2,4,5-TA with maleic hydrazide (MH). MH has been shown to be an anti-ripening agent and may tend to depress any ripening effect of 2,4,5-TA. To date we have not been convinced that the anti-ripening action of maleic hydrazide is great enough to justify the extra expense of this special formulation. However, you may wish to try some to see if you can detect any difference. The MH will not interfere with the drop control effectiveness of 2,4,5-TA.
6. 2,4,5-TA is not suggested for other varieties since we have no experience with it on anything but McIntosh.

7. 2,4,5-TA is a brush-killer at high concentrations so do not use it at concentrations above those suggested and do not use repeated applications.

General Comments:

No hormone is effective for drop control if the foliage is in an unhealthy condition as a result of frost or mite injury. Also, trees suffering from magnesium or potassium deficiencies will drop their fruit readily and hormones will not prevent it.

--F. W. Southwick

YANKEE INGENUITY CONTEST

The Massachusetts Society for Promoting Agriculture will conduct a "Yankee Ingenuity Contest" in Bolton, Mass., on August 14 and 15 at the Worcester County Farmers Field Day.

The purpose of this contest is to bring out the many labor saving devices, large and small, developed on farms in the northeast and to reward the most ingenious and deserving of the men who developed them.

The contest will be conducted under the supervision of the University of Massachusetts and the Connecticut Valley Branch of the American Society of Agricultural Engineers.

Rules of entry as drawn up by these organizations are:

1. Entries must have been developed for personal use and not offered for sale before August 14, 1953.
2. Anyone, anywhere - not connected with the Massachusetts Society for Promoting Agriculture, the Agricultural Engineering Department of the University of Massachusetts, or the Connecticut Valley Branch of the American Society of Agricultural Engineers - may enter.
3. There is no limit on the number of entries by any one contestant.
4. Entries must have been developed for use in either the production or marketing phases of agriculture.
5. Entries which cannot be brought in must be represented by a working model.
6. Entries must be demonstrated before the judges at 1:00 PM on Friday, August 14.
7. Entries will be judged at 1:00 PM on Saturday, August 15.
8. If possible, contestants should have records of cost and performance with them to aid in the judging.

JUDGES WILL BE:

Halstead N. Colby, Extension Agricultural Engineer, University of New Hampshire
William A. Junnila, USDA, University of Connecticut
Harold E. Gulvin, Extension Engineer, University of Rhode Island.

A total of \$500 will be awarded as follows:

- 1st prize - \$300.
- 2nd prize - \$150.
- 3rd prize - \$ 50.

Here is the score card to be used by the judges:

- 35 - Ingenuity
- 25 - Usefulness of product to its commodity
- 20 - Cost as related to performance
- 15 - Simplicity
- 5 - Workmanship
- 100

Contestants should drop a postcard to Ralph Reynolds, general contest chairman, Farmers Field Day, Room 405, Post Office Building, Worcester, Mass., giving their name and address and stating that they intend to enter, before August 5, 1953.

It is emphasized that this contest is WIDE OPEN. Anything might win. The ingenuity and usefulness features place complicated power drawn machinery or its adaptations in the same class with the simplest hand operated devices.

-- Duncan Thayer
Massachusetts Society for Promoting
Agriculture

NEWS RELEASE

The top event of the year for New England farmers - the eighth annual Worcester County Farmers Field Day - will be held August 14 and 15 at Deerfoot Farms in Bolton.

Scheduled for the first time as a two-day event, the Field Day is expected to attract a record-breaking throng of more than 30,000.

The huge Summer-time farm production will be staged by some 400 volunteers. It has the backing of 40 farm organizations and agencies who have joined forces to help put it across.

More than 100 exhibitors have signed up for space at the sprawling 124 acre field where a million dollars' worth of farm equipment and machinery will be displayed.

Field exhibitions will range from the latest in bee handling to airborne spraying of corn fields and wooded areas. Huge mobile mist blowers as well as swooping airplanes will be on tap for spray demonstrations.

Latest in balers and harvesters, tractors and plows will roar back and forth in vivid demonstrations.

With emphasis on action demonstrations and entertainment for the entire family, the program is crammed with contests and special events.

There'll be goat shows, horse shows, beef cattle exhibits, sheep dog trials and a score of other livestock events.

The dairy people will have their annual Massachusetts Jersey Parish show. Fruit growers will set up their Summer equipment show at Davis Bros. Orchard, just down the road from the main site.

Flower growers will be on hand. So will poultry growers with a huge barbecue of 5,000 golden brown chickens to appease appetites bolstered by food cooking and preserving demonstrations.

Soil Conservation experts will be on hand to demonstrate land clearing, drainage, pond construction and the like.

The completed Field Day program, in the planning stage for five months, is spiced with variety.

There'll be a truck load of contests - and prizes. That includes bareback horse riding for kids, ox pulling, tractor driving, firemen's muster and rolling pin throwing - for women only.

A lengthy list of special events - topped by an elaborate air show - includes an antique auto parade, barnyard circus with trained animals, drum and bugle corps, Boy Scout Jamboree, Civil Defense demonstrations and water dousing.

A sportsmen's show will include canoe tilting, log rolling and fishing competition.

And there'll be plenty doing for the small fry, such as animal acts, movies, magicians and a special fishing pool with helping hands to show them how to fish and how to cook what they catch.

Nationally-known speakers will discuss home economics and outline short cuts to household tasks in the shade of a huge circus tent set up for housewives.

There'll be a coffee hour, a cooking school and loads of door prizes including a clothes drier for the ladies.

Governor Herter, a farm enthusiast, will be on hand.

One of the top events will be the big-time Square Dance and giant fireworks display to be held under the stars on Friday night. A battery of floodlights will shine on the exhibits during the night hours.

Dance exhibition teams including eight youngsters on horseback will put on demonstrations.

Besides scores of refreshment stands scattered throughout to supply the traditional ice cream, soft drinks and "hot dogs," there'll be stands featuring goat milk and barbecued rabbit.

There'll be no parking problems. Enough space has been set aside for 10,000 cars.

The site is easy to get to. It's right at the junction of routes 110 and 117 in Bolton.

There is no admission fee to any of the events. Proceeds from the Field Day go to help support the Worcester County 4-H Camp in Spencer.

The Field Day will be held from dawn to midnight Friday, and from dawn to dusk on Saturday.

HOW'S THE POISON IVY DOING IN YOUR ORCHARD?

From orchard observations in all parts of the state, poison ivy seems to be doing exceedingly well in most orchards. Right now is an excellent time to eradicate this objectionable weed from in and around your orchard. This would make apple harvesting much more agreeable to those who may be more or less susceptible to ivy poisoning and perhaps even make it easier to obtain pickers.

About a year ago Professor John S. Bailey prepared Special Circular No. 90 which deals with the nature and control of poison ivy. Since the menace of poison ivy is so widespread and since you may not have a copy of this circular at hand, it is being given special emphasis in this issue of FRUIT NOTES. Professor Bailey's comments on this subject are as follows:

"Poison ivy is widely distributed and very abundant in Massachusetts. It is a serious health hazard to those who are susceptible to its poison. However, ivy poisoning is not like mumps and measles, 'one of those things every child must have'. Something can and should be done about it.

"The poison ivy plant is sometimes a trailing vine which grows over low stone walls or over the ground. It often forms dense mats over large areas. On the other hand, it may be a vigorous climber which grows up fence posts, tree trunks or the sides of buildings. It is recognized by its leaves which are usually dark green and shiny in the summer and always have three leaflets on each leaf stem. In summer it forms characteristic clusters of green berries which turn bright red in the fall.

"The poisonous substance in poison ivy is a resinous material. It is carried in resin ducts in leaves, stem and roots. To be 'poisoned' one must come in contact with this resin. It is a very sticky material which is often rubbed off and clings to shoes, clothes, gloves, the fur of dogs, cats, or other pets, and tools. Handling these as well as contact with the plant may result in poisoning. When poison

ivy is burned, the resin may be changed to tiny soot particles which are carried with the smoke. These particles can cause severe poisoning of a sensitive person who gets in the smoke. Since the resin is in the stems and roots, poisoning can result from handling these, even during the winter.

"The best way to prevent ivy poisoning is to learn to recognize and avoid poison ivy. It is possible to develop partial or even complete temporary immunity by using tincture of poison ivy which may be purchased at most drug stores. It should be taken before exposure according to the directions on the bottle. After exposure thorough washing with alcohol or strong soap suds may prevent poisoning if it is done promptly enough. Many solutions and lotions are available for treatment but these seldom do more than relieve the burning and itching temporarily. In cases of severe poisoning always consult a physician.

"Poison ivy can be grubbed out and destroyed by persons who are resistant to the toxin. This is hazardous because the resistant individual sometimes becomes sensitive and is severely poisoned. It is usually cheaper and easier to kill the poison ivy with a suitable weed killer.

"Ammonium sulfamate (or Ammate) is very effective against poison ivy. It can be applied any time during the growing season after the leaves are fully formed but is most effective if applied during late June or July. It is used at the rate of 3/4 to 1 pound per gallon of water. It can be applied with a sprinkling can or sprayer. In either case the foliage should be thoroughly wet with the solution. If the first application does not result in a complete kill, retreating may be done later in the season or the next year. Ammate is effective, nontoxic to humans or animals, noninflammable and very readily soluble in water. On the other hand, it is non-selective and will kill almost all plants if applied in sufficient quantity. It is very corrosive on metals and should never be left in a sprayer longer than necessary. After its use, any sprayer, or other applicator, should be very thoroughly washed both inside and out. Some spray lime, baking soda or soap powder added to the wash water will help to do a thorough job.

"The two hormone-like materials, 2,4-D and 2,4,5-T may be used either alone or combined. 2,4-D used alone has given rather erratic results. Sometimes kill has been excellent, at other little or none resulted. Combinations of 2,4-D and 2,4,5-T are often sold under the name of Brush Killer. These mixtures and straight 2,4,5-T are very effective against poison ivy. They are prepared as amines or esters. The amines are almost non-volatile and are safer to use than the esters which are more volatile. Since formulations differ, the manufacturer's directions as to dilution should be followed.

"Any of these, 2,4-D, 2,4,5-T or mixtures, may be applied as an over-all spray in the summer. The best time is early in the season when the ivy is growing rapidly.

"During the dormant season a combination of an ester in oil may be used. These are most effective when applied in spring before growth starts. Where the ivy covers the ground, it will be necessary to use this as an over-all spray. Where the ivy is growing as a climbing vine, it is necessary to thoroughly wet the stem to a height of only two feet. If the ivy is growing on a desirable tree, care will be needed not to get so much material on the tree that it, too, is killed.

"2,4-D and 2,4,5-T are non-corrosive, easily mixed with water, non-toxic to humans and animals, selective, and effective. On the other hand, they must be used around gardens and valuable plants with great care because of the danger from spray drift and volatility. Since they are very difficult to wash from spraying

equipment, it is best to use them in a separate sprayer. If this is not possible, let some one percent household ammonia stand in the sprayer over night. Be sure some is run through the hose and nozzle.

"If you are not familiar with 2,4-D and 2,4,5-T get a copy of Farmers' Bulletin 2005, USING 2,4-D SAFELY. This may be obtained from the Mailing Room at the University of Massachusetts, Amherst, Mass.

"Warning: The use of 2,4-D or 2,4,5-T in any form around sensitive crops such as tomatoes, tobacco, beans and grapes, is always dangerous. When poison ivy must be eliminated from roadsides or other places near gardens or fields where crops are grown, 2,4,5-T or 2,4-D - 2,4,5-T mixtures should be used in the dormant season or not at all."

LET'S ERADICATE THAT POISON IVY

--- O. C. Roberts

TOBEY'S TRAVELS - Chapter X

As we left Medford, Oregon in a down pour and headed for "sunny" California, we fully anticipated that the sun would be shining as soon as we reached the state line. But, alas, we were due for disappointment. However, apparently remorseful that California should have greeted New Englanders so discourteously, the clouds suddenly parted, the sun shone for about ten minutes and then we travelled in the rain for several more miles on our way to Davis which was our next objective.

The College and Experiment Station at Davis is the Agricultural branch of the University of California with the main campus at Berkeley. The Davis campus, consisting of 3000 acres, is one of eight connected with the University of California. At many of the other branches there is an experiment station only and thus no student enrollment. Dr. Stanley Freeborn, a graduate of the Massachusetts Agricultural College in the class of 1914 had recently been appointed Provost at the Davis Campus.

On our arrival at Davis we were fortunate to find Dr. Warren P. Tufts, Head of the Department of Horticulture, in his office and to obtain from him considerable information concerning the horticulture of California and in addition a personally conducted tour of the Campus and experimental grounds.

It would require much more space than is available in this publication to describe completely the vast pomological enterprises in California. Consequently, I shall attempt to mention only a few of the most significant items as gleaned from Professor Tufts and other sources.

At Davis the average annual rainfall is 16 inches coming mostly in December, January, and February. The normal minimum temperature is 22 degrees Fahrenheit. In 1932 a minimum of 15 degrees Fahrenheit killed the lemon trees and seriously injured orange trees.

While many interesting experiments are being conducted at the Davis Experimental Station one outstanding discovery is particularly worthy of note.

For some years pear growers have been troubled with a disease known as Black End. This was found to be due to an incompatibility between stock and scion.

The disease is prevented when pear varieties are propagated on *Pyrus communis* stock but is not prevented when Japanese stocks are used.

The total acreages of the principal deciduous fruit crops in 1951 were as follows:

| | | | |
|----------|---------|---------|---------|
| Almonds | 114,572 | Peaches | 96,423 |
| Apples | 21,974 | Pears | 42,975 |
| Apricots | 45,488 | Plums | 26,066 |
| Cherries | 11,259 | Prunes | 107,210 |
| Grapes | 496,181 | | |

The chief apple producing areas are Sebastopol in Sonoma County and Watsonville in Santa Cruz County. The Sebastopol area is noted for its production of Gravensteins while the principal varieties in the Watsonville area are Yellow Newtown and Bellflower. Red Delicious is rapidly replacing Bellflower. Other varieties grown in scattered areas throughout the state from Humboldt County in the North to San Diego County in the South are Jonathan, Rome, White Ashachan, and Golden Delicious. Of particular interest to me was an orchard which I visited in the town of Julian which is located in a mountainous region about sixty miles northeast of San Diego. It hardly seemed possible that in a relatively short distance one could travel from an area producing oranges, lemons, olives and other tropical fruits to one suitable for the raising of apples, pears and other fruits typical of New England. This supports a statement that was made to me that local topography in California has greater influence on the temperature than latitude.

The principal pests on apples are codling moth and mites which are being controlled quite generally with parathion.

There are three principal fruit exchanges in California.

The California Fruit Exchange handles deciduous tree fruits and grapes. The two others are the California Fruit Growers' Exchange (Sunkist) and the Mutual Orange Distributors which handle citrus fruit.

In California it is illegal for a fruit grower to plant any nursery stock unless inspected by the Department of Agriculture in his county. This practice makes it possible to keep an accurate up-to-date census of the fruit plantings in the state. From the data thus obtained the California Department of Agriculture in cooperation with the Bureau of Agricultural Economics of the U. S. Department of Agriculture periodically publishes the acreages of fruits and nuts by counties and varieties as well as acreages of bearing and non-bearing plants of each crop.

As this concludes observations relative to deciduous fruits it seems to be an appropriate place to conclude this series of articles without attempting to comment on the citrus industry as seen not only in California but also in Florida.

Since returning to Amherst on February 1st I have been asked frequently "Where would you locate in the fruit growing business if you had your choice?" My answer has been, "Assuming that the question implies apples, pears and such other fruits as can be grown successfully in this climate, I saw no area with more natural advantages nor better marketing possibilities than right here in New England."

Thus concludes TOBEY'S TRAVELS.



Fruit Notes

Prepared by the Fruit Program Committee of the Extension Service
W. H. Thies, Extension Horticulturist

SEPTEMBER 18, 1953

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By the time this copy reaches you Professor W. H. Thies, Extension Horticulturist and Editor of FRUIT NOTES, will be back on the job after his year of service with FAO in Yugoslavia.

Judging by his reports to the Department of Pomology he has had a very busy and most interesting year helping to solve some of the problems of fruit growing in that country. We shall all welcome his return to assist in solving some of the many problems with which the Massachusetts fruit industry is confronted and to resume editorship of these pages.

***** A. P. French

THE RELATION BETWEEN BLACK ROT, CANKER & FROG-EYE LEAF SPOT OF APPLES

The disease is caused by the fungus organism Sphaeropsis malorum which also causes black rot cankers on trunks, branches and twigs and frog-eye spot on the leaves. It is necessary to understand the different forms of this disease to obtain satisfactory control and avoid serious losses.

Black Rot on Fruit usually is noticed first when the apple is half grown but also may be found on smaller apples earlier in the season if conditions for infection are favorable. It starts as a purple discoloration at the calyx end and develops as a circular brown spot made up of concentric rings. Development is off to one side so that the calyx is not in the center of the rotted area but near one edge of it. The rot grows quite rapidly when ripening apples are infected.

In some localities, the trouble is known as "Brown Rot" because of the brown color of the diseased portion which is almost tasteless whereas in "bitter rot" it is bitter.

Half rotted apples fall to the ground where they continue to rot, dry up into hard black mummies, and begin to produce spores in the autumn and winter. With some varieties, such as Cortland, the rotted apples do not drop to the ground but remain as mummies on the trees. The spores become mature and are ready for dissemination at the beginning of the growing period in spring and dissemination continues through summer. Moisture, either rain or dew is necessary for germination and infection. The name Black Rot comes from the black mummified apples.

Black Rot Cankers are formed on trunks, branches and twigs and, like the mummified apples, are a source of spores and infection in the spring.

Frog-eye Leaf Spot is an infection on the leaves from overwintered mummies and cankers but seldom from overwintered diseased leaves. Infection takes place as soon as the leaves unfold and continues through summer whenever there is enough moisture for spore germination. The first spots appear about May 1st, are brown, one-sixteenth to one-eighth inch in diameter, and gradually enlarge to one-fourth inch diameter. There is always a narrow purple ring around each spot. A few spots remain in this condition the rest of the season, some fall out and cause a shot hole effect, but most of them start a secondary growth of brown crescents, always bordered with purple on the outer edge, on the margins of the old spots in late July or early August. The crescents run together to form brown concentric rings so that

eventually the spot is a more or less irregular blotch with a sharply defined gray center surrounded by concentric brown rings with lighter zones between.

Badly infected leaves turn yellow, drop prematurely, reduce the vitality of the tree and affect fruit production the following year.

Control:

1. Prune out all dead or cankered wood and destroy mummies before new growth starts in spring to reduce amount of infective material.

2. Protect leaves and fruit with ferbam, captan, or Crag before rains. A good scab control program early in the season will protect the leaves and fungicides in the summer insect sprays will protect the fruit.

*****C. J. Gilgut

The 1953-54 advertising budget adopted by the Washington State Apple Commission is \$700,000. Then last year's budget was just over \$600,000.

***** O. C. Roberts

COLD STORAGE HINTS

² Keep the Relative Humidity High. Up to the present time the main apple producing areas of the State have received no appreciable amount of rain since early August. Any used boxes or crates to be used as orchard storage containers are bone dry and unless we get some heavy rains will remain so when they enter the storage. Since a dry box may absorb up to a pound of water, one should be sure to soak the boxes well before they enter the storage or as soon as they are placed in storage. One can soak them regardless of whether apples are in the containers or not. Don't forget to use your humidity instruments and add water to the room when needed. A relative humidity of 90 to 95% is what you want. Once apples have lost about 5% of their weight as water they will show some shriveling.

³ Cool the Apples Rapidly to 32 degrees F. Move apples to the storage as rapidly as possible. Every day an apple remains at 70 degrees F. about one week of storage life is lost. McIntosh apples held at 40 degrees F. for the first month in storage may not keep a month or six weeks as long as similar apples held continuously at 32 degrees F.

⁴ Failure to cool apples rapidly to 32 degrees F. probably constitutes one of the main reasons why many McIntosh are not in a firm condition by January or February.

¹ Pick Apples Before They Become Too Soft. Sometimes apples do not keep well because they were too ripe when picked. The use of a pressure tester can serve as a guide in determining when McIntosh apples are becoming too soft for late storage. For good storage McIntosh should be picked before the flesh is softer than 14.0 pounds using a 7/16 inch head. Most of your county agents have a pressure tester which is available for your convenience. Make use of it or obtain one of

your own. This test should be made on 15 or 20 apples. Remove the skin (on an area about the size of a nickel) on the unblushed side of the fruit. The plunger is then forced into the flesh about 1/4 inch (there is an indentation on the plunger to indicate the depth the plunger should go) and the firmness of the flesh can be read directly off the instrument.

***** F. W. Southwick

WHEN YOU HAVEN'T GOT IT

Nearly every grower faces a situation at one time or another, when he does not have quality in a crop. It may be due to weather, help, a breakdown, oversight or some other cause.

What does he do?

There are two general ways that such a crop is handled:

1. Some growers stay with the standard they have set for themselves and pack what they can under the farm or trade name, sell some more for what it is and throw the rest away.
2. Other growers have a "No. 1" that is simply a field run with the worst thrown out. This "No. 1" varies with the shortness of the market, the season and from year to year. They pack what they pick and sent it in. This "No. 1" doesn't mean anything; it is just put there for effect.

Growers who have an acceptable standard for their products and are able to stay with their standards, establish a good reputation and are successful. They have a profitable operation. Examples of this group are in all parts of the state. They would not desert their standards for the simple reason that the loss of their market standing would be a greater financial loss than the loss of a crop. They stick by their standards, and keep the integrity of their label. They have a regular and loyal list of buyers. Their packs are frequently marked "sold" as they are taken from the grower's truck.

Growers, who do not have established standards for their products, have no particular market standing to lose. They keep sending products to market as long as the returns are above actual marketing costs. This kind of selling hurts the individual and the whole deal. These growers are frequently on the ragged edge of the business, and would just as soon quit as not.

The way a crop is handled, when something happens to it, seems to make a big difference in the success of a farm.

This matter of standards is serious business;

***** F. E. Cole

BRUSHING UP

I have been on the receiving end of a lot of kidding about wiping apples to make them shine. I do not have any idea that wiping apples is going to remove any active spray residue. The materials have to be put on in such a way and at such times to prevent any actual active spray residue being on the apples at harvest time.

Sometimes there is dust or some of the spent or inactive residues on the apples that takes away the shine and first class look of an apple. It is these residues that make an apple look dirty or dull that I believe should be removed before they are sold.

But I am told, you cannot do it without damaging the apple! That, I have got to be shown! I realize that a lot of bruising may be done in the process, but I do not believe it is necessary. The polishing devices have not got to be so tough as all that. All we are trying to do is what might be done with a light wipe of a handkerchief and certainly that does not bruise an apple.

It would seem from observations, that most of the damage to apples is done GOING INTO and COMING OUT OF the wiping machines. There are at least one or two makes of wipers that fit over the elevator section of the sizing machine that give the apples a polish on the way by.

Anyway, as long as I can go into grocery stores and see bulk unpolished apples for one price and then right along side a neat pile of apples that have had the caress of a wiping cloth and a little attention to display, selling for a much higher price, I am going to keep right on talking about wiping apples.

***** F. E. Cole

CANADIAN IMPORTS 1953-54

In Chicago, on August 14th, the U. S. Canadian Apple Committee met, as it has each year since the start of World War II, when apple exports from North America to Europe were abruptly cut off. E. Palmer Hart and John Chandler represented the Northeast; Henry W. Miller, Jr. and M. E. Knouse, the Southeast, for the U. S.

A quick run-down by the U. S. team revealed that our forth-coming apple crop, estimated at 100 million bushels, was slightly larger than the short crop of 1952, but well below the ten year average of 109 million: that McIntosh showed the greatest increase over last year, up 70%, with Delicious down 20% in the East, but higher in the West, showing an overall increase, and with Winesaps up from 1952 about 10%. All other varieties in the U. S. indicated decreases, with Yorks barely 50% of 1952 production. It was estimated that 70 million U. S. apples would be sold as fresh fruit, against 65 million in 1952-53 and that 26 million bushels would be processed, the remaining 4 million being used on farms and therefore not a factor in commercial channels.

The U. S. gave out export figures for the U. S. 1952 crop as follows: To United Kingdom (England) not one bushel, whereas in the five years before World War II we have sent 4-1/4 million bushels each year to United Kingdom markets alone: to all European countries, we shipped 37,000 bushels of apples in '52-'53, against 8 million before the war. Our total exports last year to all countries was

1.2 million bushels, against 10 million per year in the good old days. Canada was our best customer last year, taking 239 thousand bushels, with Cuba, Venezuela, the Philippines and Mexico accounting for most of the balance.

The Canadian team estimated their 1953 apple crop as 12,086,000 bushels, only 37,000 bushels greater than the short 1952 crop in Canada, with no significant changes by varieties. They were quite frank in saying the U. S. offered their best export outlet, since United Kingdom markets were closed to them. The Canadian team indicated that their exports to the United States would not exceed 2, 250,000 bushels this coming year, of which they hoped to sell 250,000 bushels to U. S. processors, from Eastern Provinces. It should be recorded here, that at no time since the U. S. -Canadian Apple Committee has been meeting, have the Canadians exceeded their estimated shipments to the U. S. In fact, they have always kept well within their commitments. For example, a year ago they reported probable sales in the U. S. of 2,250,000 bushels whereas actual shipments were 1,990,000 bushels.

Just a word on British Columbia McIntosh, which can sometimes be a problem to us in New York and New England. Last year Canada sold 475 cars of McIntosh to U. S. importers, a half of which found their way into New York and New England markets, as was natural considering our shortage of Macs in 1952 and our high market levels. The spokesman for Canada said that in 1953 they expected to sell in the U. S. fewer McIntosh than last year, due to our 70% estimated increase of McIntosh. As formerly, the Canadians will undertake to spread their shipments evenly over the months of October, November, and December. Where these apples are eventually sold is in the hands of the individual importers. However, with an ample McIntosh crop in New York and New England, and considering the freight rates from British Columbia to our home markets, it seems unlikely that B. C. Macs will be a major problem for us in 1953.

A great deal of time was given to the question of re-opening the U. K. and other European markets for North American apples. Some of the Canadians had recently attended the Commonwealth Fruit Council Meeting in London and reported that so long as England and the European countries had to buy more goods of all kinds from Canada and the U. S. than they could sell to the North American countries, there was little chance for us to sell them apples. Unfortunately England can buy apples, of a sort, in Europe where she sells her manufactured goods in abundance. All agreed that demand for American apples abroad is as good as it ever was, but it seemed likely that large volume export selling of apples to European countries would have to wait for the day when international trade is in balance.

In the meanwhile apple production in both the U. S. and Canada is on the decline, adjusting itself to the realities of world trade. It seems unlikely that 2 million Canadian apples, added to the U. S. supply of 100 million bushels would seriously upset our markets. After all, 2 million bushels is about equal to the apple production in one average U. S. state.

*****from Apple Institute News

NOVA SCOTIA FRUIT GROWING

The following are some bits of pomological knowledge gleaned during a recent three day stay at the Dominion Experimental Station, Kentville, Nova Scotia.

1. Nova Scotia still has a neglected orchard problem, but there are a

goodly number of well cared for blocks of McIntosh, Cortland, Delicious, Northern Spy, etc. A good crop was expected prior to the hurricane of September 8 which is reported to have done a million dollars worth of damage to fruit in the Annapolis Valley.

2. One of their research men, Mr. Pickett, is working on a much simplified spray program which does not kill off the natural enemies. However, curculio is not a problem in apples up there.

3. Dr. Bishop is breeding apples for scab resistance. All of his seedlings are tested for scab resistance in the greenhouse and only those showing satisfactory resistance are planted in the orchard for fruiting.

4. Their variety testing program is quite extensive. Like many of the rest of us they are searching for that ideal late winter apple variety.

5. A process for making a very fine quality apple syrup for table use has been developed by their Food Processing Laboratory.

6. The Viking red raspberry is still tops with them with Willamette showing considerable promise.

7. In spite of their 160 day frost free growing season, which is longer than most parts of Massachusetts, Fredonia is the latest grape variety which they can mature. Why? Mean temperatures are too low due to the ocean influence.

8. Howard (Premier) and Senator Dunlap are their two leading strawberry varieties. The most vigorous field of strawberries seen on the trip was one of Senator Dunlap where the grower had used only his own plants for over 25 years.

9. Extensive tests of Malling rootstocks is in progress. Some very fine Cortland trees on Malling #1 planted in 1940 were seen. They were about 10-12 feet high with 15-18 feet spread and bearing a good crop. McIntosh on Malling #1 planted in 1934 were large enough trees, but their total yield to date had not been so great as trees on seedling roots.

10. Their most desirable pear varieties are Clapp's Favorite and Bartlett, because pears are used chiefly for commercial processing.

11. They have a new cranberry seedling which is ready for harvest a week earlier than Early Black, yet is an excellent keeper in storage.

12. Some orchardists on light soils, in particular, are using sprinkler irrigation with good results.

***** A. P. French

VARIETIES OF STRAWBERRIES FOR MASSACHUSETTS

| Variety | Recommended For | Harvesting Season |
|--------------------|-----------------|-------------------|
| Howard 17(Premier) | C & H | Early |
| Pathfinder | C | Early |
| Catskill | C & H | Midseason |
| Fairland | C | Midseason |

| Variety | Recommended For | Harvesting Season |
|--------------|-----------------|-------------------|
| Redcrop | T | Midseason |
| Temple | C & H | Midseason |
| Vermilion | T | Midseason |
| Armored | T | Late |
| Empire | T | Late |
| Sparkle | C & H | Late |
| Robinson | C | Late |
| Great Bay | T | Late |
| 20th Century | T | Everbearer |
| Red Rich | T | Everbearer |

T = Trial

H = Home Garden

C = Commercial; varieties so marked are not necessarily equally adopted to all sections of the state.

VARIETY NOTES

- Howard 17 (Premier) This variety is still an important commercial berry in Massachusetts. It is particularly adapted to the lighter soil types and is more frost resistant and leaf spot resistant than most varieties. Fruit is good size, rather light colored but only fair quality and rather soft. Its season is early and long.
- Pathfinder The outstanding desirable characteristics of this variety are attractiveness, productiveness and resistance to red stele disease. Its fruit is slightly smaller than Howard and no better in quality and firmness.
- Catskill A leading commercial variety with many growers because of its large size, attractiveness, good quality and vigorous, productive plants. Quite susceptible to leaf spot and requires a high level of fertility for good production. A good freezer.
- Fairland Worthy of trial as a high producing, midseason commercial berry. Its rather large, medium red fruits are attractive, firm and of better than average quality. The plant is vigorous and resistant to red stele. A good freezer.
- Redcrop The plants are vigorous and resistant to red stele but only moderately productive here. The fruit is good size and quality fairly firm and a good freezer.
- Temple Large, attractive, firm, high quality fruits characterize this variety. The plant is vigorous and resistant to red stele but requires a higher than average level of fertility for superior yields. A good freezer.
- Vermilion A very vigorous variety, of good plant making ability, fairly productive, resistant to red stele, and fairly resistant to

leaf spot. The fruit is large, attractive, and good quality but only moderately firm.

- Armore A new late variety of excellent quality, large, and firm, with medium red color. The plant is vigorous with good runner development.
- Empire Good sized, attractive bright red fruit which is a bit soft and only fair quality characterize this variety. It is a good plant maker and fairly productive.
- Sparkle One of the important late season varieties. Its outstanding values are productiveness, firmness, good quality, and resistance to red stele disease. Berry size is rather small and ~~the~~ plant is quite susceptible to leaf spot. It is rated as a good freezer.
- Robinson It is large, attractive bright red fruit, high yield and abundant runner production have made this variety commercially important as a late berry in many parts of the state. The quality and firmness of the fruit, however, are below average.
- Great Bay The strong vigorous plants and large size fruit of this late variety have attracted a great deal of attention. However, the fruits are long and very irregular, quite unattractive, rather soft and only fair quality. It is reported to prefer heavy soil types.
- 20th Century A new everbearing variety of very good quality, large size, firm and attractive. It has good plant making ability and very good production for an everbearer.
- Red Rich This variety has large, vigorous plants with dark green foliage. The fruits are good quality, attractive and quite abundant. Under our conditions runner development has been very sparse.

***** A. P. French

FALL PLANTING FOR STRAWBERRIES

Have you considered setting strawberry plants out this fall instead of next spring? Such is the standard practice of one of our best strawberry nurserymen in the state. It has also been tried experimentally for the past 3 years here at the University with the advantage consistently in favor of the fall set plants. Fall set plants develop more and larger runner plants during July and August and therefore out-yield spring set plants in the first fruiting year.

October may be a less busy month than April for many growers and in case of a wet spring the plants will already be in the ground. On the other hand, fall set plants require an extra winter of mulching, but 2 quarts of sawdust over each plant should be ample protection the first winter.

***** A. P. French



Fruit Notes

Prepared by the Fruit Program Committee of the Extension Service
W. H. Thies, Extension Horticulturist

OCTOBER, 1953

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GLAD TO BE BACK IN MASSACHUSETTS

After a year's absence among a friendly and hospitable people, the former compiler of FRUIT NOTES is happy to return to Amherst and the American way of life. He looks forward with anticipation to a renewal of acquaintances around the state. During the past year his colleagues have done a good job in preparing and distributing this publication. It arrived in Belgrade regularly and was read with interest. A note of thanks is extended to those who carried on in his absence. Here's hoping that future issues may be equally worth while. If our readers are interested, some observations covering about 10,000 miles of travel by automobile and jeep will appear during the next few months.

— W. H. Thies

* * * * *

HOW GOOD ARE MASSACHUSETTS APPLES?

If there ever was any doubt in your mind about the ability of Massachusetts' climate to produce an apple of superior finish, the following quotations from other states with whom we exchange apples for class use should be convincing evidence.

"We receive no other apples very closely similar to yours, and I do like the students to see your color and finish."

"You obtain a degree of perfection we cannot attain with some varieties, so our students greatly profit from studying these varieties as grown in your state."

— A. P. French

* * * * *

500 SALESMEN

There are at least 500 apple growers in Massachusetts who can carry a part of the responsibility of seeing to it that retail stores have access to a dependable supply of apples.

They can get acquainted with the retailers and assist them with their supply and handling problems. The regional and local sales promotion organizations can do many things that individual growers cannot do by themselves. These organizations do not, however, have the funds for individual store contact. Here is where the growers can back up their organizations and help to make their business profitable. The final responsibility of making a farm business profitable cannot leave the farm!

— F. E. Cole

* * * * *

FALL IS MOUSE CONTROL TIME

As soon as the fruit harvest is completed, prompt attention should be given to the control of orchard mice. A careful check-up now and the proper distribution of a good rodenticide will avoid the discouraging prospect of girdled trees next

spring. A newly revised leaflet from the Fish and Wildlife Service, ORCHARD MOUSE CONTROL, presents the whole story in 4-1/2 well written pages. The situation concerning Meadow Mice and Pine Mice is clearly stated. Also, the possibilities of mouse control from five control practices, namely, (1) mechanical protectors, (2) clean tree bases, (3) trapping, (4) natural enemies and (5) a baiting program. Full details of bait preparation and placement are presented. A copy of this leaflet may be obtained from your county extension office or from the Fish and Wildlife office, 59 Temple Place in Boston. We quote from this publication on two new developments:

"Mechanical Trail Builder. The Fish and Wildlife Service has developed a tractor-drawn machine which is used to construct artificial mouse trails in which the poisoned baits may be placed and thus eliminate the time-consuming and costly job of searching for the natural mouse trails. Preliminary tests made in sod orchards indicate that the method is effective in controlling both Meadow Mice and Pine Mice. Further field tests are necessary before any general recommendations can be made; however, specifications of the machine are available if orchardists wish to have a machine constructed for use on an experimental basis. The machine is used to make parallel trails down each side of the tree row, just under the drip-line. The trail is made just under the sod and baits are placed at 4 to 5-foot intervals along the trail. The baits recommended are the same as referred to in the fore part of this leaflet.

"Use of Insecticidal Sprays in Rodent Control. There has appeared within recent months considerable publicity on the use of toxaphene in the control of meadow mice in orchards, hay and other field crops. The use of toxaphene and other chlorinated hydrocarbon insecticides applied as a blanket spray to the ground cover for the control of small rodents is a matter of current research by the U. S. Fish and Wildlife Service and State agencies. Procedures still are in the research category and the method should not be used in operational rodent control at this time. The effectiveness of toxaphene in controlling meadow mice (*Microtus*) varies with the density of the ground cover and the amounts of active toxaphene employed per acre. Field results to date have been very erratic. Currently, large amounts of active toxaphene per acre are being used experimentally. At this rate of application, a serious hazard exists to game birds, domestic poultry and livestock that may enter sprayed areas. The Fish and Wildlife Service recommends that until research investigations have been completed and appropriate recommendations formulated, no toxaphene or any other toxic insecticide be employed as a ground spray in operational rodent control."

* * * * *

Every Week Should Be Fire Prevention Week. Although the week of October 4-10 was officially designated as National Fire Prevention Week, the year-round nature of the campaign is stressed in President Eisenhower's proclamation, "I earnestly request all our citizens to initiate, during that week, a year-round campaign in their homes and in their communities against the needless waste of life and property caused by destructive fires". This further statement emphasizes the seriousness of the situation, "Farm fires caused the loss of about \$133,000,000 worth of farm property and the death of 3,000 farm people during the past year. This loss of manpower, livestock, farm products, buildings and equipment is staggering! Approximately 95% of these fires were the result of carelessness and neglect".

* * * * *

The National Apple Crop. The recent estimate, about 100,000,000 bushels, is nearly 9,000,000 bushels below the 10-year average. But in New England the estimate of 7,844,000 bushels is more than 1,000,000 bushels larger than the 10-year average.

IS YOUR STORAGE TOO DRY?

A dry apple box will absorb as much as a pound of water. If water is not available in the surrounding air, it will be pulled out of the apples in the box. No wonder many apples become wrinkled in storage, and also that growers are showing increasing interest in a method of measuring Relative Humidity. The wet and dry bulb thermometer, sometimes called a sling psychrometer, has become standard equipment in many storages.

The principle underlying this device is so simple that an occasional grower may not bother to figure it out. Hence this brief review. An ordinary thermometer (dry bulb) gives the temperature of the surrounding air. But if the bulb of a similar thermometer is enclosed by a piece of moist cloth or wick, and whirled to encourage evaporation of water, it will indicate a lower temperature than the dry bulb because of the cooling effect of evaporation. The dryer the air the greater will be the difference between the wet and dry bulb readings. But, if the air is saturated, the moist cloth will neither lose nor gain moisture, so both thermometers will read the same. In other words, the air holds as much moisture as it can possibly hold at that temperature and its Relative Humidity is said to be 100%. However, the higher the air temperature the more water it can hold. Thus, to figure the Relative Humidity in a storage on a particular day we must know not only the depression, or difference between wet and dry bulb readings, but the air temperature. With these two figures in mind we have merely to consult a simple table to get the Relative Humidity. The lower reading is sometimes known as the "dew point" since it is the temperature at which the air would tend to give up some of its moisture. Drops of dew collect on a pitcher of ice water on a hot day as soon as the air immediately surrounding the glass is lowered to the "dew point". And, obviously, the higher the Relative Humidity the sooner will dew appear.

The Relative Humidity in an apple storage should never fall below 90%. But growers would be surprised to know how frequently it falls to 80% or lower. Only by making a periodic check-up (at least once a week) can actual moisture conditions be determined. A dry floor is a danger sign. The following sample figures show the relationships between depression, air temperature and Relative Humidity:

| Air Temp. | 1° F. | 2. | 3. | 4. | 5. | 6. | 7. | 8. | 9. | 10. | Depression (dry bulb-wet bulb) |
|-----------|-------|-----|-----|-----|-----|-----|-----|-----|----|-----|--------------------------------|
| 30°F | 89% | 78% | 67% | 56% | 46% | 36% | 26% | 16% | 6% | % | |
| 32 | 89 | 79 | 69 | 59 | 49 | 39 | 30 | 20 | 11 | 2 | |
| 34 | 90 | 81 | 71 | 62 | 52 | 43 | 34 | 25 | 16 | 8 | |
| 36 | 91 | 82 | 73 | 64 | 55 | 46 | 38 | 29 | 21 | 13 | |
| 38 | 91 | 83 | 75 | 66 | 58 | 50 | 42 | 33 | 25 | 17 | |
| 40 | 92 | 83 | 75 | 68 | 60 | 52 | 45 | 37 | 29 | 22 | |
| 42 | 92 | 85 | 77 | 69 | 62 | 55 | 47 | 40 | 33 | 26 | Relative Humidity (%) |
| 44 | 93 | 85 | 78 | 71 | 63 | 56 | 49 | 43 | 36 | 30 | |
| 46 | 93 | 86 | 79 | 72 | 65 | 58 | 52 | 45 | 39 | 32 | |
| 48 | 93 | 86 | 79 | 73 | 66 | 60 | 54 | 47 | 41 | 35 | |
| 50 | 93 | 87 | 80 | 74 | 67 | 61 | 55 | 49 | 43 | 38 | |

* * * * *

Selling Fruit With Vending Machines. "In 20 minutes the people of the United States purchase over 2-1/2 million bars of candy and drinks of soda through vending machines. If fresh fruit had been made accessible to these people this same volume would amount to 12-1/2 carloads. So in answer to the question, 'Are we missing something in marketing?', we are definitely missing a good bet when we ignore the amazing possibilities of merchandizing fresh fruit in the coin-operated field. (Eastern Fruit Grower)

WE VISIT YUGOSLAVIA

During the summer of 1952, I was invited by the Food & Agriculture Organization of the United Nations to serve on a horticultural mission in Yugoslavia. This assignment had to do with the improvement of an extensive and relatively primitive fruit industry. Recognizing the lack of progress in recent years, the Government of Yugoslavia had requested help in reorganizing its orchard practices and in introducing methods which have been found effective in other countries. This was one of their many requests to FAO and other international agencies for assistance in agriculture and industry. The assignment looked interesting and challenging, and after careful consideration the invitation was accepted. A leave of absence from the University for a period of 12 months was granted. Then followed a series of preliminaries including clearance, passport, UN certificate, physical exam, etc. Arrangements were made for the payment of salary by FAO and a living allowance by the Government of Yugoslavia. Departing by plane from Bradley Field on August 25, 1952, I arrived in Rome the next day and spent about 10 days at FAO Headquarters for briefing. Imagine my surprise on arrival at the Belgrade Airport, September 8, to be met by a Serbian who spoke good English and to hear on the radio a once popular American song.

This brief statement sets the stage for a busy and interesting year. The writer has learned a few things from people who have been farming for many centuries. In return he was able to impart some ideas along fruit lines which were new to them. Hundreds of horticultural leaders took part in informal discussions of fruit problems, and they listened attentively to our presentation of methods commonly practiced in the United States.

Yugoslavia covers approximately 100,000 square miles and is made up of six Republics, Slovenia, Croatia, Bosnia, Serbia, Montenegro and Macedonia. Soil and climate are sufficiently varied to permit the growing of all of the tree and small fruits grown in New England plus certain sub-tropical fruits, such as figs. Apples are an important item in Slovenia and in limited areas in other Republics. In Macedonia some large, well-colored Delicious were observed. They were in prime eating condition in October, indicating a long growing season. Statistics show more than 80,000,000 plum trees in the country, more in fact, than in any other country in Europe. But many of the trees have been planted too close together, with little or no pruning, spraying, or hand thinning of the fruit. Insect control, particularly in apple orchards, is Problem No. 1. More about that in a later issue of FRUIT NOTES.

Arriving in Belgrade during the harvest season, visits were made to each of the Republics while some of the fruit was still on the trees. This offered a good opportunity to get first hand information concerning fruit problems. In company with an interpreter and one or more of the local horticultural leaders many thousands of miles were travelled over rough roads, frequently in a jeep. Some of the roads are incredibly rough. This presents a big problem in the transport of good fruit. Also, there are very few cold storage plants in the country, and the fruit processing plants are, in some cases, dependent upon inadequate equipment and antiquated methods. Power sprayers are conspicuous by their absence and most of the sprayers in use are of low capacity. Frequently, two men can spray no more than 30 or 40 trees in a day. Several very low capacity sprayers were observed in use in fairly large orchards as for example, one of 500 trees, requiring 15 days for one spray application. Quite a number of small power sprayers date back to UNRRA days when this equipment was introduced.

During the winter (mid-December to March) a series of seminars was held in 10 localities. With morning and afternoon sessions, lasting in some cases for a week, a total of 210 hours were spent in informal discussion. Teachers, research workers, and others from all parts of the country attended. The total enrollment was 387. A list of 15 fruit topics was previously submitted to each Republic, from which those

of most interest were selected. After a presentation of the essential facts and a review of methods in other countries, the topic was thrown open for discussion. The questions and comments in these sessions were very interesting.

As a direct result of the seminars, several simple demonstrations of recommended practices were arranged, including insect control, pruning, mulching, contour planting, etc. These demonstrations have attracted much attention since they involve cultural practices with which the people were not previously familiar. The methods of controlling San Jose scale and codling moth in the United States should prove of particular value, since these pests are taking a very heavy toll.

Readers of FRUIT NOTES may wonder how one would solve the language problem in a country where very few people speak English. Each Republic supplied an interpreter, of whom three were graduates of American universities (Maine, Vermont and Cornell). Most of these interpreters served very creditably. However, with most of the educated people speaking some German, my acquaintance with that language came in very handy. On several occasions, two or more days were spent with individuals who spoke little or no English, and it was necessary to converse entirely in German.

In the next issue of FRUIT NOTES we intend to say something about soil management practices. There may be an idea or two of interest in New England. In visiting a foreign country one would be short sighted indeed if he assumed entirely the attitude of a teacher, and showed no interest in learning. The writer asked many questions about their commonly accepted horticultural methods. Some of the answers may be worthy of consideration. An ingenious and successful method of grafting grapevines is an example.

----- W. H. Thies

* * * * *

Why Add Nitrogen to Sawdust? Sawdust, used as a mulch or for improving the structure of soils, is known to depress plant growth. The reason is briefly this: Soil bacteria and fungi which bring about the decay of organic material need nitrogen to carry on their activities and if necessary will rob the soil to get it. Sawdust and other wood wastes are very low in nitrogen. Hence the addition of supplemental nitrogen is necessary to overcome the depleting effect on the nitrogen in the soil. About .8 of a pound of ammonium sulfate or .5 of a pound of ammonium nitrate or their equivalent in other forms per bushel of loose sawdust, is recommended. The yellow leaves of plants growing where sawdust has been used liberally bespeak nitrogen starvation. Sawdust literally brings about an unbalanced condition in the soil. It does not exert an actual toxic influence.

* * * * *

How Insects Breathe. In SCIENTIFIC AMERICAN (February '53) there appeared an interesting article on this subject. It is of interest to fruit growers because insect control involves an understanding of insect anatomy. Some insects can be smothered because the respiratory system by-passes the blood and delivers oxygen directly to every one of the millions of cells in the various tissues and organs. This is accomplished by a complicated system of breathing tubes, called tracheae. These air filled tubes branch repeatedly, and the finest tubes, as small as capillaries in the human system, come in contact with each cell. Oxygen diffuses through this system. It is the dream of the entomologist to fill these tracheal tubes with an insecticide.

IS CAPTAN THREE TIMES AS GOOD AS SULFUR?

Captan and sulfur appear to represent two extremes in costs among several fungicides used by apple growers. When substituted for sulfur in a spray program for a particular apple orchard, Captan may cost three times as much as sulfur. Between these extremes in cost are other fungicides which may be substituted either in whole or in part. These cost variations in fungicides lead to several questions. How many growers have figured on the possible variation in their cost with the use of different fungicides? What are the added benefits, if any, of the higher cost materials? Do they more than offset the added cost?

Costs of fungicides vary greatly, on a pound basis, but vary in a different order when prepared in full strength spray mixtures. Table I indicates this variation. Ferbam costs less on a pound basis than Phygon, but costs eighteen and one half cents more per 100 gallons when in a full strength mixture. Captan on a per unit basis is less in price than Phygon, or phenyl mercuries; on a full strength basis it is the most expensive material.

Price Per Unit and Full Strength Cost of Six Fungicidal Spray Materials

TABLE I

| Material | Full Strength | Price Per Unit* | Cost per 100 gal. full strength |
|-----------------------------|---------------|-----------------|---------------------------------|
| sulfur | 6 lbs. | \$.07 lb. | \$.42 |
| Phygon | 1/2 lb. | 1.40 lb. | .70 |
| Crag | 1 qt. | .73 qt. | .885 |
| ferbam | 1-1/2 lbs. | .59 lb. | 1.38 |
| phenyl mercury (lactate) | 1 pt. | 1.38 pt. | 1.38 |
| captan | 2 lbs. | .80 lb. | 1.60 |

*Prices used are average prices of our leading companies in 1953

The use of certain fungicidal materials, either separately or in combination are recommended in the 1953 Pest Control Schedule for Apples published by the University of Massachusetts. A survey of growers indicates a great variety of combinations in use. All combinations shown in Table II have been checked by University production specialists as giving effective control.

A desirable way to compare the costs of materials in these various programs is to consider their application on a particular farm. For this analysis a fruit farm with 1300 trees on 48 acres has been chosen. The trees were planted 40 x 40 feet, thirty years ago. They are well pruned for adequate spray coverage and good fruit color. Under twenty feet in height, they are sprayed from one side of a Bean Speed Sprayer. The block is predominately McIntosh with some Delicious and Gravensteins.

The first seven sprays used in each program are at full strength. For the additional four hot weather sprays at reduced strength, Crag or ferbam or captan may be used. A grower may select one of these recommended materials over the others. Crag costs \$350.40 for the four reduced strength summer sprays. Ferbam costs \$377.60 or \$27.20 more than Crag. Captan costs \$512.00 or \$161.60 more than Crag and \$134.40 more than ferbam for these four reduced strength summer sprays. The last column in Table II gives the total material cost for all eleven sprays.

Total annual costs for these different fungicidal combinations on this farm could vary from \$770.40 to \$2,112.00, a range of \$1,341.60. Per tree costs could vary from \$.59 to \$1.62, per acre costs from \$16.06 to \$44.00 and per bushel costs from \$.033 to \$.090, if the assumed average production is 486 bushels per acre of

picked fruit. A more complete analysis includes thirteen spray programs and their costs per acre, per tree, and per bushel. If you would like to receive this added information please send a card to the Editor.

In this analysis it is assumed that the cost of phenyl mercury sprays for eradication, or the sulfur dusts necessary during prolonged rainy periods would be a constant amount to add to each program.

The quality of fruit produced with the aid of these different fungicidal sprays must also be considered in trying to determine which material is most economical. Some materials may provide superior control, thus allowing a decrease in a number of applications. Obviously this would favor the superior materials with less cost than shown in Table II. However, little quantitative information is available on relative effectiveness of these materials under field conditions. The ability of the farm operator in timing and adequate spray applications perhaps more greatly influences the success in obtaining a clean crop than the material used.

TABLE II Variation in Cost of Fungicidal Spray Programs
(1300 30-year old McIntosh trees on 48 acres)

| Spray Program No. | Materials Used 1st. 7 sprays Last 4 sprays | Per 100 gals. Amount cost ¹ | Cost of 7 full Strength sprays (100,000 gals.) | Cost 4 Re- duced Strength Sprays ² (64,000 gals) | Tot. Annual Cost 11 Sprays (164,000 Gals) |
|-------------------|--|---|--|--|---|
| I | sulfur (50% wetttable) | 6 lbs. \$.42 | \$420.00 | | \$ 770.00 |
| II | Crag 341 | 3/4 qt. .5475 | | \$350.40 | |
| | 1/2S ³ sulfur | 3 lbs. | 652.50 | | 1030.10 |
| III | 1/2S ferbam | 3/4 lb. .6525 | | 377.60 | |
| | ferbam | 1 lb. .59 | 730.00 | | 1080.40 |
| IV | Crag 341 | 1 qt. .73 | | 350.40 | |
| | Crag 341 | 3/4 qt. .5475 | 885.00 | | 1262.60 |
| V | ferbam | 1-1/2 lbs. .885 | | 377.60 | |
| | ferbam | 1 lb. .59 | 1118.50 | | 1630.50 |
| VI | Phygon(4 sprays) | 1/2 lb. .70 | | 512.00 | |
| | captan(3 sprays) | 2 lbs. 1.60 | 1600.00 | | 2112.00 |
| | captan | 1 lb. .80 | | | |
| | captan | 2 lbs. 1.60 | | | |
| | captan | 1 lb. .80 | | | |

1/ Prices used are average prices for four leading companies in 1953.

2/ Crag or ferbam or captan may be chosen by the apple grower to be used for these four reduced strength summer sprays.

3/ 1/2 S indicates half strength.

-----Ronald O. Aines
Laboratory Assistant
Farm Management Dept.

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Fruit Notes

Prepared by the Fruit Program Committee of the Extension Service
W. H. Thies, Extension Horticulturist

NOVEMBER 24, 1953

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PICTURES FROM THE FIELD



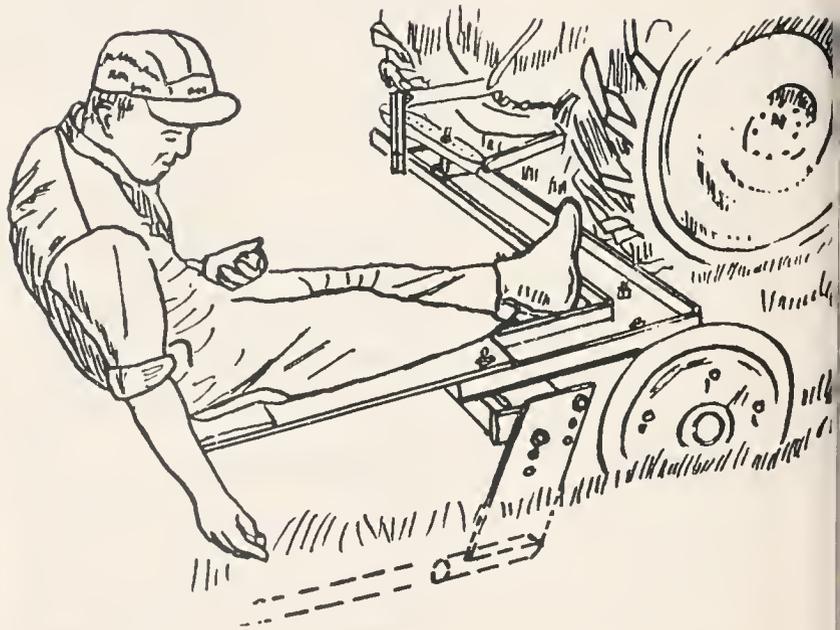
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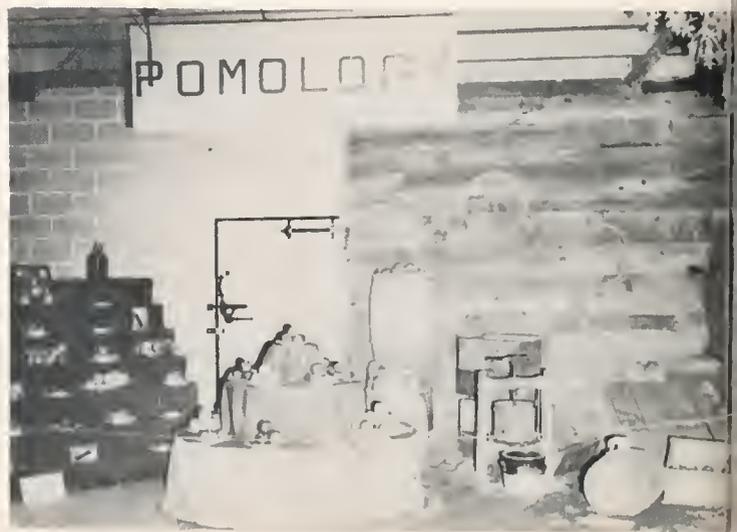
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Pictures 1,2 and 3 - Hydraulic Lift, Orchard of Russell Chace, Swansea. This raised platform provides working space for two apple pickers. Mr. Chace writes, "We removed the bucket from the loader and replaced it with a platform 4' x 5' which is ample room for two men with picking buckets and eight boxes. It has a railing 30" high all around and we installed levelling arms to keep the platform level at all heights. This gives it a range of 4 to 12 feet from the ground. As far as the platform is concerned, a good operator can keep apples before the pickers at all times which means a good non-professional picker can easily average 10 to 12 boxes an hour. The capacity of the outfit is limited only by the speed of the individual picker. It has been a substantial help, but at the same time has presented problems in that the pickers have lost their interest in ladders!"

Picture 4 - Mouse Trail Builder. This unique device, designed by Carl Henry, can be made at relatively low cost. It has been used in many Massachusetts orchards this fall, and greatly reduces the time involved in placing the rodenticide. A leaflet, giving details of construction, may be obtained from your County Extension Office or from one of the Rodent Control specialists.

Picture 5 - Apple Smorgasbord. This picture was taken at a recent Pomology Department Dinner. (Left to right, Mrs. J. K. Shaw, Mrs. A. P. French, Mrs. O. C. Roberts, Mr. A. L. Fish). Apples were used in every item on the menu, except coffee. The complete list is as follows:

| Cider | Apple Snacks | Coffee |
|--|-------------------------------------|---------------------|
| Stuffed Roast Pork with Apple Wedges | - Baked Ham with Apple Sauce on Top | |
| Apples Stuffed with Sausage Meat and Decorated with Rice | - Apple Omelet | |
| Apple, Ham and Sweet Potato Casserole | - Baked Squash with Apples | - Apple Rolls |
| Baked Apple and Cabbage Casserole | - Apple, Onion and Bacon Casserole | |
| Apple Ring-Cheese Ball Salad with Lemon-Sherry Dressing | - Jellied Apple Waldorf | |
| Apple-Cranberry Relish | - Apple Pie with Cheese Crust | - Apple Chiffon Pie |

Picture 6 - Pomology Exhibit at the Horticultural Show. A brief write-up appears elsewhere in this issue.

* * * * *

Is "Layer Pack" the Answer? In a Virginia Department of Agriculture publication, there appears some pointed information from retail stores in that state. Apples in cut-of-state packs, the retailers say, are uniform in size and color and arrive with a minimum of damage, even from across the country. Virginia packs frequently contain a high percentage of damaged apples and there is too much variation in size and degree of color. Richmond stores take a liking to a layer pack. Both 150's and 163's bring a premium of 50 cents a bushel over the face and fill box. When these retailers were asked if they prefer the layer pack to either the face and fill box or the basket, 95% said "Yes" and 5%, "No". On the question, "Do the trays eliminate bruising of the fruit and do you intend to re-purchase this type of apple pack", the answers were 98% "Yes" and 2%, "No".

THE PRESSURE TESTER - A TOOL FOR STORAGE OPERATORS

In the September issue of FRUIT NOTES a few comments were made about the use of a pressure tester at harvest time. As indicated at that time, a pressure tester (with a 7/16 inch head or plunger) is not an ideal instrument to determine proper picking maturity but it does tell one when apples are becoming too soft for long storage.

Now that all varieties have been picked and what's left are in storage, the pressure tester is a pretty valuable instrument in determining the condition of your fruit. It can tell you which lots in your storage are the softest or the firmest. Such information can be of considerable assistance in determining which apples to sell first or last.

The following tables compiled by Dr. R. M. Smock at Cornell and published in the Cornell University Extension Bulletin 440 are in agreement with our observations in Massachusetts and may serve as an aid in determining when to market your fruit.

Table I Determination of fruit condition with a pressure tester.

| Variety | Firmness (lbs.) | | | |
|------------------|-----------------|----------------|--------------------------------|--------------|
| | When harvested | When firm ripe | Should be sold before reaching | Unmarketable |
| McIntosh | 14 - 16 | 11 - 12 | 10 | 7 - 8 |
| Cortland | 16 - 18 | 12 - 13 | 10 | 8 - 9 |
| Delicious | 17 - 18 | 12 - 15 | 11 - 12 | 8 - 10 |
| Golden Delicious | 18 - 20 | 13 - 16 | 12 | 8 - 10 |
| Baldwin | 22 - 24 | 13 - 14 | 12 | 10 |
| Northern Spy | 19 - 21 | 13 - 16 | 12 | 10 |

McIntosh which test only 10 or 11 pounds now should be put into the consumers' hands as rapidly as possible.

Table II Length of marketability period for McIntosh apples when removed from 32°F. and held in air at 74°F.

| Firmness when removed from storage | Days required to become unmarketable (reach 7 lbs.) after being placed at room temperature |
|------------------------------------|--|
| Pounds | Days |
| 14 | 18 |
| 13 | 15 |
| 12 | 12 |
| 11 | 9 |
| 10 | 6 |
| 9 | 4 |
| 8 | 2 |
| 7 | 0 |

Remember McIntosh apples at 10 pounds pressure will be unmarketable after about one week at room temperature.

Apple Scald. Keep your eyes open for storage scald on Cortland and other susceptible varieties. We expect that this may be a bad scald year following a sunny, hot, dry season. Bring out small samples of susceptible varieties (particularly from the earliest picked lots) at 2 week intervals starting after Thanksgiving.

Leave such samples at room temperature for 5-7 days and see if scald is beginning to develop. Apples may show no scald in cold storage but 100 percent scald after a few days at room temperature.

- - -F.W.Southwick

* * * * *

25,000 Visitors Flock to Student Horticultural Show. A record crowd of over 25,000 New Englanders visited your University of Massachusetts campus for the annual student horticultural show October 30-November 1. Prominent among the exhibits was a 20' x 10' "Then and Now" display prepared by the student Pomology Club.

As seen in the photo, the left-hand area presented 1953 ideas of packaging and display of apples, pears, grapes, and cranberries on neat salesroom shelves. Built into the cinder block wall was a door suggesting refrigerated storage beyond. Contrasting this on the right, 1903 provided a well-worn cellar storage door, barrels and field boxes of apples, and a small cider press. The "atmosphere" was clear at a glance. Between the "Old and New" areas a revolving pyramidal table displayed labeled varieties, old and new.

Much chuckling and broad grins were noted as oldtimers passed by, recalling memories of other days. Many spent several minutes studying this student suggestion of progress.

- - -A.L.Fish

* * * * *

Hand-Picking Blossoms Aids Newly Set Strawberries; Sprays Not Effective. Experiments in the U. S. Department of Agriculture have demonstrated the value of removing blossoms from newly set strawberry plants. Removing the blossoms allows the plants to grow bigger, develop more runners, and produce more berries the following spring. The experiments also proved that hand removal of blossoms is more effective than destroying them with sprays.

Scientists D. H. Scott and Paul C. Marth, geneticist and physiologist, respectively, of the Plant Industry Station, tried various sprays in comparison with hand picking for removing the blossoms, the last a practice long used by the more progressive strawberry growers. None of the sprays (2,4-D; 2,4,5-TP; and TIB) was successful, but hand picking seemed to stimulate the plants.

Scott and Marth set out plants of a new, vigorous, virus-free variety (US-3919) on April 3, 1952. On May 3, when blossoming was at its height, they sprayed three different plots, hand-picked the blossoms from one plot, and left one as a check. On June 11, plants on the plot from which blossoms were hand-picked were much larger than any of the others, having 4.4 runners each compared with practically none on any of the sprayed plants or those in the check. By July 7 the hand-picked plants had an average of about 20 runners each, the checks averaged 3.3, and those sprayed had about one runner, or none. The removal of blossoms of newly set strawberry plants is found by these workers to be one of the most important practices in giving the plants a good start. They call attention also to research work in Ohio, which showed that more runners are produced when plants are started early, and to research in North Carolina and Ohio that showed the early-set runners produce more berries the following spring.

* * * * *

World Apple and Pear Production. The total 1953 apple crop throughout the world amounts to about 560,013,000 bushels. About 147,000,000 bushels are used for cider. The reported total for cider in France, alone, is 140,000,000 bushels and in Austria, 4,000,000 bushels. The total United States crop, 99,611,000 bushels (September estimate), makes up about 17% of the world crop. Of the total pear crop throughout the world, 160,338,000 bushels, about 26,000,000 bushels are used for cider, 20,000,000 in France and 6,000,000 in Austria. The total United States crop, 30,374,000 bushels, is about 19% of the world crop.

Orchard Reorganization in Virginia. In 1937 there were 4,153,000 apple trees in Virginia orchards. In 1949 there were 2,766,000 and in 1952 there were 2,389,000. These figures are presented in a publication from the Virginia Department of Agriculture, "Bulldozers at Work in Virginia Orchards". Between 1949 and 1952, growers pulled or abandoned 18.2% of all commercial apple trees and replanted only 4.6%. The peach tree picture is similar. In '49 - 1,116,000; '52 - 938,000. The switch toward redder strains and varieties in Virginia is very noticeable. There has been a 30% increase in recent years in red strains of Rome Beauty and a 33% decrease in Albemarle Pippin, a favorite of Queen Victoria.

* * * * *

CAN YOU AFFORD TO LIME YOUR ORCHARD?

Now that lime is no longer included in the Soil Conservation program, many fruit growers may wonder whether or not they can afford to buy lime for their orchards.

Before attempting to answer the question let us consider a few fundamental facts. Without frequent applications of high magnesium lime our orchard soils become increasingly more acid. This increase in acidity is due to several factors, the principal one being the repeated applications of sulfur necessary to control apple diseases. An orchard which receives 500 pounds of sulfur per acre per year will need 1500 pounds of lime to neutralize the acidifying effect of the sulfur.

Our soils are naturally very low in magnesium and as they become progressively more acid what little magnesium becomes available is more readily leached from the soil. By applying high magnesium lime to the soil we not only correct the acidity which is partly responsible for magnesium deficiency but we add magnesium and calcium which are necessary for plant growth. The magnesium which is added to the soil by the lime is rather slow in its correction of magnesium deficiency. It takes from 3 to 5 years before high magnesium lime can correct serious cases of magnesium deficiency. In the meantime growers must apply magnesium to the leaves by applying 3 sprays of epsom salts at the rate of 20 pounds per 100 gallons.

A final word on high magnesium lime - it is the cheapest source of magnesium available. Twelve dollars and twenty cents (\$12.20) spent for high magnesium lime will purchase as much magnesium as ninety three dollars and fifty cents (\$93.50) spent for epsom salts. In other words, when you buy high magnesium lime, you get a bonus of \$93.50 in magnesium.

The answer to the question, "Can you afford to lime your orchard?" is, "You can't afford not to."

STRAWBERRY VIRUS

Strawberry virus troubles are still serious in Massachusetts as elsewhere. They will continue to cause considerable loss to growers until virus-free plants are available in adequate quantity.

Dr. G. M. Darrow and his associates in the U. S. D. A. have located virus-free plants of a number of varieties and made them available to nurseries. It is the responsibility of the nurseries to increase the supply of plants and keep them virus-free. Several nurseries have accepted this responsibility and appear to be doing a good job so that virus-free plants of several varieties will be offered to growers this winter and next spring. The supply is limited and may not meet the demand.

Virus-free plants are being produced by nurseries in Delaware, Maryland and Tennessee. One of the high points of the trip to Beltsville was a two-day visit to several strawberry plant nurseries in Delaware and Eastern Maryland. It is quite a sight to see a single field of 60 to 70 acres of strawberry plants. These plant fields will average about 150,000 plants per acre. Some of the better will yield 300,000 plants. Such fields are really covered with strawberry plants. It is estimated that virus-free plants, because of their increased vigor, should yield 400,000 plants per acre.

Many of the plants I saw were virus-free or nearly so. The following substantially virus-free varieties are now available to growers: Albritton, Armore, Blakemore, Catskill, Howard 17, Klondike, Klonmore, Massey, Sparkle, Tennessean, Tennessee Beauty and Tennessee Shipper. In the winter of 1954-1955, it is hoped that plants of Big Joe, Dunlap, Missionary, Robinson and Vermilion will be available and, in 1955-1956, plants of Fairfax, Gem, Midland, and Redstar.

Where virus-free stock has been compared with ordinary, virus-infected stock, the growth of the virus-free stock has been much better. It should be worthwhile for a grower to get some virus-free plants to make his own comparison. If the plants are to be fruited only once, there is probably little to be gained from dusting for aphid control. On the other hand, there is the possibility that if virus-free plants are kept free of virus, their superior vigor can be maintained and they can be fruited several times to advantage.

To keep plants virus-free requires thorough and regular dusting to control aphids. There are in Massachusetts plenty of the three aphids which spread the virus. Either parathion or malathion will do a good job. Actual field experience on a large scale showed that where dusting was properly done, aphids were extremely hard to find. In nearby undusted fields, plenty could be found.

Dusting of the virus-free bed only is not enough. Aphids must be prevented from migrating in from surrounding infected fields. Since it is estimated that 99% of the strawberries presently grown are virus infected, it is a good bet that nearby old beds are infected and need dusting. Wild strawberries, also, have been found to be virus infected. Therefore, to keep virus-free plants free of virus will require thorough and regular dusting of both the new virus-free plants and all old plants in the vicinity and either dusting or eliminating wild plants.

SOIL MANAGEMENT OBSERVATIONS IN YUGOSLAVIA

Relatively little commercial fertilizer is used on Yugoslavian farms, for at least two reasons. The average farmer has a smaller cash income and is therefore less able to purchase such materials, and they are not so generally available as in some other countries. However, this does not mean that soils are becoming depleted. Practically all farms have livestock. Hence soil fertility is maintained by using barnyard manure. Compost is also commonly used. Through the centuries farmers have learned to conserve and use the materials at hand, whether willow twigs for baskets, fences, etc., or the prunings from a vineyard for fuel. On one large farm not far from a city, street sweepings were being distributed in quantity as a means of soil improvement. Labor is plentiful and inexpensive. But with so much hand labor the production per worker is necessarily rather low while the production per unit of area (hectare, or 2.4 acres) is, on the average, quite satisfactory.

At least 70% of the people are tillers of the soil and many of the farms are not only small, but as in other parts of Europe, divided into several parcels. Mechanization, under these conditions, is impractical. Only on the larger cooperative and state farms does one see tractors and other kinds of farm machinery. Even mowing machines, drawn by horses or oxen, are quite uncommon. The scythe, the cradle and even the sickle are used. Also, a heavy hoe substitutes for a drag, harrow, or cultivator on many farms. One of the very common sights in spring is the many women working in fields with hoes, breaking up clods, a task which most farmers would consider possible only with a harrow or other equipment.

Rainfall in some areas is inadequate for best production. Open irrigation ditches are of quite frequent occurrence and along some of the swiftly flowing rivers, irrigation wheels have been constructed. An ingenious arrangement of "buckets" carries water to a trough near the upper side of the wheel, from which point it is conveyed to the field. There is a general belief that some of the soils are becoming dryer because of the cutting off of forests during periods of warfare or occupation. In the very dry season of 1952, crops were materially reduced. Corn in some areas was a near failure.

Before a vineyard or orchard is established, many of the horticultural leaders favor deep tillage to break up the more or less impervious subsoil. Fields of considerable extent are frequently dug to a depth of about two feet by hand with that idea in mind. The deeper soil is not brought to the surface but the upper and lower layers are turned separately. One field of about 40 hectares was observed where 500 men accomplished this enormous task by the shovelling method. Occasionally, a special type of plow of Italian origin is used in preparing the soil for the planting of grapevines. On one such project in Slovenia, a bulldozer was being used for motive power. Whether or not deep tillage is necessary on all soil types is questionable. On podsol soils, however, it is claimed that roots develop better if the subsoil is broken up.

Erosion is a serious problem in some parts of the country, particularly in Macedonia. Gullying and sheet erosion have gone on for centuries, suggesting a real need for improved farm practices and for reforestation. There is some interest in strip farming and in contour planting of orchards. The writer helped to lay out the first row of a new contour orchard, the first of its kind in Croatia. Mulching is also being demonstrated. All of the 4000 fruit trees on one of the experiment station farms were mulched for the first time last summer. With the gradual adoption of a more complete spray program and the realization that vegetation of various kinds will tend to increase fruit production, mulching may replace to some extent the growing of other crops between the trees. Most of the orchards are double-cropped. Hay, vegetables, potatoes, etc., frequently interfere with a good spray

program. Only by increasing the production of good fruit per hectare, thus conserving land for other crops, are farmers likely to change from the present double-cropping system to the more specialized method of growing fruits in this country.

- - -W.H.Thies

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Some Facts About Agriculture in Massachusetts. Only 2% of our people are engaged in farming. We rank 44th in size and 9th in population among the states. About 65% of our total land area is covered with tree growth while many thousands of acres are too steep or stony to be tilled, or are poorly drained. Our farm lands need an annual application of 320,000 tons of agricultural lime, and some individual acres need an initial application of as much as 3 tons. The total value of all agricultural products sold in Massachusetts in 1952 was \$202,615,000. The value of cranberries was \$7,966,000 and of other fruits, \$5,314,000.

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STRAWBERRY BLACK ROOT ROT

Recently I had the good fortune to spend ten days at the Plant Industry Station at Beltsville, Maryland, working on strawberry problems with Dr. George M. Darrow and his associates. The principal purpose of this visit was to learn about the latest developments concerning the strawberry black root rot disease.

Black root rot of strawberries has caused severe losses to strawberry growers in Massachusetts for many years. Usually, affected plants look fairly good till a dry spell occurs. Then the plants begin to die. The lower, older leaves die first and then the younger, till the whole plant dies. When a dead or badly diseased plant is dug up, the root system is found to be mostly black and dead.

Plant pathologists have tried to associate this disease with a fungus and a rather imposing list of fungi has been isolated from the roots of plants infected with the black root rot. Some were parasitic and were causing damage, others were saprophytic and had invaded the dead roots. However, it was never possible to tie the disease up to a single fungus.

About a year ago Dr. Darrow, while visiting Holland, found that Dutch strawberry growers were having nematode troubles and were doubling their yields by soil fumigation. This suggested a possible relation between our puzzling black root trouble and nematodes.

Nematodes, also known as eelworms, are very small, almost transparent, worm-like organisms which are present in crop soils in tremendous numbers. Fortunately not all are harmful. One of the very common ones, the meadow nematode which causes a serious brown root rot of tobacco and other troubles, is under suspicion as the cause of black root.

If the meadow nematode is the cause of black root, it should be present in the roots of plants showing the symptoms and the worse the symptoms, the more nematodes should be found. To obtain information on this, 24 strawberry plant samples were collected from eight Massachusetts counties and taken to Beltsville for examination. These samples were collected from fields where the black root symptoms varied from none to very severe and were examined in cooperation with Dr. A. C. Goheen, of the U. S. D. A., who is working on the black root rot problem. Of the

24 samples, 4 were nematode free, 7 had so few that the infestation was considered light, 10 had a moderate infestation and 3 were heavily infested. Since these samples were obtained from as far west as Berkshire County to as far east as Essex and Barnstable Counties, and only 4 were free of meadow nematodes, it is obvious that the meadow nematode is very widely distributed in Massachusetts strawberry fields. Thus, the meadow nematode becomes more suspect, but a definite tie-up between it and black root has yet to be established. At the Plant Industry Research Station considerable experimental work is in progress to determine the relationship.

If it is proved that the meadow nematode is either directly or indirectly the cause of black root, what can be done about it? The soil can be practically freed from nematodes by good fumigation. Several good soil fumigants, as well as the machines for injecting them into the soil, are already available. In fact, field soil fumigation has been practiced by tobacco growers and vegetable growers on certain crops for a number of years.

What about the plants to be set in a fumigated field? Can they be obtained free of nematodes? For the present, the answer is no. However, it will not be long before nematode-free plants will be available. Dr. Darrow and his associates have produced a small supply of virus-free nematode-free plants of 25 varieties. These will be distributed to cooperating nurseries in the spring of 1954 and substantially virus-free nematode-free plants should be available to growers in two or three years.

-- -J.S.Bailey

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Plastic Film Box Liners Lengthen Storage Life of Pears and Apples. The marketing season for certain varieties of pears and Golden Delicious apples is being lengthened by packaging in boxes lined with plastic film, say two plant scientists of the U. S. Department of Agriculture. In a paper given at the annual meeting of the Produce Prepackaging Association in St. Louis, Mo., October 8, the two scientists, Fisk Gerhardt and H. A. Schomer, described studies in packaging and storing fruit in plastic film at the U. S. Horticultural Field Laboratory, Wenatchee, Wash.

The studies show many films are satisfactory for use with Bartlett, Anjou, Comice, and Bosc pears, but the tougher films provide greater resistance to rough handling when the lids are placed on the packing boxes. The scientists recommend packaging in plastic film only for sound fruit washed in an effective fungicide and for the part of the crop intended for late storage. Pears kept sealed in film at 31° F. could be held in storage one or two months longer than non-film packed fruit, and still ripen with excellent quality. Packing in sealed films added several days to the shelf life of the ripened fruit.

The scientists found Golden Delicious apples, which lose moisture easily and shrivel, benefited most from box liners of polyethylene, plicofilm, and other films impervious to moisture. When stored for six months, these apples had a better appearance and dessert quality than those of standard packs. Certain of the films allowed a margin of several days at which the apples could be held without injury at room temperature. But generally, sealed box liners should be perforated or slit when apples are removed from cold storage to prevent possible development of off-flavors at higher temperatures.

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Fruit Notes.

Prepared by the Fruit Program Committee of the Extension Service
W. H. Thies, Extension Horticulturist

DECEMBER 30, 1953

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LOWERING TOPS THE "ALLEN" WAY



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FRUIT NOTES
December 1953

Picture number 1 -- Before Pruning - 1952

Picture number 2 -- After Pruning - 1952

Picture number 3 -- Before Pruning - 1953

Picture number 4 -- After Pruning - 1953

Pictures showing Before and After lowering the top of a large apple tree, according to the "Allen Method", in a Worcester County orchard. In both 1952 and 1953 the same tree was pruned in the month of December. In the upper left hand corner (number 1) we see the tree as it appeared before any limbs were removed. Number 2 shows the tree after the top was removed. Number 3 is the same tree after one year's growth (note the strong growth of sprouts below the level of pruning). In number 4 we see the results of a second pruning in December, 1953. An appraisal of this method of pruning appears elsewhere in the current issue of FRUIT NOTES.

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Back Issues of FRUIT NOTES. We are on the verge of discarding a sizeable pile of FRUIT NOTES, including as many as 25 copies of a few issues, some of them dating back several years. Any reader wishing a miscellaneous collection may have it for the asking. But please don't request a copy of a particular issue, for example, one in 1948. Maybe none was prepared that month. A postcard to the editor will bring as complete an assortment as is available. First come, first served.

* * * * *

Twenty Years Ago, - Brr-r-r. Remember the winter of 1933-34 when Baldwin trees with a heavy crop the previous fall almost passed out? What have we learned in the meantime? (1) That heavy pruning just before very cold weather means more winter injury. (2) That a tree with a mere shell of live sapwood recovers slowly, is very subject to decay and breakage and may never be profitable again. (3) That winter hardiness in a variety is important. Two cold winters (1917 and 1934) plus a hurricane (1938) have done much to reduce the quantity of Baldwins on our markets. Over a 15-year period (1925-1940) the percentage of the total Massachusetts crop dropped from 40 to 25%. It is even lower today.

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Soil Moisture is Replenished. Rainfall in Amherst for the first 10 months of 1953 was 42.41 inches compared to the normal for that period of 36.91 inches. In view of the dry summer this is welcome news. Trees will now go into the winter season with their roots in a thoroughly moistened soil and with less run-off than if the soil had frozen in November. The October rainfall amounted to 5.15 inches. The normal is only 3.29 inches.

THE RELATION OF FALL FERTILIZATION TO WINTER INJURY. WHY TAKE CHANCES?

Fruit growing is naturally a hazardous enterprise, so every effort should be made to eliminate as many hazards of the business as possible. Avoiding application of nitrogenous fertilizer in the fall is one way to eliminate one of the risks in growing apples.

Nitrogenous fertilizers applied in the fall predispose the tree to winter injury. The reasons for increased susceptibility of fall fertilized trees to winter injury are not clear, but there has been ample evidence established to show that fall fertilization is associated with winter injury. This does not mean that fall fertilized trees will be winter injured every year; certain climatic and tree conditions are apparently needed for the development of the injury. However, these conditions cannot be predicted, so while fall fertilization may be practiced for several years without injury the threat of severe injury is always with us. When it occurs the tree is either killed outright or so severely injured that its productive life is drastically shortened. The injury is usually characterized by discoloration of the bark and wood and a separation of the bark from the wood all along the main trunk of the tree. Sometimes the injury is noticed because the bark splits and curls away from the wood. In many cases, however, the tree appears normal and no visual sign of trouble is noticed until yellowing of the foliage takes place in mid-summer.

Winter injury to fall fertilized trees is not confined to severe winters, it has been severe in comparatively mild winters. I recently observed severe winter injury to a young McIntosh orchard in Massachusetts after a mild winter. In talking to the foreman I found out that the trees had been fertilized in late November and early December.

While winter injury to fall fertilized trees may occur only once in a lifetime, it can cause severe losses which are not worth the chance. Your orchard is subjected to enough hazards, so why take a chance of subjecting it to winter injury by fall fertilization?

***W.D.Weeks

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Farm Fire Losses Up 5% Over 1952. The losses from farm fires during the past year will amount to about \$140,000,000, an increase of about 5% over 1952. The principal causes have been carelessness and faulty building construction. December through March are the months of heaviest losses. The nation's staggering fire losses are the result of over a million fires of all sizes. The total losses from all fires will be about 17% higher than last year. Have you checked your property for fire hazards lately?

* * * * *

THE TALL TREE PROBLEM

Anyone who has attempted to carry out a spray program or harvest the fruit in an orchard of tall trees is familiar with the difficulties involved. Modern spraying equipment tends to emphasize the problem. Complete coverage with the air blast type of sprayer, above a certain level, is quite impossible. And as trees become

higher production and harvesting costs do likewise.

The experience of Sherman Allen in Vermont, who is maintaining apple trees which can be harvested with a short ladder, has attracted considerable attention. Mr. Allen has visited Massachusetts on several occasions and has demonstrated his method of lowering tall trees in a Worcester County orchard. Pictures of a particular tree before and after pruning in December, 1952 and December, 1953 appear in this issue of FRUIT NOTES. This demonstration and a discussion by Mr. Allen at a twilight meeting in 1952 have done much to focus attention on the importance of maintaining good conditions for fruit development at a lower level than is found in most orchards. He has convinced many growers that lower apple trees go hand in hand with profitable production.

The best pruning technique for a particular tree is always a debatable question. There are frequently several ways in which the desired results may be obtained. In years past much was said about "orchard renovation", which involves the same idea. Where an older tree has grown out of reach, the problem is always the same, namely the elimination of the present fruiting wood above a given level and the encouragement of new fruiting wood at a lower level. This goal can be accomplished in at least two different ways, the method demonstrated by Mr. Allen in which the entire top is lowered rather drastically and successively over a period of years, and the method described briefly in the following paragraph.

Most excessively tall trees have two, three or more towering growths which form a sort of "second story". They over-top and prevent the development of fruiting wood as much as 8 or 10 feet below. If these towering growths are removed the first year there will be a marked development of new wood near, or below, the level of cutting. The following year other tall growths are removed and further encouragement is given to the new wood which will, in 3 or 4 years, be producing fruit within easy reach of a short ladder. At the same time, other cuts are made in the tree to favor outward growing branches which will later be bent downward with crops of fruit.

It is a well known fact that one form of winter injury involves exposure of limbs to the direct rays of the sun in late winter when the inner bark is exposed to freezing at night and thawing during the day. Shade provided by small growths throughout the top prevent that kind of damage. But if drastic slashing is done before late winter, some sun scald is likely to occur during March.

In appraising the Allen method of lowering tall trees, it is well to remember this fact. Mr. Allen has successfully lowered his trees by keeping in mind his objective, and pruning accordingly year after year. Another grower, attempting to follow the same method, may miss the mark completely. By carrying out this one simple idea any grower should be able to improve his excessively tall trees. Sprout growth at the 8 to 12 foot level must have sunlight if it is to become productive. Pruning cuts must be made in such a way that these growths have adequate space and sunlight. Keeping these growths in mind, the most important cuts should be made first. Then, a year later, other cuts will provide further encouragement to these growths. But there seems to be little need for successive cutting of the same limb year after year.

***W.H.Thies

Does Organic Matter Accumulate? Organic matter is a general term referring to the remains of plants and animals in various stages of decomposition. In a poorly drained area the soil takes on a darker color because there is not enough oxygen to supply the decay organisms and as a result the organic matter actually builds up. Muck and peat are good examples. But in a well drained soil under cultivation the organic matter tends to disappear faster than it accumulates. It literally "burns up". Even a heavy cover crop plowed under in a sandy soil will disappear in a relatively short time. But in the process of decomposition it makes a real contribution to the productivity of the soil. The crop growing on the land reaps benefits through the release of mineral elements in available form, improved moisture relations, and in other ways. This complex material, whether in the form of manure or other plant remains, if accompanied by conditions favorable for decay, can transform a sterile soil into a fertile soil. We add organic matter to the soil not with the idea of storing it for use in the future but for its influence this year and next. If the objective were a mere accumulation we might use only materials low in nitrogen, such as straw, or wood, in fact almost anything resistant to decay. But the most profitable use is through gradual decomposition and prompt replenishment.

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THE FRUIT VARIETY PROBLEM IN YUGOSLAVIA

In the course of my travels, amounting to about 10,000 miles by automobile and jeep, I was impressed many times with the importance of the fruit variety question. Taking apples as an example, at least 80 different varieties are now being grown in Macedonia, many of them sweet apples of Turkish origin which are no longer popular. Horticultural leaders in that area have selected a list of 15 varieties which they consider well adapted. It is planned to propagate these varieties in the future and gradually eliminate the others. I asked how many of the trees at the present time are outside this list of 15 varieties. The answer was 60%. Imagine, if you can, the difficulty in marketing such an assortment of apples either locally or through export channels.

In an apple producing area in Slovenia there is a considerable percentage of trees of early varieties, more in fact than can be used locally. I was informed that only one of the European countries has shown an interest, in years past, in apples of early varieties, namely Czechoslovakia. The principal demand in other countries was for hard, winter apples.

About 20 years ago propagating material of five American apple varieties was introduced into Yugoslavia, - Delicious, Jonathan, Rome Beauty, Winesap and Yellow Newtown. The first two, Delicious and Jonathan, do very well under the soil and climatic conditions in that country and bid fair to replace some of the older sorts. Good Winesaps can be grown in Macedonia. In years past, practically all of the varieties were of European origin. The Budimka, a local sort, is one of the most common in Serbia. It is an apple of very mediocre quality but is quite resistant to apple scab. This characteristic has induced Serbian farmers to plant the Budimka variety since usable fruit can be grown without fungicidal applications.

Another example of variety significance is found in sweet cherries which thrive in certain localities. The fruit is of large size and excellent quality. But only the early ripening varieties are likely to be free from cherry maggot (*Rhagoletis cerasi*) a close relative of the two species found in this country. A few varieties of sweet cherry, ripening in late May, find ready sale locally and in

other countries. But the maggot flies emerge from the ground in early June and within a short time infested cherries are of common occurrence. A sample of fine looking sweet cherries, which I purchased in late June at a farmers' market near the Italian border, were quite disappointing. Control of this insect is difficult because the orchards are invariably double cropped, and a complete spray program would be quite impossible.

The variety question is also important in the plum growing areas, particularly in Serbia. The most common variety, Pozegaca, is of local origin. This is a prune-type plum, trees of which have been planted by the millions. But many of these trees are infected by a virus disease, known as "sarka". The fruit from such trees is quite worthless. It is said that pigs will even refuse to eat it. A program of eradication has been started and an attempt is being made to locate all of the infected trees. This brings up the question of a replacement, the present variety being very susceptible to the disease. A careful study must be made of other varieties, some of which may prove to be less susceptible if not quite immune to the disease. Thus an old established industry which has grown up around a single variety must be reorganized on the basis of variety, adaptability and susceptibility.

The importance of peach and apricot varieties should also be mentioned. Peaches are limited to a few varieties which have been found reasonably successful. Some are of Italian, others of German origin. But there is reason to believe that some, if not many, of our good American varieties would be well adapted to their soil and climate. Test plantings have been established since World War I. In one of these plantings, 70 American varieties are being grown for purposes of comparison. A test will also be made of two American apricots. Several varieties of Hungarian origin are now being grown.

From the foregoing illustrations it is quite apparent that the development of the fruit industry in a backward country, such as Yugoslavia, involves a careful study and comparison of different varieties. A recently introduced variety may ultimately prove to be better than the old. But because a variety is new, it is not necessarily better. Only time will tell whether the new should replace the old. As a writer (Pope) said many years ago, - "Be not the first by whom the new is tried, nor yet the last to lay the old aside."

***W.H.Thies

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50 Years of Extension Work. Fifty years ago Seaman A. Knapp established the first formal farm demonstration in Texas. This marked the beginning of the demonstration method of teaching better farm practices. Similar demonstrations soon appeared in other parts of the country. Later, home demonstration work was started with rural homemakers and 4-H Club work with boys and girls. The founder of the Extension Program stressed the idea of having farmers try out the better practices on their own farms. In this way what farmers might consider mere "book farming" becomes real "dirt farming" in actual practice. Dr. Knapp said, "What a man hears, he may doubt. What a man sees, he could doubt. What a man does, he cannot doubt".

* * * * *

SEEN AND HEARD IN THE FIELD

Sick Trees. Some striking cases of magnesium deficiency were noted this fall, particularly in Bristol County. The characteristic yellowing between the veins of the leaves, with the veins and midrib remaining green, was particularly noticeable. In one orchard where the symptoms were very prevalent, no lime of any kind has been applied for several years. In other orchards there is reason to believe that some of the "bulk spread" lime has been of the high calcium, instead of high magnesium, type.

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Good Orchard Management. A well planned mulching program was observed on a fruit farm in the Nashoba area. A low lying, swampy area has been drained, plowed and seeded. Many tons of mulch will be produced here for use in a nearby orchard at a higher elevation where the soil is rather light. By transferring the growth of vegetation from this moist field to another field where moisture conservation is much needed, a 50% increase in yield over a period of years may be possible.

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An Effect of Heavy Equipment. Use of a soil auger in many orchards this fall has revealed the packed condition where heavy equipment has been used repeatedly. In many cases it was quite impossible to obtain a sample even where no interference from stones was encountered. The development and functioning of roots in such places can well be imagined. It would, of course, be impossible to prevent packing of the soil entirely. But on certain soil types, almost completely devoid of organic matter, a soil improvement program is urgently needed. Liming, growing more vegetation, bringing in additional mulch material and, in some cases, an occasional discing may be advisable.

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Poor Growth of Peach Trees. The inability of peach trees to compete with a heavy growth of grass is very apparent in an occasional peach orchard. Instead of making a terminal growth of a foot or more, some peach trees show an average growth of no more than 4 inches. The remedy is not additional fertilizer but, in the absence of early season cultivation, a layer of mulch sufficiently heavy to suppress the grass. Good growth and good production go hand in hand.

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Release Cutting. This term, very common among foresters, might well be applied to an orchard in which every other diagonal row has been removed. The response of the remaining trees is little short of miraculous. Lower branches take on new life as they reach out into the newly released space. It doesn't take very many good trees on an acre of land to produce a large crop of fruit. If twice as many trees are present as are needed, they handicap each other, and production costs are higher because there are more trees to prune, spray, fertilize, etc.

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New Trail Builder. The new device for making trails in an orchard in which to place mouse bait has been quite widely used this fall. Several growers have expressed satisfaction. In using this equipment, as in placing bait in the usual manner, the relation of the grass cover to the mouse population should be borne in mind. The heavier the grass, in general, the larger the number of mice per acre. More baits should be placed in the heavy grass, including the lower edge of the orchard border-

ing on lowland where grass is likely to be heavy. The trail builder promises to take much of the hard work out of the rodent control program.

* * * * *

Repeat Customers. Roadside stands, along with retail fruit and vegetable counters, have done a thriving business this fall. More good quality apples have been offered than in some seasons past. This kind of fruit not only attracts customers but brings them back. Successful fruit salesmen are firmly convinced that repeat sales, instead of one to a customer, are the secret of a profitable enterprise.

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Size of Apples in 1953. In spite of a severe drought during the past summer, the average size of apples was surprisingly large. This was unexpected since apples contain about 87% water. The explanation may be something like this: fruit development is closely associated with healthy, undamaged leaves. Good nutrition of the trees plus a good spray program helps to maintain good leaves. On the average soil fruit trees develop roots at a sufficient depth to provide a supply of water even in a fairly dry season. Thus, the well cared for tree was able to carry on in developing apples of large size even though shallow rooted crops suffered from the drought.

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Report on Captan. One Worcester County grower has this to say about Captan, "It has a tendency to promote better fruit finish and color. It appears to stop scab from spreading better than sulphur. It is easy on the operator, the tree and the soil". This is one man's opinion and may not reflect the experience of others. However, this new material looks promising and in spite of its relatively high cost will be used to a considerable extent in 1954.

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Wasted Fertilizer. There is every reason to believe that a considerable proportion of the mineral elements in a complete fertilizer is wasted on some soil types when used year after year as a ring application around the trees. The same fertilizer applied over the orchard floor would undoubtedly bring a better return. Instead of growing a ton of mulch material per acre, we should be growing 2 tons or more. The additional mulch material will benefit the tree more than the fertilizer itself.

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A Worthy Cause. The Hampden County Fruit Growers' Association has taken on a very worthy project. It involves supplying good 2-1/4 inch apples throughout the winter for the Shriners' Hospital, where many crippled children will enjoy this gift from the commercial fruitgrowers. A wholesaler in Springfield has agreed to store the apples and deliver them to the hospital, as needed.

* * * * *

Lowering Tall Trees. Well spaced apple trees bearing consistantly heavy crops assume an umbrella shape. The downward pull of 25 bushels of apples will do more to hold a tree down than an improperly used pruning saw. One well spaced orchard was observed this fall in which the owner is removing the tops unnecessarily. In other orchards half the trees should be removed. There is need for studying each block before making large pruning cuts.

Chemical Thinning. Thinning of apples by means of chemicals is making good progress in Massachusetts, not as an over-all application but with special reference to certain varieties, such as Early McIntosh, Wealthy, Golden Delicious, etc. Any grower having a severe biennial bearing problem with a particular variety should look into the possibilities of reducing the crop in the on year in the hope of bringing about some semblance of annual bearing.

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Five Ton Strawberry Club. In the state of Washington strawberry growers will be offered an opportunity to qualify for membership in a "5 Tons Per Acre" Club. And that's a good yield of strawberries in any state. A recent letter from Extension Horticulturist John C. Snyder inquires about the organization of our Red Apple Club which was operated for 5 years (1947-1952) in Massachusetts.

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Nylon and Fruit Juices. Press and filter cloths of nylon are being adopted by the food processing industry because of notable advantages in the handling of fruits and vegetables. When used as press cloths, nylon fabrics do not swell when wet, nor soak up juices. They also resist degradation by mildew and organic acids of fruit. Other advantages claimed for them include high tensile and bursting strength, light weight, long life, and minimum shrinkage.

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Experiment with Sawdust in British Columbia. At a meeting of the Western Section of the Am. Soc. For Hort. Sci., in California, G. H. Harris, University of British Columbia, Vancouver, B. C., reported on an experiment in which strawberries were mulched with sawdust. One acre of strawberries was divided into 72 plots. All of the plots were given regular fertilizer treatment, that is 1,000 pounds per acre of 4-10-10. One-third of these plots taken at random were manured. Another third of these plots were manured and given a 4 inch layer of hemlock sawdust. The experiment was run for four years at the end of which time results in the various plots were compared. The sawdust did not increase the soil acidity. The sawdust plots had a pH of 5.92 as compared with 5.82 for the manure plots. The amount of organic matter in the sawdust plot was increased. Analysis of leaves and fruit showed very little difference between the essential elements in the three series. The yields were 42 units in the plots that received the fertilizer alone, 46 in the manure and fertilizer plots, and 66 in the sawdust, manure, and fertilizer plots. There was a corresponding increase in runner production - fertilizer, (7.98), manure and fertilizer (9.52), sawdust, manure and fertilizer (12.6).

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1954 Fruit Spray Charts. As this issue of FRUIT NOTES goes to press, proof is being read on the New Fruit Spray Charts. They have been carefully revised and brought up to date. Duplication is accomplished on the campus and early distribution is planned.

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Fruit Notes

Prepared by the Fruit Program Committee of the Extension Service
W. H. Thies, Extension Horticulturist

JANUARY 27, 1954

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FRUIT NOTES

January 27, 1954

WHY DO STRAWBERRY PLANTS FAIL TO MAKE RUNNERS?

During the past few years strawberry growers have become increasingly aware of the failure of many plants to grow normally and produce a satisfactory number of runners. This has been especially noticeable in certain parts of the state and with certain varieties. In the Falmouth area there has been a great deal of trouble with Howard 17. Midland has practically gone out of production because of its failure to grow and produce runners. What is the reason for these failures which are becoming far too frequent to be passed over lightly?

Among a number of possible causes for failure to produce runners, two, virus and black root, appear of first importance and should receive prompt and careful attention. The first, virus, is probably the most important. As was pointed out in November Fruit Notes, probably 99% of strawberry plants now in commercial production are virus infected. Where virus-free plants have been compared with virus infected plants, the superior runner production of the former has been little short of amazing. The answer is virus-free plants, which are now available.

The black root trouble is probably second only to virus in reducing runner production. This disease may not only reduce growth and runner formation but also cause the death of both the mother and runner plants. This trouble appears to be associated with certain weather conditions and is, therefore, worse in some years and in some places than in others. The cause of black root is not known, but may be related to the presence of nematodes in the roots. A discussion of black root appeared in the November Fruit Notes. If nematodes are responsible, then soil fumigation and nematode-free plants will be the solution.

During the past few years dry periods during the summer seem to be increasing in frequency. These dry spells certainly reduce the growth of strawberry plants and may in themselves be a cause of reduced runner growth. However, it is strongly suspected that the dry weather effect on the strawberry plant is much worse because of the previous destruction of a portion of the root system by black root. In other words, the dry weather gets blamed for what may be partly or even largely the effects of black root.

There are a number of other possible causes for failure to make runners: lack of fertilizer, lack of soil organic matter, nutrient deficiencies, infestations of insects and other diseases. At times one, or a combination of these, is undoubtedly responsible. However, their effects in Massachusetts have not been so widespread as the effects of virus or black root. Certainly the effects of other troubles have been confused by the presence of virus and their remedy hampered. In many instances the same can probably be said of black root. One thing is certain. Until these two troubles are corrected, good runner growth will be uncertain and it will be very difficult, if not impossible, to sort out and appraise properly the effects of these other causes for failure of strawberry plants to make good runner growth.

---J.S.Bailey

* * * * *

An Editorial Headache. January FRUIT NOTES is delayed for this reason: The stencil had to be cut a second time because the first one was so brittle from long storage that it would not hold together for duplication. Cutting a 10-page stencil twice in a busy office presents quite a problem.

* * * * *

"He Had Good Plants to Start With" Strawberry growers in Washington and Oregon were faced with a production problem similar to ours in Massachusetts. Yields have been decreasing until they have reached such a low level in some fields that the growers were losing money. They were faced with the practical certainty that unless they did something they would have to go out of the strawberry business. They chose to act. The story of what they did, called "Strawberries by the Ton", appears in the fall issue of the NATIONAL FERTILIZER REVIEW. Several lessons can be learned from this story.

Production was increased by proper soil preparation, correct fertilizer practice and irrigation. These have been well emphasized as they should be and all are important in Massachusetts because even irrigation is becoming a must for a good crop in most years. A fourth factor which contributed to their success was passed over too lightly. It is a matter of just as great, if not even greater, importance than the three which were stressed. The last sentence in the article, referring to one of the growers, states, "He had good plants to start with." Another grower "put out certified Marshall plants!" "Good plants!" "Certified plants!" That's very important. Marshall, their principal variety, has been infected with virus for years. The yellow margins of the leaves which were thought to be a varietal characteristic proved to be a symptom of virus infection. Most of our commercial varieties don't show such characteristic symptoms of virus but they may be just as sick. Sick plants won't be top-notch producers no matter what is done to them.

---J.S. Bailey

* * * * *

Note on the "Allen Method" of Lowering Tall Trees. A letter just received from Joseph H. Putnam, former county agricultural agent in Franklin County, now in Florida, expresses concern about the kind of pruning depicted in December FRUIT NOTES. He refers to the experience of growers before World War I when severely pruned Baldwin trees never thereafter bore a crop of fruit. "De-horning", as then practiced, proved an expensive experiment. Mr. Putnam fears that similar drastic pruning is now recommended, and urges the utmost caution. In reply we have indicated the need for lowering the tops of McIntosh trees, and that our recommendations in Massachusetts are quite different from the "de-horning method" of years past. We favor the removal of those towering second story branches which are not only out of reach themselves but prevent the development of fruiting wood at a lower level. This does not mean approval of all details of the "Allen Method". Furthermore, orchard meetings are being held in several counties this winter at which the "Allen Method" is carefully appraised, improvements suggested, and needed precautions emphasized. Mr. Putnam's letter is greatly appreciated. It will help to avoid some of the mistakes of the past and insure cautious procedure as we adapt our tall McIntosh trees to the modern air-blast sprayer and the 15-foot ladder.

SOME PEST CONTROL PROBLEMS IN YUGOSLAVIA

In some respects this country is especially favorable for the research entomologist. A relatively long, dry summer brings many insect problems and some good work is being done by research workers on life histories and methods of control. But equipment and materials for a good spray program are quite generally lacking. To mention a few of the more troublesome fruit insects, (1) there are 3 broods of codling moth in some parts of the country and frequently 50% of the harvested crop shows the characteristic blemishes, (2) San Jose scale, introduced in the late Thirties, is causing widespread damage and is interfering with apple exports, (3) the apple blossom weevil destroys a large percentage of the blossom buds in unprotected orchards, (4) a cherry maggot (similar to the two species found in the U.S.) infests the later ripening varieties, (5) a root borer causes the loss of many fruit trees, (6) aphids responsible for the spread of certain virus diseases of stone fruits are a constant menace.

Apple trees in some areas bloom in April, and Delicious apples may be found in prime eating condition on the trees in late October. Certain varieties of sweet cherries ripen in late May. These observations suggest a long growing season with many hours of sunshine, a situation favorable for insect development. Under these climatic conditions, control of codling moth would require at least 3 thorough, well timed sprays of an effective material, such as DDT. But the DDT manufactured in this country contains only a low percentage of the essential ingredient and thus far has not been applied very generally for codling moth control. Lead arsenate, with seldom more than 2 applications, is the more common insecticide. One can easily visualize what would happen to the codling moth problem if 50 or 75% Wettable DDT were widely available along with suitable spraying equipment. Power sprayers are conspicuous by their absence. Even some of the Fruit Institutes where experimental work is under way, must get along with a power sprayer of such low capacity that two men can spray no more than 50 trees in a 10-hour day.

Several gallons of "Superior" oil were brought over from the U.S. for demonstration purposes in San Jose scale control. In one of these tests at an experiment station, a bucket type pump was actually used for applying this material. The results were very encouraging, with more than 98% control compared with about 92% with the material commonly applied. Along one of the highways, where 20 years ago apple trees had been planted for a distance of 50 kilometers, many of the trees are severely infested by San Jose scale. Lower elevation orchards seem to suffer more than others because of more favorable weather conditions which influence the number of scale insects.

A few years ago the bud moth, a minor insect pest in New England, was introduced into the country in the absence of its natural enemies or parasites, causing severe defoliation. A laboratory has been set up to develop suitable control measures, including the breeding of parasites.

Neither apple scab nor brown rot cause severe damage, partly because of a drier climate and partly because most of the varieties are somewhat resistant. The Budinka variety of apple, commonly grown in Serbia, shows little scab even though no fungicidal applications are made. In vineyards, however, the situation is quite different. Fungus diseases are prevalent and copper fungicides are used liberally. In fact, about 80% of the pesticide materials used on Yugoslavian farms is used in vineyards, leaving relatively little to control the insects and diseases of tree fruits.

Speaking of "pests" a large species of rabbit causes much damage to young

fruit trees, so much in fact, that it is a common practice to wrap the trunks of young trees with straw or cornstalks each fall. The largest young orchard in the country includes about 100,000 trees, each of which had been wrapped with straw before my visit to that area in late October. Plenty of farm labor may be obtained at 10 cents per hour. A few of the experiment station orchards are protected by means of a woven wire fence, with posts set in concrete.

In conclusion, one more "pest" should be mentioned, namely "chiggers". The writer was annoyed from time to time by itchy swellings on his skin. But it was not until his return to the U.S. that the "critter" was identified. In fact, he never got a glimpse of this extremely small mite at the time. Fortunately, an ointment which came in the medical kit from FAO gave some relief. After about a week the swellings disappeared, just in time to acquire a new assortment. Hopefully, none of the "chiggers" were brought back to Massachusetts. If they were, recent chilly weather has undoubtedly finished them.

---W.H.Thies

* * * * *

Black Knot of Plums. This common fungus disease is no problem in an orchard where Brown Rot is well controlled. But the experience of the writer in a home orchard consisting of two plum trees shows how quickly Black Knot will spread in the absence of fungicidal applications. Before leaving for Europe in August 1952, these trees showed no more than half a dozen small "Knots". But no fungicidal applications, whatever, were made in 1953. As a result, at least 100 small "Knots" are now in evidence. Control of this disease may be accomplished by prompt removal and destruction of any "Knots" which appear, plus the kind of spray program needed to control Brown Rot.

* * * * *

1954 APPLE Spray Charts Ready for Distribution. The new Apple Spray Charts are now being distributed through the County Extension Offices. If you are on the County Fruit Mailing List your copy should arrive soon. This newly revised publication contains much useful information. It deserves careful study. The Notes are especially important. The comments on each pest and each material will be found, in general, immediately following the particular spray application with which they are most concerned. Other Notes on Dusting and Dust Mixtures, Fungicides and Insecticides follow the spray schedules, on pages 11 to 14.

* * * * *

Those Back Issues. The first request for back issues of FRUIT NOTES came from a reader in Quebec. Requests are still coming in and the assortment has shrunk considerably. As a final reminder we repeat the invitation, "Any reader wishing a miscellaneous collection may have it for the asking. First come, first served." The balance will be discarded soon.

GREATER INCOME VS. MORE TAX?

In January most farmers file Federal income tax returns. The farm account is totaled and the tax return filled out. For many, the big job of accounting is done for a year. The 1953 records are put away and this tax problem is dismissed for another year. But to other farmers the summarized account is a valuable tool. It gives a picture of a year's operation. It's a bench-mark. From this base the farmer can project changes in his business for the year ahead. The following case summary will serve as a guide.

The case is that of a young married couple with an eight-year-old boy. Their farm includes 1075 apple trees on 35 acres. Fifty percent of the trees are McIntosh. An airblast sprayer is used. Apples are sold wholesale. Seasonal labor is hired for particular operations. The farm account summary and Federal income tax is shown below:

| <u>Expenses</u> | <u>Amount</u> | <u>Receipts</u> | | |
|------------------------------|---------------|--------------------------|-------------|-----------|
| Harvesting labor | \$ 2350. | 1,400 bu. U.S. Ex. Fcy @ | 3.10 | \$ 4,340. |
| Other labor | 824. | 5,100 bu. U.S. Fcy @ | 2.70 | 13,770. |
| Trees and supplies | 272. | 2,800 bu. No. 1 Cooker@ | 1.75 | 4,900. |
| Spray and dust materials | 3677. | 900 bu. Utility @ | 1.50 | 1,350. |
| Fertilizer and lime | 771. | 10,200 bu. | | \$24,360. |
| Truck tractor & sprayer exp. | 1483. | | | |
| Other repairs & general exp. | 1011. | | | |
| Taxes, interest, insurance | 1040. | | | |
| Boxes and cartons | 2573. | | | |
| Storage, sorting, selling | 6836. | | | |
| TOTAL EXPENSE | \$20,837. | | | |
| | | | *in cartons | |
| | | Total Cash Receipts | | \$24,360. |
| | | Total Cash Expenses | | 20,837. |
| | | Net Income | | \$ 3,523. |
| | | Depreciation | | 980. |
| | | Taxable Income | | \$ 2,543. |
| | | 1953 Federal Income Tax | | \$ 107. |

The spray and dust program /1 on this farm cost \$3677 in 1953. Ferbam and captan were used for fungicides. In addition, two sulfur dusts and one phenyl mercury spray were applied. TEPP, methoxychlor, TDE, DDT, and lead were the insecticides used. Following the discussion at the Worcester Union Meetings, a spray program/1 believed as effective, but less costly, was laid out as one alternative for this farm. Sulfur instead of captan could be combined with ferbam in the first seven sprays and glycdin for captan in the four reduced strength summer sprays. Dieldrin would replace methoxychlor in the Calyx, First and Second Cover for insecticides.

A saving of \$820 in spray material cost, with no change in quantity produced, may result from a careful study of alternative spray programs for this farm. Can it be that the original spray program gave superior finish to the apples which was worth \$820 more on the wholesale market? Admittedly, at 1953 rates the gain in net income means an increase of \$170 in Federal income tax. Most farmers would willingly pay this added tax when their net gain is nearly four times the added tax. Furthermore, 1954 income rates may be less than 1953.

/1 Detailed spray programs for 1953 and the alternative compared are available on request.

Get More From Your Gypsy Moth Dollar! Every one of us helps pay the bill to control Gypsy Moth. It is spent mainly on a town by town basis under present laws.

Are we getting anywhere? The attached map and statement say "No", except when arrangements are made to pool the resources of town, county, State and Federal agencies. Town personnel will still play a very important role in a cooperative, integrated and coordinated, state-wide program to prevent defoliation - this year, next year and every year.

Let's join hands to stop this pest!

---E.H.Wheeler

* * * * *

JUNIOR APPLE JUDGING CONTESTS

For a number of years two contests have been held in Massachusetts each year in which members of various chapters of the Future Farmers of America located in several high schools and county agricultural schools compete. This year a contest was held at the University of Massachusetts, October 30, and another at Worcester North High School, January 6.

Three boys constitute a team. At the Amherst contest 8 teams competed from the following schools: Arms Academy, Shelburne Falls; Charlton High School, Charlton; Essex County Agricultural School, Hathorne; Hudson High School, Hudson; New Salem Academy, New Salem; Norfolk County Agricultural School, Walpole; Templeton High School, Templeton; Worcester North High School, Worcester.

Each contest consisted of four parts: (1) Judging. This involves correct placing of three plates of four varieties, also the correct identification of the variety in each class (400 points). (2) Variety identification. Forty-five specimens from a specific list of eighteen varieties of apples and pears to be correctly identified. (450 points). (3) Pest and blemish identification. Each contestant must identify 15 apple pests or blemishes from a list of 21 insects and diseases. (150 points). (4) Grade and variety identification. This requires the identification of the correct U.S. Grade and variety of 15 lots of apples (300 points). Thus, 1300 points constitutes a perfect score.

At the contest held in Worcester 6 teams competed from the following schools: Arms Academy, Essex County Agricultural School, Norfolk County Agricultural School, Templeton High School, Worcester North High School, and New Salem Academy. Several prizes were presented by Jonathan Davis, President of the MFCA, at the afternoon session on January 6th as follows:

(1) To the three individual contestants having the highest combined scores from the contests in Amherst and Worcester. The prizes donated by the MFCA were 1st, \$25; 2nd, \$15; 3rd, \$10. The winners of these prizes were: 1st, Harvey Peck, Arms Academy; 2nd, Eugene Williams, Essex County Agricultural School; 3rd, David Rossbach, Templeton High School.

(2) To the three individuals making the highest score in the Worcester contest medals were contributed by the Massachusetts Department of Agriculture. Winners

of these prizes were: 1st, Harvey Peck; 2nd, Eugene Williams; 3rd, Stephen Stone, Essex County Agricultural School.

(3) The three individuals who received the awards donated by the MFGA were considered the State Junior Fruit Judging Team, and each received an appropriate medal donated by the Massachusetts Department of Agriculture.

(4) To the team having the highest score in the Worcester Contest a rosetts and ribbon was donated by the Massachusetts Department of Agriculture. This was won by the team from Arms Academy consisting of the following contestants: Harvey Peck, Barry Miles and Paul Lively. Mr. Nathan Hale was the coach of this team.

What is the value of such a contest? First, it is designed to assist in the training of boys, interested in fruit growing, to identify varieties, grades and pests as well as to stimulate their ability to observe accurately and arrive at a conclusion. Second, the spirit of competition is an inducement to a boy to do his best not only for his own benefit but also for the good of the team and the honor of his school. Third, it encourages good sportsmanship. This was distinctly evident in the two contests held this year and all of the contestants merit the highest commendation in this regard.

---O.C.Roberts

* * * * *

Damage to Peach Buds. Temperatures from 14 to 18° below zero were recently recorded in the University peach orchard in Amherst. Many buds have been examined by Dr. W.D. Weeks. He finds that not more than 30% are alive, with some variation in varieties and on different trees. A more detailed report of the peach bud situation will be prepared for the February issue of FRUIT NOTES. Another severe freeze will tend to kill the remaining live buds in the University orchard. Every peach grower should cut a few buds to determine the local situation. A safety razor blade is a convenient tool for making a cross-wise cut through the center of the bud. A normal bud will appear green. Darkening of the tissues indicates bud killing.

* * * * *

Note on Grape Pruning. Here is a simple idea concerning grapevines emphasized by Dr. Nelson Shaulis of the Geneva, N.Y. Agricultural Experiment Station at a recent MFGA meeting of small fruit growers in Worcester. Instead of leaving about the same number of buds on all grapevines, regardless of their size and vigor, the number of pounds of prunings taken from that vine should be correlated with the number of buds to be left on a vine. By weighing the prunings from several vines, this relationship becomes apparent. It stands to reason that a large vine with long growths and many growing points is capable of bearing more clusters of grapes than a less vigorous vine. For the Concord and varieties of similar growth habit, 30 buds should be left for each pound of prunings, and 10 additional buds for each additional pound of prunings. For the Fredonia variety, 40 buds are left for each pound of prunings, and 10 more for each additional pound. The per acre yield of grapes may be materially increased if we balance the number of buds and weight of prunings for each vine.

* * * * *

Two or three qualified workers for part time, non-commercial pruning or grafting jobs are available, Information upon request.

DO YOU KNOW THESE FACTS ABOUT SCAB?

One square inch of leaf that has wintered over under the tree may have as many as 250 perithecia (winter spore cases).

The perithecia, when ripe, will begin discharging spores five minutes after they are thoroughly wet.

The spores are shot 1/4 to 1/2 inch into the air where they are carried by air currents to the buds, leaves, flowers and fruits of the apple trees.

In 45 minutes, 33,313 spores may be discharged from one square inch of leaf. Count them yourself sometime.

If the ground in an orchard is covered with leaves containing abundant perithecia and the trees are planted 40 x 40, it has been calculated that in 45 minutes 8,107,200,000 spores per tree may be discharged into the air.

Actual count during a 5-hour period show that ascospore distribution varies from 71 to 289 ascospores per cubic foot of air in the orchard.

A single perithecium discharges spores for one day only; but it may produce more spores later.

A leaf continuously wet discharges all its spores in 10 days. If it is dried 11 days and re-wet, no more spores are "shot".

This is important! Ascospores and conidia (summer spores) placed on apple leaves and exposed to full sunlight for 6 days germinated well when moisture was again supplied.

After ascospores land on leaves, dew is enough to cause infection - no rain is needed.

---C.J.Gilgut

* * * * *

VARIETIES OF BLUEBERRIES FOR MASSACHUSETTS

| <u>Variety</u> | <u>Recommended For</u> | <u>Harvesting Season</u> |
|----------------|------------------------|--------------------------|
| Cabot | C | Early |
| Earliblue | T | " |
| Pioneer | C & H | Midseason |
| Concord | C & H | " |
| Bluecrop | T | " |
| Berkeley | T | " |
| Atlantic | T | " |
| Pemberton | C & H | Late |
| Herbert | T | " |
| Jersey | C & H | " |
| Dixi | T-Trial | " |
| Rubel | H-Home | " |
| Coville | C-Commercial | " |

Variety Notes

- Cabot Ripens early, berries large, mild flavor, drop when ripe, may crack after rains; bush yields well, spreading, moderately vigorous, hard to propagate, costly to prune, susceptible to winter injury and to blueberry stunt.
- Earliblue Ripens early, fruit light blue, very firm, good flavor, cluster medium size, medium loose. Bush upright, vigorous, well shaped.
- Pioneer Ripens mid-season, berries large, light blue, excellent flavor, keep well. Bush moderately vigorous, fairly productive, medium height, hard to propagate, costly to prune.
- Concord Ripens mid-season, berries large, fine flavor, attractive, clusters compact. Bush upright, vigorous, very productive, susceptible to mummy berry, easy to propagate and prune.
- Bluecrop Ripens mid-season, fruit very light blue, very firm, good flavor, small scar, clusters large, medium loose. Bush upright, said to be a vigorous and heavy producer, difficult to propagate.
- Berkeley Ripens mid-season, fruit very large, light blue, firm, mild flavor, scar large and dry; bush upright, vigorous, productive.
- Atlantic Ripens late mid-season, fruit medium size, good blue, attractive; good flavor, good scar, fruit drops when ripe, may crack after rain. Bush upright, moderately vigorous, fairly productive.
- Pemberton Ripens late, fruit large, firm, attractive, good blue, excellent flavor, poor scar; bush upright, very vigorous, very productive, hardy.
- Herbert Ripens late, fruit large, fair blue, good scar, flavor good but a bit tart; bush low, spreading, said to be vigorous and productive.
- Jersey Ripens late, fruit medium to large, fair blue, attractive, firm, good flavor but tart if not fully ripe, good scar, open cluster; bush upright, vigorous, productive, hardy.
- Dixi Ripens late, fruit very large, firm, fair blue, quality fair, fair scar; bush upright, moderately vigorous, moderately productive.
- Rubel Ripens late, fruit medium size, firm, good flavor, good blue, fairly attractive, good scar; bush upright, very vigorous, very productive, hardy.
- Chaville Ripens late, fruit large, firm, good scar, fine flavor but tart, good blue, attractive; bush upright, spreading, said to be vigorous and very productive.

---Dept. of Pomology

* * * * *

A CLOSER LOOK AT THE GYPSY MOTH

By Ellsworth H. Wheeler, Extension Entomologist, University of Massachusetts

Defoliation by Gypsy Moth in 1953 was the most extensive ever recorded in New England—nearly 1,500,000 acres — more than half of it in Massachusetts. Turn to the other side and the Defoliation Map prepared by the Department of Natural Resources. Note the “hot spots” of severe damage widely scattered over the state.

Heavy defoliation has several serious effects: (1) Trees are weakened and fail to make normal growth, or are killed outright; (2) the fire hazard is greatly increased; (3) the water holding capacity of watershed areas is decreased; (4) woods are made unfit for wildlife; (5) recreational areas are spoiled; (6) Massachusetts woodlands and roadways are made unattractive to visitors.

What Is the Outlook for 1954?

Damage is expected to be as great or even greater than in 1953. The “hot spots” are centers for further spread in 1954. Parasites and other natural enemies appear unable to check the present outbreak. Temperatures must be -20°F or lower for several hours to kill exposed eggs. A covering of snow gives perfect protection.

The experience of more than 30 years has proved that individual communities cannot prevent extensive outbreaks of this pest in wooded areas. Creosoting egg masses kills eggs but appears entirely futile in the present situation. Ground sprayers and blowers are limited to streets and roadsides.

Can Defoliation Be Prevented?

Yes! Aerial spraying with DDT is **effective, safe and practicable**; it is **economical** when resources are pooled for major purchases of DDT, oil, solvents, transportation and aircraft contracts. This is not guesswork; it is based upon experience.

The map shows thousands of acres sprayed in Barnstable, Plymouth, Nantucket, and Berkshire counties since 1949. Financing was done by pooling the resources of Towns, Counties, State and Federal agencies; the work was supervised and coordinated by the Department of Natural Resources assisted by Town and County personnel. Technical information and assistance was furnished by the Bureau of Entomology and Plant Quarantine of the U. S. Department of Agriculture.

No defoliation by Gypsy Moth has occurred in these sprayed areas.

What YOU Can Do to Help

A sound, workable and continuing plan for eliminating defoliation by Gypsy Moth throughout Massachusetts has been drawn up by the Department of Natural Resources. It calls for a State-wide cooperative program. Financing requires **early** legislative action to bring about pooling of the resources of towns, cities, counties and the State. **It is to your advantage to have your community cooperate in this program.**

You may obtain additional information from your County Extension Office, Moth Superintendent, Tree Warden, University of Massachusetts, or Department of Natural Resources.

Inform yourself — inform your neighbors — make your wishes known!

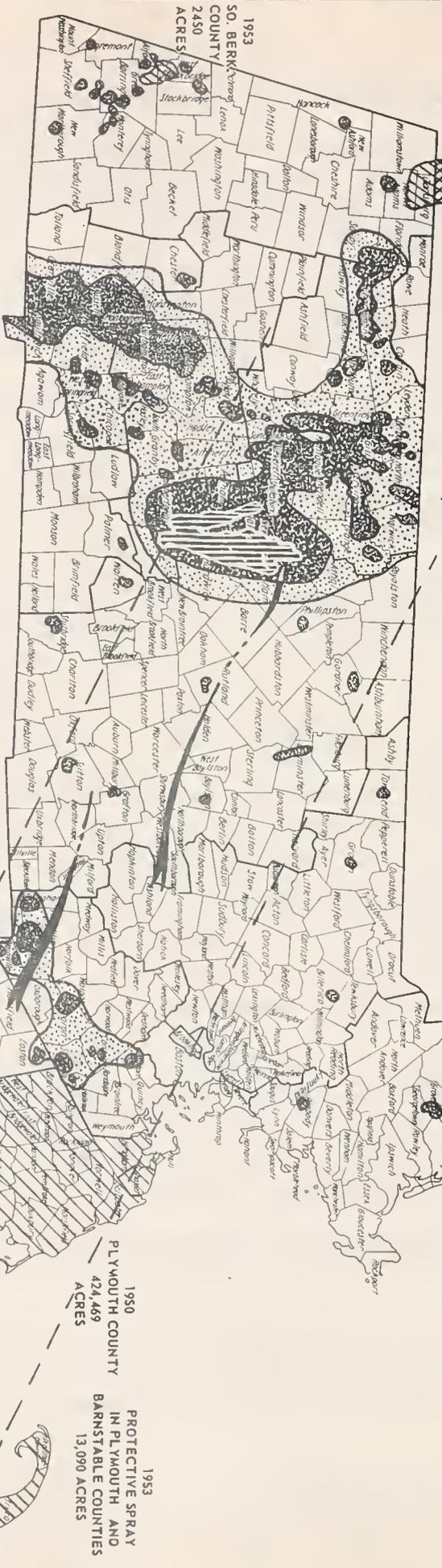
Hurry! The Gypsy Moth caterpillar starts eating again in May!

There's a lot of groundwork to be done before the planes can fly!

MASSACHUSETTS

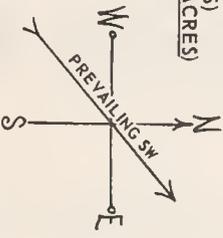
CITY AND TOWN LINES

1953 - IN NO. BERKSHIRE CO., VT. LINE 18,047 ACRES SPRAYED



1953
 GYPSY MOTH DEFOLIATION
 (AERIAL SURVEY)

- ||||| QUABBIN RESERVOIR
- ▨ DEFOLIATION (50% - 100% - 371,851 ACRES)
- ▤ LESSER DEFOLIATION (543,242 ACRES)
- ▧ PREVIOUS AERIAL SPRAY AREAS (CO-OP. PROJECTS) (1948-1953, 754,051 ACRES)
- ▩ TORNADO AREA
- - - APPARENT BOUNDARY - JUNE 9th WINDS



1950
 PLYMOUTH COUNTY
 424,469 ACRES

1953
 PROTECTIVE SPRAY
 IN PLYMOUTH AND
 BARNSTABLE COUNTIES
 13,090 ACRES

1949
 BARNSTABLE COUNTY
 241,464 ACRES

1951
 NANTUCKET COUNTY
 31,071 ACRES

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Fruit Notes

Prepared by the Fruit Program Committee of the Extension Service
W. H. Thies, Extension Horticulturist

FEBRUARY 27, 1954

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FRUIT NOTES

February 1954

METHOXYCHLOR VERSUS DIELDRIN

This year many Massachusetts fruit growers must decide whether to use methoxychlor or dieldrin to control plum curculio on their apples and peaches. They have heard that both insecticides give excellent control of this important pest. However, they do not want to turn their orchard into an experiment station nor do they wish to be the last of their fruit growing neighbors to take on "a good thing". The following analysis of the available information and a few suggestions may help them decide.

For the control of plum curculio in Massachusetts both materials have been very effective. In the middle West and South dieldrin has made a better record than methoxychlor which has not "stood up" under the higher temperatures in those areas. Dieldrin also has a better record in preventing damage by plant bugs and from that standpoint may be preferred on peaches and pears.

On the other hand dieldrin is a complete loss for the control of caterpillars and worms such as the red banded leafroller, gypsy moth, codling moth and Oriental fruit moth. In applications that are made while any of these pests are active, DDT, TDE, parathion or lead arsenate must be added to dieldrin for adequate protection, thus taking considerable of the "glamour" from this ~~new~~ material.

Both materials are exceptionally compatible with other pesticides used on fruit trees. The only caution refers to an undesirable combination with alkaline chemicals such as lime sulfur and perhaps Bordeaux Mixture. Even then they may form a less effective combination rather than one which is harmful to fruit and foliage.

Of the many chemicals used for insect control, methoxychlor is one of the safest to use and its residue is one of the least poisonous to operator and consumer. Dieldrin, on the other hand, is poisonous and has a long lasting residue. Its use is forbidden after the 2nd cover spray and it cannot be used for control of apple maggot even though it is quite effective against that pest.

One of the most amazing features of dieldrin is its mild toxicity to beneficial lady beetles including the several species which live on aphids, and the red mite destroyer, Stethorus punctum, which is now quite abundant in several local orchards. In experiments at the Waltham Field Station, methoxychlor has regularly killed 100% of the lady beetles while 86% survived sprays of dieldrin. In another test, twice as many Stethorus beetles were observed in a block sprayed with dieldrin as in an adjacent block sprayed with lead arsenate. Therefore less trouble from aphids and mites may be expected where dieldrin instead of methoxychlor is applied.

Obviously, the most debatable factor is the cost. Methoxychlor costs 65 cents a pound. Using 3 pounds, the cost per 100 gallons is \$1.95, or with lead arsenate in a 2-2-100 mixture about \$1.85. In our schedule methoxychlor in the Calyx, 1st and 2nd Cover Sprays has given satisfactory control of the major insect pests but a heavier mite and aphid infestation is likely to result. Dieldrin 50% wettable powder costs about \$2.05 a pound. Using 1/2 pound in 100 gallons, the cost is \$1.03. In most orchards it will be desirable or necessary to add 2 pounds of TDE 50% in either the Calyx or 1st Cover Spray, bringing the cost to \$1.95, and to add 2 pounds of 50% DDT in the 2nd Cover Spray making \$1.65 per 100. TDE will increase the kill of lady beetles only slightly but DDT is just as destructive to the beneficial in-

sects as methoxychlor.

The specialists and the researchers are pleased that there are now two insecticides which will control curculio. If one is not adequate in your situation, the other can be used and perhaps to your advantage. In some orchards methoxychlor will be more desirable, in others dieldrin.

Our suggestions to growers are:

1. Methoxychlor is still the standard insecticide for control of the plum curculio.
2. Because it is less expensive, use dieldrin in curculio "hot spots"; apply it very thoroughly, preferably in an extra application.
3. Consider using dieldrin throughout the orchard in one of the following sprays - Calyx, 1st Cover or 2nd Cover.
4. Review the history of your orchard in relation to leafroller, codling moth and Oriental fruit moth and if necessary --
5. Use dieldrin (a) in Calyx with TDE 50% - 2 pounds - 100
(b) in 1st Cover as the only insecticide
(c) in 2nd Cover with DDT 50% - 2 pounds - 100.
6. If necessary use dieldrin to strengthen the lead arsenate or parathion programs in applications critical for curculio control.

---W.D. Whitcomb

* * * * *

Old Timer Comments on Apple Spray Chart. "The 1954 Pest Control Schedules on apples have just been released. To an old-timer, who was brought up on a 100 gallon tank (spray tank, that is) with walk around spray rods, and a schedule of four major sprays a year, these present day charts look awful complicated. It all goes to show that you have to be smart to grow apples nowadays". ---W.E. Piper

* * * * *

Virus Diseases of Peaches in the Hudson Valley. Do you have peach trees that ripen their fruit early, remain small and green longer than normal for the variety or fail to set fruit at all? If so, these trees may be carrying one of the three common virus diseases known to be present in New York State, namely, peach yellows, little peach, or X-disease, according to D.H. Palmiter of the Poughkeepsie, N.Y. Station. Peach yellows was the first known peach virus disease. The symptoms include premature ripening, inferior quality and often a bitter taste, along with small, narrow, yellow leaves. The disease is spread by the plum leafhopper. Fruits on trees infected by the little peach disease are smaller and ripen later than normal. In recent years it has become more serious than yellows in many areas. X-disease symptoms are familiar to most Mass. growers. Dr. Palmiter says that mid-August is probably the best time to recognize these three virus diseases. He recommends checking the orchard at that time and removing trees found to be diseased.

SOIE FACTORS AFFECTING STRAWBERRY YIELDS

No fruit crop in New England requires more hand labor than strawberries. Planting, removing blossoms from the newly set plants, spacing of runner plants, weeding, mulching and harvesting are time consuming tasks. There seem to be few shortcuts in managing the strawberry planting and little likelihood that many of the tedious jobs will soon become mechanized. Many man-hours of labor go into each acre and labor is one of the major costs on a strawberry farm. There are other unavoidable expenses in a successful planting. The plants for each acre, about 5000 of them, cost upwards of \$100. Mulching materials, and the labor of collecting and applying them, represent an appreciable per acre cost. Then there is an outlay for fertilizers whether the planting yields two or ten thousand quarts per acre. And taxes are an annual expense of no mean proportions. Yes, before we pick a single quart of berries we have a sizable investment on which a fair return is anticipated.

A large number of quarts of good berries per acre, at least 6000, is essential to success in a strawberry enterprise. And if by doing one thing a little better than average, we can get an extra thousand quarts per acre, it may have a tremendous influence on the net profit. Frequently that "extra something" costs little in comparison with the results. It may be something as simple as better soil preparation, setting earlier, getting better plants, or prompt removal of blossoms.

There are many mistaken notions about the factors which have most influence on yield. Some people stress the use of additional fertilizers; others place reliance on a new and promising variety. But the thing most commonly blamed for reduced yield or crop failure, is the weather. It is either too wet or too dry, spring frost destroyed the blossoms, wind removed the mulch, or deep freezing of the soil damaged the roots. It is true that unfavorable weather conditions tend to reduce an otherwise good yield, although good management will go far to counteract the weather factor. Let's take a look at some things the grower can do to help himself.

Following are the more important factors which determine the yield of a strawberry planting: (1) Variety. (2) Soil type, preparation, acidity, organic matter and fertility. (3) Time and manner of setting the plants. (4) Spacing. (5) Weed control. (6) Insect and disease prevention or control. (7) Mulching. (8) Weather. The first 7 of these factors are very largely under the grower's control. If he plants the wrong variety, if the soil is poorly prepared, or if the planting remains unmulched; the responsibility must rest very largely with the grower. And some of the things for which the weather is blamed may go back to a faulty management practice. If berries decay before they ripen, a late, heavy nitrogen application, particularly of poultry manure, may be the reason. If heaving of the plants results in root breakage, a lack of mulch may have permitted deep freezing of the soil. And if the planting suffers from drought, an unfortunate choice of location or faulty soil preparation may be partially responsible.

To sum up the situation, if we take as our goal a strawberry yield amounting to at least 6000 quarts per acre, and then do our level best to cooperate with nature in taking care of those factors for which we are responsible, the per acre yield may surprise us. Even though the Weather Man may do his worst, we'll still harvest enough berries per acre to insure a fair margin of profit. The strawberry virus problem is an important part of this situation. When virus-free plants become available, Factor No. 6 will be more nearly under the grower's control.

Note On Malling Stocks. Reporting on the behavior of three apple varieties, Cortland, McIntosh and Delicious on 8 Malling rootstocks over a 10-year period, Karl D. Brase of the Geneva, N.Y. Station calls attention to some interesting differences. Cortland came into bearing earliest, producing more fruit on each of the stocks the 4th year after planting. Of the semi-dwarf stocks tested, VII showed most dwarfing, followed in order by V, IV and II. Numbers I and XIII resulted in trees of medium size while XII and XVI showed no growth restricting influence.

* * * * *

MECHANICAL TRAIL BUILDER - IT'S FAST AND EFFECTIVE

The Mechanical Trail Builder, designed to construct artificial mouse trails in which poisoned baits are placed, has produced excellent results in controlling both Pine Mice and Meadow Mice. To date, 100% control of Meadow Mice and between 92-97% control of Pine Mice has been obtained by the use of this machine by the fieldmen of the Branch of Predator and Rodent Control of the U. S. Fish and Wildlife Service.

Growers in Massachusetts poisoned approximately 2000 acres of orchards with this machine. Visits have been made in some of these orchards to check for active mouse signs. Very few signs were noted after the snow had melted. In conferring with the various growers that had used the machine, it was found that between 2 and 3 acres of orchard were treated in an hour's time. The help was well pleased with the speed and ease of this method of poisoning.

A few minor mechanical changes have been made in the original construction of the machine to increase the efficiency of operation.

---C.E. Faulkner, Mammal Control Superv.
U.S. Fish & Wildlife Service, U. of Mass.

* * * * *

STORAGE SCALD - A TOUGH PROBLEM TO SOLVE

Apple scald is more or less of an annual problem on certain varieties. Cortland is one of our most serious offenders and is generally disposed of before January to avoid serious losses from this storage disorder. Actually, Cortland might be kept a bit longer than McIntosh on the basis of firmness and eating quality if it were not for its great susceptibility to scald. Growers who have been increasing their production of Rome are finding that this variety is somewhat susceptible to this disorder, also.

Present control measures such as oiled paper or air purification with activated carbon are not entirely satisfactory. Apple scald is supposedly caused by certain volatile gases liberated by apples and at one time we had high hopes that activated coconut shell carbon, a very efficient absorbent of many apple gases, would be the answer to this problem. Tests over a period of 7 or 8 years indicate that

although carbon is excellent for odor removal and apparently removes some ripening gases, it is not a fully reliable scald control device. In the course of our experiments it became apparent that carbon may control scald quite well on R. I. Greening but fail completely to control scald on Cortland. This fact made us wonder if the causal factors for scald might vary from one variety to another.

In an effort to obtain more information concerning variations in degree of scald obtained between different varieties receiving similar treatment and to obtain more information on the influence of storage temperature on scald, lots of R. I. Greening and Cortland were held for different periods at 32 and 40°F. during a 16-week storage period. In one series certain lots were held for one week at 40°F. and the rest of the time at 32°F. In other words, one lot was held the first week at 40°F., another lot the second week at 40°F., etc., but the rest of the time the fruit was at 32°F. Similar series were set up with one lot in each series remaining a 2 or 4 weeks period at 40°F. and the rest of the time at 32°F. Also, we had a lot at 40°F. and another at 32°F. which remained at these temperatures for the entire 16 weeks. The average amount of severe scald over a 2 year period is given in the following table. Since the lots placed at 40°F. for one week showed no significant differences that data is not given.

The influence on apple scald of varying periods at 40°F.

| Treatment (at 32°F. except for) | R. I. Greening % Severe Scald | Cortland % Severe Scald |
|------------------------------------|----------------------------------|----------------------------|
| 1st-2 weeks at 40° F. | 27.8 | 30.2 |
| 2nd-2 " " " " | 14.7 | 22.8 |
| 3rd-2 " " " " | 16.4 | 38.8 |
| 4th-2 " " " " | 15.2 | 36.5 |
| 5th-2 " " " " | 14.2 | 35.4 |
| 6th-2 " " " " | 11.0 | 33.3 |
| 7th-2 " " " " | 13.7 | 40.9 |
| 8th-2 " " " " | 9.2 | 41.5 |
| 1st-4 " " " " | 30.5 | 7.9 |
| 2nd-4 " " " " | 9.5 | 20.7 |
| 3rd-4 " " " " | 6.7 | 41.4 |
| 4th-4 " " " " | 6.4 | 60.7 |
| 16 weeks at 40° F. | 0.0 | 1.3 |
| 16 weeks at 32° F. | 3.6 | 42.4 |

From the data it seems that R. I. Greening and Cortland respond differently to short storage periods at 40°F. R. I. Greening held the first 2 or 4 weeks at 40°F. developed more scald than similar fruit held at that temperature for the same length of time at later periods. On the other hand, Cortland developed more scald when held at 40°F. during the latter part of the storage period. Also, apples of both varieties when held at 40°F. all the time had less scald than those held at 32°F. for 16 weeks. Obviously, holding apples at 40°F. is not a good way of controlling scald. This data is perhaps of academic interest only but it does indicate that it may be necessary to devise control measures for specific varieties.

COLD WEATHER REDUCED PEACH CROP IN UNIVERSITY ORCHARD

During January peach buds in the University orchard were subjected to minimum temperatures of 14° to 18° below zero. These minimum temperatures occurred twice during the month about one week apart. On January 26, which was several days after the last cold spell, a sufficient number of peach shoots to provide 100 or more buds for each variety were brought into the laboratory and examined to determine the number of buds which were still alive. The per cent of the total number of buds examined which were still alive was determined for each variety.

Per Cent of Live Peach Buds in University Orchard (January 26, 1954)

| <u>Group I - Top of Slope</u> | | <u>Group III - Bottom of Slope</u> | |
|-----------------------------------|----|------------------------------------|----|
| Elberta | 16 | Greensboro | 21 |
| Golden Early Bird | 32 | Marigold | 13 |
| Summer Rose | 23 | Erly-Red-Fre | 2 |
| Sungold | 29 | Summercrest | 3 |
| Fowler | 23 | Early Halehaven | 0 |
| Redskin | 3 | Fairhaven | 0 |
| | | Kalhaven | 0 |
| | | Afterglow | 0 |
| | | Early East | 0 |
| | | Wildrose | 0 |
| | | Prairie Dawn | 1 |
| | | " Daybreak | 0 |
| | | " Sunrise | 0 |
| | | " Rose | 0 |
| | | " Schooner | 0 |
| | | " Rambler | 0 |
| <u>Group II - Middle of Slope</u> | | | |
| Golden Jubilee | 26 | | |
| Halehaven | 10 | | |
| Red Haven | 11 | | |
| Jerseyland | 13 | | |

The orchard is located on a slope and temperatures were lower at the bottom than at the top. The varieties are grouped according to their position on the slope. The varieties grouped with Elberta are at the top of the slope, while those grouped with Golden Jubilee are in the middle. The varieties grouped with Greensboro and Marigold are located in the bottom third of the orchard. It is not possible to compare the hardiness of the varieties located in the coldest part of the orchard with those in the warmer location. It is possible to compare the relative hardiness of varieties in each group.

In the Elberta group all of the varieties except Redskin appear to be harder than Elberta. None of the varieties in the Golden Jubilee group are as hardy as Golden Jubilee, but they had enough live buds left for a partial crop.

In the bottom third of the orchard all of the varieties except Greensboro and Marigold had no live buds or so few left that the crop is a complete failure. The Prairie varieties were selected for hardiness, but apparently the minimum temperatures which occurred in the orchard were below the critical point for resistance to cold injury. It appears that we have not yet developed peaches which will escape injury at temperatures of 18 to 20° below zero.

---W.D. Weeks

FIRE FEEDS ON CARELESS DEEDS

FURTHER HORTICULTURAL OBSERVATIONS IN YUGOSLAVIA

As one travels over the rough roads of Yugoslavia, where many farm practices have changed little with the passing centuries, he is frequently impressed with the ingenuity of the farmer and his accomplishments through long hours of patient toil. In a land admittedly backward, where in many respects it seems that the world has stood still, there are good examples of skill, intelligence and a knack in cooperating with nature. These two observations will illustrate what we mean.

On a small farm in Bosnia (and more than 60% of the farms are of less than 12 acres), the peasant has an apple orchard and many of the apples are made into by-products. But money was lacking to buy a cider press, even if one were available. So the peasant made his own press entirely of wood, and with ordinary hand tools, including an ax. For crushing the apples he hollowed out a log, suspending over it a heavy block of wood which was attached to one end of a pole, with counterweight, balanced over a fulcrum. With little effort the block could be moved up and down, crushing a bushel of apples in the process. The press itself was built on a simple woodscrew principle, the two screws at either side being operated by a wooden lever. When the pressing was completed the cider was boiled over a wood fire until it was reduced to a thick syrup. We sampled the product and found it very good.

In one of the Fruit Institutes, grape vines were being grafted by a method not previously observed. It was late spring and growth was well under way. The vine was cut off two or three feet above the ground, scions of the new variety inserted, and the wound wrapped with a strip of heavy paper to form a "cup" and tied with a willow twig. The "cup" was then filled with sand. As the sap oozed from the wound the sand became thoroughly wet, thus preventing any drying of the scion or the vine into which it was inserted. A surprisingly large percentage of the grafts were said to grow where this method was used. Grape vines are sometimes grafted in the U. S. by cutting the vine off below ground level and then mounding soil over the wound. The method described above accomplishes the same result, and it will be noted that materials at hand (sand, willow twig, etc.) are used, as was the case with the peasant building a cider press.

In a country with abundant supplies of wood of different kinds, and with undeveloped industries, it is only natural that all sorts of uses are found for vegetation growing along the highway, streams, and in the forest. Willow is used in tying straw or cornstalks around the trunks of young fruit trees in the fall to protect them against a large species of rabbit, in making baskets, as a substitute for lath in farm buildings, and on a very large scale willow twigs are woven together to make fences. We saw many miles of this kind of fence. Twigs of certain hardwoods are used as a substitute for broomcorn in making household brooms, and coarser twigs are invariably used in brooms used for sweeping streets. No brooms of the kind used in the U. S. were seen. Hardwoods are also used in making very sturdy baskets for transporting apples, potatoes, etc. on the backs of donkeys or horses. Two baskets, holding two or three bushels of apples each, so constructed that they would balance on either side of a horse, were observed in use on a small farm in Bosnia.

The Yugoslavian peasant has very little cash income. His farm is of the subsistence type. All farms have livestock, including sheep, and homemade woollen clothing is seen everywhere. With no mechanization, the private farmer and his family work from daylight till dark with hand tools (a heavy hoe instead of a harrow) on a very few acres, to eke out a precarious existence. Tea is scarce and expensive. So they brew the leaves of a basswood tree as a substitute. Home processing of fruits and vegetables is fairly common and many peasants have crude equipment for drying prunes and for making plum brandy (slivovica). There are some opportunities for sup-

plementing the meager farm income by working on a nearby state farm or working on roads, as for example cracking stones with a hammer, since stonecrushers are almost non-existent.

In conclusion, we relate these two incidents: Interest in learning the English language is evidenced by the fact that about one-fifth of the people in the capital city, Belgrade, are studying English, most of them by themselves. One day we met on the street in Belgrade a clerk from one of the agricultural offices whom we had seen several times. Using two of the limited number of Serbian words we knew, our morning greeting was "Dobre jutro". She responded with "Good morning". These may have been the only English words she knew. Our second conversation took place on a small farm. The peasant had mentioned the fact that he had two children, - two sons. Later he referred to his four daughters, but had neglected to include them in his original count. Even though the feminine members of peasant families play a very important role both inside and outside the house, they unfortunately do not always get the recognition they deserve.

(This is the last of a series of five reports covering our 12-months mission with FAO of the United Nations.)

---W.H.Thies

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FURTHER COMMENT - GREATER INCOME VS. MORE TAX?

The farm operating statement in last month's FRUIT NOTES has aroused considerable interest among readers. Several have responded with excellent ideas on possible ways of increasing the farms' profit. That was the purpose of the article, to stimulate fruit growers to use past years' records as a basis for figuring the profitability of possible changes in farm operations.

The change in spray program considered in the January article was not clear to everyone. Without the benefit of the discussion of the Worcester Union Meetings, the subject was too broad to cover in one paragraph. Space did not permit giving proper qualifications. From the materials on pesticides given out by Mr. Aines in Worcester, the possible shift in spray programs for this farm can be more easily followed. Those not having this mimeographed material should send a card for it.

For insecticidal materials, the shift in terms of programs discussed by Mr. Aines at Worcester would be from Spray Program IV to VI. Both programs were outlined in detail as to materials by sprays. The original insecticides used were TEPP, methoxychlor, TDE, DDT and lead. The alternative program substituted dieldrin for methoxychlor in the Calyx, First and Second Cover. The other insecticides would continue to be used as recommended by Dr. Wheeler. He says: "In the alternative program using dieldrin, the continued use of TDE in Calyx or First Cover, and the addition of DDT in the Second Cover is recommended. In the original program using methoxychlor TDE would be required only if leafroller were a severe problem, and DDT would not be required in Second Cover."

One reason for introducing the alternative spray program was to raise the question: "Is the most costly pesticide program the most effective and the best for a particular farm?" There is a tendency for people to accept the most costly program as the best when many uncertainties are involved. Until fuller information on farm conditions and results from particular spray programs are known, even the fruit

technologists have difficulty in evaluating spray programs as to effectiveness on a particular farm. In the meantime, farmers must make decisions which affect returns.

Mr. Bishop of Wellsmont Orchards, Shelburne Falls, indicates how a decision on one part of the farm affects others. He says: "It is interesting to note that a clean crop can be graded in half the time of a 50% scabby or wormy one. Ten cents a box off your grading buys a lot of spray materials." He finds it "good psychology to buy spray materials in the winter when the money is coming in" and he is grading apples.

Several readers felt the analysis showed selling costs greater than producing costs. More study of selling methods was proposed with a suggestion of less wholesaling and more retailing. Even this alternative is subject to question. For example, Mr. Bishop, in his careful analysis of the case noted the high storage, sorting and selling costs. He comments: "If he (the farmer) had sold his apples field run for \$1.75, the price which he got for his cookers, he would have netted about the same and saved his own time spent on grading, if any. Perhaps he could have sold for \$2.00 field run and paid a tax on \$2500 more." The weighted average price the farmer received was \$2.39 a bushel. Storage, sorting and selling costs averaging \$.67 a bushel, left \$1.72 to cover other costs. Therefore, had a field run price of \$1.75 to \$2.00 a bushel been available it might have been more profitable.

The response to this article is gratifying. It indicates the importance of using carefully selected cases as a base for projecting farm adjustments. Mr. Aines will present other farm adjustments in the future, indicating how a particular change may affect the whole farm business.

---B.D.Crossmon

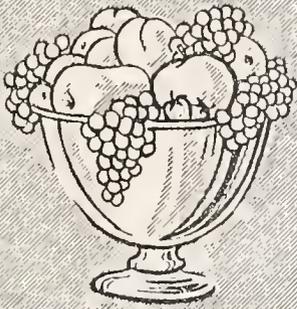
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"General Purpose" Home Orchard Spray Schedule. The 1954 pest control program for the home orchard is a decided improvement over those of the past few years. The various bud stages and the various fruits are arranged in such a way that the importance of each spray application for each fruit is indicated. For example, instead of applying the same number of sprays on each fruit in the home orchard the chart shows that while apples may require 9 sprays, certain other fruits will get along nicely with 4 or 5. This new schedule will be ready for distribution soon. Growers of fruits other than apples, peaches and pears, for which special charts are available, may be interested in looking over and using the "General Purpose" schedule.

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Are These of Interest? "Fertilizer Applications for Cultivated Blueberries" (Pomology Department Sheet No. 2), "Summer Sprays for Brush Control in Lowbush Blueberries" (Pomology Department Sheet No. 3), "More Profits from Wild Highbush Blueberries" (Pomology Department Sheet No. 4). A postcard will bring any, or all three, of these brief write-ups, prepared by Professor John S. Bailey.

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Fruit Notes

Prepared by the Fruit Program Committee of the Extension Service
W. H. Thies, Extension Horticulturist

MARCH 27, 1954

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FRUIT NOTES

March 1954

STRENGTHENING EAST-WEST TIES

The Food and Agriculture Organization of the United Nations and the Agricultural Attache of the American Embassy of Yugoslavia have requested that Professor Wilbur H. Thies be allowed to return to Yugoslavia for a period of three months to complete the Extension education job he started last year. We feel that this is our opportunity to contribute substantially to better relationships and understanding between the people of the United States and those of Yugoslavia and have therefore given our approval of this project.

Professor Thies will be gone during April, May, and June of this year and this will be important to the fruit growers of Massachusetts; however, we have the assurance of the staffs of the Departments of Pomology, Botany, and Entomology that they will make every effort to serve the fruit growers adequately. Through this cooperative effort by others we believe that the growers will be getting good service and at the same time one of our staff members will be doing his bit for international understanding.

Dale H. Sieling, Dean
School of Agriculture
and Horticulture
University of Massachusetts

March 19, 1954

PRUNING HOURS, AS WELL AS TREES

According to an outstanding northeastern fruit grower - a good economist as well, one-half of the labor expended on an apple crop up to harvest time is for pruning and bush removal. Therefore shifting to the use of a pruning platform can mean real economies. Farmers are constantly looking for ways to increase efficiency, reduce costs, and increase incomes of their farm businesses. Interest is intensified presently by the economic situation. Many desirable adjustments require large capital expenditure, but a pruning platform need not be expensive. Let's figure out how much might be saved by the use of a pruning platform in an orchard.

A case farm has 1830 trees, 20 to 30 years of age, on 45 acres. They have been adequately pruned each year to 20 feet or less. The operator has constructed a platform 9 feet high of welded pipe and planks. The platform is 8 x 12 feet, but the owner now thinks a length of 14 to 16 feet would be better. Two catwalks, each made of 14-foot planks, 2 planks wide, are manually moved outward from the platform. This pruning platform was constructed very economically by the owner. Many growers already own trailers which would hold removable platforms. Platforms made with hydraulic lifts, or hydraulically operated catwalks would be much more expensive.

Pruning on this farm is a two-man operation. Power pruners are used which operate from a power take-off pump. One man prunes from the platform, and the second man prunes from the ground and drives the tractor. Previous to using the platform about three-fourths of a man-hour per tree pruned, was required. Using the platform requires about one-half of a man-hour per tree. This is a saving of one-third of the time originally used.

| | Trees | Min./tree | Total Hours |
|-----------------------|-------|-------------|-------------|
| Before using platform | 1830 | 45 | 1372.5 |
| After using platform | 1830 | 30 | 915. |
| | | Hours saved | 457.5 |

On this farm the hired man is employed the year around. Here the saving of labor is not a saving in cash expense. Still it can be put to other productive use on the farm. On other farms where additional labor is hired for pruning, a reduction in labor required would be a cash saving. The use of a pruning platform may also have the advantage of leading to improved pruning, since the man is on the outside of the tree where he can see better, and can more easily thin out the outside of the tree.

---Ronald O. Aines

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MASSACHUSETTS ORCHARDS NEED LIME

In conjunction with the leaf analysis survey conducted in 30 Massachusetts orchards last year, soil samples were taken to determine the lime requirement of each orchard. The requirements ranged from 2000 to 14000 pounds of lime per acre. Over three-fourths of the orchards needed 2 tons or more of lime per acre.

The leaf analyses showed that about half of the trees in the survey were low in magnesium, which indicated a further need for high magnesium lime to prevent the occurrence of magnesium deficiency.

It is quite apparent that Massachusetts fruit growers have not been applying high magnesium lime in sufficient amounts and frequently enough to meet the lime requirements of their orchard soils.

---W.D. Weeks

VARIETIES OF RASPBERRIES FOR MASSACHUSETTS

| <u>Variety</u> | <u>Type</u> | <u>Recommended for</u> | <u>Harvesting Season</u> |
|----------------|-------------|------------------------|--------------------------|
| Gatineau | red | T | Early |
| Madawaska | " | T | Early |
| Chief | " | C | Early |
| Willamette | " | T | Midseason |
| Viking | " | C | Midseason |
| Latham | " | C | Late |
| Milton | " | T & H | Late |
| Amber | " | H | Late |
| Durham | " | T & H | Everbearer |
| September | " | T & H | Everbearer |
| Sodus | purple | T | Late |
| Bristol | black | T | Early |

T = Trial
 C = Commercial
 H = Home garden

Varieties so marked are not necessarily equally adapted to all sections of the state.

Variety Notes

- Gatineau** The earliest red raspberry of promise so far. The fruit is large, firm, good quality and moderately attractive. The plant is vigorous, productive, and has shown no mosaic as yet. Its winter hardiness is yet to be determined here.
- Madawaska** An early variety with large, firm fruit of good quality and medium red color. The plant is vigorous, very productive, and free from mosaic to date. Reported as being above average in winter hardiness.
- Chief** This variety is the most winter hardy of any tested so far. It is not seriously attacked by spur blight or virus diseases. Production is very good but the fruit is rather small and only fair quality.
- Willamette** A new variety with large, medium red, firm fruit of good quality. The plant is vigorous, productive and appears to be free from mosaic. Probably not so winter hardy as Latham but worthy of trial.
- Viking** Here is a variety very similar to the Cuthbert, which was formerly widely grown in this state. The fruit is a bit small but very good quality. The plant is somewhat more hardy and virus resistant than Cuthbert. Grown commercially in some areas.
- Latham** This variety is still the leading red raspberry of the Northeast. It is one of the most winter hardy when spur blight is controlled. The fruit is good size, bright red, but only average in firmness and quality. Spur blight and mosaic are its most serious weaknesses.
- Milton** The fruit of this variety ripens slightly after Latham, is of good size and color, firm, and high quality. The plant is vigorous, productive, free from mosaic but somewhat susceptible to leaf curl virus. Its greatest weakness is only moderate winter hardiness.
- Amber** If one is interested in a yellow or amber colored raspberry, this variety is doubtless the best one. The fruit is mild flavored, good size, and moderately firm; the plant is very vigorous.

- Durham The fall crop starts ripening by mid-August, making it the earliest ever-bearer. Strictly a home garden variety as the fruit is rather small and quite soft. It should be grown only for its fall crop.
- September This variety is the most reliable everbearer available. Its fruit is superior in size and quality to the old Ranere (St. Regis) and its fall crop ripens considerably ahead of Indian Summer. The summer crop of September is quite satisfactory as an early variety.
- Sodus Purple raspberries frequently produce higher yields than reds; however, the purple color is not too desirable. Sodus is the most satisfactory purple variety, with Marion suggested to extend the season.
- Bristol Black raspberries are not generally satisfactory in Massachusetts because of their great susceptibility to virus diseases. Bristol is perhaps the best new variety, if one desires to try black raspberries.

---Dept. of Pomology

BLACKBERRY VARIETIES

- Eldorado This variety has long been considered desirable for home or commercial use in the East. Unfortunately, many nursery stocks of it have been badly mixed with a worthless sort in recent years.
- Bailey The fruits of this new variety are somewhat larger and later than Eldorado moderately firm and good quality. Plants are vigorous and productive. Recommended for trial.
- Trailing types, such as the Youngberry, Loganberry and Boysenberry, are not sufficiently winter hardy and productive in most parts of the state. However, the Boysenberry has been reported as reasonably satisfactory in a few locations.

---Dept. of Pomology

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SHALL WE GROW FRUITS IN THE BACK YARD?

Most gardeners have a laudable ambition to grow one or more fruits for the home table. But not more than one in ten attains any measure of success. It is safe to say that not more than 10% of the time and money invested in home fruit plantings brings a reasonable return. In fact, many back yard ventures of this kind are a dismal failure. The reasons are obvious. First, the gardener frequently makes an unwise choice of fruits, planting apple trees when he should have planted strawberries, and second, little attention is given to such essentials as varieties, spacing of plants, insect and disease control, etc.

Fruit growing is beset with more difficulties than is the case with most flowers or vegetables. Unless ample space is available and the gardener is willing to put first things first, the garden area may well be devoted to a succession of vegetables and flowers. Certainly it is a horticultural mistake to set a few fruit trees in a limited space, only to find that they produce little usable fruit in themselves, and at the same time interfere with other crops planted between the trees.

With this pessimistic viewpoint out of the way, let's look at the brighter side. To enjoy strawberries, and more particularly raspberries at their best, one

rust pick them at just the right stage of ripeness and then eat them promptly or preserve them by quick freezing for later use. Anyone who has had the thrill of gathering luscious strawberries on a dewy morning in June and then sitting down to a breakfast topped off with strawberries, cream and sugar, will see at once the argument in favor of including strawberries in the garden plan. And it doesn't take much space to grow strawberries enough for the average family. Under good management, one quart of berries per original mother plant in the second year, is a reasonable goal. This assumes adequate spacing and good growth of so-called runner plants. All blossoms should be removed from the newly set plants; hence no berries should be expected the first season.

Strawberries fit in very nicely with a vegetable planting and are the first of the fruits to be considered by the home gardener. No other fruit rewards the grower in so short a time and none is so well adapted to the garden of limited size. If there is space for other fruits, raspberries, blueberries and grapes offer real possibilities, provided the grower spaces the plants properly, prunes annually and protects against insects and diseases. Fruit trees, however, are not well adapted to the small home garden. If tree fruits are to be grown, pest control is very important. In this connection, the simplified Home Orchard Spray Schedule offers promising possibilities.

---W.H.Thies

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GEESE IN THE STRAWBERRY PLANTING

The following questions and answers taken from a West Virginia publication by T. R. Hash and M. Kolbe are of interest to strawberry growers who are contemplating the use of geese for weed control.

What can I expect geese to do for me in removing weeds from a strawberry planting?

Geese can be a cheap hired man for the strawberry growers. If managed correctly, they will eat almost 100% of all grasses found in a strawberry planting. They will eat most narrow-leaved weeds, but only a few broad-leaved weeds. These birds are particularly valuable in wet years. They will roam the planting when man and machinery are stymied.

What are the disadvantages of using geese in strawberry plantings?

There are a few disadvantages to using geese in the planting. They will pack the soil and destroy plants if they are too confined. The fence around the planting presents a problem at cultivation time, and the geese will need regular feeding and watering.

When should geese be placed in the strawberry planting? Geese should go in the planting as soon as the plants are set or before the weeds are more than 1/4 inch high.

How many geese will be needed to do an effective job of weeding? The number of birds needed per acre varies. Strawberries planted in old garden soil that is full of weed seed may require ten or more per acre while only six to eight will be needed for normal situations. Plantings of 1000 plants should have two geese in order to supply companionship.

What age geese should be used? Goslings should be ready for the field when one month old. These young birds are growing and the amount of greens they eat will be enormous. Adult geese also may be used with good results.

When should geese be removed from the planting? The geese are of little value to the planting after the first hard freeze. Mulch your planting over winter. The mulch should keep the planting clean up to harvest time. Thus, geese should be used only the year you establish your strawberries.

What breed of geese is best for use in strawberry plantings? The breed has little to do with the kind of weeds or the amount of weeds the geese will eat.

What precaution should be taken to confine birds during the weeding period? If the birds are permitted to roam the farm, they will not keep the berry planting weed-free. A woven wire fence 30 to 36 inches high will keep most geese confined.

What feed should be given while birds are in the strawberry planting? The feed should be in proportion to the weeds present. If you feed grain free choice, the birds will eat fewer weeds. If there are no weeds, then grain is needed to keep up the body weight of the birds. Geese have been known to eat strawberry plants only when starved.

What provision should be made for watering? Geese need fresh water everyday. The water container should be placed away from the shelter and feeding space so the birds are forced to tour the far end of the planting each day.

Is a house or shelter needed? Shade is important and some type of shelter should be made from scrap lumber. In hot weather, the geese will eat weeds in early morning, evenings, and even at night.

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MORE PROFITS FROM WILD Highbush BLUEBERRIES

Most of the soils of Massachusetts are acid and many of these are good blueberry soils if there is enough moisture. Consequently, highbush blueberries may be found growing wild in almost every town in the state. In many of the hill towns high blueberry bushes are especially plentiful. Usually these wild bushes are yielding neither as large nor as many berries as they could if given a little care. A little brush clearing, a little pruning, and a little fertilizer would more than pay for themselves in many fields. Wild blueberry bushes frequently grow in places where they are shaded by trees and crowded by brush. In such places the growth of blueberries is long and spindly and few berries are produced. Shade and crowding take a heavy toll.

The first step, then, toward getting more blueberries is to remove this competition. If trees are present, they can be cut for firewood, thus making the labor serve a double purpose. After the brush and trees have been cut, resprouting can be greatly reduced by spraying or painting the stumps with a weed killer. A low volatile ester formulation of 2,4-D and 2,4,5-T in oil is good if used only during the winter and kept off the blueberries. The manufacturers' directions as to dilution should be followed.

The next operation to consider is pruning. This is an extremely important operation for both cultivated and wild blueberry bushes. By correct pruning weak, diseased, and dead wood is removed, healthy wood is stimulated and the bush is prevented from overbearing. When a new area is first opened up, the pruning will need to be aimed at removing weak, diseased and dead wood to invigorate the remainder of the bush. Overbearing will seldom be a problem in fields of wild berries, especially at first.

Wild bushes usually have a large cluster of branches growing from the base.

Part or all of these may be making a very weak growth and some may be sick or dead. The sick and dead ones should be removed first, and then the weakest of those remaining. Leaving very short stubs aids the next pruning job. Removal of one fourth of the bush has been found to be sufficient. Overpruning will result in an unnecessary reduction in yield. Although a rough type of pruning can be done with an axe or hatchet, a better job can be done with a pair of long-handled, heavy, lopping shears. The removal of dead or sick side branches from the main branches which are left will further invigorate the bush.

The third operation to be considered is fertilization. This is also important in successfully increasing yields. Pruning and fertilization supplement each other and both are needed for maximum yield increase. Wild bushes are usually starved for nitrogen and will respond to any fertilizer supplying nitrogen. They seldom respond to other elements. Hence, an application of a straight nitrogen fertilizer, such as nitrate of soda, sulfate of ammonia, or ammonium nitrate, will be most economical. It has been found from experience that an annual shoot growth of about 10 inches results in the highest yields. Fertilization and pruning should be adjusted to get about this amount of growth. As a start it is suggested that nitrate of soda be tried at 200 pounds per acre or other nitrogen sources to give an equal amount of nitrogen (sulfate of ammonia 160 pounds, ammonium nitrate 100 pounds).

Although these treatments may result in some increase in size of berries, not too much should be expected. Berry size is controlled by heredity as well as nutrition. Good treatment can increase berry size only as much as heredity will permit. You can't make a giant of a pigmy by force feeding. To get the best from wild high-bush blueberries give them more light and less competition so they will have a chance to grow; prune and fertilize them to increase vigor. You'll get more berries and they may be bigger.

---J.S.Bailey

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SIZING UP THE APPLE SITUATION

In the mail a few days ago, I found a note from the compiler of FRUIT NOTES saying "it has been some time since you were included among the contributors" with an invitation to send something along for this issue. By a coincidence, I had just been reading Bill's report on Yugoslavian conditions, covering the subject of fruit varieties. I was especially interested to see how some of our American varieties are getting in over there. We are returning the favor which they accorded us in years gone by with certain varieties which came from the eastern hemisphere.

Currently the most striking development in our New England fruit industry seems to me to be this pronounced trend in going back to hand sizing of apples. I think of it as history being un-made because my span of pomological experience covers the time when hand sizing was the general practice and machines were just coming in. Now the reverse is in effect to a certain extent, particularly on late season packing of McIntosh. One of the factors that might aid in hand sizing now is the use of so many cell carton boxes. It's easier to keep checking your judgment if you are packing cartons, because if the apple is too big, it won't fit, and if too small, it will rattle around.

I'm an old hand-sizer myself, with my own special method; thumb and middle finger of the left hand just meeting around an apple is my 2 1/4" gauge. If the apple is big enough to allow one finger of the right hand to be placed in between the two left-hand fingers it's 2 1/2"; if 2 fingers it's 2 3/4"; and if 3 fingers it's 3".

Anyway this trend is in line with the determination of apple growers to get Macs to consumers in the best possible condition - and that's all to the good.

And, by the way, Macs are getting around this year, probably as never before. It's an ill wind that blows no one any good - so the shorter supplies of apples in the Appalachian country have made it possible for us to get into their markets more strongly than ever. A recent note from Connecticut tells of perked up interest in out-of-state shipments from their growers, much in line with the trend herein Massachusetts.

In this regard I have just noticed a summary of apple receipts in New York City for the latest month reported (December) during which receipts from Virginia totaled only 4 car lot equivalents compared with 48 in December of the previous year. Pennsylvania had shipped only 18 car lots compared with 46 a year earlier; and West Virginia none against 5 cars in the same month the year before.

Speaking of Pennsylvania, an elaborate report on a survey recently conducted down there gives some revealing facts on the reduction in apple trees in that state. It shows that over the 20-year period, 1929-1949, the number of apple trees in Pennsylvania was reduced from 7.8 millions to 3.5 millions, a reduction of 55%. The number of orchards decreased at about the same rate, 53%. They probably are getting down to what is often referred to as a "healthy" condition, as we are up here in New England. At the present time they have quite a little young stuff coming along, in 1953 some 30% of their trees not having reached bearing age. About 25% are 30 years old or over.

So this offers additional confirmation of the belief (it's more than a hope) that our apple industry has turned the corner from the dark days of the past decade or two, and that better things are ahead.

Something for us to view with pride in present trends is the outstanding position reached by our favorite McIntosh in the national standing. This year, as you may have noted, the Mac is a strong No. 2 in the nation, with a production of 12,105,000 bushels being exceeded only by Delicious, with 21,081,000. A few others in order of ranking are: Winesap, Rome Beauty, Jonathan, Stayman, Yellow Newtown, Rhode Island Greening, York Imperial. Baldwin is farther down the list. The surprising thing is in fact that Greenings hold up so well. Of course, they are practically all in New York State, but they still make quite a showing.

I trust that you have noted the Piper variety in that list - Golden Delicious. I am getting to be known as the Golden Delicious man, and I think I have some good company among apple growers. And that reminds me that I have a box tucked away up at Jack Lord's Cold Storage in West Concord, a box from my ever faithful friend, Don Priest, so I better sign off here and pick up my apples.

One thing more. I've been noticing the heavy sucker growth on these new low apple trees this winter. In the spring they looked awful good -- and on the apple bus tours I pointed out to our city visitors how our growers were adopting a new method. Now I am wondering how far this will go. The motor car manufacturers have carried it to extremes -- so perhaps we are headed for the day when we can have apple trees that we can "step down into."

---Walter E. Piper

This article was prepared for the February issue of FRUIT NOTES but lack of space delayed its publication.

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SEEN AND HEARD IN THE FIELD

Interest in Orchard Reorganization. On many Massachusetts fruit farms steps are being taken to facilitate orchard management. Here is one example: In a Worcester County orchard a particular block contains 154 crowded trees. The owner was undecided about tree removal. In 15 minutes a simple map was prepared on cross section paper. A study of the two sets of diagonals showed that one of them included the only blank space and the poorest tree in the block. The owner then proceeded to mark each tree in these alternate diagonal rows by chipping off a little bark on the same side of each trunk, to guide the workmen who followed with a chain saw. With only half as many trees to spray and with good light exposure from all sides, more good apples should be harvested in this block than in several years past.

A Dust and Spray vs. A Dust Program. A new owner of a small orchard of tall trees has a duster and sprayer in need of rather extensive repairs plus a means of transporting it. The trees are now being lowered by making a few relatively heavy cuts, but not as drastically as with the Allen Method. Now the owner has this question, "Can I get a good crop of apples with a dust program, or must I now put the sprayer in working condition?". The experience of other growers along this line is very significant. Many insects are not well controlled by dust applications. Curculio is a good example. Few, if any, commercial growers rely year after year on dusts alone. The ideal program includes both spray and dust applications, with liquid used here and there as needed, and dust for prompt coverage, particularly for scab protection and for control of certain insects. If the above mentioned grower can hire someone to apply about two critical sprays, for example the 1st and 3rd Covers, at just the right time, he should be able to get along for the rest of the season with his duster.

Relation Between Pruning and Propping. Another new orchard owner points with pride to a very large pile of prop poles. In the writer's opinion, props are quite unnecessary if trees are properly pruned from the beginning. A "leader type" tree with strong framework, and with no branches which divide into two more or less equal parts, will hold a heavy crop of fruit with very little breakage. As the harvest season approaches, it assumes an umbrella shape. The lower limbs are of such height that only an occasional apple hangs down in the grass. Drooping ends of limbs throughout the tree and downward growing laterals have been removed, and there has been no "skinning up" to cause greater leverage on long branches. The fruit is well distributed, and there is a thinness about the tree which permits good penetration of light. Under these conditions, a 500-bushel per acre crop of apples is entirely possible with only an occasional broken limb. Prop poles are most needed in older trees which have been wrongly pruned. Many good growers use no prop poles, at all.

Is "90% Clean" a Practical Goal? As we approach the pest control season and orders are being placed for spray and dust materials, this question comes to mind, "Is the goal of the '90% Clean Apple Club', conducted from 1929 to 1933, still practical, or should we aim at something higher?" It pays to strive for a "100% Clean" crop, but we never attain it because we reach a point of diminishing returns. It may cost more to raise the percentage of Clean fruit from 95 to 98% than from 70 to 90%. And beyond 98%, those last few apples "come high". But growers are agreed that "90% Clean" is none too high a goal. If we aim at something less, we may end up with far more insect and disease blemishes than we expect. Many apple crops have been produced in recent years which were considerably more than "95% Clean" (less than one blemished apple in 20). Grading costs with such a crop are greatly reduced, and if the color is good, the per-

centage of Fancy fruit is high enough to bring an excellent average price per bushel on the entire crop.

Nurserymen Discuss Strawberry Virus. Strawberry plant nurserymen in Massachusetts met at the Field Station in Waltham, February 16, to consider the virus situation and take steps to make available virus-free plants for strawberry growers. Practically all of the plants now being distributed in the U. S. are said to be infected. But the USDA Plant Industry Station at Beltsville, Maryland has located clean plants of several varieties and is cooperating with nurserymen in multiplying them for future distribution. Virus is spread by the strawberry aphid. Hence, stock beds must be established in a screenhouse where protection against aphids can be provided. One or more screenhouses may be built in Massachusetts in the near future.

This or That Spray Material? When fruit growers get together the conversation frequently drifts around to pest control and the relative merits of the various chemicals used in the spray tank. One will swear by a certain material; another will almost swear at it. The listener to these arguments, if otherwise uninformed would think that the chemical, all by itself, determines the degree of control. Use Chemical A, and scab doesn't have a chance: use Chemical B, and the fruit not only has poor finish but fails to prevent scab infection. Timing and thoroughness of coverage are frequently left out of the argument. But experience shows that the least effective material on the market may give better control if properly applied, than the best material if hap-hazardly applied. Materials are important not only from the standpoint of cost but in their relation to the disease or insect to be controlled. But before we try to appraise the effectiveness of, for example, Ferbam and Captan, we should first make sure that our spraying technique takes care of the two factors most often responsible for poor pest control, timing and thoroughness.

Pruning Blueberries. If all of the fruit buds on thick, brushy, cultivated blueberry bushes are allowed to remain, not only is harvesting more difficult but the berries are inclined to be somewhat smaller. Each fruit bud is capable of producing a dozen, or so, berries provided it has an ample number of leaves from which to obtain part of its raw materials. But if we prune out the weaker branches as evidenced by their shorter terminal growths and cut others back to a more vigorous lateral, we bring about a balance in much the same way as in pruning a grapevine, the fruiting habit of which is very similar. The best blueberries are produced on relatively young branches. In pruning we bring about a gradual renewal of the fruiting wood. Not long ago the writer saw a blueberry planting which had been pruned as though it were a privet hedge. The owner didn't realize that all of the fruit buds develop on growths of the previous season, and that the hedge system of pruning tends to eliminate those growths. In the blueberry planting we have a good opportunity to improve the crop and facilitate picking by a judicious thinning out of branches, making some of the cuts at the ground level.

---W.H.Thies

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Did You Know --- That at least half of commercial strawberry crops in Massachusetts are produced in Barnstable County? The total value of our 1949 crop, according to the 1950 Census, was about \$634,000, of which \$334,000 was paid to Barnstable County growers. The dollar returns in the other counties ranked as follows (thousands omitted): Bristol (58); Essex (50); Middlesex (46); Hampden (44); Worcester (39); Plymouth (24); Franklin (11); Hampshire (10); Berkshire (9); Norfolk (8). Since 1949

the average of strawberries in Massachusetts has declined considerably. This is due, in part, to strawberry virus which results in poor plant development and a disappointing yield.

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Baldwin Aroma. Do you remember the cellar Baldwin deal at about this time of the year in the old days? It was just about now that this common stored fruit was coming onto the market. Quite frequently you would hear the remark that So-and-So "Wouldn't open his cellar until the first of March." Then the apples would come in -- nice ripe stuff -- just ready to eat, and considered to have kept wonderfully in those times, but of course not so well as now under artificial refrigeration.

It all brings to mind some of those grand old-timers -- Clarence Johnson, Bill Woods, Artie Simpson, Charlie Bleiler, Al Hunt, Ned Morrison, Henry Stevens, and Charlie Lowell. It's risky mentioning names because there is always a chance of omitting someone, but I am just mentioning a few with whom I was especially well acquainted in the early 20's, and who are so close to the local apple deal.

We must admit scientific refrigeration has done much to improve apple marketing, but it has taken away the glamour of springtime apple packing out of common cold storage and cellars. Science cannot duplicate that delightful and appetizing aroma that we used to get from a barrel of common stored Baldwins.

---W.E.Piper

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CASH RECEIPTS FOR MASS. FARM PRODUCTS IN 1952

| Commodity | Value (\$1000) | %Change from 1951 | %State Total |
|----------------------|-------------------|----------------------|-----------------|
| Poultry | \$75,986 | -12.6% | 37.5% |
| Dairy Products | 49,554 | 2.9 | 24.5 |
| Greenhouse & Nursery | 21,695 | 3.2 | 10.7 |
| Truck Crops | 16,204 | 16.2 | 8.0 |
| Meat Animals | 11,906 | -27.8 | 5.9 |
| Cranberries | 7,966 | - 4.0 | 3.9 |
| Tobacco | 7,179 | -19.4 | 3.5 |
| Other Fruits | 5,314 | -26.4 | 2.6 |
| Potatoes | 3,842 | 28.0 | 1.9 |
| Misc. Crops | 2,969 | - 4.3 | 1.5 |
| Total | \$202,615 | - 6.7% | 100.0% |

It will be noted that cranberries rank 6th, and other fruits 8th, among farm products. (From Bureau of Agricultural Economics Report)

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Publication approved by George J. Cronin, State Purchasing Agent
#19



Fruit Notes

Prepared by the Fruit Program Committee of the Extension Service
W. H. Thies, Extension Horticulturist

APRIL 30, 1954

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FRUIT NOTES

April 1954

Once again the research and instruction members of the Pomology staff will attempt to keep Fruit Notes coming to you during the absence of our Extension Specialist Professor W. H. Thies for further service in Yugoslavia as explained on page two of the March issue. We shall plan to follow his usual practice of emphasizing information which may be of current importance and value to you as growers of fruit in Massachusetts.

A. P. French

FRUIT MEETINGS

Monday, June 14 at 7:00 P.M.

The annual Strawberry Twilight Meeting will be held near Fisher Laboratory at the University of Massachusetts, Amherst. Inspection of variety trials followed by talks by the experts emphasizing weed control and the ever increasingly important problem of virus disease control.

Wednesday, July 14 - Orchard Day at the University of Massachusetts.

A top notch all day program is being planned in cooperation with the Massachusetts Fruit Growers Association and the N. Y. and N. E. Apple Institute. Details will be announced later but reserve the date now.

RESULTS FROM A COMMERCIAL CONTROLLED ATMOSPHERE STORAGE FOR APPLES

Mr. G. S. Gay, a fruit grower at Three Rivers, has operated two 3,500 bushel controlled atmosphere storage rooms from mid-September to mid-March. These rooms, made gas tight with sheet aluminum, were filled with orchard-run McIntosh and held at about 38°F. As the fruit respired the carbon dioxide level rose to 5% and the oxygen level dropped to about 3%. It took about one month for the oxygen to reach the desired level.

In mid-March the first room was opened. Of course, the atmosphere of 5% carbon dioxide and 3% oxygen was lost as air was allowed into the room. The temperature was lowered to 32°F. at this time and from that time on the room was operated as a typical cold storage. Contrary to common belief such apples do not have to be sold immediately. We expect to keep a small sample of these apples at Amherst in cold storage until June or July.

What about the condition of the fruit? As this fruit was graded it was apparent that an occasional apple had some carbon dioxide injury. This injury occurred on less than one percent of the fruit. Rot was practically non-existent even though there was about an inch of water on the floor when the room was opened. In a few boxes some scald appeared. However, the vast majority of the apples showed no scald in storage and none developed when samples were held at room temperature for a week. In fact, these controlled atmosphere storage apples developed much less scald than most cold storage McIntosh this year.

The apples averaged 12 pounds with a pressure tester, a good 2 to 3 pounds firmer than any cold storage apples we've seen in early March. Samples were taken to Amherst and compared at room temperature (in a humid atmosphere) to cold storage McIntosh. Table 1 shows the data obtained after 4 weeks at 70 to 80°F.

Table 1. Rate of deterioration of McIntosh apples held at room temperature from mid-March to mid-April

| Treatment | Firmness of flesh (lbs.) | | | | Remarks |
|-----------------------|--------------------------|------|------|------|---|
| | Days at 70 - 80°F. | | | | |
| | 0 | 7 | 14 | 21 | 28 |
| Cold Storage | 9.5 | 8.3 | 7.3 | | |
| | | | | | Soft, rotting, and unmarketable after 7 to 10 days. |
| Controlled Atmosphere | 11.8 | 10.8 | 10.2 | 10.0 | 9.7 |
| | | | | | Still Marketable after 28 days. |

From the data it is obvious that the controlled atmosphere apples were in much better condition than the cold storage McIntosh. That the controlled atmosphere apples were something extra could be seen very simply. They had a much brighter color than cold storage McIntosh. Also, they were readily sold for at least \$1.00 more than similar cold storage apples were bringing.

F. W. Southwick

RED STELE STEALS YOUR INCOME

Have you had a run-in with the Red Stele disease in strawberries? If so, you'll understand why Maryland, Illinois, New Jersey, and other states consider it their most serious strawberry disease. A relative newcomer to the list of plant pests, Red Stele was first seen in Scotland in 1920. In 1935 Illinois reported it for the first time in this country. The disease now bothers growers in about 28 states -- including Massachusetts where it has been seen in several parts of the State in the past 5-6 years.

How to recognize Red Stele?:

In March and April: Carefully dig a few plants and slice lengthwise through the thickest roots. The inner core of the root through which the soil water moves is called the stele of the root. When the disease is present the stele becomes red in color which is easily seen by the naked eye.

Later in the Spring: The diseased roots die and become brown in color, masking the redness of the stele. This rotting appearance of the root-ends is often described as the "rat-tail" symptoms.

By observing the leaves: In wet seasons the young leaves often become dull-green, later turning to red and followed by severe wilting of the foliage and, usually, the death of the plant.

Does death of the plant always occur? No -- but the yield is drastically reduced to low-grade fruit on stunted and discolored plants. Plants affected in the Spring often recover during the summer by the formation of new roots-- but next Spring the disease strikes again. The organism responsible is a microscopic fungus which thrives in moist cool Spring weather in a temperature range 32-60 degrees F. and spreads by "swimming" through moist soil. The fungus will live in fertile soils for many years and therefore will not be controlled by crop rotations.

What to do about it?

On soil infested with Red Stele: At present the only satisfactory answer is the planting of resistant varieties. Several varieties are known to be resistant. To complicate matters, research workers are finding that different types or "races" of the disease exist, indicating that a variety may be resistant in one growing area and not resistant elsewhere.

For Massachusetts the present recommendations for Red Stele resistant varieties include: Pathfinder, Fairland, Red Crop (trial), Temple, Vermilion (trial), and Sparkle. For other strawberry variety information see Fruit Notes September 18, 1953 or ask for Special Circular #212-D.

On soil not infested with Red Stele: The grower should obtain disease-free plants from inspected stock. Avoid hand-outs from neighbors unless you know the disease situation in those plantings..... The Extension Service and research staff at the University of Massachusetts will be interested to learn of Red Stele troubles in your area.

A. S. Fish Jr.

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VARIETIES OF GRAPES FOR MASSACHUSETTS

| <u>Variety</u> | <u>Recommended for</u> | <u>Harvesting Season</u> |
|----------------|------------------------|--------------------------|
| Erie | H | Very early |
| Ontario | H | Early |
| Fredonia | C | Early |
| Van Buren | C & H | Early |
| Buffalo | T | Early |
| Athens | T | Early |
| Interlaken | H | Early |
| Seneca | H | Early |
| Kendaia | C & H | Midseason |
| Cook | C & H | Midseason |
| Delaware | C & H | Midseason |
| Worden | C & H | Midseason |
| Brighton | H | Late |
| Niagara | C & H | Late |
| Concord | C & H | Late |

T - Trial
H - Home garden
C - Commercial

Variety Notes

- Erie A good quality black grape which ripens the latter part of August. Particularly recommended for the home vineyard and is worthy of consideration for roadside stand trade where a very early grape is desired. It is self-unfruitful and requires cross pollination with some other variety.
- Ontario An early white grape suitable for the home vineyard where a white grape of high quality is desired. The berries shatter considerably within a few days after it is harvested.
- Fredonia A good quality black grape. Recommended as an early variety for roadside stand trade. The vine is vigorous and productive. It should be pruned less severely than most other varieties.
- Van Buren An attractive black grape of good to excellent quality. The vine is vigorous and productive. It is particularly susceptible to downy mildew. Has possibilities as an early commercial variety.

- Buffalo A black grape with large clusters and good quality. The vine is vigorous and productive. Ripens during the early part of September. Recommended for trial.
- Athens A black grape of good quality with an attractive bluish bloom. Bunches are large but rather loose. Berries have a tendency to crack. While this variety is of doubtful value as a commercial sort, it merits consideration for trial in the home vineyard. Ripens during the early part of September.
- Interlaken A yellowish green grape that ripens during the early part of September. Quality is excellent and the berries have practically no seeds. Its unattractive appearance and tendency to rot on the vine limits its possibility as a commercial sort. Because of its high quality it is recommended for the home vineyard.
- Seneca A high quality green grape of the vinifera type. Its susceptibility to winter injury is a handicap as a commercial sort. If given winter protection it is a desirable variety to have in the home vineyard.
- Kendaia An attractive black grape having a medium sized compact cluster with large high quality berries. Worthy of consideration as a commercial as well as a home vineyard variety.
- Cook A relatively new variety introduced by S. L. Davenport of North Grafton, Massachusetts. It is an attractive black grape with an abundance of bluish bloom. Adherence of the berries is good and the quality is excellent. Vines are productive and the fruit holds in storage unusually well. Recommended for commercial planting and is a desirable variety for the home vineyard.
- Delaware A high quality red grape with small clusters and berries. Because of its red color and small size Delaware is less popular as a commercial sort than black grapes but would add to attractiveness of display on a roadside stand. Merits consideration for the home vineyard where a grape of high quality is desired.
- Worden Similar to Concord but ripens a week to ten days earlier. While slightly superior to Concord in quality and attractiveness, it has a tendency to crack when ripe and shatters badly within a few days after it is harvested. Not suitable for long distance shipping but is a desirable variety for local trade and the home vineyard.
- Brighton A reddish grape which ripens a few days ahead of Concord. Produces large bunches of high quality grapes. While its commercial possibilities are limited, it is recommended particularly for the home vineyard. Is self-sterile so should be planted near other varieties.
- Niagara A white grape of high quality with large compact clusters. Would add to attractiveness of display on a roadside stand.

Concord The particular merits of Concord are its adaptability to a wide variety of soils, its productiveness, hardiness, vigor and shipping quality. In some parts of the state may not ripen before frost. Hence, is recommended for planting only in those areas with a sufficiently long growing season to permit it to ripen satisfactorily.

O. C. Roberts

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SAFE FARM PONDS

Farm ponds can have a life ring constructed on the ice during the winter to save lives in the summer. The life ring can be made from tree poles 4" to 6" in diameter wired end to end to form a circle around the edge of the pond. This life ring should be built and anchored from 4 to 6 feet from shore on all sides of the pond. The distance the life ring is placed from shore should be such that if the water level changes in the pond the life ring will still float and not rest on the dry sides of the pond.

It will serve as a guard to keep livestock out of the pond and also serve as a float to grab when one slips off the bank into the pond.

Farm ponds can become potential death traps with children and the life ring offers a chance to save a child's life when he has fallen into the pond.

Charles W. Harris
Bristol County Extension Service

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FARM PETROLEUM SAFETY

A new film has been added to the Film Library on the use of petroleum on the farm. It is a demonstration talk on the combustible properties of the petroleum products, and dramatizes a story of a fire caused by careless handling of kerosene. In the farm safety demonstration, it is shown that a torch plunged into a beaker of gasoline will be extinguished, but held above the gasoline, the fumes are ignited. It goes on to illustrate how gasoline poured from a can creates a vapor which is very inflammable.

It shows very dramatically what happens when the mother pours kerosene into the wood stove to start the fire. The stove explodes, and the mother is badly burned, and the children are just saved before the house is consumed.

This film contains both emotional suspense and impact, and satisfies intellectual curiosity. The action moves quickly throughout, and the production is excellent. I think this film is one which should be used very extensively in all types of meetings.

Safety in the home cannot be stressed too strongly. It is a known fact that the home is the most dangerous place, much more dangerous than handling machinery or animals on the farm. Be sure and book this film for future showing at meetings. Get your reservation in early.

U. of M. Audio-Visual Center

SPRING CLEANUP AND FARM ACCIDENT PREVENTION

In the spring, it is time to give a helping hand to nature in cleaning up around the farm and in the farm home. This will give the farm a new look, and make it a safer and easier place for working and living. By cleaning up--inside and out---we can go a long way toward eliminating fire and accident hazards.

Let's use this spring, a safety rule: "A place for everything, and everything in its place". Disorder, which is a common disease, is responsible for putting one out of every five victims of accidents in the hospital.

Get rid of all those accumulated papers, rags and rubbish that are always abounding in the home, from the basement to the attic. Do a very thorough clean-up job. Label medicines, poisons and insecticides clearly, and keep them out of the reach of children.

Let's go out in the barn! No doubt it is cluttered up with an accumulation of items which have been allowed to collect in work areas. Clean them out! If they are no good, get rid of them. If they're any good, find a suitable place to store them.

Check the ladders and stairways. Keep them in good repair. Storing loose material overhead on rafters or between joists may cause a bad accident. Keep forks, brooms, rakes and other barn equipment in a rack or suitable place where they will not injure people.

Outside on the farm, you will probably see old wire, cans, pieces of board and other debris that have been accumulating over a year or two. Pick up all this stuff. Haul it to the dump or dispose of it in some other way. There is no sense in providing a home for the rats.

Now let's go out to the workshop. Put all the tools in place. Pick up all the loose material such as wire and cans. Sweep out the corners. Clean it up. You'd be surprised how much easier it is to work in a good, cleaned up workshop than a messy one.

Although a spring cleanup is in order, this cleanup should be followed at all times. As a result, you'll have a better looking and more valuable set of buildings, and at the same time, put a little paint on some of these buildings and make the old ones look neat and clean.

R. B. Parmenter

CHEMICAL THINNING CIRCULAR AVAILABLE

Special Circular No. 189 (Revised March 1954), entitled, "Chemical Thinning of Apples and Peaches," is available to anyone wishing a copy. This circular which we have been revising annually has been completely revamped and all our suggestions are on a single sheet. We believe it is an improvement over what we've put out on this subject in the past -- hope you think so too.

Address any requests to either the Department of Pomology or the Mailing Room, University of Massachusetts, Amherst, Mass.

Publication approved by George J. Cronin, State Purchasing Agent #19



Fruit Notes.

Prepared by the Fruit Program Committee of the Extension Service
W. H. Thies, Extension Horticulturist

JUNE 17, 1954

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FRUIT NOTES

May-June 1954

In case some of you are wondering why you received no issue of FRUIT NOTES dated for May, none was issued during that month because of the pressure of other work which could not be sidestepped at this time of year by our research and instruction staff members. We regret our inability to fill completely the void created by the temporary absence of the Extension Horticulturist but would assure you fruit growers of Massachusetts that we stand ready, within the limits of time and ability, to assist in the solution of your many problems.

--- A.P.French

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CARELESS PEOPLE -- CHEMICALS DON'T MIX

The death of a six-year old boy in Oregon emphasizes once again the need for caution in handling certain insecticides.

Caution signs are plainly marked on packages or labels, yet every year someone gets careless in the handling of poisons, and death or violent illness results. Again and again scientists and manufacturers have issued warnings, yet people seem to forget.

The insecticide which caused the Oregon boy's death is known as TEPP. There are several others in the same category. In the Oregon incident it is quite apparent that a bottle of TEPP was left lying in the orchard. The boy came along and found it, did the natural thing -- opened the bottle, and thus spilled some of it on his pants.

We have used poisons for hundreds of years and yet each year some are left within the reach of children.

Another point we should emphasize is the fact that the poison hazard does not extend to the consumers. As far as consumers are concerned, TEPP is one of the safest insecticides. The toxic effect of TEPP, for instance, disappears within a few hours when it is used for the control of insects.

Before any label can be obtained for the sale of pest control chemicals federal and state officials must be satisfied that the material is safe when used and handled as directed on the label. A material may be toxic and as such must be handled with extreme care. It does not follow, however, that the products upon which the material is used will harm the consumer.

--- E.H.Wheeler

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NUGREEN LIMITATIONS

NuGreen has been used as the principal source of nitrogen or as a supplement to soil applications of nitrogen for the past several years. However, there are some limitations in its use which growers should be aware of.

It should not be applied in combination with the following materials: glyodin (Crag 341), phenyl mercuries, liquid lime sulfur, D-N materials or soybean flour.

When used at high concentrations there is more chance of NuGreen causing foliage injury.

NuGreen applied after the second cover spray may cause the development of poorly colored fruit.

The use of NuGreen on peaches is questionable, because peach foliage does not appear to be able to absorb much of the urea in the NuGreen spray. Any apparent benefit from NuGreen on peaches is probably due to the urea which reaches the soil from the runoff of the sprays.

In some experimental work with tomatoes it was found that when epsom salts (magnesium sulfate) was combined with NuGreen, the magnesium sulfate reduced the rate of intake of urea into the foliage. While no experimental work has been done with apples, it would seem wise not to include epsom salts with the NuGreen sprays if you wish to get the maximum benefit from the NuGreen.

---W. D. Weeks

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CORRECTING MAGNESIUM DEFICIENCY WITH EPSOM SALT SPRAYS

If the results of the McIntosh leaf analysis survey which we conducted last summer are any indication of the magnesium status of the orchards in the state, we can expect about one half of our trees to be either deficient or approaching a deficient level in magnesium.

In orchards which have not had an adequate program of high magnesium lime for the past 3 to 5 years it will be necessary to apply magnesium to the trees as epsom salt sprays. Twenty pounds of epsom salts per 100 gallons is the recommended amount of material to use. Two or three applications should be made starting with the calyx or first cover spray.

The epsom salts may be combined with older standard spray materials such as sulfur, ferbam, lead and DDT, but the compatibility with all of the newer organic materials is not known. If there is any doubt about the compatibility of epsom salts with the spray materials being used, the epsom salts should be applied as a separate application. The timing of the epsom salt sprays does not have to be as exact as the insect and disease sprays.

---W. D. Weeks

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FURTHER HORTICULTURAL OBSERVATIONS IN YUGOSLAVIA

Since my arrival in Belgrade April 12, only two of the six Republics have been visited, Serbia and Macedonia. Trips have been made to three of the more important fruit districts of Serbia. State, private and cooperative farms were visited and meetings, similar to our twilight meetings, were held with horticultural leaders. This incident will illustrate the interest in our discussions of fruit problems. One group of about 200 arrived at a cooperative farm at 5 AM. However, owing to a misunderstanding about the time of the meeting, our jeep arrived at 3 PM. But the group was still waiting, and delayed lunch until our discussion was finished around 4:30 PM. Many questions were asked about our insect control measures in the U. S., varieties, pruning, etc.

In one of the largest young orchards in Serbia (22,000 trees), an outstanding block of apple trees on Malling 9 was observed. The trees are pruned with a pyramidal form in mind. The framework in these thousands of trees is surprisingly uniform. The planting distance is only 3x3 meters (slightly more than 9 feet) on a triangular system. Another block on Doucin stock is planted 6x6 meters. Here the traditional method of pruning results in a vase-form tree with three branches. Apple trees on Malling stocks can be propagated, thanks to low labor costs, for about 25 cents each.

Immense numbers of grapevines are grown in this country since the making of wine is a very important enterprise. In one large nursery visited last week about ten men were preparing grape grafts, and their dexterous cuts bespoke much practice. Some of them were making these whip grafts on a piece work basis, at 1/5 of a cent per graft. The record number of grafts made in a 10-hour day is 1500, but the average is 1000.

Since my previous stay in Yugoslavia there have been improvements along several lines in the fruit industry. A small type of power sprayer is becoming increasingly common. One of these sprayers at a Middle School has replaced a hand operated sprayer, and 500 trees can now be sprayed in 2-1/2 days. Previously, 15 days were required. At one of the Plant Protection Stations, the man in charge had previously no means of transportation. He now has a jeep and is making good use of it. There is an increasing interest in the establishment of an Extension Service and some steps have been taken in that direction.

There are many Plant Protection Stations here and in some of them the seasonal program is gradually changing. In some cases, spray materials may be supplied by the Station and the spraying carried out on an individual farm at a reasonable charge, similar to custom spraying. But agricultural chemicals of various kinds are now made available in every locality through chemical shops which are in charge of trained technicians. Practically every village has such a shop.

As in the Plant Protection Station where the functions of advisory service and actual operation are combined, so in the Fruit Institute, several services are performed. Unlike our Experiment Station where research is the sole responsibility, the Fruit Institute does many things. In a newly established Fruit Institute, five departments are planned, - (1) Production of nursery stock, (2) Cultural Practices, including pest control, (3) Planning and establishing orchards, (4) Fruit processing, and (5) Variety selection and testing. With this organization the possibilities of carrying out some effective Extension work, with the Fruit Institute as a base of operation, are quite apparent. In this particular area, it is said that about 95% of the fruit is found to be blemished at harvest time. The new goal is 60% unblemished fruit. Fuel is relatively scarce in the area served by this Fruit

Institute. Hence the idea of reorganizing the present plantings and reducing the older, scattered trees to firewood, will have popular appeal.

---W.H.Thies

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A VISIT TO SLOVENIA AND CROATIA

As this is being written (June 1) in Zagreb, the capital city of Croatia, the weather is becoming warmer in a country where spring was delayed by at least three weeks. There has been much rain and the usual concern among fruitgrowers about the development of fungus diseases in wet weather. Were it not for the fact that the varieties of apples grown here are, in general, less susceptible to scab the control program would present a serious problem. Equipment and materials leave much to be desired, and winter spraying to combat San Jose scale receives more attention than the later applications.

Here in Croatia with its terrain extending from the Dalmatian Coast where the climate is sub-tropical to semi-mountainous regions, there is interest in growing a wide range of fruits, including grapes for wine making, apples, plums, sweet cherries, quinces and others. In a sweet cherry orchard of one variety, visited this week, the yield has been relatively light but is much better this year. Whether or not "bouquets" of another variety were used this spring, as was recommended at the time of our visit last year, could not be determined since the manager was not at home. One of the interesting developments in this area is a new Institute for Agricultural Improvement in Slovenia. This district includes 17 counties devoted largely to farm crops. However, on the rolling uplands fruits do especially well and the returns from fruit crops compare very favorably with the others. A fruit Section of the Institute is concerned with further developments along that line and will have to do with variety testing, demonstrations and an educational program among farm people. There are even suggestions of a modified form of an Extension Service.

As in other countries where tree fruits are grown, varieties and rootstocks are of increasing concern. The lengthy list of apple varieties, for example, which makes up the present plantings, will be reduced to include only a few well adapted sorts. In Croatia emphasis will be placed on a maximum of 10 apple varieties for use in future plantings while Slovenia has its "Slovenia Seven". In one of the Fruit Institutes a study is being made of a large number of wild apples, which have grown here for centuries, in the hope of finding a better rootstock.

A few days ago a visit was made to the first contour orchard in Croatia, the first row of which we helped to lay out in the spring of 1953. The 1-year-old trees made excellent growth but were more heavily pruned back this spring than we consider advisable in New England. Previously, apple trees were kept in the nursery for three years, but with several comparisons of 1 and 3-year-old trees now under way, the planting of the younger trees is likely to become a common practice. One reason for favoring the older trees is that a large species of rabbit is inclined to cause more severe damage on 1-year-old trees. Hunting regulations do not permit shooting the rabbits except during the hunting season. The past winter, with an unusually heavy snowfall, brought more rabbit damage to young orchards and unprotected nurseries than has occurred in some years past.

In Slovenia, it is gratifying to find that a start has been made in establishing an Extension Service. In 10 of the 19 counties a little Extension Work

along fruit lines is now possible. The development will necessarily be slow because of a shortage of trained personnel and for other reasons. But a recognition of the need for an Extension program is an important step, and it is reported that farmers are pleased with the results thus far. One of the most urgent problems in this area is the control of San Jose scale. To accomplish this, many old or heavily infested trees will have to be removed, and the tops of tall trees must be lowered to permit effective coverage with spray material. There is a possibility that "superior" oil may be made available. One of the common insect parasites of San Jose scale in other countries (*Prospaltella perniciososa*) is said to be unknown in this area.

Other recent observations include new, terraced plantings of tree fruits on very steep slopes, a common method of pruning peach trees which involves growth mainly in one plane, and some interest in the growing of better plums for the making of prunes.

---W.H. Thies

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NEW OR REVISED FRUIT PUBLICATIONS

Fruit publications which are new or have been revised during 1954 include the following:

- Special Circular 178 - Home Fruit Spray Schedule
- " " 189 - Chemical Thinning of Apples & Peaches
- " " 212E - Varieties of Blueberries for Massachusetts
- " " 212F - Varieties of Raspberries & Blackberries for Mass.
- " " 212G - Varieties of Grapes for Massachusetts
- " " 215 - Controlling Weeds in Strawberries
- " " 234 - Blueberry Problems & Practices
- " " 239 - Topworking Fruit Trees
- Leaflet 29 - Strawberry Growing
- " 264 - Fertilizing Home Fruits

and, of course, the 1954 Pest Control Charts for Apples, Pears, Peaches, Blueberries and Strawberries which are of interest to commercial growers.

Your County Agricultural Agent has a supply of these or they may be obtained either from the Department of Pomology or the Mailing Room, University of Massachusetts, Amherst, Massachusetts.

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OPPORTUNITIES WITH STRAWBERRIES

A recent bulletin from New Hampshire contains considerable information which may be of interest to Massachusetts growers. Some of Professor Dougherty's findings are as follows:

1. Particularly good opportunities exist for the production of more late berries.
2. Yields of 10,000 to 20,000 quarts per acre are possible and practicable.
3. Much more attention to supervision in picking should be given to improve quality and reduce loss. Excessive bruising, as may be caused by careless picking, materially shortens the life of the product.

4. Large yields and large berries result in higher prices, a larger gross, and lower picking costs. For example the cost of picking Great Bay in 1950 ranged from 3 cents (third picking) to 17.1 cents (eleventh picking) and averaged 6.7 cents per quart with time valued at 60 cents per hour.
5. Where pickers are hired on piece work, prices should be advanced through the season as size and yield decrease to maintain a reasonable hourly wage and hold a satisfactory picking force.
6. Marketing costs and charges may approximate one-half the retail price, thus possibly making sales on the vines at half retail price as profitable as jobbing to stores.
7. Sales on the vine are practicable if rows are numbered, pickers are placed on definite rows, markers are used where picking ends, careful supervision is given, berries are priced so some savings accrue to pickers, follow-up pickers are used, and good picking is made available.
8. Sound berries can be held under refrigeration (42-45°F) three to five days with small loss. They held for eight days under such refrigeration better than for two days at room temperature.
9. Precooling of strawberries is important, particularly if they are to be held overnight or shipped a distance.

---A.P.French

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ORCHARD DAY PROGRAM

Wednesday, July 14 the University of Massachusetts, the Massachusetts Fruit Growers Association and the New York & New England Apple Institute are cooperating in an all day orchard program on the University campus at Amherst starting at 10 AM in the orchards near Fisher Laboratory (cold storage building).

The forenoon program will include (1) Inspection of Simplified Spray Schedule Plots of Dr. Wheeler and Professor Bourne, (2) Examination of Carl Henry's new models of mouse baiters, (3) Results of 1954 Fungicide Trials by Dr. Gilgut and, (4) Experiences with Concentrate Sprays by Dr. A. A. La Plante, New York Extension Entomologist.

After lunch at the new University Commons the MFGA will dedicate a bronze plaque to Fred Coleman Sears. The afternoon program will also include (1) a talk by Dr. J. R. Magness, USDA, on Orchard Irrigation, (2) a marketing panel handled by the MFGA marketing committee, (3) Walter Piper's crop estimate report, (4) short reports by N. Y. & N. E. Apple Institute officers and election of new officers and, (5) a talk on The Power of Group Advertizing by Mr. Sam Chair for the Institute.

We have planned this program for you and hope to see you there.

---A. P. French

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FARM FAMILIES CAN PLAN THEIR SAFETY

The theme for the eleventh annual National Farm Safety Week "Farm to Live and Live to Farm" stresses safety in both farming and living. Safety contributes greatly to success and happiness and therefore is important in farm and home planning. Concern for the safety of every member of the family is essential. Safeguarding others as well as oneself is especially important on farms, where work is

so closely associated with living.

Safety is a social and economic responsibility. Discuss farm safety in the family circle and in community gatherings of men, women and youth. Recognize the hazards that surround us, and the willful or heedless risks to be avoided. Remove the hazards and establish habits of safety to avoid the risks. Risks taken on the highway or the farm or even in the home too frequently cause injury or loss of life to others and involve the family in economic loss or even grief.

This is common knowledge among all of us, and yet the risk of children riding on tractors is taken to gratify their childish whims. Or permanent injury is risked with machinery to save time - time too often spent in fruitless regret. These are harsh reminders of many accidents which can be prevented by avoiding the willful risk that endangers the life or the happiness of others.

Let us begin this second decade of the nation-wide farm safety program with the determination to safeguard all members of the family from every avoidable hazard or risk. In the observance of National Farm Safety Week (July 25-31) let us apply the theme, "Farm to Live and Live to Farm" to planning for safety throughout the year.

C. M. Ferguson
Administrator, Federal Extension Service
U. S. Dept. of Agriculture

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OH! NUTS

The reader is at liberty to interpret the meaning of the title of this article as he chooses, but it actually refers to the subject of walnut growing.

About five years ago the Pomology Department received an unsolicited letter from Moses Adams of Salem, Oregon relative to the possibility of growing English walnuts in Massachusetts. His interest in this project was prompted by the fact that he is a native New Englander who, many years ago, migrated to Oregon and started a fruit and nut farm which has been eminently successful. Inasmuch as the climate of Massachusetts is similar to that of Oregon and because of Mr. Adams's conviction that walnuts could be grown successfully here, he volunteered to send the Pomology Department a few seedlings. His offer was accepted, the seedlings arrived in due time, were planted in a nursery row, and have not only survived our winters but have grown vigorously.

The origin of these seedlings is worthy of note. About 1927 Professor Shuster of Oregon State College imported two walnut trees from Manchuria. One of these trees he gave to Mr. Adams. Subsequently, this tree bore fruit and from it Mr. Adams has grown many seedlings which in turn have fruited. One of these seedlings bore nuts of exceptionally fine quality so this was given the name of Adams and has been assigned to the Horticultural Department of Oregon State College for preservation of the variety.

This spring the original seedlings received by the Pomology Department were moved from the nursery row to a permanent location. Mr. Adams sent us scions of three varieties which include Adams, Manchurian and Manchurian Franquette. These have been grafted into the original seedlings. Providing the grafting is successful and the plants continue to thrive as in the past, we can hope for a crop of walnuts in about six years. The possibilities look promising at the present time.

In the fall of 1952 I had the pleasure of a visit with Mr. Adams at his home in Salem, Oregon. Among the many interesting things which he showed me on his farm was an Evergreen blackberry vine which extended for a distance of sixty feet and supplied five families with all of the blackberries that they wanted. A year ago Mr. Adams sent several shoots from that vine to the Pomology Department. They were planted and have survived this past winter.

The Evergreen variety is one that is grown extensively in Oregon. Perhaps it has a place in Massachusetts. Only the future will tell.

---O.C.Roberts

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KEEPING STRAWBERRY PLANTS FREE FROM INFECTION

Almost all strawberry plants growing in the northeast are infected with one or more virus diseases. It is very likely that wild strawberries also are infected.

Three species of aphids, known to occur in the northeast, serve as virus carriers. After feeding upon diseased plants these aphids may transmit the viruses to healthy, virus-free strawberries. Certain other aphids, also found on strawberries occasionally, have transmitted viruses experimentally.

Virus-free strawberry plants grown only for fruiting the next season, and next season only, do not require protection from aphids. Viruses contracted by these plants through aphid feeding should have little or no effect upon their growth or yield.

Plants grown in nurseries for subsequent sale, planting and fruiting the year after planting must be protected from aphids in the nursery to keep them in a virus-free condition. This becomes even more important in stock beds from which the nurseryman will set his new stock beds and plant beds for succeeding seasons.

Virus-carrying aphids must not feed on plants which the nurseryman desires to keep virus-free.

How Aphids Move From Field to Field

Winged forms are produced in some generations of most aphid species. In strawberry aphids, only the winged forms are able to move from one plant bed to another. (An exception would be the movement of plants, infested with wingless forms, from place to place.)

The Problem

Our problem then is to (1) prevent winged aphids from developing on virus-infected plants or on plants which may have virus in them, and (2) to prevent any winged aphids that do develop on such plants from establishing colonies or even feeding upon our virus-free plantings.

What the Nurseryman Can Do!

Winged aphids do not travel great distances unless carried by wind or by some other means; therefore:

- (1) Locate virus-free stock and plant beds in places isolated from possible sources of aphids and virus - 3000 ft. is suggested as a reasonably safe distance - any distance is better than none. Distance in itself does not guarantee immunity to aphids and virus - but isolation is helpful.

Winged aphids result when a strawberry aphid colony reproduces rapidly and becomes overcrowded. They occur principally during May and June and again in September, October and November. Some may be found during summer months also, therefore:

- (2) Dust all new and old plantings at 10-14 day intervals after growth starts in April and during May and June (except during bloom and within 2 weeks of harvest on fruiting beds).
- (3) Dust all plantings at 3- to 4-week intervals during July and August.
- (4) Dust all plantings at 10-14 day intervals during September and October.

Materials

Strawberry aphids occur in the buds or on the undersides of the foliage. Dusts have proved superior to sprays in tests so far although this may not hold true under all conditions. Materials must be driven into the buds and under the foliage.

- (5) Parathion-1% dust is recommended widely. Observe all safety precautions with this material.
- (6) Malathion 4-5% dust should provide as good control; it will cost more but is safer to use.

Equipment

Hand dusters are not adequate on any but the smallest plantings. Power dusters should have nozzles arranged so as to drive the dust into the buds and under the foliage. A canvas apron to confine the dust increases effectiveness.

---W.H.Wheeler

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Fruit Notes.

Prepared by the Fruit Program Committee of the Extension Service
W. H. Thies, Extension Horticulturist

JULY 30, 1954

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FRUIT NOTES

July 1954

THREE BUSY MONTHS IN YUGOSLAVIA

Exactly three months (April 2 to July 1) were spent in our recent "follow up mission". Never have we seen time pass more swiftly, and never have we had so many new experiences in so short a time. The trip in both directions was made by plane, the New York-London flight (non-stop) requiring only 11-1/4 hours. Brief visits were made to FAO headquarters in Rome, going and coming. Encouraging progress can be reported along certain lines. Some of our recommendations are receiving attention. Here are a few of them. A start has been made in establishing a simple type Extension Service and the farmers are pleased with the results. Mulching is being widely tested. There is much interest in reducing the number of apple varieties and in Slovenia a revised list, the "Slovenia Seven", has been adopted. Many one-year-old apple trees, instead of three-year-olds, are being planted. Our most recent suggestion is that a few areas of a county or less be selected in which an educational program is carried out and improved practices are taught and demonstrated. A limited number of Extension workers in these areas could, within two years, make real progress in such things as the eradication of San Jose scale, or in plum growing areas, in the growing of a better plum and in the drying of prunes. It is gratifying to find that our efforts in these directions have met with some success.

—W.H.Thies

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PREVENTING HAIL STORMS

In a few of the larger vineyards in Yugoslavia a device of French manufacture is being installed as a means of preventing the formation of hailstones. The results thus far are promising, although not conclusive. A rocket costing about 2000 Francs (\$1.00 = 350 Francs) is projected into the air to a height of about 1500 feet as soon as a hailstorm threatens. As a result, the water in that area which would otherwise form hail stones, falls as rain. The rocket stations must be placed no farther than about half a mile apart. We asked whether hailstorms ever occur during the night, having in mind the difficulty of manning the stations on a 24-hour basis. But it is claimed that afternoons are the critical time. Additional information about this unique device will be available soon. It may be of interest to an occasional grower of McIntosh apples.

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TRANSMISSION OF PEACH X-DISEASE

Since the discovery of peach X-Disease in Connecticut in 1933, certain questions about its transmission have been very puzzling. What is the vector which carries this disease from chokecherry to peach and why does the disease spread from chokecherry to chokecherry or chokecherry to peach but not from peach to peach or peach to chokecherry?

In a recent issue of the Plant Disease Reporter H. H. Thornberry of Illinois presents a possible explanation for this peculiar behavior. He thinks that a leafhopper, *Collandonus clitellarius*, is the vector. His preliminary experiments suggest

that if this leafhopper feeds on chokecherry first and then on peach, it will live long enough to infect the peach. However, if it feeds on diseased peach first it picks up a poison which kills it before it can feed long enough on another peach or a chokecherry to transmit the virus. Since it has been found that the peach produces enough hydrocyanic acid at certain times of the year to kill other leafhoppers, this explanation sounds plausible.

---J.S.Bailey

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DR. GOHEEN TALKS TO STRAWBERRY GROWERS

Dr. Austin Goheen, Plant Pathologist in charge of small fruit disease research of the U. S. Agricultural Research Administration, talked to strawberry growers at the twilight meeting at the University at Amherst on June 14, and to another group at the farm of Joseph Teeling in North Middleboro on June 16. Dr. Goheen discussed the three strawberry diseases which are giving the most trouble at the present time, red stele, virus and black root.

Attempts have been made to control red stele by fumigating the soil to kill the fungus spores which can remain viable in the soil for several years and infect any healthy plants which are set in such infected soil. Although some of the fumigants tried reduced very materially the number of spores in the soil, there were still enough left to cause healthy plants to become diseased. The only hope for control is still disease free plants set in disease free soil or the use of disease resistant varieties in infected soil. He reported that Dr. D. H. Scott, the strawberry plant breeder, in the U. S. Agricultural Research Administration, has developed selections resistant to three strains of red stele. One of these will be named and introduced next winter.

The answer to the virus problem is to obtain virus-free plants which are becoming available in rapidly increasing quantities. ✓

The cause of black root is still not known but the evidence that the meadow nematode is a chief contributing factor, if not the causal organism, is increasing. Dr. Goheen reported that he has been able to rid strawberry plants of nematodes by giving them a heat treatment. Dipping the whole plant in hot water at 127 degrees for two minutes does it. However, the plants must be dormant and be planted immediately after treatment or they will be injured. Actually the nematodes, both root knot and meadow nematodes, can be killed in fifty seconds. The strawberry plants will stand four or five minutes at that temperature. Consequently there is a safe margin either way. Dr. Goheen showed pictures of plants rid of nematodes in this way. They were twice as large as untreated plants.

This discovery by Dr. Goheen of a heat treatment for ridding strawberry plants of nematodes is of tremendous importance. It opens the way to turning any virus-free plants into both virus and nematode-free quickly and safely. It also makes it possible for anyone who has strawberries troubled with nematodes to treat their plants, set them in fumigated soil, and have a little or no trouble from this pest.

✓ Growers who wish to use plants from their own bed will do well to start with virus-free plants and keep the spread of virus to a minimum by dusting with malathion to control the aphids which carry the virus from diseased to healthy plants.

---J.S.Bailey

ORCHARD IRRIGATION

Some interesting points on this subject were brought out by Dr. J. R. Magness at the MFGA meeting in Amherst, July 14. He first pointed out the favorable situation in New England where the distribution of rainfall is about as uniform as in any section of the country. In general, we get about the same amount of rainfall each month during the growing season, and statistics show that serious droughts are less frequent here than anywhere else in the country. On our better soils we seem to require irrigation less than in any other fruit producing section.

Fruit trees tend to root deeply and thus have access to moisture at levels not penetrated by shallower rooted crops. A silt loam holds about 20% of its weight of water. Roughly half of this water is available for plant use. This means about 10 lbs. per cu. ft. of soil or the equivalent of about 1-3/4 acre inches for each foot of soil. Thus on a good soil, approximately 7 inches of water is stored in the soil penetrated by the roots, and is available for plant use. In a sandy soil, not as much water is stored. A coarse sand would hold no more than 5 or 6% of its weight of water, or about 1/2 inch per foot of depth, while a clay soil holds up to 2 inches of water. Thus the texture of the soil and the depth of rooting are important factors to be considered in deciding whether or not irrigation will be a profitable investment. The depth to which the root system of a fruit tree develops is closely correlated with its ability to withstand a drought. In some soils the major portion of the root system is found within two feet of the surface.

It is interesting to note that the rate of growth of apples, peaches, etc. is affected by the water supply. Growth is retarded when insufficient water is available. When the water supply is replenished, growth is resumed at the previous rate but the fruit never attains the size it would have reached if no shortage had occurred. Hence the average size of fruits in an orchard affected by drought conditions is lower than that in a normal orchard.

Peaches grow most rapidly during the last 30 to 40 days of the growing season. If a shortage of water occurs during this period there is much reduction in size of the individual fruits. With apples, a shortage of water for 10 days may mean a 10% reduction in size. With peaches, a similar shortage during the latter part of the season would have a greater effect.

Mulching has an influence on the water supply in various ways. It aids in the penetration of rainfall and reduces the amount of evaporation. In the Shenandoah area the apples in orchards on soils two feet deep will be reduced by 10%, on the average, every other year. Where the soil is three feet or more in depth, this occurs only one year in four. And where the soil is four or five feet deep an investment in irrigation facilities is not likely to prove profitable.

More water is required for an effective job of irrigation than most folks realize. One inch of water may be enough for a complete spray program, while six inches may be needed for irrigating an apple orchard. For peaches, three or four inches may be enough for irrigation during the critical season of 30 to 40 days. Setting up an irrigation system may cost about \$100 per acre in addition to the water supply, with an annual cost per acre of \$20 to \$25.

Irrigation does not promote annual bearing on biennial varieties, nor does it tend to improve color except in a very dry season when apples might otherwise have a very dull color. The principal effect in a dry season is that of increasing the size of individual fruits. Annual crops are more likely to respond to irrigation

than fruit crops because the former have a shallower root system, on the average, and are less capable of tapping the reservoir of moisture in the soil. To judge the need for irrigation in an orchard it is well to watch the behavior of surface vegetation since drought symptoms will appear there before the trees reach a critical stage. If irrigation is needed, a total of two to three inches is recommended. But where a large area is to be covered, it is advisable to apply about 1-1/2 inches, and follow with a similar amount.

---W.H.Thies

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SEEN AND HEARD IN THE FIELD

The Why of Poor Scab Control. In a particular hill town McIntosh block scab control leaves much to be desired. The foliage of a certain age is heavily infected and at least 10% of the fruit shows scab spots. There is reason to believe that the new growth was poorly protected at one or two critical periods. Perhaps the protective covering was washed off by a heavy rain and was not replenished before the next infection period. The orchard owner is wondering if the fungicide was of normal strength, and that is a legitimate question. But the material itself is very seldom at fault. In the majority of cases poor scab control is due to poor coverage or poor timing, or both.

Late Bloom Provides Good Fruit Set. One grower reports cool, rainy weather during the first part of the blooming period. But when the later blossoms were opening there was an improvement in the weather. He took advantage of the situation by bringing several additional hives into the orchard. As a result there was a very satisfactory set of apples, mainly on the later blossoms. Rarely in this orchard did the middle, or first blossom on the spur develop into an apple. The lesson to be learned from this observation is plain. It takes only a small percentage of the blossoms on a tree to develop a full crop. If bees are unable to do their important work early in the blossoming period, we should give them every opportunity to visit the later blossoms. An abundant supply of nearby pollen of another variety and plenty of bees are two important factors in the apple business.

Ferbam Response. In several orchards where Ferbam was applied the dark green color of the leaves was noted. There seems to be no question about the invigorating effect of this particular fungicide which is absorbed by the leaves. The influence is as noticeable as that of a nitrogenous fertilizer applied to the soil.

Color of Leaves in Relation to High Water Table. Looking at two McIntosh blocks from a distance, the yellowish colored foliage was very apparent. In both cases the owner said the soil was so full of water during May that spraying was difficult. Excess water during the growing season means a lack of oxygen in the soil air and a failure of the roots to function. There may be plenty of nitrogen and other elements in the soil but the tree is unable to get them. "Wet feet" means a shallow root system and a disappointing yield. If the water table could be lowered permanently in poorly drained blocks, spraying would be much easier and the yield of good fruit would be increased.

Color of Leaves on Bearing and Non-Bearing Trees. McIntosh trees bearing a full crop almost invariably have darker colored leaves than similar trees without a crop. The reason may be this: A developing crop of apples uses a considerable quantity of the starch made in the leaves. Hence there is less opportunity for storage of carbohydrates in a bearing tree. A "high carbohydrate" tree or a tree

with wide carbohydrate-nitrogen ratio, normally has leaves of lighter green or yellowish color. But the demand for carbohydrates exerted by a 25-bushel crop of apples is such that few carbohydrates are stored. That tree would be in the "low carbohydrate" class, and having relatively narrow carbohydrate-nitrogen ratio, its leaves would take on a darker green color.

Blueberries. In two plantings an occasional plant showed abnormal leaves. In one case the leaves were entirely brown. In the other certain plants showed yellowish leaves, the result of mineral deficiencies. Here a bulldozer had levelled off a few knolls and the plants had lost a layer of fertile soil. Where plants were turning brown, winter injury may be responsible. We suspect late stimulation of an occasional plant late last summer, and consequent injury to the conducting tissue last fall or winter.

Virus-Free Strawberry Plants. Thus far we have seen two virus-free strawberry plantings. They are off to a very promising start. Many runner plants are developing and the original plants are very vigorous. The leaf petioles are longer, giving the plants a taller appearance. The strawberry nurseryman should get considerably more plants from a virus-free planting while the producer of berries has the prospects of a much better crop.

Fall Set Strawberry Planting. It is a well known fact that runner plants which take root early are among the highest producers the following season. One strawberry grower visited recently tried fall planting for the first time last year and is delighted with the results. The planting was mulched to provide winter protection. At this season the row is already fairly well filled in, some runner plants having taken root by mid-June. There may be little difference between fall and very early spring planting, but a big difference where late spring planting is involved. Fall set plants have a chance to get their roots well established before warm weather begins.

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Only three counties have been visited since our return from Europe. In the 15 or 20 farm visits made thus far many observations have been made. The above are a few of them.

---W.H.Thies

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WHAT ABOUT TRACTOR SAFETY?

Seventy-five percent of recent fatal accidents with farm machines, involved tractors. The annual total is increasing at a rate of 40 per year. These accidents fall into the following classes: overturning, 55%; falling from tractors, 16%; running over individuals, 8%; crushed between tractor and some farm machine, 5%; entanglement in power takeoff, 3%; and other causes of accidents with tractors, 13%. There are 75 non-fatal accidents to each fatal accident.

What can we recommend not to do? (1) Never refuel or service the tractor or other farm machinery while the motor is hot, or while it is running. Do not add oil to moving or stationary parts of the tractor while the motor is still running, otherwise, you may be injured or your equipment damaged. (2) Do not run your tractor inside a building, carbon monoxide gas cannot be tasted or smelled; you may be the next fella to get it. (3) Never allow riders to occupy your tractor. Ask yourself, "Why only one seat on a tractor?" "No riders" is a safety must. (4) Don't walk back on the drawbar and step back on the other machine to make any adjustments. You

are taking your life in your hands, or putting your foot in it. (5) Keep your feet clean. Muddy feet make for slippery control. Keep a brush or scraper handy in the tool box to clean the tractor before and after using. (6) Never use any loose clothing or loose gloves when trying to make any adjustments on the machine. There are fingers in the glove and the first thing you know, there are no fingers. (7) Always hitch to the drawbar when pulling a stump or tying to a stone. Hitching to the axle is too high, and just as sure as shooting, the old tractor will rare up and throw you. Use your head to save your hide.

---R.E.Parmenter

MISSING RUNG IN LADDER; NOTHING SADDER

Did you ever come down a ladder and find unexpectedly one rung missing? Made you catch your breath and hang on, didn't it? So, the slogan, "Missing Rung in Ladder; Nothing Sadder", has lots of meaning as a certain individual discovered when he wound up in a doctor's office.

Accidents don't just happen - they are caused. National Safety Week, July 25-31, would be an excellent time to eliminate these causes. Too many times one knows a hazard exists, but fails to do anything about it until someone gets hurt.

That missing ladder rung could have caused a serious accident. Why wasn't it fixed? No answer. One of the best methods of getting action on removing accident hazards such as this is one used by Massachusetts 4-H Club members. An eye catching card, 5" x 7" with "Danger" in large red letters followed by "Fix It Now" in smaller letter, is placed at each hazard by any member participating in the Hazard Hunt Program. The card stays there until the hazard is removed. This danger card serves as a pointed finger at the farm or home owner accusing him of carelessness and neglect. It takes a pretty callous individual to walk past one of these cards without taking some action toward making that particular spot safe.

You are heading for a fall yourself if you don't keep ladders in good repair and exercise care and judgment in using them. Some things to remember about ladders:

1. Don't use a box or a chair or other unstable elevation in place of a ladder.
2. Set base of ladder firmly 1/4 of its height from the wall.
3. Always face the ladder in going up or down and hold on with both hands. Don't hurry.
4. Don't lean too far out on a ladder, and don't go up one on a windy day.
5. See that the ladder, hands and shoes are free from grease.
6. Use a hand line for hoisting tools, etc., that cannot be carried in pockets.

Remember, "accidents don't just happen - they are caused".

---H.A.Leland



Fruit Notes

Prepared by the Fruit Program Committee of the Extension Service
W. H. Thies, Extension Horticulturist

AUGUST 25, 1954

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FRUIT NOTES

August 1954

HORMONES FOR PREHARVEST DROP CONTROL OF APPLES -- 1954 RECOMMENDATIONS

There are no major changes in our suggestions for pre-harvest drop control of apples when compared with those of a year ago. There is one new material, 2,4,5-trichlorophenoxyacetamide which is very effective for drop control, but it is so pronounced a ripener that its use cannot be recommended at this time.

Consequently, you have a choice of naphthaleneacetic acid (NAA), 2,4,5-trichlorophenoxypropionic acid (2,4,5-TP) or 2,4,5-trichlorophenoxyacetic acid (2,4,5-T or 2,4,5-TA). We believe 2,4,5-TA is the best of the materials mentioned for McIntosh when a grower needs drop control beyond 2 weeks and wishes to have the least ripening of the fruit. NAA is still a good material for the grower who can harvest his McIntosh crop in 7-12 days. A discussion of each material follows:

NAA

1. Apply just as the drop of many-seeded, blemish-free fruit commences.
2. It can be applied as dust, spray, or from airplanes. It can be concentrated.
3. Used at single (10ppm) or double (20ppm) strength (4-8 oz. per 100 gallons), it will reduce the rate of drop from 7-12 days on McIntosh. If single strength is used, longer holding can be obtained by repeat applications every 5-7 days. It causes less direct ripening to fruit than 2,4,5-TP and slightly less than 2,4,5-TA, but the higher the concentration of NAA used and the greater the number of applications, the greater the ripening effect.
4. It is still a good material for McIntosh if it has given satisfactory control in the past and the block can be picked within 7-12 days after spraying.

2,4,5-TA-For McIntosh

1. Apply when drop commences. (Same timing as NAA).
2. Apply at 20 ppm (read label) as a spray. (It can be applied by airplane, also.)
3. Will delay drop for more than 3 weeks but not quite as effectively as 2,4,5-TP for the first 3 weeks.
4. 2,4,5-TA does not hasten ripening as much as 2,4,5-TP and not appreciably more than NAA. Remember that the longer apples hang, the softer they become even if no hormone is used. Don't let the fruit remain unharvested too long if a good storage apple is desired.
5. 2,4,5-TA is not suggested for other varieties since experience with it on anything but McIntosh in the Northeast is limited.
6. 2,4,5-TA is a brush killer at high concentrations so do not use it at concentrations above those suggested and do not use repeated applications.

2,4,5-TP

1. For best drop control of McIntosh, apply when drop commences (same timing as NAA).
2. When used at 20 ppm (read the label) it will reduce rate of drop for about 3 weeks after application on McIntosh. Do not use higher concentrations.
3. Can be applied as a spray or from an airplane. Dust may be satisfactory,

- if available. It may be concentrated safely up to 3X.
4. If you want a good storage McIntosh apple, pick the fruit within 2 weeks of spraying, even though fruit is not dropping, to keep ripening effect at a minimum.
 5. If used to hasten ripening and improve color of early and midseason varieties, apply about 3 weeks ahead of harvest date. Apples from trees high in nitrogen will be ripened more than fruit from trees at lower nitrogen levels. Do not use 2,4,5-TP for improving color on regular Gravenstein, Duchess, and Milton since color is not greatly improved and the fruit may become mushy and worthless. It has been used for this purpose with some success on Early McIntosh and Wealthy. To hasten ripening of late apples apply 5-6 weeks ahead of harvest. Beware of over-ripeness, splitting, and water-core when used as a ripener. The ripening effect is not uniform over the entire tree. Some fruits will be ripened much more than adjacent fruits.

General Comments:

No hormone is effective for drop control if the foliage is in an unhealthy condition as a result of frost or mite injury. Also, trees suffering from magnesium or potassium deficiencies will drop their fruit readily and hormones will not prevent it.

---F.W.Southwick

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Sheep in the Orchard - A group of sheepgrowers and fruitgrowers in Worcester County got together recently to talk over the question of ranging sheep in the apple orchard. Among the points brought out by one of the larger sheepgrowers was the absence of mice in a closely grazed orchard and the influence on insect control from the eating of drop apples, also the fact that no ill effects were apparent in the sheep where grass and leaves in a sprayed orchard were consumed. He brought out the point that the browsing of sheep on the lower branches would be less in evidence if the low hanging limbs were pruned off. Ofcourse, no one would think of ranging sheep in a young orchard since there is plenty of evidence that disastrous results follow this practice. And in a bearing orchard, it would be impractical to have the trees headed sufficiently high to avoid browsing on those branches which can be picked easily from the ground. Suppose one were to prune off all lower branches which bend down to the ground under a load of fruit. That would not solve the browsing problem because sheep can reach to a height of about 3-1/2 feet. To eliminate all branches up to that level in an orchard producing 500 bushels per acre would greatly reduce the proportion of apples easily sprayed and harvested. There is also the question of losing the mulching benefits where grass is closely grazed. On some soil types, a heavy grass mulch brings important benefits entirely apart from the nutritive materials in the grass itself.

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"Harvesting Suggestions for Orchard Foremen" - A copy of this Special Circular 245 may be obtained at your County Extension Office. It covers 5 things the foreman should show the pickers, and 9 things he should tell them. It will be time well spent to go over these things with each new group. Most of the items are the sort of things an experienced picker would do anyway. But a new picker needs to be reminded and shown how he can earn a good day's pay by doing things in a certain way. It would take a long time to discover all of these things by himself. Many will never become good pickers unless some understanding foreman takes time to demonstrate the easy way of getting unbruised apples into the box. A good foreman is not only a good teacher but has an understanding of people. A few minutes of instruction plus a friendly check-up now and then will help to get those Fancy apples from the tree to packing house or storage with a minimum of bruising.

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"Be A Better Apple Picker" - This is the name of another new publication of interest during the apple harvest season. Your County Agricultural Agent has a supply. Just ask for Special Circular 246. It stresses these 7 points: Set the ladder firmly. Pick from bottom up. Take hold of apple without squeezing. Lift and turn to separate apple from spur. Place gently into picking container. Fill field boxes properly. Follow instructions of your foreman.

As we prepare for harvesting one of the cleanest apple crops in years, we should bear these things in mind: They're your apples and should be handled as you want them handled. Many apple pickers will be inexperienced insofar as your method is concerned. You owe it to him and to yourself to have everything about the picking operation understood. Take time to instruct each picker at the outset. If an hour is required, pay the picker accordingly. It may be a good investment. The way your apples are picked and handled will depend to a large extent on how good a teacher you are and on your willingness to reward faithful effort. A fair hourly wage plus a bonus for those who stay until the end of the harvest season has worked wonders in a few orchards. Per bushel payment is OK for a good picker but not for one interested mainly in the day's pay, particularly where supervision is lacking. You can well afford to invest another nickel a box in careful picking and handling, if by so doing you can avoid bruising. A reward to those who handle apples your way is worth considering. After all, they're your apples and you may sacrifice a quarter a box if they are handled roughly.

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Note On A Systemic Spray Material - While we are not yet ready to use systemic materials on bearing fruit trees, their use on non-bearing trees offers promising possibilities. Under the title "Systox Working Well" in a recent issue of the New York State Newsletter there appears this statement. "The new systemic poison, Systox, seems to be doing a grand job in holding down green aphid wherever it has been used. It also seems to be eliminating the red mites. Many of the younger orchards where this material has been used have made such excellent growth that the contrast with aphid curled leaves on nearby unsprayed trees is terrific."

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ORCHARD MOUSE CONTROL

During the past month I have made several tours through Connecticut and Massachusetts orchards and have become increasingly concerned with the number of trees showing off-color foliage. In several instances the area beneath the branches of the trees was carefully examined and no active mouse signs were found or any visible girdling noted. Active signs were found, however, at trees with normal, dark green foliage. Orchard mouse damage to the roots or trunk seldom causes leaf yellowing the same year that it occurs and root damage may take several years.

One orchardist agreed to sacrifice one of these questionable trees--that is, as to whether the off-color was caused by wet feet, nutrient deficiencies, spray injury, or mouse damage. When the tree was removed, it was found that approximately 80 percent of the larger roots had been damaged by mice and hair or feeder roots were practically nil.

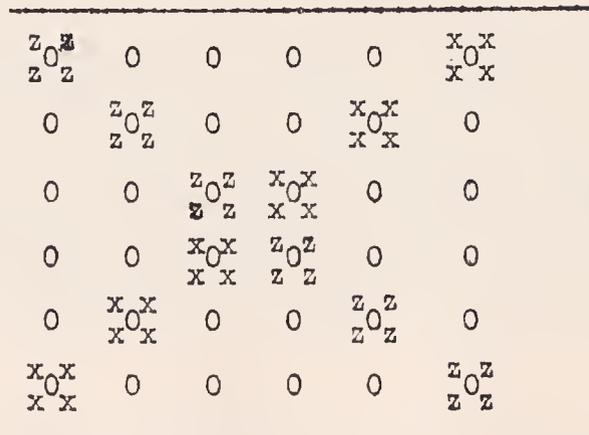
This article is not meant to infer that every off-color tree has been injured by mice but it is intended to bring to your attention the fact that root damage by mice can be a contributing factor to poor growth and irregularity in production.

Year after year this Service has repeatedly brought out the fact that thoroughness is the most important factor in a successful orchard mouse control program and there has been no reason to change. The following is a list of recommendations to follow in making the program more thorough:

1. Study and follow control information carefully.
2. Be alert throughout the entire year.
3. Select reliable help.
4. Know the habits and characteristics of the mice the same as you would any other orchard pest.
5. Run trap lines before and after poisoning.
6. Remember that killing is not the only phase of a control program.

Although a control program is necessary regardless of whether the mouse population is one or five mice per tree, trapping can be helpful and worthwhile in determining the kind of mice (Pine, Meadow, Deer Mice or Shrews) that are present, whether the population is high or low, and if the baiting program has been successful. Use wooden-base, snap traps baited with a small piece of apple plus a few kernels of rolled oats. Place traps level with base of mouse trail and at right angles. Traps should be placed as indicated in the diagram below;

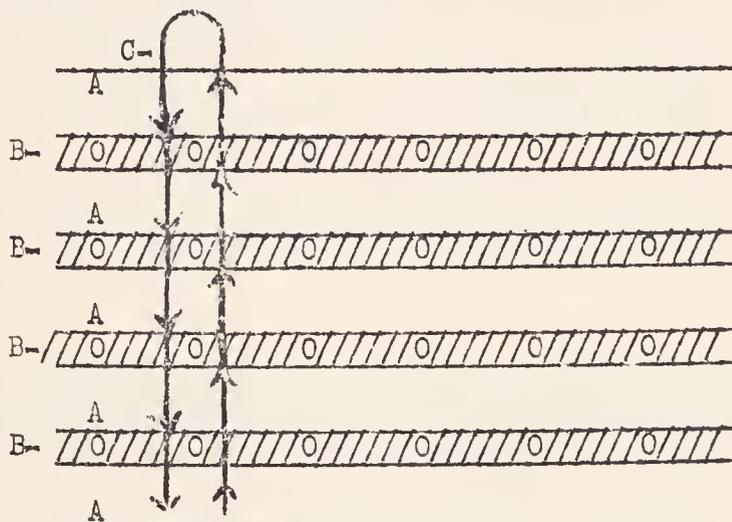
O = Trees; x = Traps before poisoning; z = Traps after poisoning.



Use a minimum of 50 traps, unless orchard block is very small. Traps should be covered with a piece of roofing paper, basket cover, or board to prevent grass or leaves from springing traps. To accurately determine the results of a baiting program, a trap line as illustrated may be operated just prior to the baiting process and repeated one week after completion, with the trap line run in the opposite direction. Place traps in locations as for baiting, at the drip line.

Trapping, as described, is not expensive or unduly time-consuming and should be tried by every orchardist. Small blocks are subject to re-invasion more quickly than large ones and should be examined more frequently. Late fall mowing, after harvest, can be helpful especially if done before baiting.

The following diagram indicates the method of mowing to be used in the orchard after harvest to assist in mouse control:



- A = Mowed areas and normal equipment route of travel.
- B = Not mowed. Best mouse trails located here. Application of bait in B areas immediately after mowing is advantageous, because mice will move from A to B after mowing.
- C = When possible, operate trail builder in this direction.

---Carl E. Henry, Asst. District Agent
U.S. Fish & Wildlife Service

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Is Complete Elimination of Apple Maggot A Practical Goal? Of all the insects infesting an apple orchard, none can compare with apple maggot when it comes to disrupting an otherwise good crop. Even a slight maggot infestation tends to make the buyer beware and if appreciable infestation is in evidence, marketing becomes a serious problem because it is impossible to grade out, completely, all infested apples. But there are examples of apple crops in which less than a tenth of one percent (1 apple in 1000) shows evidence of this late summer visitor. Apple maggot can be, and is being, controlled. If a grower finds 1% of the apples showing scab infection at harvest time he considers himself fortunate to have so few scabby apples. But if any, at all, show maggot infestation, the percentage is too high. Practically complete control is possible even in a difficult environment. Any grower with more than a very small fraction of 1% of the apple crop showing apple maggot should ask himself "Why?" and should study the control measures of the increasing number who have reduced this pest to the vanishing point.

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REDUCING STORAGE ROTS OF APPLES

Even with the most careful operation in the orchard, in the packing shed, and in the storage, it is not possible to eliminate storage rot completely.

It can be reduced considerably, however, by observing a few sensible practices.

- (1) Avoid fruit injury. Many rots start at stem punctures or at bruises.
- (2) Use clean boxes if possible because they are less likely to carry a heavy load of rot-producing spores. This applies only to boxes of thoroughly dried lumber which have been stored dry.
- (3) Sterilize old boxes to kill rot spores that are on or in them. There are two effective methods: (a) Exposure for 2 minutes to live steam. This will kill blue mold spores which are responsible for most of the storage rot, and (b) spraying with a solution of sodium hypochlorite. The solution should contain at least 0.4% available chlorine. Hold boxes for few days in a closed room. This operation could be done in the storage or packing room and walls, floor and ceiling could be washed down and sterilized at the same time that the boxes are sprayed.

---C.J. Gilgut

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CONTROLLING FLIES

Roadside stand and cider press operators - and their customers - often are bothered by the large numbers of flies attracted to the spot. Here are some suggestions made to help you - the stand or press operator - keep fly numbers down and make your place of business more attractive.

Several kinds of flies may be troublesome and if you operate at night many of the night-flying moths and other insects are a distinct nuisance. The common housefly is one of the worst offenders around the roadside stand. Occasionally the blowflies - the so-called blue bottles and green bottles - are sometimes troublesome and then there are the tiny fruit flies, *Drosophila*, of tremendous importance in scientific studies of genetics but a doggone pest wherever there is ripening fruit, spoiled fruit or vegetables and fruit juices.

If you operate at night, why not use some of the special yellow bulbs in and around your stand? They won't keep all the night-flying insects away but fewer of them are attracted to the yellow bulbs. If you have some lights at a considerable distance from the actual building, use ordinary bulbs there and the yellow bulbs in and immediately around the building.

The control of the ordinary housefly and the little fruit or vinegar fly, *Drosophila*, may be outlined in three steps - each supplements the other.

1. Clean up and keep cleaned up: Flies are not attracted to places where there is nothing to feed on or to breed in. Perhaps you can multiply in your head, but flies have to have a place to lay eggs so that when the eggs hatch their young, the maggots, can feed and grow up ready to change into pupae and then into flies like their parents. When you provide flies with the right kind of food, and temperatures are high, they can multiply mighty fast.

All refuse should be removed daily and either buried, burned, fed out or carried far away. Every other day or twice a week or once a week

is not often enough. Have some receptacles with tight fitting covers which can be used to hold refuse between collections.

The pomace from the cider press is very attractive to the tiny fruit flies and the many small pieces that are spilled and not cleaned up right away can serve as breeding spots for them. Over-ripe and bruised fruit also is very attractive and the slightest break in the skin gives them a chance to lay eggs.

Sanitation is 90% of any fly control program.

2. Residual sprays on surfaces where flies gather: DDT is still very effective against fruit flies and in many areas it is still effective against the ordinary housefly. Methoxychlor should do as well. Either of these materials may be used on any surface where flies gather and where food products will not actually come into contact with the residue of insecticide.

For a good residual coating which should last all season, you need to use either the DDT or the methoxychlor at a 5% concentration. For the 50% wettable powder, this would mean 8 pounds in each 10 gallons of water; for the 25% emulsifiable concentrate (DDT miscible oil) this would mean a dilution of 1 part of the concentrate to each 4 parts of water.

The emulsifiable concentrate would be better on painted or non-porous surfaces and would leave less visible residue, but the wettable powders might prove superior on porous surfaces. Wet the surfaces thoroughly without losing the material through run-off. Do a complete job inside and outside the building but avoid contaminating surfaces with which food products will come into contact.

3. Space treatments with aerosols: Some flies are bound to escape the residual material or will be attracted into the stand or cider press room late in the day in spite of strict sanitation. You can kill these each night and give them a second shot in the morning so as to start the day free of flies by using aerosols. There are just two requirements to be met to make these treatments successful and safe.

You must be able to close the stand or the room so as to prevent cross currents or ventilation in order for the aerosol to be completely effective.

The aerosol used must contain either pyrethrins or allethrin plus activator materials like piperonyl butoxide, sulfoxide or MG-264. They should not contain DDT, methoxychlor, lindane, chlordane or any similar materials.

The economical way to purchase aerosols is in the form of a 5-pound bomb, at least. I question the advisability of buying the small sizes, although some operators have bought them in case lots and found them not too expensive. Follow directions given on the labels to determine how long you need to operate the bomb to obtain results in the space you are treating.

I am sure these suggestions - if carried out - will help you to have fewer

flies around your stand or cider press. I am sure not too many of your customers will accuse you of handling artificial grapes just because they don't see hundreds or thousands of little flies hovering around the baskets.

You will note that we have not recommended any of the many fly traps now on the market. If you keep your place reasonably clean, it will not be attractive to the kind of flies those gadgets catch unless you put up one of the gadgets. Very few houseflies and no self-respecting *Drosophila* would be attracted to them.

---E. H. Wheeler

* * * * *

Apple Leaves, Now and Then - Anyone with a good memory and old enough to recall the days when we depended upon lime sulfur for scab control, has a treat in store as he compares the foliage in today's well-sprayed orchard with that of the early Twenties. But we don't have to go back that far to note the effects of caustic spray materials. Even the milder sulfurs, plus lead arsenate, have raised havoc with apple leaves in years past. So long as sulfur was about the only fungicide in common use, the foliage in most orchards was below par, and especially so in orchards of low vigor. Today, with several very efficient organic fungicides available and with less lead arsenate used than previously, apple leaves, on the average, look unusually well. The writer sees improvement over the conditions of two years ago. Leaves, in general, are large, of a healthy shade of green, with no evidence of spray burn and apparently much more efficient in the manufacture of starch than were the leaves in years past. We can thank our newer spray materials and our improved equipment for much of the present promising appearance of the leaves in well-sprayed orchards in Massachusetts.

* * * * *

Relation of Tree Removal to Nitrogen Deficiency - Contrary to what one would expect, it is a matter of common experience that the remaining apple trees in an orchard where every other diagonal row has been removed, are inclined to look more yellowish than they did before trees were removed. At first thought one might say that the remaining trees would make better growth and their leaves would appear a darker green because the nitrogen in the soil is now apportioned among fewer trees. But the reverse is actually true. For some time after the top and branches of a tree are removed the roots of this non-existent tree, in the process of decay, require a liberal supply of nitrogen. Wood rotting fungi and other low forms of plant life must obtain nitrogen, one of the constituents of plant protein, and they find it in the soil immediately surrounding the decaying roots. Thus dead roots become competitors of the living roots in the vicinity, and unless there is enough nitrogen in the soil to supply the needs of both, the living tree will suffer. It pays to be liberal with nitrogenous fertilizer in the spring immediately following tree removal. If enough is applied over the entire orchard floor to encourage rapid decay of the roots and at the same time provide for the requirements of the living tree, the latter will take on a new lease on life and will show the expected response to a better light exposure and a larger volume of soil into which to develop its root system.

* * * * *

WEED SPRAYING BY HAND

Weed control recommendations are generally given in terms of pounds of the active ingredient per acre. For example, if it is recommended to apply two pounds of Chloro IPC per acre, this means two pounds of actual Chloro IPC spread evenly over one acre. The amount of water used to spread the weed killer is usually unimportant. This type of area spraying seems to give no end of trouble to the person who has only a small area to cover and wishes to do it with a hand sprayer. Even when the amount to use on a small area, say a teaspoonful on 200 square feet, is given, the difficulty still persists. The question, "How much do I put in a gallon of water?", is asked again and again.

The difficulty arises from the fact that the methods of procedure for applying pesticides and herbicides are, in most cases, almost opposite. In spraying for pests the concentration of the spray solution and thoroughness of application are all important. The amount of spray material used is not important so long as one does a thorough job of covering all parts of the plant. This is the old familiar procedure. Add so much to each gallon of spray and spray the plant thoroughly. If too much spray is used, it runs off and is wasted but no other harm is done.

On the other hand, in weed spraying almost the reverse is true. With a few exceptions, concentration of the spray and thoroughness of wetting of plants are of no concern. It doesn't make a bit of difference whether a teaspoonful of weed killer is put in a cup of water, a quart or a gallon, so long as it is spread evenly over the recommended area, say 200 square feet. The important thing is to get the recommended amount of weed killer spread evenly over the recommended area. Underdosing results in poor weed control. Overdosing may result in plant injury.

Then how does one know how much water to use? With a hand sprayer this will have to be learned by trial and error. Suppose it is desired to apply one teaspoonful of weed killer to 100 square feet of area. If the strawberry row is two feet wide, measure off 50 feet of row and place a stake. Fill the sprayer to one of the gallon marks. Spray over the 100 square foot area. Measure the amount of water necessary to bring the water level in the sprayer back to the mark. Repeat the spraying and measuring operation about three times. The average will give the amount of water used per 100 square feet.

If a compressed air sprayer is used, the amount of liquid delivered will vary with the pressure. It is well to pump up the sprayer frequently. Also the amount of spray delivered to a given area will vary inversely as the rate of travel. Try to walk at a constant rate of speed. If the row is narrow, it is a good idea to hold the nozzle high enough to cover the width of the row as you walk along. If the row is wide, it may be better to go down one side and back the other covering half the row each time. This will usually give more even coverage than waving the nozzle around. With a little practice a fairly uniform coverage can be obtained.

After the amount of water to use per 100 square feet has been determined, it is a simple matter to measure the bed and determine the total amount of weed killer and water to use.

Sometimes it is desirable to spray only part of the area of a bed, a strip over the row or a strip between the rows, for example. In such a case it is only the area actually sprayed that is used in calculating the amount of weed killer. Suppose a band two feet wide is sprayed over a row where the rows are four feet apart. Then only half the total area of the bed is sprayed and only half the amount of water and

weed killer calculated for the whole bed is needed. The smaller amount is sprayed evenly over the two foot strips.

A weed type nozzle which delivers a fan shape spray is a great help for this type of spraying. Usually more even coverage can be obtained by going over the bed rather rapidly so as to use about half the required amount of spray and then going over a second time, more rapidly or more slowly depending on the amount left, to apply the rest of the spray.

To do a good job of weed spraying, determine the amount of water applied to a given area. Add the required amount of weed killer to this amount of water. Apply this weed killing mixture evenly over the given area.

---J.S.Bailey

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CAN IN SAFETY

The use of pressure canners for home canned foods has reduced danger from spoilage, yet safety precautions must be observed when using this equipment. Pressure canners are most commonly operated at 10 pounds steam pressure, thus must be handled wisely to avoid accidents, due to the potential danger. When using a pressure canner, it is best to thoroughly read the canner manufacturer's directions. Various brands of pressure canners differ in design and one should become familiar with their operation.

However, before canning time, the canner should be checked thoroughly. The pressure gauge should be tested to find out whether it registers correctly. This may be tested at any County Extension Office. Usually if the gauge is inaccurate more than three pounds, it should be replaced. The petcock, safety valve, and edges of lid and canner are to be kept clean at all times. An additional safety check is to make sure the openings to the petcock and safety valve are kept clear.

General safety hints for canner operation include having at least an inch and one-half of water in the canner so it won't boil dry and be damaged. When placing jars in the canner, leave space between jars so that steam may flow around and over each jar to insure proper processing. Be sure to fasten canner lid on tightly. If the canner has thumb nuts, partially tighten by turning opposite nuts, then continue tightening by pairs until lid is on snug. When heating, allow steam to escape for 10 minutes. This is to drive out all air which would give a false reading on the gauge if mixed with steam.

After completing the process at 10 lbs. pressure for the proper length of time remove canner from heat and allow it to stand until gauge reads zero. Wait 5 minutes before opening petcock, and carefully loosening and removing cover. Most accidents with pressure canners occur at this point. The cover should be loosened only when the gauge is at zero. When removing the cover, tilt far side up so steam escapes away from you. By tilting the cover, burns will be prevented. When removing jars from canner, handle carefully and do not set hot jars on a cold surface or in a draft. Sudden cooling may cause breakage. The pressure canner is a safe utensil and requires only correct handling to insure the prevention of accidents. Make home canning safe and profitable when using the pressure canner by following the correct methods for operation.

---R.B.Parmenter

CIDER NOTES

During the past few months, specialists from the University, and cider processors from the industry, have been working on sanitation requirements for cider mills. Their purpose is to guide cider mill owners and operators in sanitation, and to set up a voluntary inspection system for certifying cider mills. The program will be administered by the Massachusetts fruit growers Association.

Highlights of the code emphasize three points: insect control, use of detergent-sanitizers in clean-up, and the proper filling of clean, labeled containers with good, sweet cider made from clean, sound apples.

Insect control - the warm fall days attract many insects, yet if screens are used, the mill is kept free. In addition, timely cleanup and handling of pomace reduces the number of insects greatly. Don't let your customers be bothered by flies -- you want repeat sales. Detergent-sanitizers -- these were designed to speed cleanup and to leave the building and equipment in a clean, sanitary condition. They have been proved in dairies and other food plants. Use them to save time and labor.

Containers, labels and cider -- by bottling a good, sweet cider in clean, labeled containers, you encourage repeat sales. Let all three help advertise your product.

---K.A.Hayes

* * * * *

DOTTY'S PLEA

My name is Dotty Apple clothed in red from sun and rain
I have tried to be so careful my complexion to retain,
To be sure, it's not been easy dodging mites and curc and scab
And I might have failed entirely, 'cept for products from the lab
Such as DDT and Dieldrin, Ferbam and Methoxychlor
Sprayed upon my tender skin once each week or more.
Thru it all I've come unblemished, I'm appealing as can be
Now, I'm really very worried; I must be parted from the tree.
It's not the parting I bemoan. For nature decrees it so;
It's how that parting will be done that makes me feel so low.
I know that in the future my lot in life will be
To have some happy person make an apple core of me.
By every right and reason I should stay my very best
Until I make that person glad he chose me from the rest.
Now, this can never be you see unless you do your part
And as I'm taken from the tree, Please! Mr. Foreman have a heart.

---O.C.Roberts

Here's An Idea - A combination drainage and irrigation system has been installed in one part of the Fitzgerald orchard in Leominster. In spring it will serve to carry off the excess water and in a dry season it can be used for irrigation purposes. Who says, "There is nothing new under the sun?"

1910

The first part of the report deals with the general situation of the country and the progress of the work during the year. It is followed by a detailed account of the various projects and the results obtained.

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Fruit Notes

Prepared by the Fruit Program Committee of the Extension Service
W. H. Thies, Extension Horticulturist

SEPTEMBER 30, 1954

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FRUIT NOTES

September 1954

HURRICANE NOTES

Better Method of Supporting Hurricane Damaged Trees - Where an apple tree has been blown over by the hurricane and has been restored to a vertical position, the proper placement and attachment of supports presents a real problem. After discussing this matter with two of our larger growers who had much experience following the hurricane of 1938, a better technique than that suggested in a recent release can now be presented. Instead of using heavy screw eyes for the attachment of wires or placing a padding of rubber underneath the wire, drilling a hole through the center of the tree at a suitable height has certain advantages.

The methods of these two growers differ in several particulars although both involve inserting the wire through a drilled hole. Grower No. 1 had 80% of his trees blown over in 1938 and his method of salvaging resulted in the recovery of 90% of the damaged trees. He used a galvanized and twisted type of wire, and stakes 24" in length made by sawing diagonally a 24" piece of fir 2 x 4, each piece making two stakes. The 3/8" hole was bored horizontally through the tree in line with the direction of pull. The ends of the wire of proper length were stapled to two stakes. The center portion of the wire was then doubled over, inserted through the hole and a metal washer on the side farthest from the stakes, bent downward and stapled about 8" below the hole. The stakes were then driven in with resulting tension on the wires. The angle between the wire and the horizontal was in no case more than 45°. Where more than two stakes were needed, one or two additional stakes were placed, with similarly attached wires, at selected points around the tree.

Grower No. 2 used a somewhat heavier type of ordinary iron wire with the idea that it would hold up at least three years before rusting through and by that time the tree should be on the way to the reestablishment of its root system. The 5/8" hole was bored horizontally through the tree, but at right angles to the direction of pull. The two stakes, cut in the woods, were placed in such positions that they would provide support where most needed. The wire was then inserted through the hole and the two ends wrapped around the stakes. No staples were used. Where support in other directions was needed, an exact duplicate of this set-up with two additional stakes and another piece of wire on the other side of the tree was provided, the one hole serving for both pieces of wire.

Liberal use of water in salvaging a hurricane damaged tree was stressed by Grower No. 1. He used as much as 500 gallons around his larger trees, forcing it into the soil under high pressure. By puddling, or reducing the soil around the roots to mud, the stage was set for newroot development. This may be one of the most important steps in the salvaging operation.

Some Lessons from the Hurricane - "----sermons in stones, books in the running brooks, and good in everything". (We might add, "lessons in hurricanes".) Readers of FRUIT NOTES in the hurricane area are urged to examine damaged apple and peach trees and observe the relation between the framework and the amount of breakage. Peach trees, in particular, show more breakage where the trunk was allowed to divide into two or three more or less equal parts. Many such trees, completely ruined by the storm, have been observed. Even in a peach tree there is need for developing a short "leader" with well placed scaffold limbs and no narrow angled crotches. It should be borne in mind that the bark becomes trapped between the two parts of such a crotch and a strong connecting bridge of wood is impossible. Hence the more severe breakage in a storm. A second lesson is found in the relation between magnesium deficiency and loss of fruit. The drop of fruit was greater where trees were deficient in magnesium. It

is^a/well known fact that McIntosh apples drop earlier under such conditions and that the pre-harvest sprays are ineffective. A heavy windstorm shortly before harvest, like that of August 31, tends to emphasize this situation. A third lesson appears in the salability of apples and peaches from different orchards following the hurricane. Better than average color, good size and freedom from blemishes meant a reasonably good price even though the fruit lacked maturity. But small, poorly colored, blemished fruit was in poor demand at any price. Even in a hurricane year good orchard management, including an efficient pest control program, pays good dividends.

The Mouse Situation - Seldom have we seen a better grass cover in orchards than at present. The mouse population generally keeps pace with the growth of grass, the natural feed of mice. The hurricane has tilted many trees, raised the roots of others and, in general, created ideal conditions for mouse injury to fruit trees during the fall and winter. In fact, the set-up is almost made to order for mice, and if nothing is done to eliminate them we may have more girdling than in many years past. Taking proper care of damaged trees and early placement of baits, both apple and grain, are urgent October tasks. Grass and mulch material should not be left in contact with the trunk. To do so, invites mouse damage. A bare space, filled in with sand or gravel is preferable. Anyone needing information about preparation and placement of baits, the new trail builder, or about mouse control in general, should contact his county agricultural agent.

Looking Ahead to 1955 - It is not too early to be thinking in terms of 500 bushels of good apples per acre. This will mean mouse protection, salvaging and rejuvenating those damaged trees, more mulch material where needed, more high magnesium lime, proper pruning, and next spring, providing for effective pollination. As we clear away the wreckage of the storm, let's be thinking of the next and, we trust, better year ahead.

* * * * *

SOME BLUEBERRY PROBLEMS AND PRACTICES

Blueberries won't thrive on poor sites any better than any other fruit. Plants in frost pockets are likely to suffer from both winter cold and late spring frosts. Soggy, wet soils aren't satisfactory. Good air and soil drainage are necessary. A suitable soil is extremely important. A continuous and adequate supply of moisture is one of the most important soil factors. Excessive moisture during spring and summer is not good, either. An open, well aerated soil is preferred. Blueberry plants can be grown in sand but a good supply of organic matter is a big help. Under most conditions a fairly acid soil is necessary. The range is about pH 3.8 to 5.8, the best probably 4.5-5. Large quantities of organic matter alter these limits. Indicators of acid soil are wild blueberry, cranberry, white cedar, red maple. Soil acidity can be increased by the use of sulfur.

| Natural acidity of soil as tested | Pounds of sulfur per 100 sq. ft. required to produce acidity of pH 4.4 | |
|--------------------------------------|---|-----------|
| pH | Sandy Soil | Loam Soil |
| 5.5 | 0.8 | 2.4 |
| 6.5 | 1.5 | 4.6 |
| 7.5 | 2.3 | 6.9 |

For commercial operations the land is usually prepared by clearing, plowing, and harrowing a year in advance of planting. A few growers have set plants in brush

land after mowing and without plowing. If the soil lacks acidity the use of a mulch or sulfur or both will help. The home gardener will do well to dig a hole large enough so that a half bushel of sawdust, peat, rotted wood, rotted leaves, or some similar material will half fill it. Then set the plants in good soil on top of this material. Fall planting has been practiced successfully by some growers but spring planting is preferable. Various planting distances have been tried and the tendency is toward more space per plant. The distance will depend on variety, type of soil management, type of equipment, fertility of soil and severity of pruning. Never plant closer than 5' x 8'. Set two or more varieties for pollination insurance.

Blueberry fields are handled under a variety of cultural systems varying all the way from sod to clean cultivation. Mulching systems are increasing in popularity. Mulches conserve moisture, reduce fluctuation in soil temperature and add nutrients. Sawdust is an especially good mulch for blueberries. Leaf analysis indicates that blueberries grow well at a low level of nutrition. Yet they respond well to fertilization. A complete fertilizer gives better results than straight nitrogen. A 7-7-7 or other 1-1-1 ratio is recommended, but any good garden fertilizer such as 5-8-7 will do. Where mulches are used nitrogen should be doubled for a couple of years. Recent investigations show that under conditions of extreme acidity and low magnesium, an application of high magnesium lime at one to two thousand pounds per acre (25-50 pounds per 100 square feet) is beneficial.

Pruning is another extremely important practice which should be repeated annually. Unpruned bushes become a tangle of short, weak branches bearing very small fruit. Pruning induces the growth of vigorous new shoots, prevents over-bearing and stimulates the production of large berries. Some pruning is necessary but the amount will depend on what the grower wants. Light pruning results in heavier yields, smaller berries, and later maturity. Conversely, heavy pruning results in lighter yields, larger berries, and earlier maturity. Pruning needs to be balanced with soil fertility and water supply. A bush on a fertile, moist soil can carry more fruit and, therefore, needs less pruning than one on a poor, dry soil. Small bushes need little pruning during the first two or three years in the field, only the removal of diseased or dead wood. A commercial crop will be produced sooner if fruit buds are cut off during this early period.

---J.S. Bailey

* * * * *

National Fire Prevention Week October 3-9, 1954 - President Eisenhower has proclaimed October 3-9 as National Fire Prevention Week.

Secretary Benson says: "Farm fires continue to be a costly drain on the American farmers' income. During the past year, farm fires have caused a loss of about \$139,000,000 worth of property and the death of about 3,000 farm people. Most of these fires were preventable, but we continue in our personal attitude to be careless and negligent. Therefore, I urge every employee of the Department to stress farm fire prevention at every opportunity throughout the year. The Extension Service with the cooperation of the Office of Information will furnish educational and informational leadership for the Department's farm fire prevention work. The extent of our effectiveness will depend upon the integration of our activities with those of local people and national organizations who are striving to reduce farm fires. By constant vigilance and wholehearted support throughout the year we can greatly reduce the drastic toll of fires on American farms."

* * * * *

Describing Fruit Quality - Horticultural writers are frequently at a loss for words which will adequately describe a particular fruit and distinguish it from others which are similar. The following example along that line is in the "literary gem" class. In Hedrick's "Pears of New York" there appears this statement about the Le Conte variety - "The fruits are rather poorer in quality than those of Kieffer, if that be possible for an edible fruit." Having recently noted the Le Conte variety listed in a nursery catalogue this description takes on added meaning. Anyone who has tried to eat a Kieffer pear, uncooked, will appreciate the dubious quality of the Le Conte. In a few well-chosen words the author doles out faint praise, to put it mildly.

* * * * *

WHEN DOES UPGRADING FRUIT PAY?

A common belief is that upgrading fruit is a sure way to greater net profits. What are the conditions necessary to make this so? Can grades of fruit be improved without increased costs? Can previous production be maintained with upgrading? Will the improved fruit be sold at a higher price?

These questions indicate that many combinations of grades, production, cost and prices exist on particular farms. On farms where improved management is possible, apples may be upgraded with no decrease in production and with no increase in production cost. On other farms, production may be slightly reduced by more pruning, thinning and other practices to improve color and size of apples. For a group of these farms, costs may be increased by extra labor and materials to upgrade apples. On some farms total expenses to harvest will not change with upgrading even where a slight decrease in production takes place.

In a few instances, producers upgrading their apples may receive higher prices for all grades than formerly. They are good salesmen as well as good growers. Generally, all a producer can expect from upgrading in a competitive market to offset possible increases in cost and/or decreases in production are the existing price differentials between grades.

Income Effects of Upgrading Apples In A Particular Orchard

A one-man orchard with 1075 trees on 35 acres serves as an example. A review of past years' production and income records is a good starting point. Last year, 10,200 bushels of apples from this orchard were sold at wholesale. Apples graded 14% U. S. Extra Fancy, 50% U. S. Fancy, 27% U. S. No. 1, and 9% U. S. Utility. Net income was \$2488.

Detailed projections of upgrading possibilities can be made by applying known technology to this farm. The effect of a change in farm operation can be shown in a revised operating statement. Upgrading of fruit may or may not change production; it does change particular items of receipts and expenses. Net income becomes the common denominator of these varied conditions.

In the accompanying table, net farm income from nine different combinations of production, price and cost are calculated for this one-man orchard. Apples are improved by the same upgrading in all situations over the grades of the past year. Upgraded apples include 25% Extra Fancy, 60% U. S. Fancy, 10% U. S. No. 1 and 5% U. S. Utility.

In situation I, Production A, apples have been upgraded with no decrease in production and no increase in production costs to harvest. Picking and packing costs are increased by more careful handling and added expense for cartons. With prices held constant by grade at their original level, the \$3632 net income is \$1144 over the base net income of \$2488. This gain in income is possible by taking up slack in management. Apples are upgraded by managing the same farm setup better than before. Where this upgrading is obtained with better but fewer apples, Situation I with 10% less production, net income drops to \$2274 or \$214 less than the past year.

Changes in Net Farm Income For an Orchard with Apples Upgraded and with Production, Prices, and Costs Varied

| Grades | Past Year ^{1/} | Upgraded ^{2/} | | | |
|-----------------|-------------------------|-------------------------|-----------|-------------------------|-----------|
| | | I | II | III | IV |
| Situation | Past Year | | | | |
| Prices | Past Year ^{3/} | Past Year | Past Year | Increased ^{4/} | Increased |
| Production Cost | Past Year | Past Year ^{5/} | Increased | Past Year ^{5/} | Increased |

Production A (10200 bu)

| | | | | | |
|------------|----------|----------|----------|----------|----------|
| Receipts | \$24,360 | \$26,979 | \$26,979 | \$33,839 | \$33,839 |
| Expenses | 21,872 | 23,347 | 24,531 | 23,347 | 25,217 |
| Net Income | \$ 2,488 | \$ 3,632 | \$ 2,448 | \$10,492 | \$ 8,620 |

Production A-10% (9180 bu)

| | | | | | |
|------------|--|----------|----------|----------|----------|
| Receipts | | \$24,281 | \$24,281 | \$30,455 | \$30,455 |
| Costs | | 22,007 | 23,191 | 22,007 | 23,808 |
| Net Income | | \$ 2,274 | \$ 1,090 | \$ 8,448 | \$ 6,647 |

- 1/ Past year apples graded 14% U. S. Extra Fancy, 50% U. S. Fancy, 27% U. S. No. 1 and 9% U. S. Utility.
- 2/ Upgraded apples include 25% U. S. Extra Fancy, 60% U. S. Fancy, 10% U. S. No. 1, and 5% U. S. Utility.
- 3/ Past year market prices per bushel were Extra Fancy \$3.10, Fancy \$2.70, No. 1, \$1.75, and Utility \$1.50.
- 4/ Increased market prices per bushel are Extra Fancy \$4.05, Fancy \$3.30, No. 1, \$2.25 and Utility \$2.00.
- 5/ Production costs up to harvest are the same as in the past year but picking and packing costs are increased for more careful handling and more expense for cartons.

Situation II and IV include higher production costs to secure the upgrading. Expenses are increased for additional spray and dust materials and for extra labor for pruning and thinning. Under Situation II, where the original market prices prevail and with no change in production, the net income of \$2448 shows no gain from the upgrading. Under Situation III and IV, higher market prices for each grade are shown. Situation III, however, shows Situation I costs. Situations III and IV show the highest net farm income but individual fruit growers may find difficulty in securing higher prices for all their grades of apples. Hence, Situations I and II appear more realistic. If a grower could actually upgrade his fruit and increase his production without increased costs he would fare still better.

In figuring whether upgrading fruit will pay, a grower must consider for his farm the most likely combinations of production, grades, cost and prices. The array of combinations in the table serves as a guide. The same method will apply to larger farms.

— R. O. Aines and
B. D. Crossmon

* * * * *

CHICKWEED CONTROL IN STRAWBERRIES

The time is fast approaching when the strawberry grower must battle again his perennial and persistent enemy, chickweed. Until recently there was only one remedy, a hoe and "elbow grease", and this is a most time-consuming and costly one. The introduction of chemical weed killers has brought the possibility of doing a very effective job of chickweed control at a very reasonable cost.

Chloro IPC has proved to be very effective against chickweed when used at the rate of two pounds of actual Chloro IPC per acre when the chickweed is small. An application made the first week in October has been quite successful. At that time the chickweed is usually small enough to be readily killed and the strawberry plants are mature enough so that two pounds per acre won't injure them. If the weed spraying is delayed into November, more Chloro IPC will be required to do an equally good job. The strawberries, if dormant, will sometimes stand three or four pounds per acre but four pounds is getting to a point where injury may occur.

If the spraying was not done in early October, a combination of two pounds of Chloro IPC and one pound Dinitro weed killer per acre after the strawberry plants have become fully dormant appears to be more effective and safer than increasing the amount of Chloro IPC. Such an application would have to go on about mid-November or later.

Chloro IPC is usually formulated so that there are four pounds of the toxicant per gallon. Hence, two quarts would give the required two pounds for an acre. For small areas one ounce of the liquid per 680 square feet or one teaspoonful per 200 square feet equals two pounds per acre. The amount of water used is not important. Use only enough to spread the weed killer evenly over the area to be covered. Where a Dinitro is added to the Chloro IPC, the amount to use will depend on the number of pounds of actual DN per gallon. If the formula contains one pound of DN per gallon, two ounces will be required for 680 square feet to give one pound per acre. Likewise, one teaspoonful will be required for 100 square feet. If the Dinitro formulation contains three pounds per gallon, use one-third the above amount; if five pounds per gallon, use one-fifth.

— J. S. Bailey

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More Apples, Fewer Pears in Europe. The European apple crop is expected to total 265 million bushels, the largest production on record. In 1953 the crop was around 227 million bushels. The 1954 estimate for Europe is more than double the pre-War average of 126 million bushels. The 1954 pear crop, exclusive of cider pears, may total 78 million bushels. This is 11% less than in 1953 and the lowest production in the last three years.

SEEN AND HEARD IN THE FIELD

Some Ferbam Relationships - The effects of fungicides on yields and condition of McIntosh apples over a 5-year period (1949 to 1953) in a New York orchard are reported by D. H. Palmiter in the July issue of Farm Research. Comparisons are made between Ferbam and seven other materials, three of them combinations of Ferbam and another fungicide. The Ferbam treated plot ranked highest in total yield per acre, yield of No. 1 fruit, and percentage of fruit showing Fancy color. The total yield of the Ferbam plot was 528 bushels. The others ranged downward to as low as 384 bushels. Seventy-six percent of the Ferbam treated apples showed Fancy color. One of the others was as low as 55%. The amount of fruit scab and of spray injury was as low under the Ferbam program as in any of the others. The author of this article says, "Trees treated with Ferbam each year greatly outyielded those sprayed with sulfur when no nitrogen was used in either case. Ferbam-sprayed trees without the addition of nitrogen fertilizer more than equalled the yield of trees sprayed with sulfur and given nitrogen. Fruit from Ferbam-sprayed trees was larger, had better color and less scab infection than that from sulfur plots that received nitrogen."

Strawberries in 1956 - Strawberry prospects are improving. Virus-free plants offer possibilities of earlier development of runners and earlier rooting of the daughter plants. Better yields will result from these runner plants which take root in June than from plants which develop in late summer. But the rank vegetative growth now apparent in virus-free plantings set last spring points out a real need for spacing of runner plants. Otherwise, the "matted rows" of years past will seem sparse by comparison. Where a virus-free mother plant shows a dozen or more runners the competition between daughter plants can be imagined. This situation is well illustrated by a small planting in the writer's garden where the runner plants were not spaced. Looking forward to the plants to be set next spring, aside from setting virus-free plants, the advantage of incorporating manure with the soil in advance of planting should be pointed out. Poultry manure may be used liberally the preceding summer or fall. A fall cover crop fertilized with poultry manure sets the stage for good plant growth the following summer and a good crop of strawberries a year later.

Are We Too Complacent About the MAGNESIUM Problem? - In a season with frequent rains there is a tendency to forget not only how essential is this so-called minor element, MAGNESIUM, but how low is its content in most of our orchard soils. Before the hurricane the foliage in most orchards looked unusually well, thanks to milder spray materials than formerly and to an ample supply of mineral elements in available form. Soils originating largely from granite rock are low in MAGNESIUM to begin with. Use of sulfur in liberal quantities in years past has made the situation worse since sulfuric acid will combine with MAGNESIUM to form MAGNESIUM sulfate, a soluble compound, readily lost by leaching. Our best and cheapest means of replenishing the waning supply of MAGNESIUM is found in liberal, frequent applications of a high MAGNESIUM lime, wherever the soil has been allowed to become very acid. Our best orchards are in the acidity range, pH 5.5 to 6.5, and are maintained at that level.

Magnesium in Leaves and Fruit - Analyses have shown that the magnesium content of apple seeds is higher than that of apple leaves. In fact, where the soil is deficient in the element magnesium the seeds seem better able than the leaves to obtain what magnesium they need for their development. Thus the leaves on a tree bearing a heavy crop are more likely to show deficiency symptoms than are the leaves of a nearby non-bearing tree. If the root system is unable to take up enough magnesium to supply both leaves and fruit it is a safe bet that the leaves will feel the pinch. Hence the leaves of a heavily bearing tree are a good place to look for the characteristic symptoms of magnesium deficiency, a yellowing or browning of the leaf tissue between the veins while the midrib and veins tend to remain green.

Effects of Late Spring Cyanamid Application - For many years the need for applying Cyanamid very early in spring has been stressed, because the caustic effect of a late application is well understood. Before the tree can use the nitrogen contained in Cyanamid, several reactions must take place. In its original form (amide) it is literally a strong medicine which plants, during the growing season, cannot withstand. And only after the amide changes to urea, then to ammonia, then to a nitrite and finally to a nitrate is it ready for entrance into the roots. Weeks are required for these chemical changes to take place. Hence a March application is recommended. But an occasional grower is apparently unaware of the danger of a May or June application of Cyanamid. One case of severe burning of the leaves in a young apple planting was observed in July, and a similar case was observed in a peach orchard in the summer of 1953. The symptoms of Cyanamid injury are easily detected. Marginal browning of the leaf appears first, and in severe cases the entire leaf turns brown.

Apple Juice and Apple Cider - The term "Apple Juice" came into being to identify a superior product, made from sound apples and handled in such a way as to prevent deterioration, flash pasteurizing, for example. Some states, including Connecticut, are safeguarding this product by requiring the manufacturer to comply with certain regulations. The regulations for cider manufacture are somewhat less exacting although of a nature to insure a clean, palatable product. "Apple Cider", to the average individual, merely implies the expressed juice of apples, good, bad or indifferent, with as much variation as in the individuals making it. It may be sweet or otherwise. In Colonial times it was said to have been so popular that builders of stone walls frequently asked no other compensation beyond a well-filled cider jug. What we need today, and plans are well under way, is to set up simple standards covering the making of apple juice, or cider if you prefer, to which the majority of those engaged in this operation will voluntarily adapt themselves. Uniformly good cider means consumer acceptance, repeat customers, increased sales and a local market for that portion of the apple crop not quite good enough to be offered through fresh fruit channels.

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CIDER NOTES

Cider time arrived in a rush, namely "Hurricanes Carol and Edna"! Nevertheless, precautions have to be taken to insure a good quality cider. At roadside, remember that attractive displays bring customers, yet displaying the jugs of cider in the sun can bring headaches. Keep the majority of your product in a cool shady place. The sun heats up the product and it begins to "work". The longer it stays fresh and sweet in the consumers' home, the better your chances for a repeat sale. Don't forget that cleanliness in the press room aids in keeping quality. Make use of modern detergent-sanitizers to keep your press, press cloths and other equipment clean. It also saves on elbow grease.

If your sales are lagging, check the size container being used. A gallon jug takes up a lot of space in the refrigerator. Would half-gallon or even quart containers increase your sales? The last glass out of a large container may be the deciding factor on whether the customer returns. An easilyread sign showing container size and price is a boon to business.

Do you give special rates on quantity purchases? Many clubs, lodges and other organizations would increase their use of cider for refreshment if such a plan were available. It could also mean more individual customers, especially if your label is on the container.

Just thoughts, but they may mean increased sales!

--- Kirby Hayes

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The Hunting Season Is Here - Since there are firearms on most fruit farms a few hunting season reminders are in order. Hunting accidents kill or injure thousands of people every year. A little care in almost every case could have prevented the mishap. The news letter of the Florida Future Farmers of America urges these precautions: (1) Treat every gun with the respect due a loaded gun. (2) Never carry a gun into your auto, camp or home unless it is empty, taken down, or with the action open. (3) Always be sure the barrel and action are clear of obstructions. (4) Always carry your gun so you can control the direction of the muzzle, even if you stumble. (5) Be sure of your target before you pull the trigger. (6) Never point a gun at anything you do not want to shoot. (7) Never leave a gun unattended unless you unload it first. (8) Never climb a tree or a fence with a loaded gun. (9) Never shoot at a flat, hard surface, or the surface of water. (10) Do not mix gunpowder and alcohol.

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How Far Does A Meadow Mouse Travel? - The wanderings of meadow mice have been studied with a Geiger counter at the University of Wisconsin. Mice injected with radioactive phosphorus were found to wander within an area about 100 feet wide and 120 feet long during an 8-day period. This information emphasizes the importance of eliminating mice from grassy areas adjacent to the orchard as well as the orchard itself.

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Fruit Notes

Prepared by the Fruit Program Committee of the Extension Service
W. H. Thies, Extension Horticulturist

OCTOBER 30, 1954

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FRUIT NOTES

October 1954

PREPARING THE STRAWBERRY BED FOR WINTER

The time is rapidly approaching when the strawberry bed must be prepared for winter by applying a good mulch. When properly done, mulching serves several purposes. It prevents alternate freezing and thawing of the soil which usually results in heaving of the plants and injury to the roots. It reduces danger from spring frost by delaying the start of growth in the spring. It conserves soil moisture during the fruiting season. It helps to keep down weeds. It keeps the fruit clean and makes a cleaner, more pleasant place for pickers to work. This is quite a formidable list of advantages for mulching, but it isn't all.

In addition to the effects of cold already mentioned, there is another type of cold injury which sometimes occurs. The roots are injured sufficiently so that fungi, which could not invade uninjured tissue, attack the roots and the combined injury from cold and fungi can be quite severe.

This type of injury was discussed in a paper presented at the recent meeting of the American Society of Horticultural Science at Gainesville, Florida. The experimenter, Mr. John F. Brown of Cornell University, took fully dormant and hardened Howard 17 plants and subjected them to various below freezing temperatures. As the temperature to which the plants were subjected was lowered, the amount of injury to the roots increased and the subsequent growth of the plants decreased. Roots which had been injured by cold were invaded by fungi, became blackened and looked the same as roots which have what we ordinarily call black root rot.

In measuring the amount of injury to the plants the experimenter was not content to rely on looks alone. He measured the increase or decrease in fresh weight of the plants, the plants' respiration rate, and the uptake and movement of radioactive phosphorus. The use of radioactive phosphorus, a so-called tracer element, is one of the new experimental techniques which is especially valuable in determining the amount of root injury. Radioactive phosphorus can be easily traced throughout the plant. Root injury reduces its absorption.

It appears, then, that cold can injure strawberry roots in such a way that they are an easy prey to fungal attacks. This gives another good reason for applying a good coat of mulch and doing it before too severe freezing occurs. Considering the multitude of troubles which are presently besetting strawberries, it would seem unwise to risk adding more by neglecting to mulch.

---J.S.Bailey

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Strawberries As A Source of Vitamin C - Vitamin C is frequently lacking in the New England diet, even among those who spend lavishly to supply the family table. According to a Maine Expert, we need 75 milligrams of Vitamin C each day and since we cannot store it in our bodies a food rich in Vitamin C should be served every day. Maine-grown fresh strawberries were tested for Vitamin C during several seasons and the content was found to vary somewhat depending on the weather. The lowest value found was 35 mg. and the highest 96 mg. per 100 gms. (about 3-1/2 oz.) of berries. For the same weight, oranges supply 35-60; grapefruit, 35-40; raw cabbage, 35-50; tomatoes, 15-30; and apples 5-15. High Vitamin C was found in the Sparkle, Catskill and Robinson varieties, Medium in Howard 17 and Temple, and Low in Pathfinder. Long cooking involved

in making jams and preserves destroys much of the Vitamin C, but food freezers make it possible to conserve the Vitamin C for winter use. Even after long storage frozen strawberries are a valuable source of Vitamin C.

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WINTER HARDINESS OF APPLE TREES IN REJATION TO FALL APPLICATIONS OF NITROGEN

For the past several years we have not advocated fall applications of nitrogen to apple orchards because of the possibility of fall fertilized trees becoming less resistant to cold winter temperatures. Previous experience in Massachusetts and other New England states has indicated that fall fertilized trees can in some years experience severe winter injury in the form of bark splitting and separation of the bark from the trunk of the tree.

A recent report from the New York Agricultural Experiment Station tells how fall fertilized Cortland trees had their resistance to winter injury seriously reduced. Mature Cortland trees which received 3 and 7 pounds of ammonium nitrate in October and November showed significantly more cold injury than the unfertilized check trees.

In view of these latest findings on the effect of fall applications of nitrogen, it seems desirable to again call attention to the risk which the practice of fall fertilization involves.

---W.D.Weeks

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Increase In Use of Commercial Fertilizers - For the first time in history the total amount invested by American farmers in commercial fertilizers exceeded, in 1952, one billion dollars. The 1953 total was a few millions higher. Figures covering a 40-year period, 1911-1951, show annual expenditures for fertilizers ranging between 4 and 6% of the previous year's income. But since 1951 the annual expenditure has each year amounted to more than 7% of the previous year's income. For the past two years it has been 7.8%. Heavy production costs can best be offset by large per acre yields. This is as true for apples as alfalfa. An adequate fertilizer program goes hand in hand with good yields.

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"Plant Foods" In The Soil - What we often call "plant foods" are certain mineral elements in the soil, such as nitrogen, phosphorus and potassium. They are not present in the form of elements, but are in a combined form, such as salts. Plants use small amounts of these mineral elements as raw materials to build their own foods; but the bulk of the raw materials are hydrogen and oxygen from water, and carbon from carbon dioxide in the air.

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How High Is A High Water Table? - Most growers are unaware of the waterlogged condition of the soil in parts of the orchard. They are conscious of getting mired with

the sprayer at times, slow disappearance of puddles after a rain, or of yellow leaves on trees in low areas in midsummer. But the extent to which a large proportion of the root system is completely submerged remains hidden from view. If this situation were apparent and if we could visualize the failure of roots to function as soon as the oxygen content of the soil air falls below a critical level, we would be more concerned about lowering the water level. We would also refrain from planting trees in poorly drained areas, in the first place. Here is a simple device for measuring the water level in different parts of the orchard during the growing season. Set in a vertical position a piece of pipe at least 2 inches in diameter and at least 3 feet long, the lower end resting on small stones or gravel and the upper end flush with the surface. A similar set-up in a dryer or wetter part of the orchard will serve for comparison. Then, as the water seeks its level in the pipe, weekly measurements with a yardstick will give an indication of the aeration, or lack of it, in the soil beneath the trees. If the water level stands less than 3 feet from the surface during May and particularly if the level is as high as 2 feet at times, receding slowly after a wet spell, it is a sure indication that trees in that area are under a tremendous handicap, and are more than likely to be unprofitable.

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ORCHARD MICE AND THE HURRICANE

Wishful thinking would have us believe that the orchard mouse population suffered as much in the recent hurricanes as did the fruit crop and the trees. However, the reverse is probably true. The few mice that may have been destroyed will be offset by the improved living conditions now available. It seems that the necessity for orchard mouse control in hurricane-damaged orchards is intensified.

Many fruitgrowers will be straightening up and bracing tipped trees. An effort should be made to settle the newly-replaced earth tightly around the root system. If there are open spaces beneath some of the larger roots, these will be a beginning for a new mouse trail system. Being close to the roots, mice will surely damage them. Extended root damage is more serious than trunk girdling because it cannot be corrected by grafting and is not readily detected. Not knowing that the roots are injured, the fruitgrower continues to invest labor and materials on the tree but the return may not be enough to cover the cost.

Most fruitgrowers have expressed intentions of picking up all windfall apples, if they have not already done so. Those who don't expect to remove all drops are reminded of our recommendation to use Zinc Phosphide-treated Steam Crushed Oats along with the apple bait. Zinc Phosphide-treated Steam Crushed Oats should be ordered immediately through your local county agricultural agent.

Mulching has been suggested for promoting new root growth of hurricane-damaged trees. Mulching invites mice and concentrates them around the tree. At the same time, however, their runs are more easily located. In other words, mulching without mouse control can be disastrous; mulching with mouse control is good practice. Mulch should not be placed within a foot and a half of the trunk at any time of the year.

A new leaflet giving details of construction of the mouse trail builder machine for orchard mouse control has been prepared. Copies may be obtained upon request to the Fish & Wildlife Offices in Amherst.

---W. R. Jones, Mammal Control Supervisor

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Under-Cover Workers In The Orchard - A few days ago the writer was asked to look at some pear trees with foliage of unusual color. Instead of a normal green color, the leaves were a brilliant red, having taken on a gorgeous autumn hue. A heavy growth of grass surrounded the trunks and there was evidence of a heavy population of mice. On digging away the grass the abnormal looking pear trees were found to be girdled. The injury dated back to last spring. However, the trees being at least 20 years old had sufficient sapwood to pull through the season, and even bore a fairly good crop. The moral of this story is obvious. So long as grass or other vegetation is allowed to grow around the trunk of the tree, and mice are able to work in obscurity, girdling may remain unobserved for months, or years. This is particularly true where only one side of the tree is girdled. It takes time to clear away the growth around a tree and replace it with sand or gravel. And the job must be repeated every few years. It also takes time to grow a new tree. This is the time of year to insure against mouse injury by digging away the grass and replacing it with sand or gravel, baiting wherever the cover is heavy, including areas immediately adjacent to the orchard, and adjusting the wire guards around young trees, where needed. Careful attention now may avoid an unpleasant surprise next spring.

Farm Fire Safety Slogan, "Let's Grow Up - Not Burn Up" - Each day on the average 33 people in the U. S. and Canada are killed by fire. One-third of them are on farms. Take time to make your farm and family safe from the menace of fire. Check your farm now for fire hazards, such as faulty wiring, faulty machinery, and household appliances and over-loaded electrical circuits. This year's fire prevention slogan is "Let's Grow Up - Not Burn Up. "

IMPORTANT ENCLOSURE

We are glad to cooperate with our Government by enclosing with this issue a Treasury Department folder which we believe you will find well worth reading. It suggests a practical plan whereby you as a poultryman, dairyman, fruit and vegetable grower, etc. can help solve your ever-present problem of maintaining your mechanical equipment by the regular purchase of U. S. Saving Bonds.

W.H. Thies

SOME LATE FALL TASKS ON A FRUIT FARM

One of the big differences between a successful fruit grower and one who "gets by" if no real emergencies appear, is the ability to anticipate and plan ahead. Whether working with apples or strawberries, we are always planning for the year ahead. And

with a venture so long-lived as an apple orchard, what we do this month will influence the crop 10 or 20 years hence. "Ten years after the cover crop fails, the trees will fail", says one authority. In much less time we reap the results of neglect in mouse control, failure to prune properly, lack of lime, mulch materials, or facilities for cross pollination. The forward looking grower has his goal of 500 bushels of good apples, or 10,000 quarts of strawberries per acre, and then sets out to reach that objective. He insures his results, so far as possible, not by a last minute use of fertilizers or trial of new pesticide, but by preparation of the soil far in advance and by anticipating a year ahead the needs of his fruit planting. Recurring emergencies can be avoided by advance planning. Most of the serious troubles in a fruit planting are preventable. Few are completely curable when once they occur.

In an orchard there is an element of timeliness about most of the things we do. The best time to pick a given variety is this week, not week after next. Insects and diseases are about the best examples of the need for being time-conscious. Apple scab is prevented by being on the alert at just the right times. A delay of a few hours may mean the difference between success and failure. Mouse activities involve less accurate timing, but delay of a few weeks in the baiting program may be disastrous. In contrast, there are a few practices which lend themselves very well to rainy days or to the slack times which follow a busy season. Repairing boxes, ladders, etc., are good examples of rainy day jobs. Mulching, liming, drainage, tree removal and road improvement are examples of jobs for the slack season.

With the harvest completed, what next? In the hurricane area, tree salvage and mouse control should have priority. By mid-November every tree worth salvaging should have received careful attention. The stage is set for very heavy mouse damage during the coming winter. A heavy mouse population, a rank growth of grass and made-to-order conditions for mice around tilted trunks and exposed roots make it imperative that every precaution against tree girdling be taken. Still fresh in mind is the grower who, about 15 years ago, found in early spring that nearly 600 of his bearing apples had been girdled by mice.

Fall is an ideal time to apply high magnesium lime, but not nitrogenous fertilizers. The liming program we recommend is, first, a sufficient number of soil tests in different blocks to reveal the actual acidity. Where acid-tolerant plants predominate and there is reason to believe that the pH is below 5, a soil test is not so important, and 2 or 3 tons of lime per acre should be applied as soon as possible. Since few farms get enough lime in any one year to give each field as much as it needs to bring the soil up to a proper level, it seems advisable to make a liberal application in one or two blocks this year and follow the same procedure in other blocks next year, instead of using a ton or less per acre where 2 or 3 tons are needed. Our best orchards show an acidity above pH 5.5. Some are around pH 6.5. As with liming, there is no "closed season" on mulching. If hay, soaked by rains and not suitable for feeding, is available within easy hauling distance, fall is a good time to bring it into the orchard.

This is also a good season to lay plans for relieving the crowded condition in those blocks found difficult to spray. A simple map is a good place to begin. A map on cross section paper showing varieties, blank spaces, etc., for a 5-acre block can be prepared in two hours, or less. This will provide a basis for deciding which set of alternate diagonal rows should be removed or, in the case of moderate crowding, cut back. Where trees are to be removed, a start may be made as soon as more pressing tasks are completed. The same is true of drainage facilities in those low areas where the sprayer became mired last May and the leaves turned yellow in mid-summer. Removal of grass around the base of the trees and replacement with sand or gravel to exclude mice from the area immediately surrounding the trunk, is another important fall task.

Fall should also be clean-up time, not only for the fruit but for all boxes,

ladders and other pieces of equipment. It is disturbing to see so many pieces of farm equipment with no protection during the winter. If it's worth the money invested in it, it's worth taking care of. And any ladder which the owner would hesitate to climb because of weak or broken rungs, or general decrepitude, should be repaired and stored under cover or reduced to firewood.

Lastly, let's not forget to put the strawberry planting to bed for the winter. The yield of berries next June may be closely correlated with winter protection. Leaving the bed unmulched is a gamble. Some of our very cold weather may come when the ground is unprotected by snow. The crown of a strawberry plant suffers if exposed to a temperature in the lower Twenties, and freezing of the soil is likely to lift the plant enough to break the roots. Straw or other suitable mulch material is a good investment for the strawberry grower.

---W.H.Thies

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The Poorly Drained Orchard Is Unprofitable - Competition in modern fruit growing is too keen, and will continue to be so, to make it profitable to produce fruit upon unfavorable sites. An apple orchard will not be a success on land which is so wet that water tolerant plants including certain sedges, sensitive fern, alders or willows tend to grow naturally. Even if there is good surface drainage of water, the results will be unsatisfactory. The air above a wet soil is more humid than above a well drained soil. This often means the difference between difficult control of diseases and comparatively easy control. Eliminate the seriously handicapped orchard.

* * * * *

BALDWIN SPOT OR "PINK EYE"?

Baldwin Spot, stippen or bitter pit is of common occurrence in Massachusetts and is not entirely confined to Baldwin. It is a physiological trouble which shows on the surface of the fruit as a more or less circular or elliptical sunken area under which the tissue is brown, corky and spongy.

There are a half dozen or more theories as to what causes this condition and some have little supporting evidence. But let's face it - we do not know what really causes it and don't know what to do about it.

Baldwin spot is easily confused with several other fruit spots caused by fungus agents. This fall several Northern Spy apples were brought in with spots that appeared similar to Baldwin spot but yet, in some ways, the spots were not quite typical of Baldwin spot. Instead, they had the appearance of spots caused by Botryosphaeria. On the surface of the fruit around the sunken skin there was a rosy pink halo. Underneath the skin some had no brown, dry, spongy, dead tissue, but others did. Is this Baldwin spot or is it Botryosphaeria fruit spot? We are confused!

---C.J.Gilgut

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A Successful Brush Rake - A New York apple grower reported last spring on a very successful home-made brush rake. He said, "Three of us got the brush out of a 26-acre block in a day and a quarter in this manner, and I could stand up straight when the job was finished!" No two home-made brush rakes or brush pushers are quite alike. Some of them are crude looking affairs, to say the least. But the interesting thing is that they can frequently be made inexpensively from materials on the farm, and best of all, they do the job. In this hurry-up age, hand picking of brush is a time consuming and an expensive operation. A day spent in making a simple rake or pusher will greatly reduce the time and expense involved. These devices have almost entirely replaced the brush burner so common a generation ago. Any grower interested in building one of these contraptions may get good ideas from a neighbor who has done some experimenting. A simple plan of one type of pusher is available through the Extension Service.

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BETTER MERCHANDISING PRACTICES INCREASE APPLE SALES

The Washington State Apple Commission is using data from their retail movement studies in Chicago and Los Angeles to learn better ways of merchandising apples. Two of the practices that have been analyzed are the shifting of apple displays about the produce department and the frequency with which the retailers rotate the apples in the display. Stores using the better practices had apple sales as much as 62% greater than others.

Shifting Location of Display: Many retailers advocate the practice of frequently changing the location of their display within the produce department. This is done so that the housewife will find it necessary to look around the produce department to find the things she wants. In doing so she will see other produce items that will be purchased on impulse. This, the retailer says, tends to increase her purchases of produce. It was found that in stores where the apple displays were shifted frequently apple sales were approximately one-fifth greater in Chicago and one-fourth greater in Los Angeles, as is shown on the Table below.

Pounds Sold per 100 Customers

| <u>Displays Shifted</u> | <u>Chicago</u> | <u>Los Angeles</u> |
|--------------------------|----------------|--------------------|
| Frequently | 42.8 | 63.3 |
| Occasionally | 38.7 | 60.8 |
| Never | 35.5 | 50.6 |
| Maximum Percent Increase | 20.6% | 25.1% |

Frequent Shifting of Apple Displays Means Greater Sales: These results are based upon weekly observations throughout all of the 1953-54 apple marketing season. The studies were made in 28 Chicago stores and in 30 Los Angeles stores, a cross-section of each market.

Rotation of Apples In Display: Analysis of apple displays in the 58 stores in the two markets was made to measure the value of the practice of rotating the fruit in the display. (Rotation is the practice of adding fresh apples to the bottom or side of the display so that the older stock will be purchased first.) This tends to prevent apples from staying in the display over a period of time and deteriorating because they've been out of storage too long. It also induces the produce clerk to sort over the fruit that has been on the display before adding fresh apples.

The 58 cooperating stores were divided into groups - those that rotated their fruit daily, those that rotated two to four times a week and those that rotated once a week or less. This grouping was based on observations all through the season as weekly visits were made to the stores and on a special study at the end of the season. Note that apples are rotated more frequently in displays of high movement stores.

Pounds Sold per 100 Customers

| <u>Rotation of Apples</u> | <u>Chicago</u> | <u>Los Angeles</u> |
|---------------------------|----------------|--------------------|
| Daily | 47.4 | 60.4 |
| 2-4 Times/Week | 41.0 | 54.8 |
| Once/Week or Less | 29.3 | 47.6 |
| Maximum % Increase | 61.8% | 27.1% |

It was found that the Chicago retailers who had the good practice of daily rotation of their apple displays sold 62% more apples than those that rotated once a week or less. In Los Angeles the stores with the practice of daily rotation sold 27% more apples. It can easily be seen that a good retail practice such as this not only increases apple sales and profits for the retailer but means better apple business for the grower as well.

(This information from the September issue of APPLE RESEARCH DIGEST is submitted by, F. E. Cole)

Note On Advertising - Does it pay to advertise? If not 224 firms in the U.S. which spend more than a million dollars each annually on advertising, wasted in 1953, a total of \$892,000,000. Of this total, about 20% was spent by food processors, and if we include tobacco, cotton, etc., among the agricultural products, some product of the farm was involved in at least 40% of the advertising of these 224 firms. An automobile concern was the largest purchaser of advertising space and time, spending about \$41,000,000. A food concern, advertising the products of agriculture, was third with \$28,000,000.

In a recent Michigan study, an attempt was made to prove that it pays to advertise milk, sales of milk having increased 10% after a period of advertising. However, the price of milk was lower during the advertising period, and in a nearby city where there was no special advertising program, sales actually increased 15%. The writer of this report points out the difficulty in proving the direct effect of advertising on demand, and presents these basic suggestions: The product must be advertised truthfully, consistently and to the right people. It must be of consistent quality. It must be priced competitively, and it must be readily available. Here in Massachusetts, the advertising campaign on hurricane apples was undoubtedly highly successful. Far more apples were consumed during September as a result.



Fruit Notes

Prepared by the Fruit Program Committee of the Extension Service
W. H. Thies, Extension Horticulturist

NOVEMBER 30, 1954

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FRUIT NOTES

November 1954

SOME MARKET OBSERVATIONS

The big talk around the Boston market this year is the subject of New York State apples, which have come in to fill the supposed vacuum resulting from New England's hurricanes. "It's all right -- this is a free country", is the comment of one sidewalk apple specialist, "But we could stand it if those boys wouldn't get quite so enthusiastic and rush everything over here." Just to give an idea of what New York has been doing this year, the receipts from that state for the month of October, for example, have totaled 38,350 bushels, compared with 1,950 bushels last year. It's the old story about the "ill wind." While there is some criticism of this heavy influx of New York State fruit, most of the trade realize that it's only human nature and good business. We would do the same if the situation were reversed, as we have in past years.

In recent times we have been taking advantage of comparatively light crops in the Appalachian area to push our apples in markets that normally might be over-run with southern shipments. My mind goes back to a rather historic shortage in the Middle West in 1930, when we made a big play for markets in the Central Western States. I remember it well because the Massachusetts Fruit Growers' Association sent me on a tour of those western markets that winter, to check on our apples as they arrived, and to get first hand information on possibilities of getting into that area with our fruit.

In the meantime work goes on taking care of hurricane damage and other orchard jobs. I couldn't help but think recently, when I stopped in to see Charlie Dowse out at Sherborn that non-farm people could get an eye opener as to some of the winter work that is necessary in apple orchards. When I asked for Charlie, I was told he was out mousing. "Right now", said Mrs. D., "He goes mousing in the morning and straightens trees in the afternoon". Some of the folks who drop into our office with visions of planting an apple orchard and sitting on the back porch, just watching it grow, should hear Charlie Dowse's side of it.

Quinces and Russet apples are a couple of old-time favorites that you don't see every day. I spotted them alongside each other not long ago at Jock Davis's roadside stand. The quinces were unusually nice and the young lady said they had quite a demand for them. She told me that they were the personal project of the senior Mr. Davis -- so a grand old timer is growing a grand old New England fruit. The Russets were nice -- real Roxburys, I should say, and I'll bet some old New Englanders pop their eyes when they see them.

Bill Thies told me to pick my own subject for this month's contribution to FRUIT NOTES. If you read this far you can see that I have taken him at his word and rambled from one subject to the other. So let's add one other bit of variety to this page by passing on a little ditty which may or may not have come down to us from Confucius. It is something that all apple men might take to heart in considering promotion of sales of their fruit:

Man who whispers down a well
About the goods he like to sell,
No gather in the golden dollars
Like he who climbs up tree and hollers.

---Walter E. Piper

* * * * *

RESULTS OF A STOP-DROP TEST ON BALDWIN

This fall many orchards carried a good crop of Baldwin apples to maturity even in spite of the hurricanes. When trying to suggest the best hormone for drop control on Baldwin, we found no source of reliable information on how well 2,4,5-TA, for example, would control drop. We thought it might work well but in the absence of evidence we suggested that growers use 2,4,5-TP on Baldwin and then with excellent cooperation from a large grower obtained some comparative experimental results on Baldwin using NAA, 2,4,5-TP and 2,4,5-TA. The materials were applied September 21. Two frosts which injured the foliage badly occurred between October 5 and 14. Hurricane Hazel went by on October 16. The results are shown in tabular form below.

| Treatment applied | Date | No. trees | Cumulative % drop of Baldwin | | | | | Oct. 22 | Oct. 25 |
|-------------------|------|-----------|------------------------------|--------|--------|---------|---------|---------|---------|
| | | | Sept. 29 | Oct. 5 | Oct. 8 | Oct. 14 | Oct. 18 | | |
| Check | | 7 | 0.4 | 2.8 | 4.3 | 10.8 | 39.6 | | |
| NAA | 9/21 | 7 | 0.2 | 2.6 | 4.1 | 13.2 | 36.1 | | |
| 2,4,5-TA | 9/21 | 7 | 0.2 | 2.5 | 4.2 | 10.1 | 24.1 | | |
| 2,4,5-TP | 9/21 | 7 | 0.3 | 0.7 | 0.9 | 1.9 | 5.1 | 9.3 | 22.0 |

All treatments were applied at a concentration of 20 ppm.

On October 18 the checks had dropped 39.6% of their crop exclusive of what fell during the picking operation, whereas, trees sprayed with 2,4,5-TP dropped only 5.1%. 2,4,5-TA helped some but it was definitely poorer than 2,4,5-TP on Baldwin. Trees sprayed with 2,4,5-TP were left unpicked until October 22 and even at this date dropped less fruit than the checks had up to October 18. However, 2,4,5-TP was losing its effectiveness by October 22 about 30 days after application. In order to control drop until November 1 with 2,4,5-TP the date of application would apparently have to be delayed until about the first of October.

2,4,5-TP hastened fruit ripening very little, if any, in this test. It seems that 2,4,5-TP is the best stop-drop material for Baldwin available to growers in this section.

---F.W.Southwick

ANNUAL FRUIT MEETINGS PROGRAM

The 1955 Annual Meeting of the Massachusetts Fruit Growers' Association will be held January 4, 5 and 6 in the Municipal Auditorium, Worcester.

High points of the program are as follows:

- Tuesday forenoon - Disease Control program with Dr. Avery Rich, University of New Hampshire as outside speaker.
- Tuesday afternoon - Orchard Business and Marketing Program with Mr. William Mill, Thomas Smith Company, Worcester as a headliner.
- Tuesday evening - Annual Fruit Growers' Supper. Mr. Fred Burrows, Secretary of International Apple Association, will speak on "Looking Ahead in Orchardng."
- Wednesday forenoon - Insect Control Program with Dr. Siegfried Lienk, New York Agricultural Experiment Station talking on New Systemics in Mite and Aphid Control, and Dr. Frank Horsfall, Virginia Agricultural Experiment Station discussing the Pine Mouse Problem.

Wednesday afternoon - Production Program. Such important topics as Controlled Atmosphere Storage, Use of Hormones, Improving Color and Yield in McIntosh, Lowering the Tops of Tall Trees, and Social Security will be discussed by local personnel.

Thursday forenoon - Small Fruit Program, on grapes, blueberries and the "All-Purpose" Home Fruit Spray Schedule.

Thursday afternoon - Small Fruit Program, with Dr. D. H. Scott, U.S.D.A. discussing some current problems in strawberry production.

---A.P.French

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VARIETY NOTES

Which Red Raspberry Varieties for Freezing? - A recent report from the New York Agricultural Experiment Station at Geneva indicates the following results from variety tests there: "Willamette produced the best frozen berries because of the excellent texture of the thawed product, coupled with good flavor." Milton, Taylor, Newburgh and Cuthbert produced good frozen products. The new yellow variety Amber also produced a good frozen berry. (In Massachusetts, Newburgh and Cuthbert are not high yielding varieties, while Taylor is very susceptible to virus disease in many areas.) Marcy, Viking, September, Latham, Indian Summer and Chief were found to be only fair quality for freezing.

They also found red raspberries to be a fairly good source of ascorbic acid (Vitamin C). Varieties rated as good in eating quality were found generally to be higher in Vitamin C, sugars, and acids than varieties of lower eating quality.

Freezing Adaptability of Peach Varieties in New York - Out of 59 yellow fleshed peach varieties recently tested in New York State J. H. Hale, Midway, Ideal, Eclipse and Viceroy were all found to have better freezing quality than Elberta although the latter variety gave a fairly good frozen product. Champion and Polly (considered to be identical as grown and fruited under Massachusetts conditions) were outstanding freezers among the 22 white fleshed varieties tested.

---A.P.French

* * * * *

New Idea in Marketing Black Raspberries - A recent trip through Idaho found an interesting twist in a planting of black raspberries. No marketing problems here. The fruit remains on the plant until thoroughly dry. The canes are harvested, the fruit collected, stored, and later sold to flavoring concerns for use in ice cream and fruit drinks. The owner, a gentleman in his nineties, has been at this for years and apparently is one of the few growers handling the crop in this way.

---A.S.Fish

* * * * *

TECHNICAL ASSISTANCE AVAILABLE TO ORCHARDISTS FROM THE SOIL CONSERVATION SERVICE

Orchardists of Massachusetts are increasingly making use of the technical service available from the Soil Conservation Service. The SCS is the technical agency for soil and water conservation of the U. S. Department of Agriculture. It assists farmers in problems of conservation, land use, and land improvement by working through soil conservation districts.

Soil conservation districts are established under the state districts enabling act and are governed by locally elected representatives known as soil conservation district supervisors. For practical purposes Massachusetts may be said to be completely covered by soil conservation districts, since there is at least one district in each county except Suffolk. Because of its unusually large area, Worcester County was divided into three districts.

Technical assistance is available through districts for more than thirty practices. However, our experience shows that orchardists are particularly interested in about a half dozen practices or services. These are:

1. Land Use Map, commonly known as a land use capability map. This map shows the land classification with respect to soil type, slope, drainage, and erosion. It is particularly valuable in connection with selection of orchard sites.
2. Plan or Layout of New Orchards for soil and water conservation. Includes contour planting and terracing.
3. Diversion Terraces for diverting excess water away from orchards.
4. Land Drainage for both new plantings and old orchards. Includes open ditches and covered drains.
5. Ponds to supply water for spraying, irrigation, fire prevention, fish culture, and recreation. Includes site selection and technical assistance in construction.

Orchardists desiring such technical assistance should apply to district supervisors, soil conservation technicians, or county agents.

---A.B.Beaumont
Soil Conservation Service

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CIDER NOTES

MFGA Inspection Program - The program is now functioning and the mills that applied have been inspected and have received certification. The program has received favorable widespread notice throughout the country. In addition, two members of the Eastern Regional Laboratory of the USDA paid a visit recently to my office to learn more of the program. Remember, it is a voluntary program designed to promote and increase cider consumption.

Nylon Press Cloths - This year the Department of Food Technology purchased nylon cloths for its 22" press. The comments have been favorable: "can use higher pressure", "easier to shake off pomace", "clearer cider", "speeds up overall operation".

Nylon cloths are more expensive than cotton, but should be carefully considered when you are in need of new cloths for your press.

---K.M.Hayes

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*
*COUNTY AGENTS' CORNER

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* While the full implications of the MFGA's Cider Certification Program have yet to reach the more remote corners of the County it seems reasonable to expect that certain up-country apple pressers, who shall go nameless here, will be jolted by the program no less than by their own product.

*
* This is not to fault the program. In fact we have been at this sort of thing for some time, although on a less formal, or laissez-faire basis. For example, a few years ago an impromptu little contest in the interest of cider consumption was held in the Burnt Hill country.

*
* Cooperating in the promotion were a pair of itinerant choppers. The contestants sipped cider of uncertain vintage, but believed to be old enough to remember Pearl Harbor, and tried to guess whose horse blanket it had been strained through. This pioneer effort is believed to be the forerunner of the present program, although accounts of it appear only in the records of the district court.

*
* Proceeding in the belief that undue emphasis on contests detracts from the educational values of a demonstration, uniformed agents of the Commonwealth furnished transportation for the finalists to the county seat and lodged them family style. Follow-up consisted of a result demonstration the next A.M. when the local magistrate questioned seriously the benefits accruing from such promotion.

*
* In summarizing he considerably outlined to the participants the speediest and most direct route to the state line. When last heard from the choppers were said to be actively engaged in certifying hill town cider among the remaining unenlightened to the north. In other words, considerable missionary work of a sort has already been done.

*
* It remains to be seen however whether the new program will be able to convert our zealous cooperators to a blander cider and get them on the right road. In this connection we forwarded to the pair an inspiring little tract entitled, "Where Do We Go From Here?", the same being an original address delivered by a reserve infielder of the Philadelphia Athletics and widely-used in Extension circles.

*
* Evidently it took, for the first mill visited by our choppers report that they refused to quaff until all equipment was thoroughly cleaned at the end of the day's run using a detergent-sanitizing agent.

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* * * * *

 * The result? Two satisfied customers. They went down
 * the road, each with a jug of detergent-sanitizing agent.
 * The mill owner would like his containers back, but there is
 * no return on the choppers.
 *

---D.T.Thayer
 Franklin County

SEEN AND HEARD IN THE FIELD

Prolific Strawberry Plant - About the first of October some unusual strawberry plants of an unnamed variety were observed on the farm of Joseph Tieling in North Middleboro. The amazing thing was the number of runner plants developing one after another, in direct line, from a particular mother plant. The 9th runner plant, in one chain of daughter plants, was just taking root at the time of our visit. Evidently, the first daughter plant in that series had taken root very early, probably in late May, and successive progeny had developed and rooted beyond that point at the rate of about two each month. This may be some sort of a record. It goes without saying that these are virus-free plants.

Striking Results with Trail Builder - Do meadow mice enter and travel along a newly made trail? The answer seems to be, "Yes, if the trail intercepts the runways already in use". Hence the need for running the Trail Builder beneath the spread of the branches instead of confining its use to the hard packed area midway between the trees. In an Essex County orchard with heavy grass cover a recent test of the Trail Builder showed how promptly mice find their way into a newly made trail. As soon as a 200-foot section of trail was completed, without baiting, 12 snap traps with small pieces of apple attached were placed at intervals in the trail. Examination of the traps in about half an hour revealed mice in two of them.

Mice Find Home Beneath Hurricane Damaged Trees - That the hurricanes created ideal winter quarters for mice around the roots of apple trees is well illustrated in what happened at a recent demonstration. In the process of restoring to a vertical position a tree with badly damaged roots, a liberal amount of water was forced in around the base of the tree from a power sprayer. Three mice scurried out in less time than it takes to say, "Microtus". They had moved into the new apartment where tunnels were made to order and a food supply ^{was} abundant and close at hand. We commonly think of Pine Mice as being solely responsible for root injury since they prefer to work underground. But a disrupted root system permits Meadow Mice to feed at unexpectedly low levels unless the open spaces are promptly filled and the tree securely anchored.

Chemical Thinning of Baldwins - In the orchard of Ralph Roberts of Granville an extensive test of chemical thinning was carried out last season. Noting a very heavy set, with several apples on practically every spur, all of the Baldwin trees but one were given an application of naphthalene acetic acid shortly after the Calyx period. At harvest time the 41 bushels on the untreated tree were so small that they were shaken off and made into cider. There were few apples as large as 2-1/2". On the treated trees the story is quite different. Of the first 500 bushels graded out, only 6 bushels were below 2-1/4" and there was a good proportion of apples in the 2-3/4" to 3" class. Color was also better on the treated trees for obvious reasons, a better leaf-fruit ratio and less shading from the mass of extra apples. When chemical thinning develops to the point where we have not only a decided increase in average size of fruits in the "on year" but also some semblance of annual bearing in biennial varieties, one of the biggest problems of the apple grower will be solved.

Some Storage Observations - The pressure tester has been used in quite a few storages during the past month. Differences in degree of ripeness of McIntosh are very apparent, reflecting the time required to cool the storage to a suitable temperature, and temperatures maintained since that time. Pressure readings ranged, in general, from around 14 down to 10 or lower. Even in a good cold storage the reading on the pressure tester drops by about one unit in three weeks. When it reaches 10 McIntosh should be on their way to market, or as one grower puts it, "Someone else should own them". When the pressure reading is down to 9, the apples are becoming mealy and lacking in sales appeal. They deteriorate quickly when displayed in a retail store and are exposed to a temperature of 70° or higher. Any grower who plans to gamble with the late winter market will do well to keep a close check on the firmness of his fruit and govern himself accordingly. It will be most unfortunate if an appreciable quantity of the fine apples now in storage are allowed to ripen to the point where they lack consumer appeal.

Wide differences are also noted in the relative humidity in storages. The situation varies from an inch of water on the floor to a dry as dust set-up with slight wrinkling of the skin of the apples already apparent. Every storage operator should have the equipment needed for measuring relative humidity instead of guessing at it. A wet and dry bulb thermometer (sling psychrometer) is inexpensive and easy to operate. By noting the difference in readings on the two thermometers and consulting a simple table the relative humidity is easily determined and the operator knows whether the storage air is 70, 80 or 90% saturated. The first figure would mean very poor storage conditions; 90-95% is OK. Access to a pressure tester (a few county agents now have them) and ownership of a device for measuring relative humidity go hand in hand with good storage management.

---H.H.Thies

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THE NY-NE FRUIT SPRAY

A safe but effective "General-Purpose" spray formulation for all fruits is now a reality. It is called the NY-NE Fruit Spray because it has resulted from a cooperative project established by the New York-New England Fruit Spray Conference. The formula includes two of the safer insecticides, methoxychlor and malathion, and the fungicide, captan.

There is every reason to believe that prepared mixtures like the NY-NE Fruit Spray will become readily available in 1955. They should be of particular interest to growers with relatively small orchards, part-time enterprises, and to the home orchardist.

The idea of having a "general-purpose" mixture useful against a wide variety of pests on a wide range of fruits is not new. Many such mixtures have become available during the past several years. However, many of them failed in their objective in one way or another.

Mixtures containing lead arsenate can not be used on peaches without danger of causing serious injury to trees. Those containing sulfur may cause serious injury to grape foliage and to raspberries, especially in hot weather. Some contain lindane, which invites the possibility of off-flavors. Still others contain chlordane or DDT, thus creating a residue hazard when applications close to harvest are found necessary. Since many of these mixtures depend upon sulfur or mixtures of sulfur and ferbam for disease control, their use is likely to be disappointing during a season favorable for apple scab and during almost any season when used on scab-susceptible varieties such

as McIntosh and Cortland. Almost all mixtures available previously lack a material effective against mites, aphids and pear psylla.

In 1953, Dr. Philip Garman of the Connecticut Agricultural Experiment Station acted as coordinator of a cooperative project involving the testing of promising spray mixtures. Mixtures were prepared at a central point and distributed to workers in Connecticut, Massachusetts and Rhode Island. The equipment used to apply the materials ranged all the way from hand-operated, compressed-air sprayers to high powered hydraulic or air-blast machines. A wide range of fruits were included in the several widely separated tests,

A mixture containing methoxychlor, malathion and captan gave best results in all tests. No injury to foliage or fruit had occurred. The degree of insect and disease control obtained seemed almost too good to be true.

In 1954, the same formulation was tested further. Again under the supervision of Dr. Garman supplies of this and modified formulations were prepared and distributed. In addition to the general tests carried on against a wide variety of pests on a range of fruits and fruit varieties in Connecticut, Rhode Island and Massachusetts, a number of workers in New York State pitted the newly developed formulations against specific pests in their regular experimental procedures.

Once again, the mixture of methoxychlor, malathion and captan proved its worth against such pests as plum curculio, aphids, codling moth, apple scab, mites, black rot of grapes, and others.

Against some of the rust diseases and mildews it is perhaps a little weak but at present this is not considered of sufficient importance to warrant a change in the formulation. In 1954 some leaf spotting and yellowing did occur on Red Delicious and Baldwin apples and on peaches. The fruit was not damaged in any way. It seemed that most of the injury was caused by certain post-bloom applications and under certain weather conditions which prevailed at the time. In some cases, over-application may have contributed.

It appears that the advantages of the mixture when used as intended far outweigh the disadvantages just mentioned.

This general-purpose fruit spray mixture is not a substitute for thorough coverage; it is not magical in its performance. Neither is it a substitute for fairly accurate timing of applications. To cover the range of pest activity on our many fruits may require from as few as 2 or 3 applications during the season to as many as 9 or 10. No chemical or mixture of chemicals can be expected to protect fruit or foliage against a particular pest unless applied properly and at such times as to provide protection while the pest organism is active.

This is the history of NY-NE - a General-Purpose fruit spray. It will be available in 1955, as a mixture of its active ingredients, methoxychlor, malathion and captan all ready to be dumped into the sprayer tank. Or, if preferred, each ingredient may be purchased separately and mixed in the tank. When this is done, one should use from 2 to 3 pounds of 50% methoxychlor wettable powder, 2 pounds of 25% malathion wettable powder and from 2 to 3 pounds of a 50% captan wettable powder in each 100 gallons.

With thorough applications timed according to the schedules for the various fruits set forth in Circular 178 of the Massachusetts Extension Service, I am sure you will be happy with the results.

---E.H. Wheeler

APPLE MAGGOT FLIES AND THE WEATHER

At a recent meeting of pest control specialists from the New England states and the Hudson Valley of New York, it was reported almost unanimously that apple maggot flies were active much later than usual and generally that the infestation by this pest increased over that of last year throughout New England. The Hudson Valley with much less precipitation and higher temperature did not have a noticeable increase. This increase was very noticeable in Massachusetts where flies were often seen in mid-October during the harvest of the late varieties of apples.

In spite of this, the specialists reported that emergence of flies from cages was about normal. In our cages at Waltham the greatest emergence occurred between July 17 and 26 with the actual maximum on July 23 and the last emergence on August 13. Therefore we cannot correlate the late activity with any actual records of late emergence.

The most logical explanation is that cool wet weather favored a long life for the flies, some of which lived for about 2-1/2 months. The length of life of the flies has never been accurately determined because they do not act normally in captivity. It has been noted, however, that the flies live longer in late summer and early fall than in the hot weather of July. In the orchards these late flies are principally migrants and the longer that they live, the more they can migrate.

In general, the control of "railroad worm" flies in well sprayed commercial orchards was good in 1954, and the recommended materials and combinations were effective when applied thoroughly and timely. Where infestations developed, they could be traced to loss of insecticide residue from heavy rains, especially on August 9-10 and in the Carol and Edna hurricanes. Nearby unsprayed trees were a more serious source of migrant flies this year because the flies lived longer and travelled farther.

Much interest has been shown in soil treatments to control the population of apple maggot flies in hopes that such treatments can be used under a few trees or in apple dumps where large numbers of apple maggots have accumulated. In our recent experiments none of the insecticides used prevented fly emergence to a high degree compared to the check. However, soil treatments with dieldrin and heptachlor killed 95% or more of the flies within a few hours after they emerged. This proved that the insects are affected by contact with the insecticide as they burrowed upward through the soil in the adult or fly stage rather than by contact as larvae or pupae. In these experiments the only ineffective insecticides used as soil treatments were the organic phosphates, particularly malathion emulsion.

---W.D. Hitcomb

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Fruit Notes.

Prepared by the Fruit Program Committee of the Extension Service
W. H. Thies, Extension Horticulturist

JANUARY 15, 1955

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FRUIT NOTES

January 1955

COMPILER OF FRUIT NOTES RETIRES

On January 31 the compiler of FRUIT NOTES will retire after about 30 years of service as Extension Horticulturist in Massachusetts. But it will not mean retirement in the usual sense of that term. He will travel by plane a few days later to Rome, having accepted another horticultural assignment with the Food & Agriculture Organization of United Nations. This mission will be in Syria, with headquarters in Damascus, said to be the oldest city in the world from the standpoint of continuous habitation dating back to 2500 B. C. The new assignment will involve a horticultural program designed to increase production and improve quality through such measures as (1) investigating and appraising existing varieties and cultural methods, (2) introducing, testing and propagating improved varieties suited to the different regions of the country, (3) training Syrian technicians in all aspects of orchard management, including the control of insect pests and diseases, and (4) assisting in the establishment of a Government-controlled certification agency for plants, and supervising the production and distribution of better propagating material. (Transportation in Syria by jeep or camel would "top off" what looks like a restful (?) schedule for one in retirement).

* * * * *

SINCE 1924

At a season when everyone is looking toward the year which lies ahead, the writer, before embarking on his new adventure, wants to take a backward look to September 1924, and the intervening years. Arriving in Amherst via the old trolley line from Northampton, after four years of teaching at Michigan State College, he began to pick up the threads of an Extension program which had been carried on so effectively after World War I by R. A. Van Meter, and for about a year by F. E. Cole. Those were pioneer days, as we see them now. The barrel sprayer was still seen in the smaller orchards. Some of the larger orchards had a very wide assortment of varieties. Lime sulfur was still the standard fungicide for apple scab control. The spray gun, and a little later the triplex nozzle, were commonly used. The McIntosh variety had been quite heavily planted but in 1925 only 25% of the commercial crop was of that variety while the Baldwin made up 40%. Apple maggot and plum curculio were causing very heavy damage, and few growers were controlling apple scab satisfactorily. A few of the so-called Demonstration Orchards of the early 'Teens were still so labelled but, with one exception, they were demonstrations in name only.

The changes which have taken place in the fruit business during the past 30 years are so well known as to require only brief mention. Here are a few of them: The quad, and later the multiple nozzle spray broom; towers on spray tanks to permit better coverage of tall trees; removal of every other diagonal row in crowding orchards; more attention to cross pollination as filler trees of pollinating varieties were removed; substitution of mulching for cultivation; correction of magnesium deficiency; gradual planting of newer varieties, such as Early McIntosh, and an increase of Cortland along with a decline of Baldwin; better spray materials; chemical thinning; pre-harvest use of hormones; introduction of newer containers, including consumer packages; the air-blast sprayer, and very recently, virus-free strawberry plants.

The Extension Service, along with the Experiment Station, has played an important part in bringing about the changes enumerated above. A few examples will illus-

trate this point. In the early Thirties a series of apple maggot control demonstrations was carried out in cooperation with A. I. Bourne in about a dozen orchards, located in seven counties. In all of these orchards there had been a heavy infestation previously. But wherever our recommendations were carefully followed, the results were outstandingly good. In six of the orchards, the infestation was less than 1% in each of the two succeeding years. In the fall of 1928, while J. W. Dayton was county agent in Middlesex County, samples of "orchard run" apples were carefully examined for insect and disease blemishes in a number of orchards. It was noted that in three of these samples the percentage of unblemished fruit was in the upper Eighties, and in one case just over 90%. This marked the beginning of the project known as the "90% Clean Apple Club" which was operated for five years, 1929-1933. During these / 120 ^{years} commercial crops of apples were found to meet the high standards of the Club, and five growers actually met the requirements in each of the five years. Thus a new standard was established in orchard insect and disease control. Other states have since set up a "95% Clean Apple Club".

During the past 30 years the writer has made more than 5000 farm visits, travelled at least half a million miles by automobile, conducted about 200 pruning demonstrations and has taken part in meetings too numerous to mention. If the days devoted to project work in Worcester and Middlesex Counties are added up, it means that more than a year has been spent in each of these counties. Beyond a few very minor mishaps there have been no serious highway difficulties. But one self-imposed joke is worthy of mention. Soon after arriving in Amherst and before a sense of direction had been acquired, arrangements were made to take a train in Northampton for Boston, presumably via Springfield. After taking a trolley from Amherst to Northampton to board the train, imagine the surprise in finding that the train passed through Amherst over the old Massachusetts Central route of the B&M. . .

These have been happy years in Massachusetts, and with the cooperation of a host of co-workers, they have been fruitful years. Good friends over the state and elsewhere have contributed much to a store of pleasant memories. Were it not for the blessing of unusually good health there would be a strong temptation to remain in Amherst and continue to enjoy life among familiar surroundings. But a combination of another challenging opportunity with FAO, a firm conviction that a contribution can be made in the field of international understanding and no physical infirmities have prompted the decision to retire and apply the experiences of three decades in an underdeveloped country.

Among the highlights since 1924, in addition to those previously mentioned are the following: "The New England Seven" project (1928) in which the New England states cooperated in preparing a publication in color depicting the seven apple varieties then recommended; the "Red Apple Club" (1947-1951) which emphasized three important factors in an apple enterprise, pest control, yield and fruit color; the severe winter of 1933-34 and its aftermath; the hurricanes of 1938 and 1954 with the problem of tree salvage involved; twilight meetings which have been conducted during the spraying season for about 18 years; rating of soil types for orchard purposes and a study of root development in relation to soil type; examination of several hundred thousand apples to determine the degree of insect and disease control, grade, etc.; German Prisoner of War apple picking project in the Nashoba area (1946); cooperative strawberry variety tests (1952); and discussion group meetings in several counties beginning with the Sears Study Group in Worcester. Since 1950 the University has granted three leaves of absence, first, for a 3-months mission with the State Department in Germany in the interests of an Extension Service in the French Zone of Occupation. The other two, in 1952 and 1953, of 12 and 3 months respectively, were with the Food & Agriculture Organization of United Nations in Yugoslavia. They had to do with the improvement of an extensive fruit industry in that country.

In conclusion, this last word. If the writer's efforts have contributed in a small way to the advancement of fruit growing in Massachusetts and to a more satisfying life among those people with whom he has worked, his mission as a member of the Extension staff of the University of Massachusetts has been to that extent successful.

W.H.Thies

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PREPARING FOR A BETTER YEAR IN 1955 - (Blueberries)

At this time of year spring looks a long way off. Consequently, there is a tendency to put off doing some of the things which could very well be done during the winter months. All too frequently spring is here before we have done half of the things that we know we should do. The following list of suggestions is probably not a complete one but should serve as a good starting point.

Pruning - This is one of the most important things for the blueberry grower to do during the winter and early spring. All too frequently it is left undone or left until too late and then the job is hurried through and only half done. Sometimes half or two-thirds of the field gets pruned and the rest is left unpruned because of lack of time. It would be much better if the whole field were partially pruned rather than leaving part of it unpruned. A good way to do this job is to go through the whole planting during the winter and do about half of the pruning required on each bush. This is the time to go through with the lopping shears, or heavy pruners, and make any large cuts which are necessary. Then in late winter or early spring, when all danger of winter injury is over, go through the whole planting a second time and do a finished job with the hand shears.

Fertilizer - The use of fertilizer on cultivated blueberries is extremely important. Where mulches of such materials as sawdust and shavings are used, the nitrogen application will have to be about doubled for a year or two after the mulch is applied. Also, where the blueberry planting has been allowed to develop a grass sod, fertilizer applications, particularly nitrogen, will have to be increased very materially. The best way to determine the fertilizer needs of the bushes is to study them carefully and judge from the type and amount of the growth, the amount of fertilizer which is required. For those who wish some assistance in this matter Pomology Department Sheet No. 2, which will be supplied on request, discusses what to use and how much.

Mulching - Mulching cultivated blueberries has proved to be an excellent method of soil management. Sawdust, in particular, has been found to be one of the best mulches. Whether or not to mulch is usually determined by the cost of the mulch. Much too frequently the cost of the mulch is so high that its use is not a financially sound procedure. However, if mulching is to be practiced, it is well to apply it during the winter months when other jobs are not so pressing.

Drainage - Are certain parts of your planting too wet? Although the ground may be frozen now so that you can't dig drainage ditches and lay tile, the winter is a good time to make plans for a drainage operation. Don't forget that the soil conservationist in your district will be glad to make surveys and help you with the planning of such a project. You can have all the plans made and the necessary materials on hand so that the actual construction of drains can be started as soon as the ground thaws, or at any time when it is convenient during the summer.

Irrigation - Cultivated blueberries need a lot of water all through the season. Unfortunately some plantings have been set where either a part or all of the planting becomes too dry at some period during the summer. Of course, this is most likely to occur during excessively dry periods. Do you have one of these dry spots in your planting? Has your crop been seriously cut by a dry spell? Perhaps you need to consider what some type of irrigation could do for you. Here again your soil conservationist could be of great help in giving you information on how and where to get water, what type of equipment will be best suited to your conditions, and in making estimates of materials required and their cost.

Spraying and Dusting Materials - In the past cultivated blueberries in Massachusetts have not required very much dusting or spraying for the control of disease and insect pests. Unfortunately, there is evidence that this happy situation may be very nearly at an end and that much more spraying and dusting will be required in the not too distant future. There is a pest control chart for cultivated blueberries which is revised annually. You may have a copy of this chart by writing to your county agent or to the Extension Service in Amherst. Now is a good time to study one of these pest control charts and then order whatever spraying or dusting materials will be needed for your own planting.

Plants - If you are going to replace some bushes which are missing or if you are planning to expand your planting next spring, now is an excellent time to be thinking about what varieties you will set, how many plants you will need, and where you will get these plants. While it's a good idea to write to several nurseries for prices, remember that the plants which cost the least are not always the cheapest. It is best to buy from a reliable nurseryman who propagates his own plants.

Boxes - The picking season may seem a long way off but now is a good time to prepare for it when things are not so pressing. A good supply of picking boxes and crates or trays obtained this winter will ease the tension when the rush of spring work starts.

Repairs - It would seem that no good farmer should need to be told to put his equipment in good working order during the winter so that it will be ready for use in the spring. However, a reminder sometimes helps to get the job done more quickly and more easily. Be sure that all tractors and motors are in good running order and in good enough condition so that breakdowns will not interfere with work during the busy season. Cultivation equipment should be inspected, broken or worn parts replaced and sharpening done if necessary. Are the basket carriers for your pickers all in good repair? Do you have enough of them? Some growers put short legs on the carriers which results in less bending and more comfort for the pickers which, in turn, usually results in more berries picked.

Prepare now and worry less next spring.

John S. Bailey

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YOUR POMOLOGY DEPARTMENT

Perhaps you are one of those fruitgrowers who would like to know how the Pomology Department of the University is attempting to serve the fruit industry of Massachusetts through research and the training of future fruitgrowers and professional workers. If so, the following paragraphs should give you a bird's eye view of our efforts in your behalf.

As many of you know, the Department, like Ancient Gaul, has principal and equally important parts so far as type of work is concerned: resident teaching, Extension and research. However, thanks to the reorganization plan conceived by Dean Sieling of the School of Agriculture and Horticulture, and approved by the 1954 session of the Legislature, these three lines of endeavor within the Department are no longer compartmentalized divisions which are entities unto themselves. The new set-up permits a much fuller integration of activities so that the training and experience of all personnel may be used to the fullest in attempting to serve you better.

At the present time our professional staff is composed of seven: Professor Wilbur H. Thies who is on full time Extension activities; Dr. Franklin W. Southwick and Dr. Walter D. Weeks who devote most of their time to research activities in Amherst; Professor John S. Bailey who carries on small fruit research chiefly, and is stationed at the Cranberry Station in East Wareham; Professor Oliver C. Roberts whose main job has been teaching but who is currently carrying on fruit marketing research; Professor Almon S. Fish, Jr., who has full time teaching duties; and the undersigned who attempts to coordinate the work of the Department and thereby theoretically spends one-third of his time on teaching, research and Extension, each.

Our physical plant includes facilities for certain types of chemical and physiological research in French Hall, and Fisher Laboratory which serves as headquarters for the orchard crew, provides cold storage and grading facilities and contains student laboratory rooms. Certain phases of our research program also are carried out in Fisher Laboratory where facilities can hardly be called adequate to meet present demands. During the past five years or so campus buildings have deprived us of about 30 acres of our better orchard land. As no replacement is in sight for this lost acreage, considerable of our orchard research is now being done in growers' orchards. More may have to be conducted that way in the future providing some of you are willing and have orchards which are adaptable to certain types of research needs. However, we still have about 70 acres of land inside the orchard fence. But, unfortunately, about one-third of it is too low, wet and frosty for anything but hay.

The usable 50 acres are devoted to the several kinds of fruit as follows: apples 60%, other tree fruits and nuts 25%, small fruits 15%. However, I hasten to say that not all of these 50 acres are in bearing or usable fruit plantings now or at any one time. Replacement blocks must be planted before old blocks are pulled out, land on which an orchard soil management study has been made cannot safely be replanted for certain other types of research for several years, and in case of strawberries, an area at least 5 times the size of any one year's fruiting bed must be preserved for adequate rotation. Considering that our orchards must also provide facilities where the entomologist and plant pathologist may test new materials, as yet of unknown safety, it is evident that our land facilities are not overly adequate. However, we shall continue to serve your needs as fully as possible with that which we have to work.

Of the three types of service which the Department provides the fruit industry, you probably are best acquainted with the Extension program which comes to you in the form of meetings and farm visits. Many of you also know that our instruction offerings provide a well rounded program for the student who wishes to specialize in fruit growing in the 2-year vocational Stockbridge School of Agriculture and also for the 4-year student who plans to major in Pomology preparing himself either as a future fruitgrower or for a career in the field of professional Pomology. Present enrollment in this field is low here as well as elsewhere. There is every evidence however that our offerings are still among the best in the country.

The research program in the Department utilizes about 50% of the total time of

the professional staff, as well it should for all teaching either resident or Extension must be based on the findings of research if progress is to be made in solving the many problems of the industry. For your information the Pomology Research Projects now under way are listed below:

1. Analysis of the market quality of McIntosh apples offered for sale in retail stores.
2. Influence of chemical treatment on flowering and fruiting of fruit trees.
3. The nutrition of apple trees.
4. The nature of winter hardiness in the raspberry.
5. Highbush blueberry culture.
6. A study of the leaf characters of tree fruit varieties.
7. A study of new varieties of fruits.
8. Improvement of the lowbush blueberry.
9. Chemical control of weeds in fruit plantings.
10. The influence of orchard and post-harvest treatments on the metabolism of tree fruits.
11. The evaluation of root stocks for tree fruits.
12. The best method of improving the soil preceding the planting of strawberries.
13. The development and production of healthy strawberry plants.
14. The cause of unfruitfulness in the Beach Plum.

During the next several months we plan to have the leader of each project write a brief story that will tell you why each particular project was started and what results have been attained so far. These project stories will appear under the heading of POMOLOGICAL RESEARCH. For the first such report, which follows, we have chosen to present a project so new that no results from it are yet available. However, we are confident that this problem concerns the entire apple industry.

A.P.French

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POMOLOGICAL RESEARCH

I. A Survey of McIntosh Apples In Retail Stores - Ever since the McIntosh variety became a prominent item on the fruit counters in retail stores there has been discontent, on the part of growers and others interested in the sale of McIntosh, with the product which has been offered to consumers. This feeling of discontent has been based chiefly on casual observations rather than on factual information concerning the condition of the fruit.

In order to determine more exactly the quality of McIntosh apples which are being offered to the public in retail stores, the Pomology Department in cooperation with Professor F. E. Cole, Extension Specialist in Fruit and Vegetable Marketing, has initiated a research project to study this situation.

Since nothing of this type has ever been done in Massachusetts, the first step appeared to be to make a survey of the condition of McIntosh apples offered for sale in retail stores. The particular aim of this survey is to determine what the condition of McIntosh apples really is and whether or not present practices could be improved in order to make the fruit more appealing to consumers and thereby increase sales.

Starting the last week in October, after most of the "hurricane apples" had been disposed of, the writer has been travelling around the State purchasing samples

of McIntosh apples in retail stores. To date samples have been collected in stores from Williamstown to Newburyport and also in the Fall River, New Bedford area. The Boston, Worcester and Springfield areas will be covered during the month of January.

After collecting the samples they are brought to Amherst in a container especially constructed to avoid further bruising. They are temporarily held in cold storage and within 48 hours each lot is examined for grade, cause of apples to be below Fancy grade, number of bruises, holes, cuts and cracks. Firmness, sugar content and amount of waste due to blemishes are then determined. When the apples are obtained at the store, additional information is obtained such as method of display, type of container in which fruit was received, method of refrigeration in the store, if any, and method of purchase.

While it would be premature at this time to evaluate results obtained thus far, the absence of insect and disease blemishes is worthy of note. This would indicate that growers and packers are either carefully eliminating apples with these blemishes when doing the grading, or growers are doing an excellent job in controlling insect and disease pests in the orchard.

It is anticipated that the results of this survey will indicate the direction that future research on the handling of McIntosh apples should take.

O.C.Roberts

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Through the Years With FRUIT NOTES - The first issue of FRUIT NOTES appeared along with the flood in the Connecticut Valley, in March, 1936. More than 150 issues have been distributed since that time. The mailing list hovered around 1000 during the early years and in recent years has gone as high as 1700, including quite a number of individuals out of state. Non-residents in educational work have obtained it free of charge while other out-of-staters have paid a small charge to cover mailing costs. Several years ago an individual in South America paid his subscription 10 years in advance. FRUIT NOTES, in conformity with the franking privilege, has carried no advertising material and has had this one simple objective, - to convey to the reader in understandable language useful information about fruits. New developments have been presented from time to time, with enough of miscellaneous items to make the reading less boresome. One of the biggest compliments we have ever received came from the late Thomas Rorrie of Gay Farm in Westwood. Arriving at the farm one day with the county agent we found our good Scottish friend at his mailbox, reading something. Believe it or not, it was FRUIT NOTES. When we expressed surprise that this humble document would take precedence over the daily newspaper, he said "I have on file every copy that has appeared thus far". If FRUIT NOTES has added here and there to an understanding of the many complex problems in the fruit business, and especially if it has made the fruitgrower's job a little easier, more enjoyable or more profitable, its mission has been accomplished. The retiring editor has had a lot of fun with FRUIT NOTES since 1936. He has also had many good cooperators who have contributed much to its store of information. To them our hearty thanks, and to the many readers our sincere wish that your efforts along fruit lines may be successful.

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No December FRUIT NOTES - No issue of FRUIT NOTES was prepared during the month of December.

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