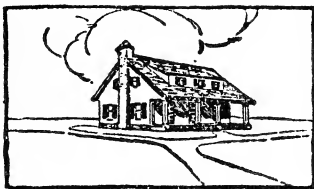


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BEFORE

Planting and Care of Nursery Stock



AFTER

Prepared by
ROSE HILL NURSERY
MINNEAPOLIS - ST. PAUL

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CARE OF NURSERY STOCK UPON ARRIVAL

Orders outside of the Twin Cities are sent by freight, express or parcel post. Call for your order on date we notify you or when notified by transportation company. Twin City orders are delivered by truck. All our goods are carefully packed so as to reach destination in good order. Customers should see that the package is not allowed to remain exposed to sun and wind. Prompt planting often means the difference between success and failure.

"HEELING IN" NURSERY STOCK

If it is impossible to plant the stock for a few days it can be taken care of by opening the bundle and spreading out the plants, covering the roots with moist soil. Dig a trench wide and deep enough to cover the roots entirely, then fill in soil to cover roots and if ground is not moist use plenty of water. If you cannot "heel in," soak the bundle and place in basement or other cool place where the roots will not freeze. It is well to remember that plants are things of life and must be treated as such.

HOW TO PREPARE SOIL AND PLANTS BEFORE PLANTING

The soil should be well pulverized and loose throughout the area where plants are to be placed. This can be done by spading or plowing. If the soil is not rich an inch or two of rotted manure well mixed with the soil will be beneficial. Never use manure in direct contact with the roots.

After the soil has been worked into good condition, the holes should be dug. They should be larger than the spread of the root system on the plant. Before planting trim any broken or badly bruised

roots. They should be cut off with a sharp knife. This enables them to start a new growth more quickly.

FIRMING SOIL AROUND ROOTS AND WATERING

Fine loose soil should be worked with the fingers in among the roots so that no air spaces are allowed to remain causing the roots to dry out. When the roots have been covered, stamp the soil as solid as possible. This may be accomplished by pressing down hard upon the soil with your foot using your whole weight. If water is available it should be used freely while planting as it will settle the soil around the roots and a good vigorous growth will soon start. Be sure to leave a loose soil mulch of three inches on the top after planting.

GENERAL PLANTING POINTS TO REMEMBER

1. Never allow the roots to dry out—expose only the plants you are going to plant immediately.

2. Dig holes larger than the spread of the roots.

3. Place good black or top soil around the roots.

4. Pack the earth firmly around the roots and leave three inches of loose soil on top after planting.

5. Do not plant too deep nor too shallow—about the same depth as they stood in the nursery.

6. Where water is available, soak the soil thoroughly when planting and only as needed thereafter.

7. Correct planting means that a plant in its new location should be left in a proper position, top properly trimmed and roots firmly embedded in the soil.

8. Do not allow weeds and grass to grow around the plant—keep the top soil loose.

Planting Apples, Plums and Cherries. Plant apples and Crabs about 20 feet apart, Plums 10 to 15 feet, Cherries 10 feet, except when planting Rocky Mountain Cherries which may be set 5 to 6 feet apart. Dig a hole wider and deeper than the root system of the tree to be planted. A hole 2x2 will generally be sufficiently large unless the tree is to be planted in sod or very poor soil when a hole a foot larger will be better. If poor ground, fill the hole with good surface soil. Remove any broken roots, cutting the ends smooth with a sharp knife. Place the tree in the hole and spread the roots out in their natural position, working in good fine soil among the roots. Always examine the tree and see that it is placed at the same depth as it stood in the nursery. Pack the soil firmly around the roots using your feet and your full weight. Immediately after planting trim the top, cutting back the branches about half their length. See cut of fruit tree properly trimmed also. refer to article on pruning.

Currants and Gooseberries. Plant about four feet apart each way. If the soil can be enriched by applying rotted manure, there will be a larger and better fruit. The plants do not need severe pruning when planted. About one-third of the weakest branches should be cut out. After the first trimming, currants and gooseberries need no pruning for four or five years. After that time old and weak wood should be removed each year to invigorate the plant.

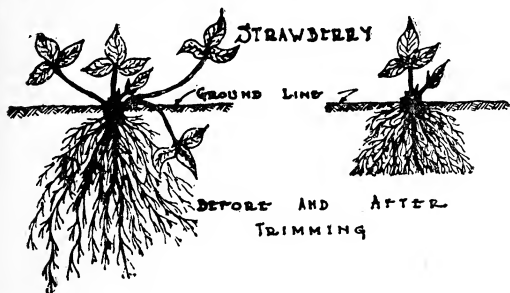
Raspberries and Blackberries. Plant in rows six feet apart and two to three feet

apart in the row. For city lot planting four feet apart each way will give good results. See that all the roots are spread out in their natural position. When planting cut back canes to four inches from the ground and be careful not to plant raspberries too deep. Canes that have borne fruit should be cut out just above the ground after the fruit crop is harvested. This year's new canes produce the fruit next year. Black Raspberries and Blackberries should be covered with earth or straw for winter protection. Latham Raspberry is hardy without protection.

Grapes. Choose a warm, sunny location if possible. Plant in rows eight feet apart and vines about five feet apart in the row. The roots are often very long and can be cut back to eight or ten inches. Dig the holes plenty large enough to accommodate the roots and firm the soil when planting. Trim back vines to two buds; this is important. About November 1st when the wood is thoroughly ripened, cut back vines to within three or four buds. When trimming grapes do not cut too close to the bud—leave an inch or two of wood beyond. The following spring allow only two buds to grow; these should grow 5 to 8 feet during the summer. Again about November 1st cut the shoots back to about four feet. The following spring these two shoots should be fastened horizontally to the lower part of the trellis. When growth starts allow only such shoots to grow as will leave upright branches about a foot apart. As these grow train to grow in an upright position until they reach the upper wire of the trellis. Each year all weak wood should be cut out and remaining vines cut back. Late in the fall the vines should be taken down and covered with dirt or coarse manure. Hardy

grapes such as Beta, Alpha and Hungarian need no winter protection. These varieties may also be planted for porch vines or to cover buildings. A good trellis can be made by using fence posts, leaving the posts about five feet above the ground. Stretch three or four smooth wires 15 or 18 inches apart, fastened securely with staples.

Strawberries. Prepare soil as for other garden crops. Plant in rows 4 feet apart and 18 inches apart in the row. In small gardens plants may be grown in hills 18 to 24 inches each way. By planting this way, most new plants should be destroyed or the plants will become too thick. Perfect flowering varieties such as Senator Dunlap and Progressive will bear a good crop planted alone, but varieties with imperfect flowers, such as Warfield, should be alternated with some variety having perfect blossoms. To facilitate planting, the roots can be cut off to one-half or two-thirds of their length and all the foliage should be removed except two of the top young leaves (see cut). The plants should be set so the crown (where the leaves start) is just at the surface of the ground. Plants set below the crown will not grow—neither will plants set too shallow. Three or four inches of straw applied in November will give a good winter protection.



Asparagus. Plant in soil heavily enriched by rotten manure. Where the space is limited plant 18 to 24 inches apart each way, otherwise in rows 3 or 4 feet apart and plants 18 to 24 inches apart in the row. Plant so the tops are under the soil one or two inches. Keep bed free from weeds. Do not cut the Asparagus the first year. Enrich each year for best results.

Rhubarb. Rhubarb will grow most anywhere but for best results rich soil is necessary. Plant about 2 feet apart and set the plant so the crown is about an inch below the surface. Add plenty of fertilizer each year and keep the grass out.

Ornamental Shrubs. When planting shrubs dig the hole wide and deep enough to admit all roots without crowding. If the soil is poor, remove same and fill in with good soil. Should there be any broken roots remove them with a sharp knife. See that the roots are spread out in their natural position and good, fine soil worked in between the roots. Plant same depths as shrubs grew in the nursery. Tramp the soil down as solid as possible around the shrub. Planters having a water-system will find it to a great advantage to use water freely in planting. When the roots are covered with fine soil, fill the hole with water. When this water has settled, fill the hole with earth and firm with your foot, using your whole weight. Trim severely immediately after planting (see cut and article under pruning). Hydrangea plants should be trimmed very severely, cutting back the plants to 10 to 12 inches. By doing this strong new shoots will develop, each tipped with an immense blossom.

Hedges. Dig a trench 15 to 18 inches wide and about as deep. If all the soil is not good, place the black dirt to one side

and remove the bottom or poor soil, replacing it with fertile soil. After the trench has been completed, start to plant at one end, using a small rule or stick for proper spacing of plants. Do not lay out the entire lot of plants before starting to plant because they will dry out quickly. The distance apart to plant will vary according to variety. Buckthorn, Caragana and Russian Olive should be set 8 to 9 inches apart. Thunberg's Barberry 12 to 18 inches, Honeysuckle, Cotoneaster and Dogwood, 10 to 12 inches, Alpine Currant, 12 inches, Bridal Wreath 18 to 24 inches. Fill in good top soil around the roots and firm by pressing down hard with your heel. Always see that the plants are set about the same depth that they stood in the nursery. After all the plants have been set water them thoroughly and as soon as water has settled fill the trench with soil, packing it firmly. Leave an inch of loose soil on top when planting is finished. The plants must be trimmed immediately after planting. See article on pruning.

Trees. Ornamental trees require care in planting to be successful. When planting always dig the hole much larger than required for the root system. If soil is not good remove same and fill in with good earth. Remove all broken or badly injured roots. Make a clean cut where ragged ends occur. Place the tree in the hole and spread out the roots in their natural position, then fill in good top soil around the roots, being sure to use your fingers to work loose soil among the fine roots. It is difficult to get the soil to pack firmly in among the roots and it is therefore a good plan as soon as the roots are covered to fill the hole with water which will settle the soil around the roots. When the water has been allowed to settle fill the hole with soil and firm. Some smooth barked

trees as Mountain Ash, Basswood, Linden and Wiers Cut Leaved Maple are greatly benefited by wrapping the trunk for the first two years with burlap. The burlap should be removed at least once a year to avoid injury to the tree from girdling. If there is sufficient rain so the ground is kept moist, do not water trees but if soil does not contain plenty of moisture, water or rather soak the trees once a week. It takes a lot of water to reach the bottom of the roots. Trimming must be attended to immediately before or after setting. See cut and also refer to article on pruning.

Evergreens. Evergreens are delivered either "Balled and Burlapped" or with roots packed in moist packing material. Care must be taken not to expose evergreens to sun and wind as it will kill them quickly. When evergreens arrive balled and burlapped they should not be allowed to remain unplanted longer than absolutely necessary. Dig a hole nearly twice as large as necessary to accommodate the ball but do not plant deeper than the tree originally grew. When hole is one half filled with soil, fill balance with water, allow to soak in and fill with water again to be sure the ball is soaked through. When the hole is three quarters filled the burlap may be loosened or cut at the trunk of the tree and turned back in order that soil may be packed close to the trunk. Evergreens that are delivered without ball must be planted without delay. Keep weeds and grass from growing near the trees. Evergreens need no pruning when planted. When weather is dry Evergreens need to be soaked once a week but do not water when there is sufficient rain to keep the ground moist.

Roses. The preparation of soil is very essential and to obtain the most satisfactory results they should be planted in well drained, rich, deep soil in a location where they will have good sunlight and good air circulation.

Straighten out all roots when planting and be sure to pack the earth hard around them. When budded Roses are planted be sure to get the buds two to three inches below the surface. Water thoroughly being sure the bed is soaked to the bottom. Do not water oftener than necessary. Cultivate the soil very shallow, just enough to leave a dust mulch on the surface. After the plants have started to grow give them a light mulch of well rotted manure. This will conserve moisture and provide plant food.

Pruning is very important. Roses should be pruned back to about 8 inches immediately after planting. (See cut.)

Winter protection is necessary. They should be covered with a foot of straw then brush or boards laid on to hold it during the winter.

Perennials. Perennials may be "heeled in" before planting but must be placed separately and not covered above the crown. The soil should be dug deep and be well pulverized. Well rotted manure should be added and worked into the soil thoroughly. Perennials should be planted at exactly the depth of their root systems. Water them well immediately after planting and thereafter only as they need it. Examine the soil to be sure. Well rotted manure will make an excellent mulch and aid greatly in conserving moisture.

Perennials are greatly benefited by careful and regular cultivation. Do not cultivate too deep but be sure to always have the ground loose on the surface.

All withered flowers should be cut off. Perennials are everblooming through their individual season if the blooms are kept cut rather than allowed to go to seed. Use the Perennials for bouquets and prolong the blooming season.

Always cover in the fall to prevent alternate thawing and freezing.

REASONS FOR PRUNING

1. To maintain a balance between root system and top.

2. To remove injured, diseased or dead branches.

3. To secure the desired form and height of the plant.

4. To improve or modify the natural form of the plant for some specific reason.

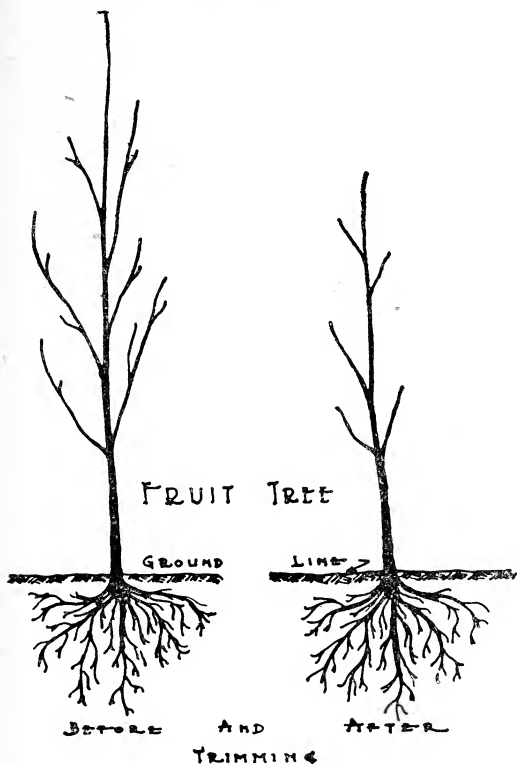
5. To encourage production of more flowers. In the case of newly planted stock, tops should be cut back to compensate for the loss of roots in moving.

Cuts should always be clean and close to the main trunk or branch. Pruning shears, knives and hand saws are the best tools to use and should be sharp. Pruning is however only one important phase in the care of plants and must be accompanied by constant good cultivation and feeding for successful returns.

Fruit Trees should always be pruned back severely upon planting. It is usually advisable to open the head of the tree by thinning out small branches, leaving only part of the central leader with a few of the shortened lateral branches. All cross branches should be removed as well as injured limbs.

If plums and cherries are pruned similar

to apples they will give good results. See the illustration for proper pruning.

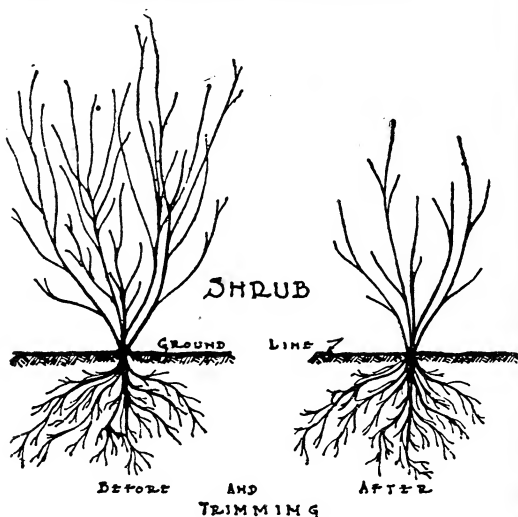


Ornamental Shrubs. All shrubs should be cut back severely at the time of planting. Care should be given to properly shape the plant at this time. Shrubs should be examined carefully and broken limbs removed at this time. With newly planted stock remove at least one-third of the top to offset loss of roots. (See cut.)

Hydrangea shrubs should be cut back to one foot from the ground.

Shrubs may be pruned at any season of the year if no consideration is given to flower production. Late summer pruning sometimes stimulates new growth that may not ripen by fall and be exposed to winter killing.

All early flowering shrubs should be pruned shortly after the blooming period. Summer or late flowering shrubs should be pruned in the late winter or early spring before growth has started.



PRUNING HEDGES

When a trimmed hedge is desired, cut the plant back $\frac{1}{2}$ to $\frac{2}{3}$ its height. This tends to form a heavy growth at the base of the hedge and is the only way in which this can be secured. Severe trimming at

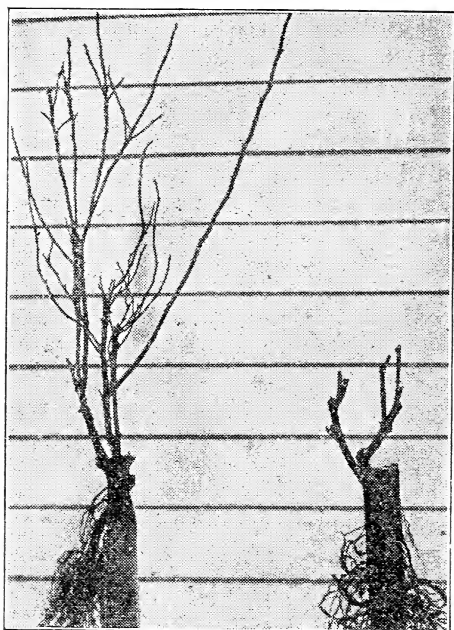
time of planting will save future disappointment. As soon as the hedge has grown three or four inches cut the tops to induce further branching, thereby thickening the hedge. Repeat trimming as often as necessary. A hedge allowed to grow several months without trimming is not ornamental and time is lost in growing a dense hedge. If a graceful, natural growing hedge is wanted such as Bridal Wreath or Thunberg's Barberry, the plants need to be trimmed only about half as much when planted and thereafter only enough to keep the hedge in the desired shape and height.

Roses. Prune all roses back to 4 or 5 short stems carrying 2 to 3 buds. For newly planted roses see illustration. All hybrid and hardy roses should be pruned in April when the sap starts to flow. At this time dead wood can be easily distinguished and removed. Severe trimming of roses will produce large blooms and longer stems.

In pruning Rugosa roses, cut back several inches of the stems and always remove wood to the base of the plant when it becomes old.

Climbing Roses need one-third to one-fourth of the wood removed. Old wood should be removed once every three years. See illustration for pruning a newly planted Rose.

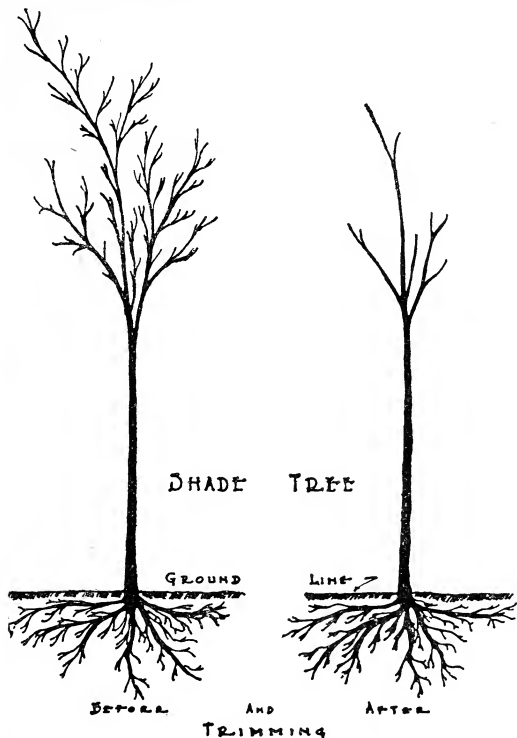
ROSE



Before and After
Trimming

Trees. Trees must be severely top pruned to offset loss of roots in moving. A general rule is to remove about one-half the top. This may be done by cutting out all small, weak branches, removing all branches that cross or will later need removal, and also cutting back the branches that are to remain. All cuts should be close to the main stem or branches and no stubs allowed to remain. The branches should

be removed at a height desired to form the top of the tree. For pruning a newly planted tree see cut.



CULTIVATION AND CARE AFTER PLANTING

Watering should be done only when the plants require it. To determine whether watering is necessary dig near the plants to a depth of at least eight inches and note the moisture in the soil.

A careful examination of the soil will avoid loss from too much water as well as drought. Too much water is as bad as too little.

Do not confine watering to a daily sprinkle. This is only a waste of water and time. When watering thoroughly saturate the soil and be sure it has penetrated. Watering is usually not required oftener than once a week, depending upon weather conditions. Always water either early in the morning or late in the afternoon.

Staking. Trees of large size should be staked especially in windy locations. This prevents movement of the root system and enables the tree to get a quicker start. Be careful in staking not to use wire in tying the tree. A soft material such as an old hose should be used around the trunk and removed twice a year to prevent girdling.

Cultivation. All plants should be given clean cultivation. Weeds rob the plants of food and moisture and must be kept out. If a dust mulch is kept up in cultivation, the plants will grow during a dry period. Roses and perennials must be given careful cultivation for success depends upon care.

Winter Protection and Mulching. All fruit trees should be examined during the winter to determine whether rabbits or mice are doing injury. If the animals are injuring the trees a protection should be given them. Usually wrapping the body of the tree with building paper, corn stalks or any other material handy, will prevent injury.

All but hardy roses of the Rugosa, or Harrison Yellow type must be covered to prevent winter killing. A straw covering about a foot thick held in place with tar paper or light boards is best.

Perennials must be covered each fall after the ground freezes to prevent heaving and alternate thawing and freezing. A straw or light straw manure cover will serve the purpose.

It will greatly benefit all plants to provide a winter mulch when possible, for it will eliminate considerable trouble from alternate thawing and freezing which is so injurious to plant life.

INSECTS AND DISEASES

Do not hesitate to consult the entomologist at the University Farm when you need information about insects and diseases. A large amount of information is available for your use. Due to our limited space we cannot incorporate anything but a few general remedies.

Factors to Consider in Spraying. 1. A spray mixture must be the correct one, for example, it does no good to use a poison on an insect classed as a sucking insect, nor to use it when an insect is at a period in its life when it does not eat. 2. Spray mixtures must not injure plants or the cure will be worse than the insect. 3. A thorough job must be done or poor results will follow. 4. The spray must strike every part of the plant and stick long enough to be of some use. 5. If rain follows soon after spraying it may be necessary to spray again.

Sprays intended for leaf eating insects are classified as POISONS and the insect is killed by eating it. You can readily see by examining the leaves if portions have been eaten. If so, a Poison spray should be applied.

Those Sprays intended for sucking insects are classified as CONTACT INSECTICIDES. They kill by suffocating the insect. The insect must be covered for it is the

physical action which kills it. When plants are attacked by sucking insects the leaves usually curl up and by opening you will find the underside is covered with a small aphid or louse.

The third class of sprays are called FUNGICIDES and are used against fungus growth, such as rust, mildew, canker and rot. This class usually contains sulphur, either lime-sulphur or bordeaux mixture. They also act as a contact insecticide against scale insects.

If it is necessary to spray for both fungus diseases and insects the sprays can be combined so that both insects and fungus can be sprayed in one operation.

Some form of spraying machine no matter how simple should be used to apply the spray. This is for the purpose of securing a mist spray which eliminates the danger of the spray running off quickly and thereby losing its value.

FORMULAS FOR SIMPLE SPRAYS

POISONS—for leaf eating insects.

1. Arsenate of lead—1 oz. to 2 gal. water
—4½ heaping tablespoonsfuls are equal to one ounce.
2. Hellebore—1 oz to 2 gal. of water.
3. Paris Green—2 level tablespoons to 3 gallons of water.

Arsenate of Lead and Hellebore can also be used as dust sprays by placing the poison in a cloth sack and dusting lightly on the plants while the dew is still on the plants.

CONTACT INSECTICIDES—for leaf sucking insects.

1. Dissolve ½ lb. hard soap to 5 gal. of water. Apply when cool.

2. Commercial nicotine sulphate (Black Leaf 40) $\frac{1}{4}$ pint to 50 gal. water. Directions are always on the container. 2 lbs. of hard soap may be added to this.
3. One lb. of tobacco stems steeped in 2 gal. of water until the color of strong tea.
4. Kerosene Emulsion $\frac{1}{2}$ lb. of hard soap, 1 gal. of boiling water, 2 gal. of kerosene. Mix thoroughly until a creamy fluid, then dilute this to 17 gal. of water. Or, use 1 part of the stock solution to 10 parts of water.

FUNGICIDES for Fungus Diseases.

1. Bordeaux mixture.
2. Commercial concentrated Lime-sulphur.

Consult the experimental station bulletins for complete information regarding the use of these sprays.

Don't wait for pests to strip your trees and fruit—spray first.

Don't neglect to watch the wind when spraying and be sure to cover the entire plant.

Don't hesitate about asking your entomologist at the University Farm for spraying information. Specimens of the injured plant or insect will aid them in quickly determining your trouble. Living insects can be sent through the mail in a tight wooden box.

PRACTICAL PLANT POINTS

1. In pruning cut just above the bud. You can shape the plant by picking an inside or outside bud.

2. Give thorough cultivation to all nursery stock. Be sure it has sufficient moisture and plant food.

3. If in a section where birds eat your grapes, bag the grapes to prevent them.

4. Keep your strawberries clean and most of the runners pinched back.

5. "Spray"—Raise fruit and enjoy it.

6. "Canines and Conifers"—a bad combination. Screen the Arbor Vitae or tie up the pup.

7. The dirt mark shows where plants stood in the nursery row. Set them at the same depth.

8. Stake large shade trees if in a windy location and be sure to tramp the soil firmly when planting.

9. Cover your perennials in winter to protect from sudden changes in temperature.

10. Never leave stubs when cutting off limbs.

11. Plant now. You will reap the harvest one year earlier than if you wait until next year.



It's Not a Farm Home
Without Fruit.

