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The VEGETABLE GARDENER'S HANDBOOK



A Complete Manual of How, When, Where and What to Plant



how to grow a **VICTORY GARDEN**

A complete manual of
HOW, WHEN, WHERE AND WHAT TO PLANT

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EDITED BY *Walter Patterson Pollock*

FORMERLY MANAGER AGRICULTURAL AND SCIENTIFIC BUREAU, OF
N. V. POTASH EXPORT MY., AND AGRONOMIST-DIRECTOR OF THE
MIDDLE WEST SOIL IMPROVEMENT COMMITTEE

DRAWINGS BY *Joyce Ballantyne*

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A C K N O W L E D G M E N T S

We gratefully acknowledge the generous assistance of the organizations listed below. They placed at our disposal vast reservoirs of information and illustrations, facilitating our efforts in the production of these books. We deeply appreciate their editorial co-operation, which in many cases included reading of manuscript and other valuable advice and aid. Technical suggestions and sound criticism helped to make this series accurate and authoritative.

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		United States Rubber Co.
		W. Atlee Burpee Company

AND MANY OTHERS

When you have finished reading this book pass it on to a friend, so that the value of the information it contains may help as many as possible to do as much as possible in the country's effort to win the war.



Your ideas may be very valuable. If you have any suggestions to aid Defense, ideas that might be included in future editions of these books, please address them to Editor, "*Nothing Counts But Victory*" Series, 153 North Michigan Avenue, Chicago, Illinois. For each new idea we use, one dollar (\$1.00) in Defense Stamps will be paid to the person first sending in the idea.

462972

“FOOD WILL WIN THE WAR AND WRITE THE PEACE”

THIS booklet has been prepared to meet the need for up-to-date information, wanted by both experienced and inexperienced gardeners who will respond to the appeal of federal and state agencies for more than six million VICTORY GARDENS.

Victory Gardens must not only raise food to help win the war, but Victory Gardeners must develop a garden strategy which provides aggressive action for production of more vegetables and for defense against their enemies—insects and disease.

While we are fighting a war to maintain our freedoms, we must see to it that our plants are secure with their essential freedom for life and growth. Freedom from *thirst*, from *starvation* and from *disease*—these are the three freedoms we must guarantee, along with security in their homes in the soil. Provide these freedoms and you have the answer to the question of *How to Grow a Victory Garden*.

Secretary of Agriculture, Claude R. Wickard, has suggested the slogan “Grow Vegetables for Vitality for Victory,” and everywhere we hear the suggestion that another “V” be added so that the slogan would read “*Grow Vegetables for Vitamins for Vitality for Victory*.” Home-grown vegetables will not only furnish us with a goodly share of needed vitamins, but will supply needed minerals along with the basic food elements. These essential proteins, fats, and carbohydrates

are just as vital as vitamins, and food experts agree that in the use of more vegetables we have the answer to better nutrition and health. Let us grow, choose and use our vegetables along with other foods as sources of minerals and digestible nutrients, but at the same time seek the added blessings of their *Vitamins for Greater Vitality for Victory*. Victorious indeed is the individual who avoids excesses in eating, but who daily gets the right amount of a well-balanced digestible ration of water, proteins, starches, sugars, fats, and minerals—plus vitamins.

A Victory Garden in which we will grow our own vegetables as a contribution to the “all-out effort to win the war” will automatically provide us with more nutrients and vitamins than our family would obtain from “store vegetables.”

Finally, we now have this golden opportunity of sharing in a nation-wide food conservation program, designed especially to save on costs of transporting food, reduce the cost of living, and add to the supply needed to replace foods shipped abroad. Your earnings and savings from your garden, if invested in defense stamps or bonds, will help “win the war and write the peace.”

Grateful acknowledgement for photographs reproduced in this book is given to the Bureau of Plant Industry, U. S. Department of Agriculture, W. Atlee Burpee Company, Delaware Agricultural Experiment Station, Ferry Morse Seed Company, and International Harvester Company.

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WHERE TO GROW VEGETABLES

The Garden Site. You may have no choice. There may be just one spot available to you for use as a garden. It may be good, bad, or indifferent. If the conditions essential for a profitable garden are really bad, the best thing to do is to forget gardening until you can arrange to buy or rent some ground where vegetables will thrive. The bad conditions which make gardening unprofitable are those associated with unworkable soils, absence of sunlight, inadequate moisture, and poor drainage. Although very bad soils can be greatly improved by providing necessary drainage, improvement of their physical condition, and renewal of their fertility, it is folly, with very few exceptions, to try to grow crops in the shade.

If your conditions are really bad as regards these three essentials, it would be much better to seek another site for your garden. If, on the other hand, the plot of ground available will provide sunlight for an average of at least six hours a day, and your soil is not too heavy and sticky,

or water does not stand long after heavy rains, your chances for moderate success are excellent. Under these conditions you will have an incentive to improve the texture and fertility of your soil, remove trees to provide more sunlight, and supplement the natural water supply as needed.

Ideal Garden Soils. In choosing a site, select as level a piece of ground as possible, fully exposed to the sun and preferably longer from north to south than east to west. In general, a southern exposure is better and favors earlier crops. The land should be free of tree and vine roots. Protection by buildings or other windbreaks, especially from the north, will also favor earlier maturity of crops. A spadeful of soil, turned over two or three days after a rain, should fall apart, or a fistful clenched in the hand should crumble when released. Such a soil is said to be friable. On the average, sandy loams respond more readily to kind treat-



An excellent beginning for a small, well planned garden

ment than heavier soils. Although even very heavy clays or clay loams can be made productive and satisfactory, two or three years may be needed to change their texture or "make them over" into looser, more friable soils, where beneficial soil bacteria as well as the roots of vegetables can flourish.



Friable soil crumbles in the hand

A Mighty Good Sign

A good supply of decaying organic matter or humus is a mighty good sign in both sand and clay loams. It is for this reason that manure and plant residues are returned to the soil. The better garden soils are also fairly deep and should prove to be "pay dirt" if the topsoil to at least the depth of a spade is permeated with humus and decaying vegetable tissues, but not sharply separated from the subsoil by an impervious layer of clay or hardpan. The really good garden soil must also be relatively "sweet," and by this is meant it should be almost neutral or only slightly acid in order to favor the best development of most vegetables. Soils that are acid are often indicated by growth of sorrel, moss, oxalis, or other acid-loving plants. Such soils should be limed to correct this acidity. The improvement of garden soils is discussed in our section on "Manure, Fertilizer, and Lime."

THE GARDEN PLAN

Types of Gardens. Although a dozen or more different types of home gardens might be described or classified as to size, we may assume that there are only about four essentially different kinds of home gardens.

First, there is the farm garden, which may supplement other crops grown on the farm, but for the most part undertakes to provide the abundance of vegetables and small fruits needed for the family and farm hands, with a liberal supply for home-canned foods. Such a garden might range from one-half to even five acres in size.

Second, there is the subsistence type of garden, illustrated on page . . . , which normally produces all of the vegetables and many of the fruits needed for a family of five or more. This garden might vary from one-fourth to one-half acre in size.

Third, a very common type of suburban, backyard, or vacant-lot garden contains about one-twentieth of an acre or is in a plot 30 x 75 feet in size. Such a garden, illustrated on the two center pages, if intensively cultivated, may produce

most of the needed vegetables for a small family from early spring until late fall.

Fourth, there is the small kitchen patch, available on almost every city lot. Probably not more than twenty feet square, or about one one-hundredth of an acre, it will provide the delights of fresh vegetables for many meals and substantially reduce costs of living in more populated places.

This is to be *your* garden. No one can work out a plan for you in the most minute detail, and you probably would not want anyone to do so. Some sort of plan, however, you must make, and the better your plan, the greater will be your joys of anticipation as well as realization.

Suit Your Own Needs

Suggestions for a better arrangement and selection of the vegetables are always appreciated even by the most experienced gardeners. There are certain obvious similarities between all garden plans. There are reasons for changing the best of plans to fit in with your own conditions. The suggestions which follow and the typical garden plans shown in diagram and in perspective should not be copied in their entirety, but instead you should question their application to your plot of ground.

Consider especially the length of your growing season as it applies to a succession of two or more crops in a single season. These plans and most of the suggestions made, apply to the middle temperate zone in the United States, but a reference to the map and to the planting-time chart on pages should at least set aside any qualms about *what not to plant*. Answers to questions about the



Don't start without a plan

adaptation of vegetables to your soil in its present state of fertility and physical condition as regards drainage and water supply, may be found in the articles relating to these subjects. You can then better make up your mind as to "*what vegetables should grow.*"

Vegetables for a Victory Garden

Successful and experienced gardeners do not attempt to raise too great a variety of vegetables. They have learned by "hard knocks" the pitfalls of "dividing their eggs into too many baskets." Inexperienced gardeners should limit the number of vegetables planted to those that can be cultivated and utilized without waste. This number should probably not exceed a dozen in any one season. Concentration and conservation of one's efforts, always important, are doubly important now in wartime, when it is a sin to waste seed, time and energy that could otherwise better be employed in our "all-out war effort."

Appeal to All

Although we will describe more than fifty different vegetables, many of them have no place in *your* garden and our only object in discussing them is to include vegetables which might *have a place in some other* garden North, South, East or West. There are, however, certain vegetables which make a universal appeal because of their excellence, ease of culture, and extensive adaptation to soils and climates throughout the nation. These vegetable crops are featured in the Garden Plans which follow and are double starred (**) in the descriptive text. Novices in the art of gardening may do well to limit their efforts to the culture



Don't plant too many kinds of vegetables

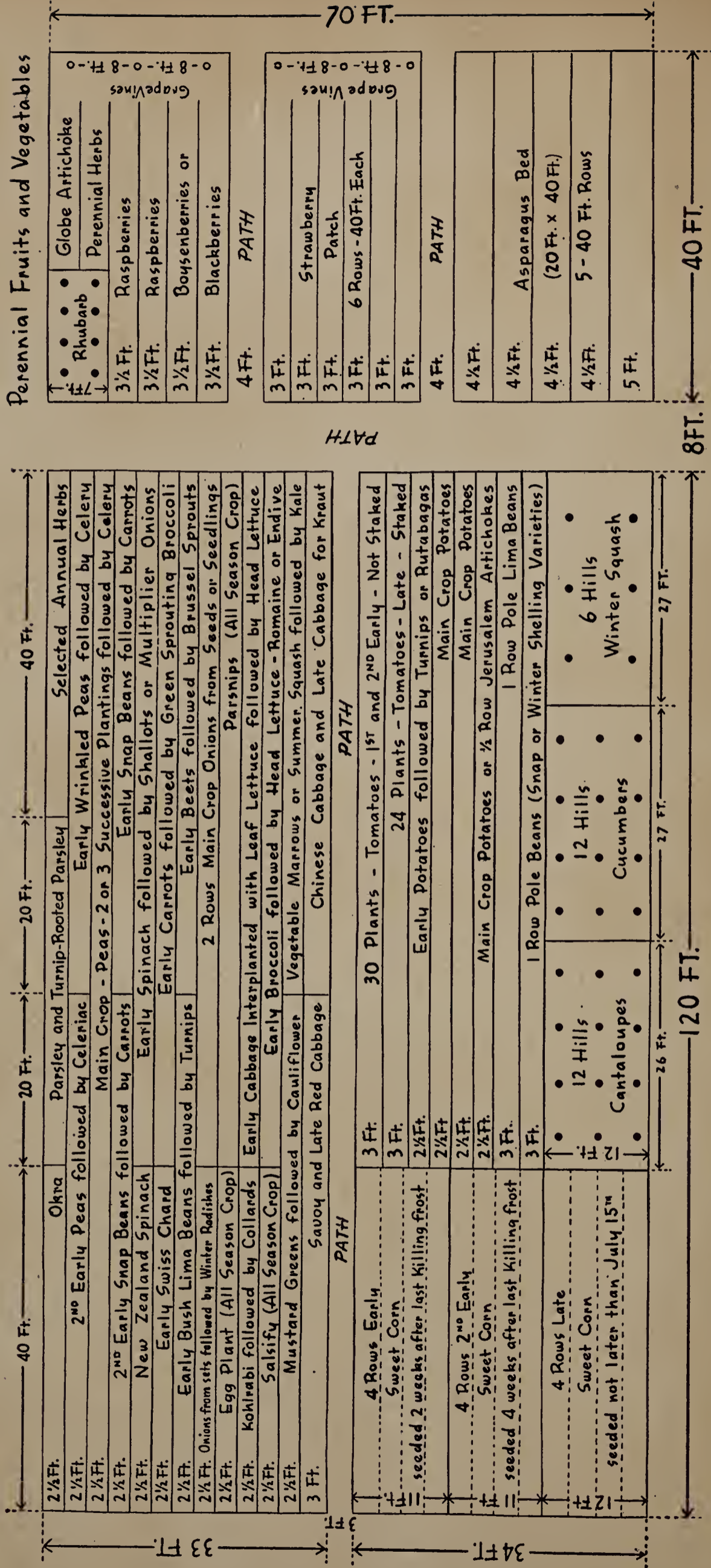
of the first ten or twelve of these selected crops, which are here listed as nearly as we can evaluate them *in order of their usefulness* to the average home gardener:

- | | |
|-------------------|------------------------|
| 1) Beans | 12) Endive |
| 2) Tomato | 13) Sweet Corn |
| 3) Lettuce (Leaf) | 14) Peas |
| 4) Carrot | 15) Kohlrabi |
| 5) Onion (Sets) | 16) Kale |
| 6) Beet | 17) Parsnip |
| 7) Radish | 18) Broccoli |
| 8) Swiss Chard | 19) Peppers |
| 9) Cabbage | 20) Egg Plant |
| 10) Spinach | 21) Turnip or Rutabaga |
| 11) Parsley | |

Substitution may be made of certain similar vegetables in the same group, such as other cole crops for cabbage or of shallots and leeks for onions. Conditions of soil, climate, and size of garden, or more mouths to feed and more free time and available labor might also justify some changes in the above list. Most of the single starred (*) vegetables which will be discussed might readily be substituted for the last ten listed, but the culture of vegetables not commonly grown in your neighborhood should certainly be undertaken only after consultation with experienced vegetable growers or your State Agricultural Experiment Station.

SUBSISTENCE GARDEN

70 Ft. x 168 Ft = 1/4 Acre +



This plan provides a great variety of vitamin-rich, leafy vegetables, and nutritious staples over a long season—with a substantial reserve for canning and winter storage. Longer rows, spaced wider apart, reduce wider labor of both wheel-hoe and hand-hoe cultivation

What Vegetables. In making your garden plan, you also have some personal considerations affecting you and your family. So far as possible you will want to grow vegetables that will be useful and served on your table. You may also want to grow the crops which will save you the most money and avoid planting those which may be cheaper in the market.

Then there are those questions which you must ask yourself, such as, "Am I making my selections so as to have a goodly supply of the four main crops of vegetables, namely, root crops, leafy crops, legumes such as peas and beans, and fruit crops such as tomatoes?" and again, "Shall I be able, with the help of my family, to prepare the ground that is needed, keep my garden free of weeds, water it when necessary, and cope with insect attacks and plant diseases?"

Having settled these questions to your entire satisfaction, you can then go into the details of the amount of ground you will allot to each and every vegetable. This visualization, not unlike that of furnishing four bare walls with furniture, will result in an answer to your question of "What to Plant?"

The Plan on Paper. Having carefully surveyed your plot of ground, you are now ready to put your plan on paper. A diagram, large enough and drawn to scale, will then not only indicate the length of your rows and their proper distance apart, but will also show the particular varieties of vegetables and the approximate time of sowing seeds or setting plants. Even though this plan may be subject to change, it will be a guide and a great help in laying out your work as the season progresses.

Before you start actual operations, you must decide whether you will limit your work entirely to growing vegetables which

can be raised from seeds planted in the open ground, or whether you will be forced to raise plants indoors or buy some with which to execute your plans. The suggestions as made in the discussion of the culture of the fifty-one vegetables listed and of those in the illustrated text should be helpful.

What Varieties of Vegetables

To avoid useless waste of time in selecting the particular variety of the vegetable you will want to grow, the experience of neighbors or members of your garden club might prove to be very helpful. Some varieties you may not be able to obtain, but there are others which seedsmen consider standard and well adapted for your conditions. There are also literally hundreds of varieties of certain vegetables, many of which have only a local acceptance or represent selected strains of more standardized varieties. It is therefore our purpose to offer for your consideration improved and outstanding varieties.

All-America Selections. Typical of advancement made by plant breeders, are more than one hundred superior varieties, representing over twenty of our most popular vegetables. These are the *All-America Selections* which have been awarded gold, silver, and bronze medals by a nation-wide committee of judges who have studied the growth habits of new selections or hybrids for perfection of fruit or seed at twelve or more trial grounds in many parts of the United States. These varieties are featured in the catalogs of many seedsmen.



Don't plant too much of any one crop

THE KITCHEN GARDEN PATCH

20 FT. SQUARE OR ABOUT $\frac{1}{100}$ th ACRE

CROPS

PARSLEY and CHIVES
(all Season)

SWISS CHARD
(all Season)

ONION (from Sets)
followed by KOHLRABI

ONION (from Sets)
followed by KALE

LEAF LETTUCE
followed by CELERIAC

CARROT and RADISH
followed by LATE BEETS

CARROT and RADISH
followed by LATE BEETS

BEET and RADISH
followed by LATE CARROTS

BEET and RADISH
followed by LATE CARROTS

SNAP BEANS followed by
TURNIPS or RUTABAGAS

SNAP BEANS followed by
TURNIPS or RUTABAGAS

NEW ZEALAND SPINACH

TOMATO

TOMATO



Space
Between Rows

Sow parsley seed one week before last killing frost	5 ft. for chives (cloves)	←12 inches
Sow one week before last killing frost. Then thin to stand 5 inches apart		←12 inches
Set bulbs 2 inches apart as early as it is possible to prepare a fine seed. Plant kohlrabi before July 1st		←12 inches
Set bulbs 2 inches apart as early as it is possible to prepare a fine seed. Plant kale before Aug. 1st		←12 inches
Sow leaf lettuce 1 week before last killing frost. Set celeriac plants before July 15th		←12 inches
Sow carrots mixed with a few radishes to mark row before last killing frost. Seed late beets before July 10th		←12 inches
Sow carrots and radishes as above (or seed parsnips for an all season crop)		←18 inches
Sow beets with the radishes for early crop and follow with late carrots seeded by July 15th		←18 inches
Another row of beets - followed by late carrots as above		←18 inches
Plant bush beans (green or wax) 2 weeks after last killing frost. Seed to rutabagas Aug. 1st		←18 inches
Plant second row of bush beans 3 weeks after last killing frost - turnip or rutabagas as above		←24 inches
Sow seed 2 weeks before last killing frost. (an all season crop)		←18 inches
Set a dozen strong healthy tomato plants	○ ○ ○ ○ ○ ○ ○ ○ ○ ○ ○ ○	←27 inches
3 ft. apart at least 2 weeks after last killing frost	○ ○ ○ ○ ○ ○ ○ ○ ○ ○ ○ ○	←27 inches

Rows should be wider apart on poorer soils. Closer planting is not practical - even on the best garden loams



Don't let the seed catalog floor you

SELECTION OF SEED

Now that all plans for our garden have been made, most of us will resume our studies of the seedsmen's catalog, and we shall be very fortunate if we do not become further confused by the glittering array of varieties which are described and

in the end, leave the decision to the store clerk. We should decide now, with the aid of the reference tables, how much seed of each variety we shall want to buy. We hope that the suggestions made in the succeeding chapters will at least enable us to make some decisions on what *not to buy*.

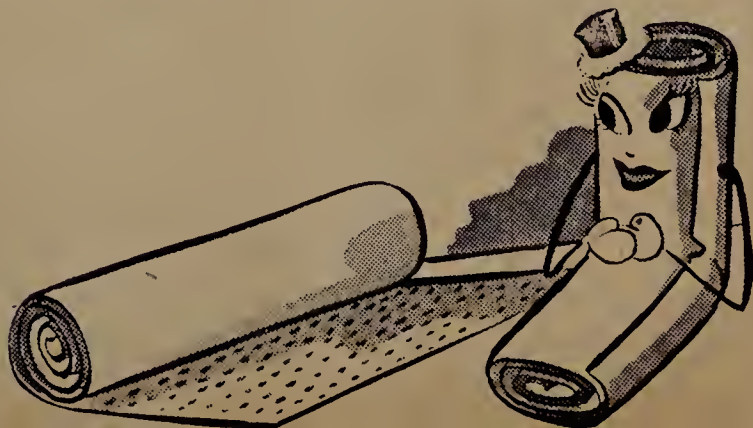


Don't waste seed

recommended. Perhaps some day seedsmen will get together and commission some sympathetic soul to write a book on "How to Read a Seedsmen's Catalog." More new gardens might be made and more seeds and plants sold. One thing is certain—we must not be confused by the beautiful novelty pages in color and then,

Use Only Good Seed. Assuredly we will buy our seeds only from a reputable seedsmen. This will be our best assurance for obtaining fresh seed that will not only germinate but is the best that can be had from the standpoint of vitality and vigor. Poor seed is a bad investment, resulting in poor stands, waste of ground, or unnecessary replacement by reseeded. If in doubt about any seeds, test a sample by keeping them between wet blotters, counting the number that germinate and the percentage of germination. Better still, use the Rag Doll method by placing seeds between moistened cloths. We shall also want to give preference to disease-resistant varieties and, if possible, purchase seeds of vegetables that have been chemically treated for disease prevention. It is also very important that we select those varieties of certain vegetables which are known to be adapted to our local soil and climatic conditions.

Make a "rag doll" for testing germination before planting certain seeds





Don't start too early. Wait for Jack Frost to come out of the ground

THE SOIL AND ITS PREPARATION

The importance of good soil has been stressed, but most good soils can and should be made better each and every year. Even more important are the steps necessary for the improvement of average or poor soils. There will be no essential difference in the methods used to achieve greater productiveness of either good or poor garden soils, but rather in the degree of our efforts. Better drainage may be obtained either by tile underdrainage or surface ditches, both to remove excess or standing water, and to maintain a water level favorable to the movement of water down through the upper two or three layers of soil and upwards to the cultivated layer. The next step will be to take advantage of the better physical condition of the soil created by drainage and further improve its texture by adding organic

matter or humus from well-rotted manure or from compost piles of decaying plants. While we are thus improving the texture of our soil, we are at the same time adding fertility, including available plant food



Your compost pile adds humus—organic matter which improves garden soils



and also providing a medium in which beneficial soil bacteria can multiply and create more favorable conditions for the growth of plants. This speeding-up of the life processes of soil will be further accelerated by the annual use of manure, lime, and fertilizer.

Preparation of Soil. Assuming that we have a fairly deep mellow loam with

Rake and roll for a fine seed bed

good drainage, we shall want to have it plowed or spaded just as early as possible. This does not mean that we should stir the ground before it is dry enough, since even some otherwise workable soils will become compacted and lumpy, making it difficult later on to prepare a seed bed. If you hire your ground plowed and fitted, provide in your contract for thorough harrowing or dragging and, if possible, the removal of stones and rubbish. The proper depth of plowing or spading is determined by good common sense. Under no condition should we bring up too much unfertile subsoil, but should dig deep enough to insure the penetration of roots for a full supply of plant food and moisture. The proper fitting of the soil must include the breaking up of all clods, removing trash and pulverizing the upper two inches. The use of either a disc or drag harrow and a roller will reduce the



Don't make a garden in rocky soil

number of man-hours of labor, although, when seeding time comes, the use of the hand rake is usually necessary. In making a new garden, if sodland is turned under, it may be best to shake the dirt loose from the sods, destroy the larvae of insects, and use the residues in the compost heap.

MANURE, FERTILIZER, AND LIME

Animal Manures. Both the oldtimers and modern market gardeners will agree that there is nothing better for growing vegetables than good barnyard manure, and yet there are many successful truck farmers and gardeners who now rely altogether on the use of green crops turned under, composts, and commercial fertilizer. The reason for this is that good manure is both expensive and difficult to obtain. In fact, many gardeners are fortunate if they can secure enough fresh horse manure to produce the necessary bottom heat for their hotbeds, and must rely on electrically heated forcing beds. Good manure for use in garden soil should be well rotted, and manure with too much straw should be avoided. Prob-

ably greater benefit may be obtained from manure by using it in the compost and sprinkling it with fifty to one hundred pounds of superphosphate to the ton to reduce the loss of ammonia. Such well-rotted manure, reinforced in phosphoric acid, may also be applied as a heavy top dressing (about one ton on a 30 x 75 foot garden) before plowing or spading. If fresh manure is used, a fall application is preferable.

Poultry and dried cow and sheep manures are two to five times as concentrated as fresh horse or cow manure which is mixed with straw or bedding material and should be used accordingly. All are excellent sources of nitrogen, but usually are more costly than fertilizer for the units of plant food which they supply.

Commercial Fertilizer. Animal manures, however, are not well-balanced fertilizers, and even heavy applications may not provide all of the quick-acting nitrogen, available phosphoric acid, and potash needed for the intense cultivation of vegetable crops. The home gardener cannot very well select the especial fertilizer analysis needed for certain crops and therefore finds it quite satisfactory to use an *average analysis*. Thus, while it might be more profitable for him to use a fertilizer furnishing 10% of nitrogen on leafy crops, and 12% of potash on root crops, he will strike an average and use such a fertilizer as a 5-8-7 on everything in his garden (5% nitrogen, 8% available phosphoric acid and 7% potash). One per cent more or less of phosphoric acid or potash may not be so important; but lower-grade fertilizers containing less total plant food—and, especially, less nitrogen—are not so effective, excepting where heavy applications of animal manures have been made. Where garden loams have been greatly enriched with nitrogen, the recommended rates of application of fertilizer may be reduced or even cut in half. Those exceptional soils which furnish too much nitrogen should receive a special fertilizer, such as an 0-12-12 or 0-20-20, from which nitrogen is omitted.

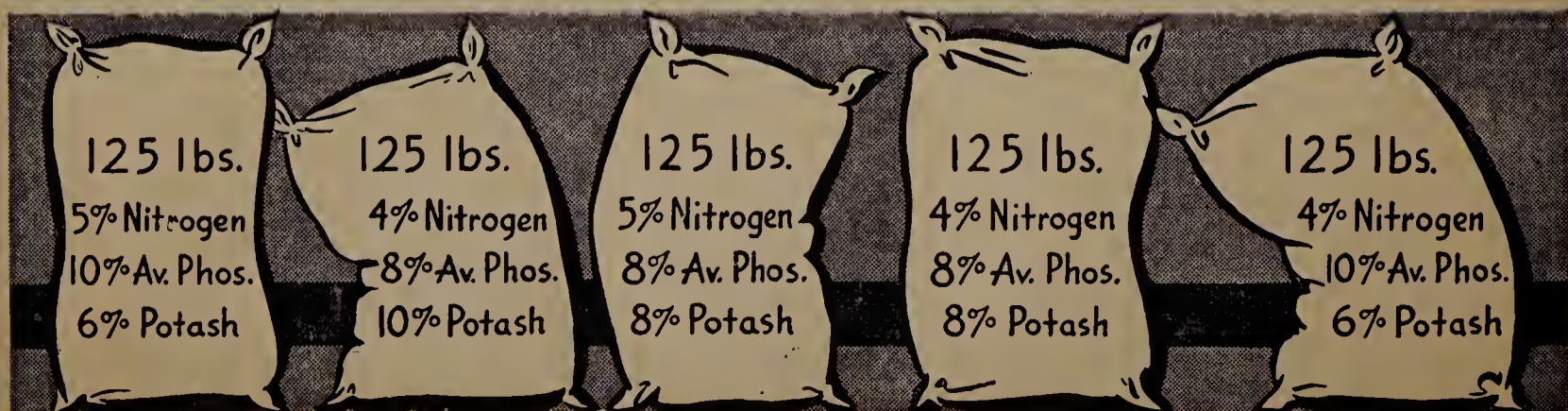
Although specific suggestions for the use of other fertilizers, more in accordance with the demands of certain vegetables, are made in discussing the culture of these crops in succeeding chapters, the home gardener will do well to heed the following instructions for the use of fertilizer. It

may help him not only to make better use of commercial plant food, but also to avoid injury to seeds and plants.

How To Use Fertilizer. On small gardens, most of the fertilizer (usually fifty to one hundred pounds on a plot 30 x 75) should be applied broadcast and well worked into the soil a week or ten days before making up rows or planting seeds. On larger gardens, especially where rows are farther apart, probably half of the fertilizer applied broadcast and the other half well mixed into the row, especially for long season crops, will prove to be more profitable. The greatest care must always be used to avoid direct contact of fertilizer with seeds, seedlings, and plants. This also applies to the use of *nitrogenous side dressings*, such as nitrate of soda, cyanamide, and sulphate of ammonia. For leafy crops, usually planted with rows close together, a pound per hundred feet of row of any of these materials applied to the soil alongside, but not touching the plants, and repeated after two or three weeks, is safer and better than one heavier application. Always cultivate the fertilizer into the soil without disturbing the roots. It is more economical to purchase fertilizer in one hundred or one hundred and twenty-five pound bags than in small packages.

The Use of Lime. The consistent use of lime in growing vegetables means that only the right amount of lime should be applied to correct acidity. Most garden soils should receive an application of one-

All good garden fertilizers



half ton of lime to the acre every other year over a period of five or six years, and very acid soils might receive two or three times this amount for the first application (100 to 150 pounds on a plot 30 x 75). The proper amount to apply can best be determined by making a test for acidity yourself or having one made by a local county agent or vocational teacher.

The home gardener will find the use of hydrated lime both more expedient and more effective, although if agricultural, pulverized or ground limestone is more readily obtained, approximately fifty per cent more of this material should be used than of hydrated lime. Hydrated lime can be purchased from almost any hardware store or builders' supply house.

TOOLS AND EQUIPMENT

The essential tools for the profession of gardening are, of course, a spade, a hoe, an iron rake, a hand weeder, a trowel, and twenty-five to two hundred feet of cord or twine for a garden line. The owner of a small garden usually cannot afford to invest in laborsaving tools, but as your

both, may also be needed to combat insects and plant diseases. There are other rather inexpensive small tools which will prove very useful, such as the narrow-bladed hoe, spading or manure fork, and combination rake and roller. An extension for the lawn or garden hose may be necessary, while a wheelbarrow and fertilizer distributor, always useful, would be optional equipment for larger gardens. In the final analysis, resort to the use of the hand hoe is inevitable and even hand weeding may decide the issue of success or failure.

There are many excellent tools for specialized gardening and also gadgets of more limited usefulness which are seldom purchased by practical gardeners. Good tools, properly cared for, will last many years, and good gardeners will never blame their tools for crop failures.



Tools of the gardening profession

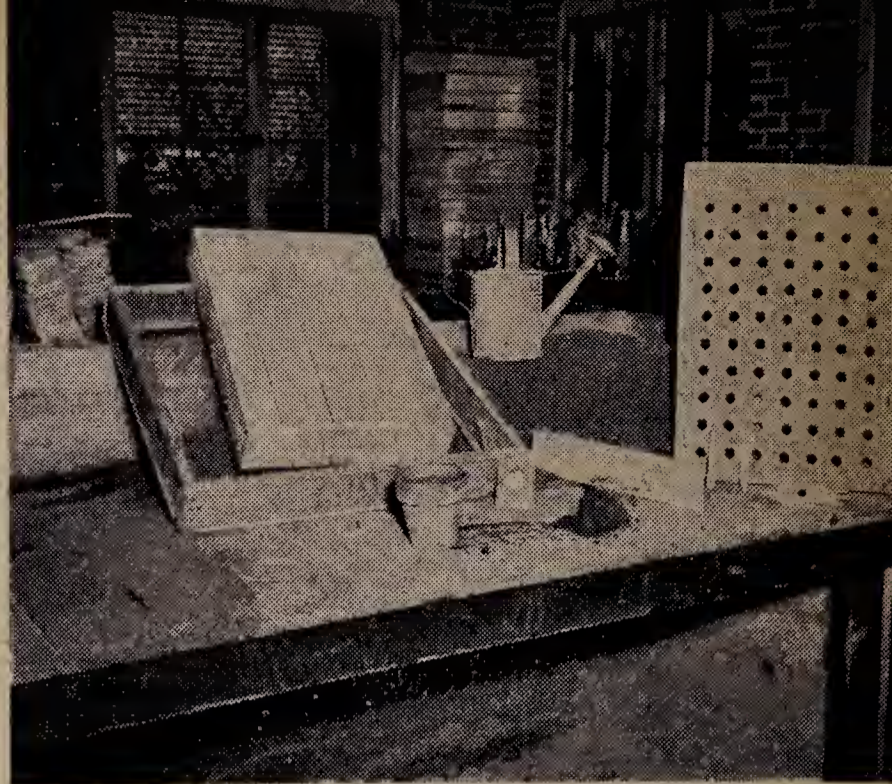
garden grows in size, you will not only *wish* to buy but very likely *will* buy additional equipment. The longer rows of larger gardens make the use of a wheel cultivator with various attachments not only a convenience but almost a necessity. A hand or knapsack sprayer or duster, or



Don't clean your garden tools in water



Start seed early in flats, using fine soil or sand



Soil, sieve, flat, dibble and spotting board for first transplanting

WHEN AND HOW TO SEED AND PLANT

The "when and how" of vegetable gardening are closely associated in both thought and act. Although there are general principles which apply to the time and method of planting all vegetables, and others to certain classes of vegetables, the successful home gardener will eventually come to know the growing habits of his plants so well that he will apply his knowledge of the "how and when" to each and every crop that he grows.

When to Plant. Good gardeners no longer wait for the "light of the moon" to plant seed or set plants, but they will nevertheless be very insistent on planting things as nearly at the right time as possible. By keeping "ahead of their work" instead of behind, they will always be ready when the spring opens up and good common sense indicates that it is safe to plant any particular vegetable. This preparedness program not only provides for having the soil ready and in good condition for seeding but for making the necessary arrangements for seeds and plants. Those gardeners who have the

time and space for gardens of a half acre or more, can well afford either to start their seeds indoors or in a hotbed. This applies especially to the growing of plants which produce their edible portions for us during the spring and early summer, but also applies to certain vegetables, like celery, which could not be grown from seed, particularly in northern climates.

Starting Plants Indoors. Seeds are usually planted in flats or boxes containing two or three inches of soil ($\frac{1}{3}$ each of sand, leaf mold, and garden soil). Seed is usually planted thickly in rows only about two inches apart and then trans-



Don't plant seed too deep

planted two or three days after the first true leaves appear, either to other flats or pots with richer soil. Spotting boards, such as shown in the illustration, and a dibble or pointed peg, provide regular spacing of a half to two inches apart for the transplanted plants. These are usually set to the depth of the first seed leaves, thoroughly watered, firmly packed and protected from the sun. Before these transplanted plants are ready for the garden, they are gradually hardened off by lowering the temperature and reducing the water supply. A cold frame is used for this purpose.

Outdoor Hotbeds. An outdoor hotbed can easily be constructed by sinking into the ground a wooden frame banked with fresh manure. These frames are usually 3 feet x 6 feet in size, sloping from a height of 16 inches in the back to 8 inches in the front. Half-sized frames are also obtainable, as well as their glass sash covers. A layer of from six to ten inches of fresh well-watered and packed horse manure is used as a base for five or six inches of good garden topsoil. After the frame is covered with a sash of glass, plants should not be set until the temperature drops to an average of 90 degrees. Otherwise plants transferred may wilt and die.

Cold Frames. Cold frames are usually filled with only three or four inches of manure and less topsoil, but otherwise are similar to hotbeds, except that they are more often used for spotting and hardening plants grown in the greenhouse before they are set out in the garden. De-



Transplant seedlings into pots or hotbeds

sired temperatures for both hotbeds and cold frames are maintained by raising the sash during the heat of the day and by covering with hay or straw at night.

Planting Seed in the Open Ground. To avoid waste of seed and the labor of replanting later on, no seed should be sown in a soil which is too wet or which has not been properly pulverized. Even though the seeds of certain vegetables, like peas, beets, cabbages, onions, lettuce, and spinach, will germinate at soil temperatures of 50 degrees or less, or even stand freezing temperatures, time will be gained by waiting until "spring opens up." Moisture is essential for germination, and although hard-coated seeds, like peas and beans, may be soaked before planting, it is usually better to wet down the furrows and cover the seeds immediately after planting, to conserve moisture. Sowing after rather than before a rain, especially on heavier soils, is the better practice, if the soil is inclined to bake. The crusts which will form under these conditions should be promptly broken with the rake. Firming of the seed bed after planting, by tamping with the rake or roller attached to the seed drill, or by tramping with the feet, is a universal practice and applies particularly to lighter loams and sandy soils.

Start your plants for extra-early or later "tender" vegetables in a hot bed





Make good straight rows and shallow furrows for most seeds

Experience as Your Guide

In general, seeds should be sown thickly enough so that proper spacing is assured after the thinning process which follows germination. Although the amount of seed to sow can be determined in a general way by reference tables or instructions on the seed packet, the good judgment of the gardener is usually a product of experience with seeds sown either too sparingly or too thickly. When too many seeds are sown, there may be a loss of plants from disturbing the roots at thinning time. Seeds of root crops should be sown relatively thin, but an excess of seed is desirable in making up hills for melons, cucumbers, and squash.

The use of a tape measure or a rod or stick marked off into feet and inches will enable you to stretch the garden line for the marking off of straight rows at equal distances apart. The furrows to be made for small seeds are then made either

with the corner of the hoe or a lath or dull-pointed stick, or by a special type of "shoe" on the wheel cultivator, if you have one of the right size and type.

Thinning and Transplanting. A certain amount of thinning of plants after germination is almost inevitable, even when the optimum amount of seed is planted. Plants that grow in crowded rows become spindly and stunted in early life owing to unnecessary competition with one another. The strong, healthy plants should always be allowed to survive. The number of plants to be left in the row depends not only on the particular crop, but on the different varieties which vary in their growth habits. Although it is possible to utilize certain plants removed in the thinning process by transplanting them under favorable conditions, certain plants like carrots, parsnips, and salsify resist transplanting in open ground. Roots of many plants which are removed without sufficient adhering moist soil should be immediately "puddled" or dipped into a thin paste of soil and water and then transferred at once to their new abode. The roots should not be exposed to the air even for a short period. Trans-

A few crops, like peas, are planted in furrows two or three inches deep





Disturb roots as little as possible when transplanting



After seed is covered, tamp with a hoe



Don't waste seed when sowing from the packet

planting solutions prepared from chemical hormones are helpful with certain crops. It is usually a good practice to set transplanted plants down nearly to their first true leaves and to firm the well-moistened ground about them.

Intercropping. In the plans laid out for our gardens, we provided for a succession of crops in order to make the best possible use of every square foot of ground, but did not definitely plan on companion crops or the growing of rows of early crops in between some of the slower maturing sorts like broccoli or cabbage. This is an optional practice, and may be followed out either by a separate seeding or by utilizing plants transplanted from a seed bed or by salvaging the "thinings."

Marker row crops, such as radishes in the same row with carrots or parsnips, are sometimes called partnership crops, but this term is also used for the less desirable practice of growing pole beans in the corn hill. Why not call all such crops "Buddy Crops"?



Don't start a job you can't finish

Husky plants in paper pots or protective bands will "get off to a better start"





Don't spare
the water!

CULTIVATION AND IRRIGATION

All gardens must be cultivated and most of them will be benefited by irrigation or watering during certain seasons of drought, and it is even profitable to frequently supplement the natural rainfall, even though this may not be absolutely necessary to prevent wilting or starvation for lack of plant food.

Cultivation. A good hoeing sometimes is worth even more than a light shower. Hoeing should follow almost immediately after a light rain, but never while the soil is still sticky. Remember that insects and small bad boys are not the only thieves of the garden. Weeds are usually arch criminals. Cultivation is also advisable even if there are no weeds, for

regardless of theories of the value of cultivating soil for aeration and free movement of water, we know that the practice of hand hoeing is profitable. One good rule would be to cultivate at least once a week. We should at all times, however, avoid such deep cultivation as may cause injury to the roots of plants, keeping uppermost in mind the killing or uprooting of weeds before they become established. There is a satisfaction in getting the best of weeds rather than allowing them to get the best of us. Look upon them as robbers that steal the moisture and fertility needed for our crops and, furthermore, often harbor harmful insects and fungus diseases.

Irrigation. Most green plants contain from eighty-five to ninety-five per cent of water, but the amount of actual water in them is only a very small fraction of the amount that is needed during the processes of their growth. The intake of water through their roots and its transpiration through the leaves from birth to fruiting time is enormous. This water must be supplied, and if nature is not kind in providing it through rainfall, or if the moisture does not penetrate the soil, or is lost through drainage, some sort of irrigation must be practiced.



The wheel-hoe saves labor in opening furrows and cultivating the soil



Don't heave too heavy a hoe

Water for the Garden. Although the amount of water and the frequency of application to the garden will vary according to natural rainfall and the type of soil, we must be guided by the needs of vegetables some of which require much more water than others. Habits of growth and development of root systems have much to do with this. Most root crops send their roots downward after moisture and may not suffer like shallow rooted leafy vegetables. The home gardener might better take a chance on the side of "too much" water than not enough. This does not mean watering the garden too often, but rather giving it a good soaking to induce penetration to a depth of at least three inches. To be really effective, water should be applied in one place until it soaks into the soil, and mere sprinkling should be avoided since, like a light

shower, it brings the roots to the surface where they may be scorched by the sun.

In dry weather it is a good plan to make shallow furrows with the hoe, alongside of plants so that water will run to them rather than away from them. The irrigation of the garden by means of open ditches is only practical where the seepage of the water is toward the roots of the plants and the run-away will be so gradual that available water will not be lost. Occasionally good gardens are located on soils where the water table may be within eighteen to thirty inches of the surface, and it may be necessary to provide permanent ditches at intervals of twenty or thirty feet to lower the water level. Tile drainage is usually the better solution in gardens that have too much water.



Don't let the weeds win the fight

WAR ON INSECTS AND PLANT DISEASES

Preparedness, to meet the onslaughts of insect enemies and the numerous diseases that may attack our garden vegetables, will win the battles and final victory. Home gardeners, however, should not be discouraged from planting gardens because

they think they do not have or cannot afford the "implements and munitions" needed for the job. There are many simple remedies for repelling or killing insects. Seeds may be purchased that have already been treated to prevent "damping



Don't let the bugs beat you

off" at germination time. Materials for combating fungus and other plant parasites are relatively cheap, and many gardeners come to rely on only two or three chemical treatments, such as the copper-rottenone dust, the bordeaux mixture, and the simpler remedies known to all gardeners. Although specific treatments are described in the section on our common vegetables, and formulas for mixing them are shown on page, some general suggestions should simplify our understanding of "Garden Defense" measures.

Preventive Treatment. "Alert" number one should be sounded before the plow or the spade is used in your garden. The execution of our orders may include the destruction of all trash that has harbored insects. After the garden is plowed or spaded either in the fall or early spring, do not cultivate or fit it until a few days before you are ready to seed and plant. Then, insofar as possible, either buy treated seed or treat according to directions with copper or organic mercury dusts so that you may avoid seed-borne diseases.

"Alert" number two may be sounded when certain plants are just coming through the ground, and you will avert disaster either by placing poisoned bait or

Hand-pick 'em—when necessary

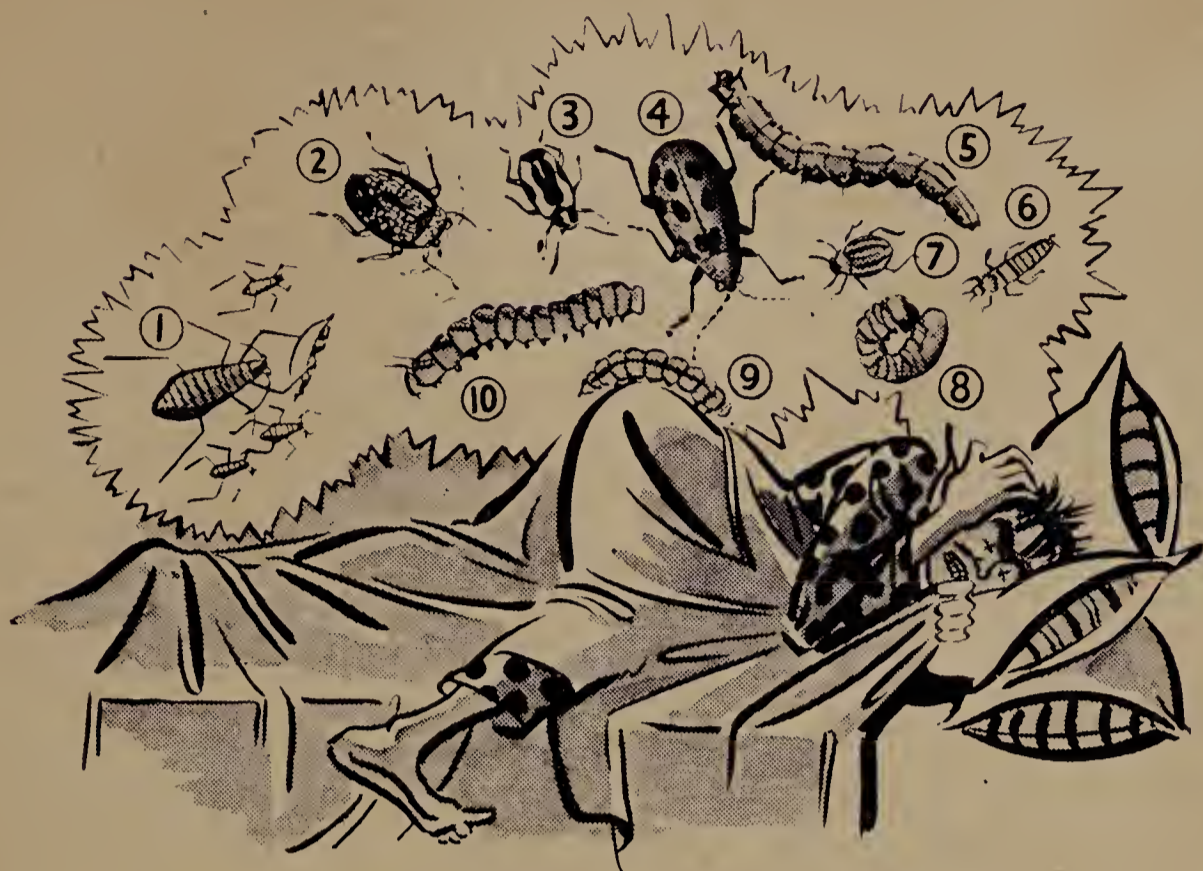
by thorough dusting after the first true leaves appear.

"Alert" number three may be sounded at any time during the growing season; and even though you find your "enemy at your gates," your preparedness with nicotine dust or spray will enable you to kill aphids or lice. If a mobile army of leaf-chewing insects descends under cover of darkness, you will have your spray gun or dusting gun ready and loaded with rotenone, pyrethrum, or a combination bordeaux-arsenate mixture.



Immediate action on your part will rout the enemy. Perhaps no amount of spraying or dusting will get rid of all of the cutworms and "borers from within," but they can be rooted out bodily and destroyed. A good rule to follow is to take nothing for granted but to be ready at the sound of the "alert" and keep your guns trained so as to shoot underneath the leaves as well as on top if you want to eliminate all of the "snipers."





Avoid a nightmare from (1) aphids, (2) and (3) flea beetles, (4) cucumber beetles, (5) wireworms, (6) thrips, (7) potato beetles, (8) white grubs, (9) corn ear worms, (10) tomato hornworms

Seed Treatments. Pre-treatment to disinfect seed and kill fungi and bacteria varies with the crop, type of seed, and number of infections to be controlled. Thus, two or more different treatments may be necessary for some vegetable seeds. Although protective against soil-borne diseases, seed treatments do not take the place of soil sanitation and weed eradication.

Soak cabbage seed for twenty-five minutes in hot water at 122 degrees F. to combat Blackleg and Black Rot. (Soak cauliflower, broccoli, and Brussels sprouts seed for only eighteen minutes.) Either red copper oxide (Cuprocide) or zinc oxide and one of the organic mercury compounds (Semesan and others) are used against "damping off" of seedlings and for certain blights of asparagus, beet, carrot, Swiss chard, cabbage and other cole crops, cucumber, melons, peppers, lettuce,

radish, rutabaga, and spinach. Use commercial preparations as recommended by the manufacturer, who suggests different concentrations or prepares special formulas for such crops as peas, tomato, sweet corn, peppers, and egg plant. Treatment of melon, cucumber, squash, and tomato seed with a 1-2000 solution of deadly poisonous corrosive sublimate should precede dusting with red copper oxide or organic mercury compounds.



The family enlists and is armed with crank duster, hand and knapsack sprayer



STANDARD REMEDIES FOR DISEASE AND INSECT CONTROL

The greatest caution should be exercised both in preparing and using the poisonous substances in the following formulas. Vegetables should always be thoroughly washed to remove poisonous residues. The principal pests and the diseases for which the formulas are used are shown on the left; the formulas themselves, on the right.

I. CROPS AND INSECTS

Asparagus beetle, blister beetle, bean-leaf beetle, beet and bean webworm, diamond-back moth on cabbage and cole crops. Cucumber, squash and melon beetles, also flea beetles on many crops.

STOMACH POISONS

SPRAY:	
Calcium arsenate	1 oz.
Hydrated lime	2 ozs.
Water	2 gallons
DUST:	
Calcium arsenate	7 ozs.
Hydrated lime or flour	3 pounds

II. CROPS AND INSECTS

Cutworms on peas, cabbage, cauliflower, lettuce, corn, tomato and many other garden crops. Use bran bait on soil about plants. (Formula not useful for the black cutworm.)

II. POISONED BRAN BAIT

Paris green	1/2 oz.
Wheat bran	5 pounds
Molasses	1/2 pint
Water	5 quarts
(Sufficient for 200 feet of row)	

III. CROPS AND INSECTS

Sucking insects (aphids or lice) on cabbage, peas, bean, squash, lettuce, beet-root aphid, spinach, turnip, and melons. Also thrips on onion.

III. CONTACT POISONS

SPRAY:	
40% nicotine sulphate	1/2 oz.
Soap, any kind	1 oz.
Water	2 gallons
DUST:	
Hydrated lime	2 pounds
40% nicotine sulphate	1 oz.

IV. ROTENONE AND PYRETHRUM DUST AND SPRAY

Many home gardeners and some professionals are relying more and more on either rotenone or pyrethrum dusts and sprays for most leaf-eating and some sucking insects. These dusts are not normally poisonous to animals or humans, but should preferably be purchased in the proper strength and used according to the recommendations of the manufacturer. Success is also reported from the use of commercial copper rotenone mixtures for the control of both insects and fungus diseases.

V. CROPS AND DISEASES

Blight on celery, beet, tomato, melons, etc. Anthracnose on egg plant, tomato, and watermelon. Leaf spot on beet, celery, and tomato. Mildews on onions, melons, peas and cucumber. Formula also useful as a repellent to drive away flea beetles, leaf hoppers, and blister beetles from many vegetables; useful, too, with soap emulsion for maggots on onions.

V. FUNGICIDE (FOR PLANT DISEASES) BORDEAUX MIXTURE:

Pulverized bluestone (copper sulphate)	1 oz.
Hydrated lime	2 ozs.
Water	2 gallons
Dissolve bluestone in earthen vessel in two quarts of warm water. Mix hydrated lime with cold water to make a thin paste, add bluestone solution, stirring constantly as you add water to make up to five gallons.	

VI. COMBINED INSECTICIDE AND FUNGICIDE

SPRAY: For a good combined insecticide and fungicide spray, add one ounce of calcium arsenate per gallon of bordeaux mixture made in accordance with formula V.
DUST: An excellent combined dust is made by mixing two pounds of hydrated lime with ten ounces of dry calcium arsenate and eight ounces of monohydrated copper sulphate.

HARVEST AND STORAGE OF VEGETABLES

Having grown your vegetables to their most delectable eating stage, it might seem to be just a matter of pulling them or yanking them from their vines and throwing them into the pot. Unfortunately, even professional gardeners are sometimes careless in picking or pulling, with the result that roots are broken off in the ground and vines are injured or killed by rough handling. In heavy soils, it will pay to use the spade or a large trowel in lifting roots, especially tenacious ones like carrots or parsnips; and children should be especially cautioned, in picking beans or peas, so that vines will be carefully protected with one hand when pods are snapped off the vines with the other.

Winter Storage. During the growing season, home-grown vegetables in reality should not be "stored" at all, but plucked, prepared, cooked, and served without delay. Otherwise they should receive the same treatment as vegetables from the market, which should always be stored in a cool, humid place. Some of them, like asparagus and many leafy vegetables, should either be stood in water or sprayed to preserve their crispness.

Winter storage of vegetables may have no place in the modern scheme of living of some suburban gardeners who do not have unheated portions of their cellars or who do not find it practical to open up pits for cabbage or root crops during the winter. Neither will they want to dig into frozen ground for parsnips, salsify or other roots which are often sweeter although frozen. Even those who do have unheated cellars may well give more careful attention to moisture and temperature conditions. Carrots, beets and other root crops may be stored in sand to prevent their drying out, but ventilation as well as a low, constant and above-freezing temperature always is a prime requisite. Thus, if a room is partitioned off from a heated cellar, it must not only be insulated, but provided with at least one window for ventilation. Shelves for crates and boxes or open bin space are a matter of choice. Outdoor storage cellars especially constructed with ventilators which can be opened at night and closed in the day, and also storage pits or banks, are described in U.S.D.A. Farmers' Bulletin No. 879. More detailed instructions are given in other circulars and bulletins.

Barrel storage pit, well ventilated and well covered with earth



FRUITS FOR THE GARDEN

One of the questions which might arise or which may be suggested by some member of the family will be, "What about growing some fruits in our garden?"

Although not often practical in the smaller home gardens, there are conditions where fruits might be grown even to the exclusion of vegetables. The fruits which you might want to consider are perennials, which will, of course, require pruning, thinning, resetting, and fertilizing. A certain amount of seasonal work is necessary for their successful culture, but you may not be required to give fruits the constant and consistent attention required by vegetables.

Perennial Fruits. Although strawberries may be the first to suggest themselves, a row or two of raspberries or blackberries can often be placed along the fence or with other perennial crops, where they will not interfere with the culture of vegetables. Included with raspberries are the Dewberries, Loganberries, Boysenberries, Youngberries and other hybrids of these cane fruits—all of them well adapted for home gardens. An arbor or a trellis might just as well be used for two or three grapevines of some favorite varieties adapted to your conditions. The planting of tree-fruits should rather be considered apart from the home garden, although there are dwarf varieties of such

fruits as the peach, cherry, quince, and pear which may be planted in gardens without producing either too much shade or creating a drain on the fertility of soil even when interplanted with leafy vegetables.

Strawberry. A home size strawberry patch might consist of four 25-foot rows which would require about one hundred plants if the rows are three feet apart and the plants set one and a half feet apart in the row, or double this number if planted in twin rows for a more matted growth. Although plants may be set either in the spring or in the early fall, most gardeners will want to set their plants in the spring to insure the all-season growth needed for a small harvest the following spring. Plants should be set so that the crowns are even with the surface of the soil, which should be firmly packed about the roots. Tillage of the soil should be thorough to keep down weeds even until the first hard frost. It is assumed that the soil of the strawberry bed has been enriched with manure and fertilizer and that the acid soils are moderately sweetened with lime.

The home gardener has the opportunity of selecting many delectable varieties that are seldom available in the markets, but he should make certain that his selection is from varieties known to be adapted to his locality. This information, if not locally available, can readily be obtained from your State Agricultural Experiment Station. Moreover, only those varieties should be planted which are known to produce perfect flowers. Otherwise fruit would not set unless a few plants, bearing these perfect pollen producing blossoms, are interspersed among "imperfect" ones.



Grow berries for healthful summer desserts, and for a year-round supply of jellies and jams.

The winter protection of strawberry vines is important in all excepting our southern tier of states. The time of applying a mulch, whether it be of hay, straw or pine needles, is also important. This mulch should not be applied until the plants have become well hardened in the fall. Severe injury often follows if not mulched before the temperature reaches fifteen degrees Fahrenheit.

Cane Fruits. It is well to think twice, if not three times, before setting out raspberries or blackberries, and this is particularly true for those living south of the Mason-Dixon Line. Raspberries are at their best in the cooler regions of the country, but only the hardiest varieties can be grown in the colder parts of the northeastern and north central states where temperatures do not normally go below fifteen degrees below zero. Blackberries have a much greater range, and the Lucretia and Young Dewberries do very well in the South.

Culture. It is advisable to open a trench and work both manure and fertilizer well into the soil before setting either of these cane fruits. Raspberries are spaced about three feet apart, and blackberries three and one-half to four feet. Only roots that are free of crown gall and other diseases should be used, and, soon after growth starts, stakes or trellises should be provided for both blackberries and raspberries. Mulching with straw or coarse litter to conserve moisture and keep down weeds is always good practice and heavy winter mulching is essential in the colder climates.

Only those varieties recommended for your locality should be considered, although there are some newly developed fruits, including the Youngberry and

Boysenberry, which can be grown under varied soil and climatic conditions.



Grapes. A single row of five or six grapevines can be planted across a fifty-foot lot, or two or three vines may be grouped on arbor or trellis where they will blend with ornamental plantings. Usually one-year-old vines are planted eight or ten feet apart, and on reasonably rich soil should produce a few bunches of grapes the second year after planting. Success with grapes depends upon careful pruning to twenty buds or less on three-year-old vines, or double this number when well established. In the South, Scuppernong and Thomas varieties are suggested, although Concord Catawba, Moore's Early, and Niagara are all excellent table grapes for northern gardens. Consultation with county agricultural agents or experiment stations concerning the varieties of fruits best adapted to your locality should be very helpful, although commercial nurseries are always pleased to render this service.





"I grew them myself!"

FIFTY-ONE VEGETABLES

Artichokes

Globe Artichoke. Neither of the two distinct types of artichokes, Globe and Jerusalem, is as popular with home gardeners as each might well be. The Globe, French or Burr Artichoke—a perennial member of the Thistle family—can be successfully grown in good rich soils throughout the South and even in the latitude of Chicago if given winter protection by covering with straw or coal ashes.

Culture. Edible flower heads may even be produced from seed the first year if plants are started under glass in February or early March, potted and set in the open when danger of frost is past. Once established, artichokes can be propagated by replanting root divisions or suckers. The rows in the garden should be at least $3\frac{1}{2}$ feet apart and the plants spaced 20 to 30 inches in the row. The plants are cut down to within 8 or 10 inches of the crown in the late fall for another season's bloom. However, for the

larger and more luscious edible flowers, new plants should be set at least every third year. The Globe Artichoke commends itself both to more experienced and more adventurous gardeners who must, however, nurture it with great care and ample supplies of plant food. At least $\frac{1}{4}$ pound of 5-8-7 fertilizer, thoroughly mixed with the soil in the hills and around the plant, will encourage succulent growth.

Jerusalem Artichoke. This useful vegetable, although more often grown by farmers for stock food, has a high nutritive value, and, when properly prepared for the table, is relished by many people. Excellent yields of the edible roots of this sister of the sunflower are readily ob-



Jerusalem Artichoke



The flower bud is the edible portion of the Globe artichoke

tained, and they may be easily stored to substitute for baked potatoes during the winter.

Culture. The tubers are cut and planted after the fashion of potatoes in the very early spring (March or April) and spaced twelve to fifteen inches apart in rows separated by about 2½ to 3 feet. The tubers may even be left in the ground to be dug and used when the weather permits. The Jerusalem Artichoke has a place in some Victory Gardens as an eco-

nomical source of home-grown food, but should not be planted unless you like it and your family will eat it.

Asparagus ★

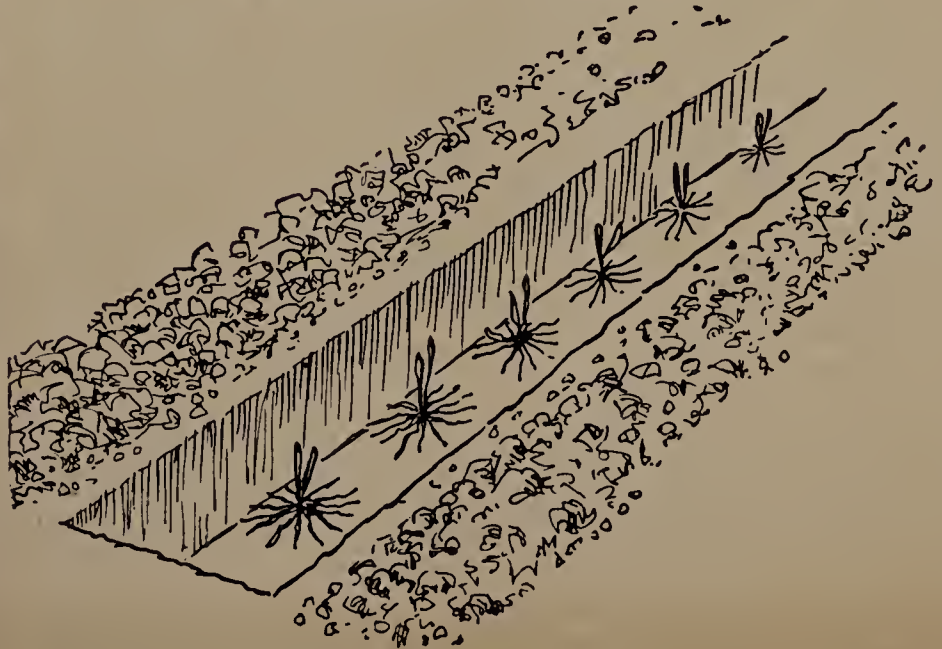
Literally millions of home gardens, farm and suburban, should have an asparagus bed. In fact, it has a place in almost every permanent garden with the exception of those located on very heavy, compact soils. Properly maintained, a bed of four hundred square feet will provide a small family with two or three messes a week during the average cutting season of two and one-half months, although if daily harvests are wanted, with a reserve for canning, the bed should be at least 15 x 40 feet. Two hundred and fifty roots will plant this area. With proper care, an annual production over ten or twelve years may reasonably be expected.

Culture. Although the roots may be grown from seed, even professional gardeners prefer to buy one-year-old roots which they plant in trenches eight to ten inches deep. The roots are covered to a depth of two inches and soil is then gradually filled in as the roots grow. The top growth is cut down in the late fall, but the asparagus shoots are not cut until the third year, and then for a short season of five or six weeks. The spears are harvested with a short knife, by cutting just below the surface of the soil. Cutting should cease early in July and the shoots should be allowed to develop their normal

Healthy asparagus roots



Set in trenches 10 inches deep



growth of leaves, flowers and berries. Kept free from weeds throughout the summer and well supplied with plant food, the roots will then develop and store up the reserve food needed for strong, straight shoots for our good health and enjoyment.

Fertilizer. Well-rotted manure should not only be placed in the bottom of the trench and mixed with the soil before setting roots, but, if available, should be used as a mulch between the rows and cultivated into the soil. The use of at least ten bushels of manure and twenty pounds of a 4-8-10 fertilizer on the four-hundred-foot bed is advisable. Apply fertilizer broadcast and wash it in to a depth of five or six inches. Follow up this application each year with two ten-pound top dressings, one in the early spring before the first cultivation, and the other after "laying the crop by" for summer growth. These semi-annual applications should be applied two feet on either side of the row and cultivated in as deeply as possible without disturbing roots.

Varieties. Home gardeners should

follow the example of professionals in planting rust-resistant varieties. Either Mary Washington, developed by the late Dr. J. B. Norton of the U. S. Department of Agriculture, or the somewhat earlier strain, Martha Washington, should prove satisfactory, although the new variety, Paradise, has been developed for both rust resistance and larger yields.

Diseases and Insects. The one fly in the ointment in growing asparagus is not a fly at all, but one or both of two beetles which feed on the tender tips of the leaves. The common asparagus beetle and the twelve-spotted asparagus beetle are controlled either with a four per cent rotenone solution or a dust of a 1-5 mixture of calcium arsenate and hydrated lime. Should rust develop, a measure of control is obtained by dusting with sulphur every two or three weeks after the last cutting and throughout the summer, and then in the fall all of the diseased plants should be burned. Watch for the orange and black blisters on the stalks and leaves which are forerunners of turning yellow and dying.

Beans ★ ★

Beans should not be omitted from the family garden since they are dependable, and good judgment in their planting will insure a supply of vegetables even when other crops may fail. Then there is variety even in beans if you know your beans. You may have your choice of snap beans, either green or wax, heavy-yielding pole beans, and bush or pole limas; then, if you have some extra ground, you can plant some shell beans for the winter supply. Culture is simple. Plant only after

the danger of frost is past and for green or snap beans, up to the first of August in localities where frost does not appear before September 20th.

Bush Beans. These are usually sown in drills two and one-half to three feet apart and planted one and a half or two inches deep. Also, the seed may be sown in double rows *four feet apart*. Then in the process of thinning the plants to three inches apart in the row, take care to

eliminate all the weak ones. It is well to break the crust of the soil with a rake just before the seedlings are due to appear. Beans respond to a high-potash fertilizer, and 10 pounds of 4-8-10 mixed in the 100-foot row is profitable.

Green Beans. Select from a score of good stringless varieties of green podded beans, Giant Stringless Green Pod, or the original Burpee's Stringless Greenpod, originated by the famous Calvin Keeney (the father of stringless beans). The All-America Silver Medal selection of Commodore might well head our list. If you want them extra early, the Plentiful and Bountiful strains are very good. Tendergreen is also a heavy yielder, although either the Red or Black Valentine Stringless varieties may be slightly more resistant to light frosts.

Wax Beans. When it comes to wax beans, you may have your choice of Keeney's Rustless Golden Wax or Pencil Pod Black Wax. Do not hesitate to plant Golden Bountiful or Gold Standard or, for extra-early wax beans, Henderson's Golden Age. Then there are the stringless Kidney Wax varieties, also originated by Calvin Keeney, and Round Pod Kidney Wax, all of which are good, but some one may do best under your own local conditions.

Pole Beans. Though less hardy than the bush varieties, pole beans should be planted six or eight to the pole (poles previously set in the ground) and then thinned to three or four of the strongest plants. About two pounds of seed are needed for one hundred and fifty poles. The poles are usually set about 3 x 4 feet apart. As soon as the first runners appear, tie loosely with string or cotton cloth and



Don't let pole beans black out your spinach

keep the intervening ground free of weeds and Crabgrass.

Kentucky Wonder and Old Homestead are the old stand-bys, both stringless when young, although more rust and mosaic resistance is claimed for a new variety, Golden Gate Wax, which is stringless at all stages of growth. In the South, where pole beans are more popular, a new introduction by the Alabama Experiment Station known as Alabama No. 1, is resistant to root-knot nematodes as well as drought and adverse conditions. Among other pole beans, more often grown for winter storage, are the Horticultural, Cranberry, and Lazy Wife, and the Ideal Market, sometimes known as Black Valentine Pole and Black Cornfield.

Lima Beans. Both bush limas and pole limas have their places in the home garden and should be planted a little later than other beans, even though they require more time for maturity. Of the two, bush limas are earlier although, in view of the larger yield of pole limas, ambitious home gardeners should not hesitate to set a few poles.



**SUBURBAN
GARDEN**
30x75'



Early Sweet Corn followed by la

Later Sweet Corn
or Rutabagas.

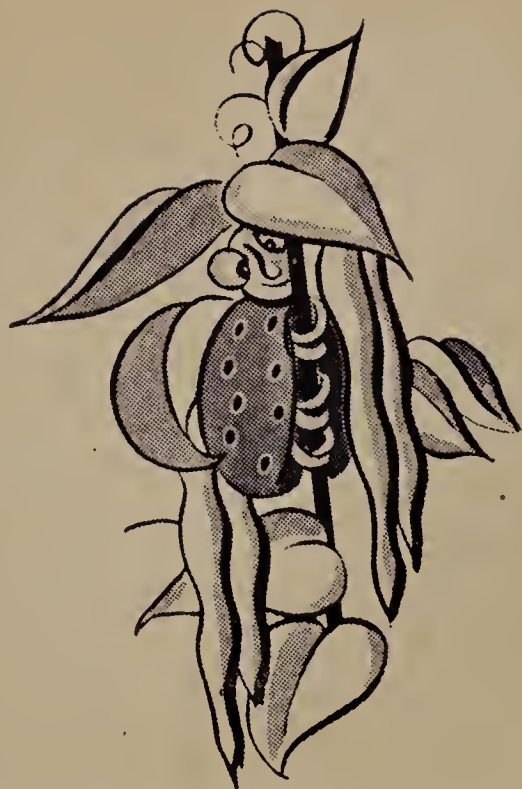


WHY THIS



A plan similar to this one may suit your needs. Corn is planted on the north to avoid shading other crops. A succession of crops is provided by planting at intervals and selecting different varieties. Intercropping makes two crops possible on the same soil in one season. Plenty of salad crops and greens from early to late is assured along with a goodly supply of winter storage crops. Early crops must be planted *early*, and succeeding crops in ample time to mature before frost.

PLAN?



Don't let Jack, the Bean Beetle, climb up your bean stalk

Bush Lima Beans. Bush limas have been developed to fulfill many ideals of size, disease resistance, and flavor. The original Fordhook Bush is still standard, but the U. S. D. A. has improved the original Henderson Bush, which is now marked as U. S. D. A. Henderson Number 2. Then there is the Baby Fordhook, which is a cross between the original Henderson's Baby Lima and Fordhook. The All-America Silver Medal winner, Baby Potato, resulting from a selection by Dr. Huelsen of the University of Illinois, is a very thrifty, productive sort. There are also green-seeded varieties of the Henderson Bush Lima developed for higher vitamin A content.

Pole Lima Beans. The ideal pole lima may not yet have been produced; but such excellent varieties as Succulence, Leviathan, Henderson's Ideal, King of the Garden, Florida Butter, Sieva, and Improved Challenger, all have special merits according to location. For a dependable supply, pole limas planted early are a "better bet" for the home gardener than bush limas.

Fava or Broad Windsor Bean.

Sometimes called English, Giant Butter, Italian, and Horse Bean—this distinct species should be planted in rows three feet apart, spaced four inches in the row. Heavy yields of glossy pods with five or six flat pea-flavored beans will account for its rapid increase in our markets and home gardens. The pods are not edible, but the shelled beans are delectable fresh or dried for winter.

Diseases and Insects

The principal pest of beans, and especially lima beans, is the Mexican Bean Beetle, both the larvae and adults of which not only feed on the foliage, but work underneath the leaves and sometimes attack the stems. The home gardener can reduce the ravages of this imported pest by destroying the eggs, making frequent pickings. Otherwise, use a poisonous spray, but not before the pods begin to fill. Four per cent rotenone solution or a $\frac{3}{4}$ per cent derris-rotenone dust should be thoroughly applied every week or ten days until the beetles disappear.

Beans sometimes are also subject to bacterial blight and halo blight, and if you see brown or brick-red spots on the leaves or stems, you have not planted a resistant variety. Powdery mildew is a fungus producing a cobwebby, powdery mold on the leaves and pods, and downy mildew, affecting both the stalks and leaves of both pole and bush limas, is a typical mold. No satisfactory control measure for downy mildew or pod blight is known, but powdery mildew can be checked by the use of sulphur dust or spray. Bean seeds should always be treated with Cuprocide or other copper dust before planting.

Beet ★ ★

The contribution of the beet both for table use and canning in the home gardener's family is exceeded by only a very few other root crops. Although naturally a cool season or temperate climate crop, beets can be grown throughout the South during the cooler seasons. Though slow to get off to a start, those small, tender, young beets are usually ready for the pot in sixty days. Beets are also lime-loving, although an excess of lime or the use of too much manure favors the development of scab—those rough "pox marks" resembling potato scab.

Culture. In order to make up for delayed or poor germination, the seeds should be sown thickly, or at least not over one inch apart, in rows fourteen to eighteen inches apart. Radish seed may be sown with the beet seed to mark the rows, which may be only slightly ridged, especially on lighter soils. Plants should be thinned before they tend to crowd each other. Leave from three to six inches between plants, depending upon the variety and whether you prefer the small, sweet, tender specimens or the larger beets—for table use, pickling, or canning. Extra-early beets can, of course, be obtained from transplanted plants seeded under glass six or eight weeks before transplanting. Transplanted thinnings are very useful for filling up void spaces in the garden. Shallow and frequent cultivation for weed control will enable us to avoid injury to the roots. Good economy will dictate the use of tender beet tops for "greens," which will taste better because they have been grown in "our home garden."

Fertilizer. The yield of beets will be

greatly increased by the use of plenty of potash in the fertilizer; and an analysis furnishing approximately four per cent nitrogen, eight per cent phosphoric acid, and ten to twelve per cent potash, is preferable to that of average garden fertilizer. Such fertilizer should be well mixed with the soil and to a good depth before preparing the rather shallow furrows needed for seeding beets. Four to five pounds per one hundred feet of row is a moderate application.

Varieties. The home gardener will probably prefer the Early Wonder or Crosby Egyptian, although the Detroit Dark Red is preferred where both a good crop of roots and "tops for greens" are desired. Asgrow Wonder, Little Marvel, and Perfected Detroit are also good home garden varieties.

Broccoli ★

There are two types of broccoli, and one of them, Cauliflower Broccoli, closely resembles cauliflower excepting that the heads require much longer to develop and the crop is even more sensitive to unfavorable weather conditions. Its culture is largely confined to the region of the Gulf States and Oregon and California, where the plants will carry through the winter and develop heads in early spring.

Sprouting Broccoli. This has become very popular, not only because of its green color and greater vitamin content, but because there is less grief in its culture. Nevertheless, the same favorable soil and climatic conditions favor the full development of sprouting broccoli. Seeds are usually planted indoors about ten weeks before planting in the spring, or sown in the open for a fall crop. The



Green, sprouting broccoli ranks high in vitamins and minerals

heads should be cut before the green flower clusters fully develop. The home gardener can well consider broccoli ahead of cauliflower, since he will find the tender leaves about the stem, as well as the secondary flower clusters which develop after the first cutting, a good substitute for other greens. Italian Green Sprouting or Calabrese is the most common variety.

Brussels Sprouts ★

By many considered to be the most delicate member of the cabbage family, Brussels sprouts are susceptible to kind treatment by the home gardener. Although the plants are less hardy than cabbage, seed sown under glass in February may be set in the ground during April; or, for the fall crop, seed sown in

May is usually ready to be set out by June 15th. Plants are usually set in rows two and one-half to three feet apart and about eighteen inches apart in the row. Cultivation of the deep, rich, moist soil is essential for rapid growth, which can be further hastened by the liberal use of stable manure and fertilizer, with one or two side applications of nitrate of soda or sulphate of ammonia.

The diminutive heads that develop on the stalk are usually harvested from the bottom up and a supply from a single planting will provide a quantity of these nutty little cabbages over a period of weeks. The leading variety is Long Island Improved.

Cabbage ★ ★

Although commercially the most important of the cole crops, cabbage has a place in the home garden only if the room it takes up is not needed for other vegetables. Early cabbages require less space than late, and a single row can well furnish you with a dozen or fifty compact heads of vitamin-rich food. When they are out of the way, your ground is available for late tomatoes, late beans, potatoes, or other winter storage crops.

Culture. Early cabbage plants may be set 16 to 20 inches apart in the row, and the rows spaced as close as 2½ feet apart. If a ball of moist soil is compacted about the root, the plant set to a depth of the first true leaf, then watered and protected from the sun for a day, rapid growth will be assured and little cultivation aside from clearance of weeds will be necessary. Late varieties should be set two to three feet apart in the row and the rows spaced three feet apart.

Fertilizer. Before setting plants, apply ten pounds of 4-8-8 or 4-8-10 fertilizer to 100 feet of row, thoroughly mixing it with the soil, or if obliged to set plants without fertilizer, apply the same quantity in 4-inch bands, two inches from the plant, and cultivate into the soil. A side dressing of two pounds per 100 feet of row of nitrate of soda, or sulphate of ammonia, three weeks after planting will usually insure a more rapid succulent growth. Unless you have applied all of the lime needed to correct acidity of your entire garden, an additional application of four pounds of hydrated lime per 100 feet thoroughly mixed into the row should help you obtain a better response from the use of fertilizer.

Varieties. So far as possible, only *yellow-resistant* varieties should be grown. Of the early varieties, yellow-resistant strains of Early Jersey Wakefield (Jersey Queen), Charleston or Early Winningstadt will give you your choice of conical green-headed sorts; or if you prefer round or flat cabbage, Early Dwarf Dutch, Golden Acre or Copenhagen Market will put you in the professional class, with more solid white cabbage. Should you plant some intermediate or late cabbage, Globe Hollander, Danish Ball-Head, Penn

State Ball-Head, many Drum Head varieties, and also Premium Flat Dutch, are excellent. Other good ones like Glory of Enkhuizen, Wisconsin Hollander, Wisconsin Ballhead and Wisconsin All Season are yellows-resistant. Many home gardeners prefer to use their ground either for the crinkly-leaved Savoy, or for red cabbage. Chieftain, Improved America, and Benito Savoy are justly favorites. The usual red varieties are Red Head, Mammoth Rock Red, Red Drum Head, and also the yellows-resistant Red Hollander.

Diseases and Insects. Owing to warfare by several insects, bacterial and other diseases, cabbage plants should be grown only from seed which has first been treated with the proper corrosive sublimate solution and then with zinc oxide or Semesan. If cabbage maggots are found about the roots, moisten the soil with a solution of corrosive sublimate (1 to 1000), using $\frac{1}{2}$ teacupful per plant every week or ten days. Use derris dust or derris spray to combat the cabbage worm and cabbage looper. If calcium arsenate dust is used, guard against poisonous residues on the foliage. In some sections the Harlequin cabbage bug, although dangerous, can be controlled by handpicking or strong contact sprays of whale-oil soap.

Sabotage of a variegated cutworm in a single night



Cantaloupe (Muskmelons)

If wishes were melons, most home gardeners would certainly have a patch in the back yard. Cantaloupes, however, will have a place in our gardens only if we have land not needed for more essential vegetables. Our soil and climate must also be favorable, if failure is to be avoided and a supply of luscious melons assured. The lighter loams or sandy soils usually produce the best quality of fruit, but by selecting the right varieties, good melons can often be grown on well-drained clay loams which have been enriched by manures and other organic matter. Ample soil moisture must be provided throughout a warm growing season.

For an early crop or in the cooler short growing season parts of the country, seed may be started under glass in paper pots, but plants should not be set in the garden until soil is well warmed and after all danger of frost is over. More often the seed is sown after all danger of frost is over in specially prepared hills five to six feet apart each way. The hills are prepared by thoroughly mixing a shovelful of well-rotted manure and a handful of high-grade fertilizer with the soil. Ten or a dozen seeds are planted at varying depths of one or two inches, but well covered with soil. The plants that survive insect attacks are narrowed down to two or three and carefully cultivated and dusted or sprayed to ward off insects and disease. Cultivation of the soil should be effected with little disturbance of the vines.

Preparedness against insects and disease will include the usual contact sprays for lice. Copper sprays and dusts (Cuprocide or bordeaux-copper formulas) will aid in the control of Downy Mildew and bacterial wilt. Treatment of the seed



Upright in growth, milder, sweeter. Why not plant some Chinese cabbage?

Chinese Cabbage. The increasing popularity of Chinese or Celery Cabbage is no doubt due to its use both as a salad and as a pot herb. Owing to its tendency to go to seed if planted in spring, plants are not usually set in the North until late July or early August. Seed may be planted in seed beds or open ground during June or early July and, when very small, may be thinned to a stand of only fifteen or twenty inches apart. The control of the usual insects by means of arsenical poisons is not considered safe for Chinese Cabbage, and rotenone or pyrethrum formulas are therefore suggested. Chihili and Pe Tsai (or Chokurei) are dependable early heading types, and Paoting is a shorter, stout, oval variety especially adapted for warmer summers or for culture in the South.

before planting, with the standard corrosive sublimate solution and cuprous oxide or Semesan, is almost a prerequisite to prevent "damping off." The spread of mosaic or virus diseases is checked by dusting the plants in the early stages of growth with a 1 to 20 mixture of calcium arsenate and either gypsum or lime.

Varieties. The home gardener now not only has his choice between several good green- and yellow-fleshed varieties, but can utilize some of the disease-resistant strains developed for commercial growers, such as the Improved Hale Best Nos. 45 and 36, developed by the Department of Agriculture especially for the Southwest, for resistance to the powdery mildew disease. Honey Rock, Sugar Rock, Hearts of Gold, and Milwaukee Market are excellent yellow- and salmon-fleshed varieties. Green-fleshed melons do not offer so large a choice, but rust-resistant strains of Rockyford or Netted Gem have more universal acceptance. Honey Gold introduced by Edward Lowden of Hamilton, Ontario, is a small, thick-fleshed melon which is well adapted for gardens on heavier soils.

Carrot ★ ★

No home garden would be complete without a goodly supply of carrots planted for a succession which can be achieved both by planting at different dates and by a choice of varieties.

Culture. Although light, sandy loam soils produce the smoothest and straightest carrots, all deep loam soils (except the heaviest clays) will produce satisfactory crops. Enormous yields are produced on muck soils. The home gardener is interested in growing the tender and, so far as possible, the coreless varieties. For



Vitamin A for man and beast

the extra-early crop, seeds are usually planted in rows about twelve inches apart, and the seed is sown along with radishes to mark the rows. The first thinning may leave the plants only one to two inches apart. This will make it possible to pull those plants which develop edible roots thirty to forty days after seeding. This will then enable the more backward seedlings to rapidly develop sizable roots. A seeding every ten days until the middle of June, and with different varieties, will provide carrots throughout the summer, late fall and winter. Careful weeding and cultivation and artificial irrigation will usually reward the home gardener and make it possible to pull his carrots without breaking. In heavy soils, a spade or large trowel may be required to lift them.

Fertilizer. Like all root crops, carrots require plenty of potash for satisfactory development, and a 4-8-10 fertilizer is usually preferable to the average 5-8-7 garden mixture. If fertilizer is broadcast and disked in, at least forty pounds per one thousand square feet should be used; or if applied in the rows, one half of this



quantity thoroughly mixed in the soil before seeding would be preferable. Soils that are acid should be limed, but carrots do not require so much lime as beets and some other root crops.

Of the many varieties available you might well choose either Nantes, Touchon, or Coreless, of the round stump-rooted sorts; or the longer strains of Chantenay, Emperor, and Perfection, for the long, tapering, bunching type of carrot that is preferred in our markets. Supreme Half-Long and Claudia are also good home garden types. Carrots are remarkably free from insect attack and plant diseases.

Cauliflower ★

More cauliflower would be planted in home gardens were it not for the many failures of otherwise successful gardeners to develop sizable compact heads of this more refined cole crop. Many gardeners have favorable soil conditions and even the cool weather which favors this crop, but do not have the low humidity and sufficient soil moisture essential to the best development of cauliflower.

Cauliflower is less hardy than cabbage or broccoli and is usually set about the same time as late cabbage, during the month of June. Plants are set approximately the same distance apart and in the same way as cabbage. Clean tillage must be practiced without disturbing the root systems, and the blanching of the heads is accomplished by loosely tying the leaves over the young heads in such a way as to protect them from the sun and enable them to shed water. Twine or loose-fitting rubber bands may be used. After two or three weeks, but before the heads or curds become riced or discolored, they may be cut the same as cabbage.



Cauliflower plant with leaves tied up to shade the head

Success with cauliflower depends also on a liberal supply of plant food. To encourage uninterrupted growth, a top dressing with nitrate of soda and the use of up to a ton per acre of a high-potash fertilizer such as 4-8-8 or 4-8-10 will be especially beneficial if the soil has been sweetened with sufficient lime. Well-rotted manure, if available, is especially beneficial on sandy soils.

Control of insects and diseases common to cabbage and all the cole crops applies to cauliflower, and in some localities it is advisable to include ten to twenty pounds of borax to the acre in the fertilizer to prevent the browning of the heads.

Celeriac ★

Celeriac (turnip-rooted celery) is a horticultural variety of the celery species that develops roots averaging about three inches in thickness. Considering its usefulness for flavoring other vegetables and as a salad, as well as the fact that it provides another useful root for winter storage, home gardeners might very well

grow some celeriac, even if they do not attempt the growing and blanching of celery.

Culture. Culture is like that for celery, the early plants either being started under glass in the North or in open ground in latitudes where there is time to mature a crop. The crisping and the whitening of the roots are attained by protecting them with soil until ready for use.

Celery ★

The knack of growing celery is easily acquired, but a rich, moist, well-drained soil is absolutely essential. Ideal conditions are those provided by well-manured, deep, and rich sandy loam or, better still, the typical peat or muck soil. On upland soils, a mulch of stable manure between the rows will eliminate weeding and cultivation and furnish some plant food to supplement the rather heavy application of fertilizer which successful truck farmers and gardeners use on this crop. As much as a ton to the acre, or ten pounds per one hundred feet of row of a 5-8-7 on average loams, or five pounds of an 0-8-24 on muck soils, conforms to common practice. The use of one to three top dressings of nitrate of soda or sulphate of ammonia is also a common practice (about one pound per one hundred feet of row). To prevent crackstem, especially on muck soils, from twenty to thirty pounds of borax is often mixed with a ton of fertilizer.

Culture. Celery seed is usually sown in flats indoors or in the hotbed and transplanted outdoors after the second pair of leaves appear. Seed may be grown in the open for the fall crop, but the

home gardener will usually want to buy his plants and set them during late July or early August. Cultivation should be confined to necessary weed control, and mulching with straw or manure is considered a good practice. Irrigation should supplement the normal supply of moisture essential to uninterrupted growth. Early in fall the gradual ridging or throwing of the soil to the base of the plant finally results in blanching and crisping the stalks. Ten- or twelve-inch boards may be placed on edge on either side of the row, but the home gardener may prefer to purchase individual paper wrappers or tubes to provide the shade and protection needed to perfectly blanch the stalks. In two or three weeks your celery is ready for the table or may be stored for winter use.

The home gardener should select varieties of celery proved to be successfully grown in his locality. Golden Plume and Early Fortune are popular early varieties, but the new Michigan Golden is no doubt the best yellows-resistant strain. If you are interested in celery for late fall use



Enormous crops of celery like this are grown on muck soils

and winter storage, the fine quality of Giant Pascal is sure to please, although Utah, Emperor, Winter Queen, and Crisp-heart are justly favorites. New and good varieties of Pascal types are Summer Pascal, Epicure, and fusarium-resistant Cornell 6 and Cornell 19.

Swiss Chard ★ ★

This foliage beet, like New Zealand spinach, provides a supply of "greens" without the destruction of the plant. "Mess after mess" of the outer leaves can be removed without stopping the growth. Therefore, it follows that only one planting is necessary. Furthermore, the home gardener will be assured of a lot of "fodder" in the form of a tasty pot herb or vegetable. A few feet of row in the garden will supply a large family.

Culture. Swiss chard is grown very much like beets, excepting that a greater spacing should be allowed between plants to permit expansive growth. A rich soil will promote lush growth, and side dressings of nitrate of soda or sulphate of ammonia should supplement the commercial fertilizer suggested for beets. Since there are no serious diseases, and insect attacks are rare, why not consider growing some chard in your garden?

Chive

Every home gardener or even the city flat dweller can grow his own chives, and have a supply of decorative green seasoning winter and summer.

Culture. In the garden, chives may be used as a border or for intercropping between other vegetables which do not produce too much shade. Since the chive



A few pots of chives or parsley convenient to your kitchen

is a perennial and hardy, the root clump need only be divided and replanted, or if it is desired to pot them and grow them indoors, the kitchen window will provide the needed sunlight, and frequent watering will produce an abundant growth of the slender hollow leaves. Some success is also reported in growing them in nutrient solutions.

Collards ★

Although collards, or leafy cabbage, are grown mostly in the South for a dependable supply of cabbage during hot weather, there is no reason in the world why this open-leaf type of kale should not be grown in the North, unless it be that we prefer our cabbage in solid heads at the expense of a higher vitamin A content. Collards are resistant to cold as well as to heat, and the plants are set about the same distance apart in the garden as cabbage and require no different cultural treatment. Collards may be tenderized by tying the outer leaves, or the leaves may be plucked for use at any time before maturity.



From stalk to pot

Sweet Corn ★

Sweet corn has always been a favorite, but now there is an added zest in growing your own "roasting ears," even if you do not roast them. This greater value of sweet corn has been brought about in the new hybrid varieties that are more dependable and uniform in time of ripening—a boon for home gardeners as well as canners and market gardeners.

Culture. The seed should not be sown more than a week before the average date of the last killing frost. Seed should first be treated for disease prevention with organic mercury dust (or Semesan Jr.); other seed treatments, including copper dusts and tar, are sometimes advisable. If planted in hills, these should preferably be three feet apart and certainly not closer than two and one-half feet in each direction, six or seven seeds being dropped in each hill, and later thinned to two or three plants to the hill. If planted in rows, the early garden varieties may stand ten or twelve inches apart

in rows three feet apart. Regardless of which method of planting you choose, plant your sweet corn in a square or oblong block that is at least four rows wide. Otherwise cross-pollination, needed for full development of ears, cannot be depended upon.

Many home gardeners fail with their sweet corn because they plant only single or double rows in the garden. Succession plantings every ten days, and a choice of early, mid-season and late varieties, can provide you with sweet corn plucked and served to you "within the hour," thereby preserving the sweetness and flavor that is denied folks who do not have their own garden. Sweet corn should be well hoed, but cultivation should never be so deep as to cause injury to the roots.

Fertilizer. Fertilizer for sweet corn is best applied in four-inch bands on either side of hill or row. At least ten pounds of 5-8-7 per one hundred foot row should be used on sandy loam soil, but perhaps half this amount would answer on heavier loams and clays. A light side dressing of nitrate of soda or sulphate of ammonia (about two pounds per one hundred feet of row) a week before tasseling time should improve the succulence of the corn.

Varieties. If hybrid seed is not available, there are still excellent strains of Golden Bantam, Bantam Evergreen, and Improved Golden Bantam in sweet, yellow-fleshed varieties. For those who like good white sweet corn, Country Gentleman or Shoepeg, Clark's Early Evergreen, and Stowell's Evergreen are varieties of *real* sweet corn, especially for mid-continent or northern gardens. In the South, Early Golden Sweet and Golden Early Market are well-adapted varieties



of yellow corn, and Moss Heart Sugar and U.S.D.A. No. 34 are good disease- and insect-resistant varieties of white corn.

Hybrid seed corn costs more to produce, but it is worth the extra money it costs for a few ounces of seed. Golden Cross, Hiawatha, or Ioana are all fine golden or yellow varieties. Country Gentleman Top Cross or Illinois Country Gentleman Hybrid are representative of prolific varieties of the larger eared sorts of white corn.

Diseases. Although a small garden may escape some of the insects and diseases that affect sweet corn, preparedness to meet the attacks of cutworms by means of poisoned bran bait, and to prevent injury by the corn-ear worm by dusting with a mixture of calcium arsenate and either mineral oil or flours of sulphur, will be insurance well worth having. Although corn borers are not often active in home gardens, it is well to be on the safe side by removing and burning cornstalks and their roots in an early fall clean-up operation. Progressive gardeners also plant only seed that has been treated with copper dust for smut infection and often dip in a tar solution to prevent sabotage by crows and chickens before the seed germinates.

Cucumber

Provision for a few hills of cucumbers in a medium-sized garden, or as many as twenty hills if you have the space and want to put up pickles, will usually answer a family's requirements. Although it is a *cool growing season* crop, you will do better by deferring its planting until the latter half of May or early June. Planting dates may be advanced in the

South, cucumbers being grown either as an early spring or fall crop. For a succession, plant at ten-day intervals until July 1st.

Culture. Most varieties should be planted in hills not less than five feet apart; and usually six or seven feet is better. Eight or ten seeds to the hill, thinned at first to three and then not more than two good strong plants, is probably the best practice. The use of a shovelful of well-rotted manure, thoroughly mixed with the soil, and supplemented with a small teacupful of 5-8-7 fertilizer, should push the plants ahead of the weeds, if only cucumber beetles are not lying in wait to slay the young seedlings. Your pre-



paredness with a 1 to 20 mixture of calcium arsenate and lime (or gypsum), applied with a hand duster or perforated tin can or a coarse burlap bag, may win the battle. Invasions by either the striped cucumber beetle or twelve-spotted cucumber beetle may best be controlled later on with rotenone dust or pyrethrum dust and spray. Nicotine dusts or sprays will control the melon aphid, which may attack during the bearing season.

Varieties. A selection of varieties for home use should perhaps include both slicing and pickling types. Of the former, improved varieties of the White Spine types, such as Kirby, Longfellow, Long

Green, and the All-America selection, Straight Eight, might well lead the list; and for pickles, improved Black Spine varieties, such as Chicago, Boston or Jersey Pickling, National Pickle, are all productive and satisfactory.



Egg Plant ★

A few egg plants will add variety to the small garden and this rather long-season sister of the potato and the tomato may be set out when all danger of frost is over. The preference today is more for the smaller compact fruits, and egg plant should always be used before the seeds harden and the flesh becomes tough. They may be spaced at 24 inches in rows about thirty inches apart. A small handful of 5-8-7 fertilizer in the hill, or ten pounds per 100 feet mixed thoroughly with the soil in the row, should provide their need for steady uninterrupted growth. If egg plant is raised from seed, the usual corrosive sublimate treatment, plus a cuprous oxide or Semesan dusting, will provide the best insurance against Phomopsis blight, bacterial and verticillium wilt. A weekly bordeaux spray will ward off infection during the growing season.

Varieties. Garden varieties may well be copies of commercial strains. Black Beauty is earlier than some, although some of the newer varieties, including Bountiful and Blackie, and especially the New Hampshire Hybrid, are prolific and profitable home garden sorts. Cultivation should be directed towards weed elimination, and care should be taken to avoid injury to the root system.



Endive ★

The name Endive is used rather loosely, but it really belongs to all of the varieties of annual chicory. It includes the broad leaved sorts, like Escarole, or Fullheart and Batavian Endive, which are often used unblanched in soups and stews. The narrow leaved sorts have curled or fringed leaves and are represented by such varieties as Green Curled and White Curled.

Culture is similar for all varieties. Good, rich, moist soil endowed with plenty of plant food is necessary for tender, succulent leaves; and the same fertilizer treatment indicated for lettuce will favor its rapid growth. Plants are usually thinned to six or eight inches in the rows, which may be sixteen or eighteen inches apart. Blanching may require from two to three weeks or longer in cooler weather. The leaves should be dry before they are tied for blanching. In the home garden, rubber bands snapped over the enveloping outer leaves will provide a supply of this delicious but slightly bitter salad, which may be enjoyed from late spring until early winter.

Garlic

This member of the onion family belongs to a distinct species that produces compound bulbs of eight or ten bulblets or cloves in a compact overbulb and is propagated by planting these little bulblets in either spring or fall in any warm or mild climate.



Culture. Garlic thrives especially in fertile well-drained sandy loam soils. The bulblets are set four to six inches apart, and the rows may be a foot apart. After the tops die down in the fall, the bulbs are lifted from the ground and cured, usually by weaving them with their tops into braids. The limited need for garlic may not justify the home gardener in planting it; however, a few cloves can be set out along with other onions.

Kale ★

The increasing popularity of kale in northern markets suggests that the home gardener will not only have use for this member of the cabbage family as a pot herb or for spring greens, but will plant it in succession for a spring, summer, and fall supply.

In northern gardens, seeds may be sown early in April or May and until July for plants that will develop before frost. Culture otherwise is similar to that for cabbage, excepting that plants may be only eight to ten inches apart in

rows two feet apart. The same favorable conditions, of soil, fertilization and insect control, apply to kale as indicated under cabbage and other cole crops. Kale can be harvested either by plucking the outer leaves when young or by pulling the entire plant at any time. Few vegetables are better adapted or more dependable for "greens," in spring, summer, and fall, than kale. Dwarf Blue Scotch is the most popular variety, and Dwarf Green is usually preferred to Dwarf Siberian.

Kohlrabi ★

Kohlrabi, or turnip-rooted cabbage, will produce a very satisfactory crop from seed sown as soon as the ground can properly be fitted. It is a very hardy crop, which may be grown early from plants set in the ground in April or May. The turnip-like bulb, which is produced above the ground, should be eaten before it becomes woody and tough; and a succession may be had throughout the summer, or a late crop produced for storage, if planted in July or, in warmer regions, even in August. White Vienna is the leading variety, and a heavy crop can be grown either in double rows two feet apart or in single rows fifteen inches apart. Plants should be thinned six or eight inches in the row. Treatment with manure and fertilizer is similar to that for cabbage.

Leek ★

For those who prefer milder onions, the leek deserves consideration. The home gardener will find its culture not at all difficult, since uniform stands from early seedings result in luxuriant growth, especially in rich soils reinforced with fertilizer as suggested under "Onions."



Kohlrabi at its best in a community garden



Culture. The production of tender sheaves of leaves which constitute the edible stalk is accomplished by either hilling or setting the seedlings in trenches three or four inches deep and gradually filling them with soil as the plants develop. Leeks are seeded in rows twelve to sixteen inches apart and thinned to two or three inches in the row. They may be stored for winter use in outdoor trenches, or in sand in cool cellars.

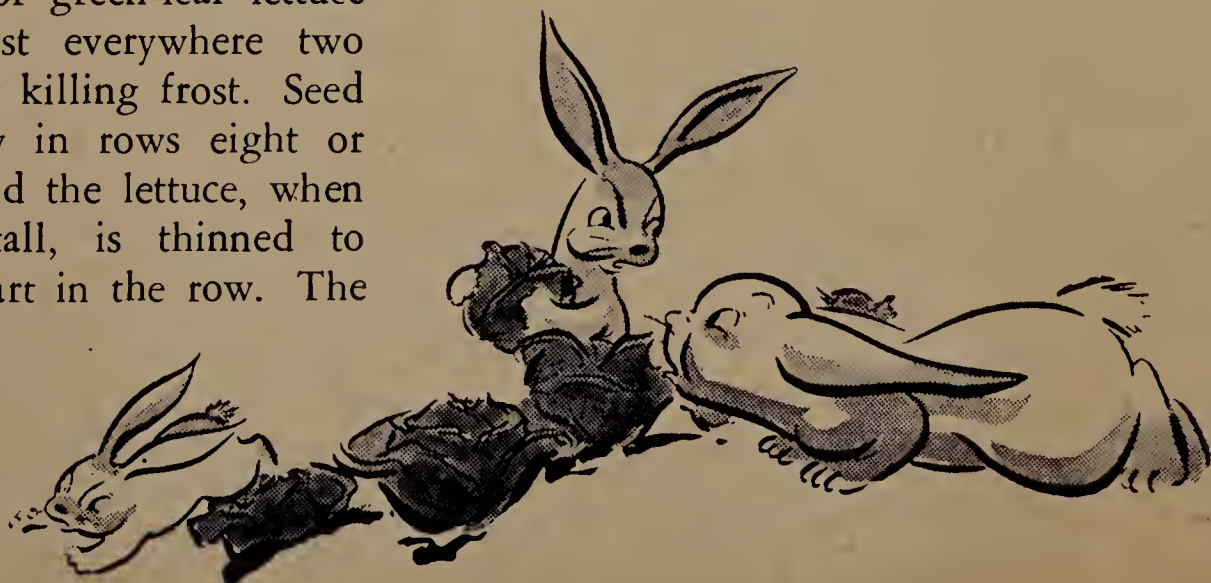
Lettuce ★ ★

You may have a supply of green lettuce from early spring to fall, but only if expert care and attention are provided during the hot summer months. Most home gardeners rightly prefer to grow a liberal supply of leafy lettuce and early heading sorts in the spring, depending on other salad crops during the heat of summer, and then content themselves with some Big Boston or other loose-leaf heading type for the late summer and fall.

Culture. Loose or green-leaf lettuce may be sown almost everywhere two weeks before the last killing frost. Seed is sown continuously in rows eight or nine inches apart; and the lettuce, when about two inches tall, is thinned to about 2½ inches apart in the row. The

first mess of lettuce may be had from the thinnings. Later, harvests of leaf lettuce may be cut off with shears just above the ground and a second crop, though not quite so tender, will spring up. Grand Rapids and Blackseeded Simpson are about the best and most common varieties.

Head lettuce for the early crop is grown from seed sown about four weeks prior to transplanting in the open ground. The use of both hotbeds and cold frames permits the hardening of plants and assures better growth when ordinary transplanting precautions are observed. Improved Hanson and Crisp As Ice are good crisp-head types. Butter Head types, such as White Boston, Tender Heart, and May King, are very satisfactory for the home garden—although, for later planting, Salamander, All Season, and Black Seeded Tennis Ball are considered more dependable “headers” during the warmer weather. Difficulties in growing crisp-head types are likely to be overcome only under the most favorable climatic conditions. New York No. 515 and No. 12 are improved strains of the Iceberg or crisp-head lettuce. Head lettuce is usually set about ten inches apart in the rows, which are twelve to eighteen inches apart. Cos lettuce or Romaine, distinguished by longer heads bearing long crisp leaves, is usually more satisfactory for the home garden than the crisp-head sorts, and either White Paris or Trianon should fill the bill.





Types of Soil. Although lettuce may be grown on many different types of soil, the warmer, sandy loams are preferable for the early crop; and the looser silt and clay loams well supplied with organic matter are more dependable for the summer and fall crop. Muck or peat soils, which are most generally used for the commercial crop, are of course ideal if available to the home gardener. Since rapid, continuous growth is essential, well-manured soils should be supplemented by the use of complete fertilizer used broadcast and disked in at the rate of three or four pounds per 100 square feet. The use of side dressings with nitrate of soda at the rate of $\frac{1}{2}$ pound per 100 square feet, just before the plants start to head, is a good practice only when applied just before a rain or previous to irrigation. Soils should be neither too sweet nor too sour, and lime should be applied with caution.

Although lettuce may be grown year after year without loss from insects or diseases, there are times when cutworms, lice, and cabbage loopers do some damage. They should be controlled with poison bran mash, nicotine, pyrethrum, and rotenone. Tip burn is a physiological disease, but usually not serious on the early and late crops. If either *yellow*s or *mosaic disease* appears, this is just a warning to remove diseased plants, destroy all refuse, and use disease-free seed the next year.

Mustard Greens ★

Mustard greens or mustard spinach is an acceptable substitute for spinach and can usually be depended upon for satisfactory growth, even in poor soil. Although the seed of ordinary black mustard is often planted, the Chinese or Japanese varieties have the advantage either of

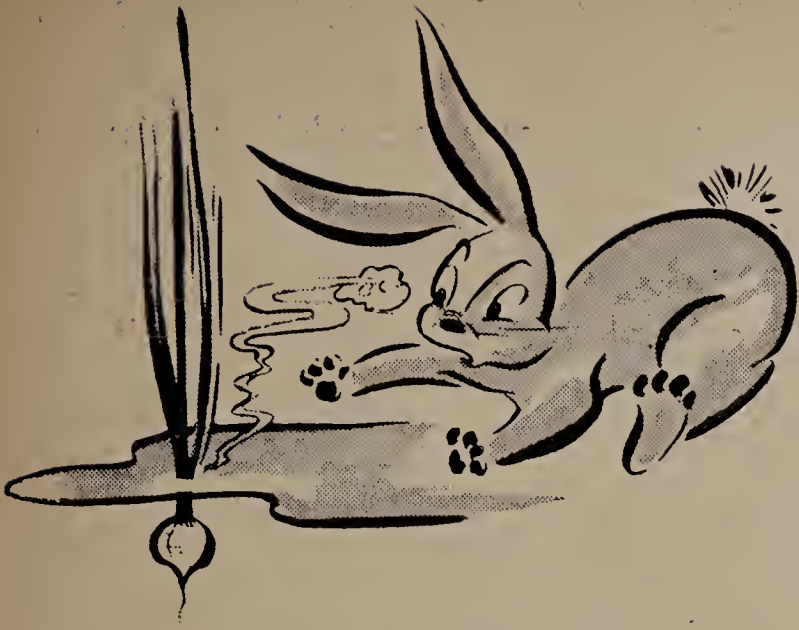
curled leaves or more abundant foliage.

Culture. The seed should be sown as early in the spring as possible in the North or, if wanted for a fall crop, in late July or early August. In the South the crops are often started in the fall for early spring salad. Seed is sown in drills about twelve inches apart, and the plants thinned to five or six inches in the row. Fordhook Fancy and Southern Giant Curled or the new Tendergreen variety otherwise known as Spinach Mustard should have an especial appeal for the home gardener who has a fondness for "greens."

Okra

Although a warm season crop, okra (or gumbo) can be grown in the North on good warm fertile soils. Heavy applications of manure and fertilizer favor the rapid development essential for the production of tender pods. The seeds may be sown in hills or drills in rows about $3\frac{1}{2}$ feet apart for the dwarf varieties and four feet apart for the tall ones. If grown in hills, the plants may be thinned to eighteen or twenty inches in the row, but not more than three plants should be left when they are planted in hills.

While Long Green and White Velvet are popular tall varieties, the Dwarf Prolific, with smaller pods, is very productive. Improved strains with spineless pods have recently been introduced, and of these the Clemson Spineless is an excellent strain of the long-podded type. Another good dwarf variety is the New Orleans Market, which bears dark green round and short pods. White Lightning—with long, tapering, spineless pods—is probably the most recent introduction.



Onion ★ ★

Of the several types of onions grown in North America, the home gardener's interest is practically confined to one species (*Allium Cepa*) from which to make his selection of the best onions to grow, either for "scallions" or for mature onions. For those who are interested in growing other onion species, more specific information is given under "Chives," "Leeks," and "Shallots." You must also decide whether to grow your onions from seeds or sets. For the small gardener, the safest and surest bet is on sets for scallions in early spring, for cooking onions throughout the summer, and for winter storage. However, since onions grown from seed are sweeter and will keep better, many gardeners who have rich, loamy soils, with plenty of available moisture, successfully grow onions from seed, or from seedling plants which are now available in many markets.

Onions from Sets. You have your choice of white, yellow, and red varieties of onion sets; and these small onions grown from seed, properly stored, free of disease, should be firm and average about $\frac{1}{2}$ inch in diameter. As early as the ground can be worked in the spring, set them about two inches apart in the row and take your choice of single rows,

twelve to fourteen inches apart; or double rows two feet apart, with a space of about six inches between the plants of the double row. *Perennial onion sets* are also obtainable, and these may either be planted in the perennial bed on one side of the garden or set in garden rows for extra-early scallions. Of these, there are two types, one of which is usually referred to as Multiplier or Potato onion because of its dividing bulbs, and the other as the Top-Tree or Egyptian, which never forms an enlarged bulb in the ground, but bears bulblets in the top instead of flowers. The White Multiplier is probably the milder and better scallion onion for the amateur.

Onions from Seed. Whether grown from seeds or sets, a rich moisture-filled soil is essential to success with onions. Seedling plants of the Spanish and Bermuda types, shipped from the South, now make it possible to grow these large mild-flavored bulbs even in the northern states. Set them two or three inches apart in the row with the rows fourteen or sixteen inches apart, or, if you prefer, use the double row system. Should you attempt growing onions from seed, thin plants to six or nine to the foot. Thorough preparation of the seed bed should be preceded by a broadcast application of high-grade 5-8-7 fertilizer at the rate of 1500 pounds per acre, or three pounds well mixed with the soil in one hundred feet of row.

Varieties. Your personal preference between yellow, white, and red varieties will be granted to you in a selection of either Yellow Globe Danvers, Southport Yellow Globe, Ohio or Michigan Yellow Globe, White Portugal, Southport White Globe, or Red Wethersfield. More experienced gardeners sometimes attempt



to grow European varieties. Of these, Prize Taker probably offers less grief to the northern amateur, although the southern home gardener has his choice of all the best commercial strains. Sweet Spanish or Valencia Yellow Bermuda, as well as the improved Creole, are often available as seedlings shipped from the South and usually may be safely transplanted during April. Small onions for pickling are grown by sowing the seed generously in open ground as late as the middle of June and thinning to only about an inch apart in the row. White Portugal, Brown Australia and Ebenezer are good pickling varieties.

Other Onion Species. Another distinct species of onion worth the home gardener's attention is the White Welsh, otherwise described as White or Hardy Bunching Onion, a perennial with no distinct bulb. He Shi Ko is an improved Japanese variety. Red varieties of onions are best for winter storage, and white onions are considered the "poorest keepers."

Although onions in the home garden may often escape attacks of the onion maggot or thrips, these insects may be held in check with bichloride of mercury treatments and nicotine sprays respectively. Onion smut may also be checked with formaldehyde soil treatments.

Parsley ★

There is little excuse on the part of the home gardener for not having a short row of parsley, since it will thrive in any good soil. Although parsley seeds are small and germinate very slowly (unless soaked in water over night before planting), it is not difficult to obtain a stand of plants. Parsley will thrive under

soil and temperature conditions favorable to lettuce or spinach.

Culture. Sometimes a board is laid over the row for a few days until the seedlings are ready to emerge from the soil. A plentiful supply of water is essential for germination. The row of parsley should be kept about sixteen inches away from other plants and not shaded by tall growing vegetables. Plants are usually thinned to five or six inches in the row. For extra-early parsley, the seed should, of course, be sown indoors and transplanted as early as possible. Planted in a succession every three or four weeks until July, it is possible to provide the young tender leaves for garnishes and flavoring throughout the growing season, and, if a cold frame is available, transplanted plants may provide a winter and very early spring supply. Parsley is seldom the victim of insect attacks or plant diseases.

Turnip-Rooted Parsley. Hamburg or turnip-rooted parsley has been developed for its fleshy root, the flavor of which resembles that of the leafy varieties and is useful especially in stews or other mixtures of vegetables. Culture is also similar, except that the plants are usually thinned to three or four inches apart in the row. Turnip-rooted parsley may remain in the ground until frost and may be stored like other root crops for the winter larder.

Parsnip ★

Unlike their near relatives, parsley, carrots and celery, parsnips should be grown to full maturity in order to capture all of the sweetness and flavor peculiar to this old-time vegetable. In com-



Not "two peas in a pod" but sextuplets

mon with other root crops, rich and fertile loamy soils favor the development of straight and smooth, creamy white roots. Fresh seed should always be planted, and, as with carrots, radishes may be sown with them to mark the rows. Covered with about $\frac{3}{4}$ inch of soil, the delicate seedlings must be nurtured along and the plants must be thinned three or four inches in the rows, which are usually about eighteen inches apart. Parsnips may be left in the ground until after freezing weather and removed any time when digging will permit. In fact, freezing improves the sweetness and flavor. If your garden space permits growing roots for winter storage, you may be converted to the parsnip when you *grow your own*. Hollow Crown, Model, and Ideal are the most popular varieties. Parsnips are relatively free from insect attacks or other plant diseases. The parsnip webworm may occasionally destroy some leaves, but it can be controlled by the use of arsenical sprays.

Peas ★

Fortunately this quick-growing cool weather crop—peas—can be planted early enough so that the home gardener can, by growing two or three varieties, delight his family with a succession of peas for several weeks before hot weather sets in. The earliest varieties require about fifty days from seeding time to harvest. Better success is usually obtained by planting two or three different varieties rather than by depending upon a succession of planting dates of the same variety. Since home-grown peas are a treat second only to home-grown sweet corn, it is smart to avoid those market garden types that lack sweetness and delicate flavor. For the most part, the early wrinkled types carry these "extra" qualities to a greater extent than later smooth-seeded varieties.

Culture. Moist and well-drained soils enriched with commercial plant food, produce excellent crops, although the lighter sandy loams are better adapted for growing the earliest varieties. Peas are usually one of the first crops to be planted early in April and a pint of seed will plant about thirty feet of row. Plant to a depth of four or five inches in lighter soils and about three inches in heavier types. If peas are planted to a greater depth, it is best to cover them with about two inches of soil and gradually fill in ahead of germination. The earlier dwarf varieties can be grown in double rows, but better success is obtained with medium and tall varieties by planting in single rows at least two feet apart to permit placing brush or sticks or trellises for stronger upright growth.

Varieties. Early varieties of wrinkled seeded peas are probably the sweetest, but

as a rule do not compare in yields with the later sorts. Improved Gradus, Thomas Laxton, Laxton's Progress, American Wonder are all among the earliest of these sugary wrinkled varieties. Little Marvel and Century of Progress may be planted for ten-day-later ripening. If you prefer the smooth-seeded sorts, Alaska, Bountiful, and Mammoth Podded Early are good prolific types recommended to home gardeners. For later peas you may select varieties of the telephone type, with vines varying in height from twenty inches to five feet. Alderman, Mid-Season Giant, and Stratagem or Potlach are good varieties resistant to fusarium wilt and also very productive if grown with brush or trellis support. If you have never tasted edible podded peas, try Dwarf Gray or Dwarf White Sugar, or Mammoth Melting Sugar, but eat them when young and tender.

Pea Pests. The most serious pest of the pea is probably the pea aphid, which in summer seasons may ruin the crop. Drastic measures must be taken as soon as these pea-green lice appear on the foliage. A four per cent nicotine dust or a four per cent derris rotenone contact spray of sufficient strength to kill at the first application must be used. Should your pea vines become "alive with lice," use more rather than less to the row than the usual instructions call for. Pea seed is usually treated with carbon bisulphide to control the pea weevil, and disease-resistant varieties may be selected to combat fusarium wilt. These seed treatments should also include the usual copper or zinc oxide or Semesan applications recommended in our discussion of Seed Treatments and Disease Prevention. Spraying and dusting will also help to control the virus mosaic disease, which is spread by the aphids.

Grow them sweet or grow them hot

Peppers ★

A few pepper plants, set in the garden when all danger of frost is over, can usually be relied upon for a supply of sweet peppers from July until frost; and the pungent-fruited varieties, for a winter supply. Your choice of varieties and types of the mild or sweet fruits, often called "mangos," can be narrowed down to the types which suit both your taste and the uses you may want to make of peppers. Early and late varieties of both "sweet" and "hot" peppers are available.

Culture. Pepper plants grown from seed planted indoors about eight weeks before setting in the garden should be strong and vigorous. A high temperature is favorable both to germination and the rapid growth essential for vigor. A warm, moist, fertile, sandy loam soil will also favor their later growth in the open ground. Plants may be set from June until August according to variety and climatic zone. The width of the rows may range from eighteen inches to three feet, and they may be set from twelve to twenty-four inches apart according to their habits of growth.

Varieties. Of the mild-fruited sorts, Ruby King is a general favorite, although King of the North, Worldbeater, and the Harris Early Giant are increasingly popular. The latter is an excellent early variety of the "bull-nosed" type. The California Wonder is a later variety producing handsome, chunky peppers, and vies with the earlier Waltham Beauty or Windsor A for



thickness of wall and sweetness of flavor. When it comes to the pungent fruited sorts, Tobasco is rather standard for the small slender bright red fruits "with plenty of pep." Both Chili and Long Red Cayenne are earlier, long, slender types with ample pungency, while Hungarian Wax is an early yellow hot pepper that changes to bright red when it is ripe.

Potato ★

Success with potatoes, early or late, depends on planting disease-free and, if possible, northern-grown certified seed adapted to local soil and climate conditions. Land should be well drained and the soil provided with plenty of humus, but this is more important on heavy soils than on sandy loams. Heavy, compact clays should be avoided. Do not plant *table-stock* potatoes, either home-grown or obtained from the corner grocery.

Fertilizer. Few crops respond better to the use of fertilizer than the Irish potato, and successful growers use from 1000 to 2500 pounds per acre of a fertilizer with an analysis averaging 4 per cent nitrogen, 8 per cent available phosphoric acid, and 8 to 12 per cent potash. This is equivalent to from ten to twenty pounds per one hundred feet of row. It is thoroughly mixed with the soil, or placed in two four-inch bands on either side, and slightly below the level of the seed piece.

After preparing a furrow about five inches deep in a mellow seed bed, the seed

pieces—cut to contain one, but not more than two eyes—are dropped at intervals of ten or twelve inches and covered to a depth of three or four inches. The ground should be raked over once or twice before the sprouts appear; and, as the season advances, slight but gradual hilling, to prevent exposure of tubers to the sun, should be practiced.

Varieties. For early potatoes, the Cobbler, Early Ohio, Triumph and Warba are probably the most popular varieties. Mid-season varieties succeeding in the cooler portions of the Midwest are Chippewa and Katahdin. Persisting late varieties, especially in the eastern states, are Green Mountain, Norcross, and Gold Coin. For heavier soils in sections with less rainfall, the Russet varieties such as Rural Russet and Late Petoskey are popular, as are also the smooth-skinned Rural New Yorker No. 2, Sir Walter Raleigh, and Carman.

Diseases. Home-grown potatoes rarely escape some of the diseases and insect attacks common to the commercial crop. The severity of common scab and also *Rhizoctonia*, or Black Scurf, can be controlled by a 1 to 120 corrosive sublimate solution or Semesan Bel dip. Both late blight and attacks by the Colorado Potato Beetle are held in check by the use of the standard bordeaux-arsenical dusts or sprays. Flea beetles may be driven away by dusting with hydrated lime.

The best defense against all potato diseases is obtained from the use of certified seed and of rather acid soil, which discourages the development of scab. For this reason, gardeners who grow potatoes may be more successful if they reserve a potato patch on which lime is not applied.



Healthy potato plant on left, sick with mosaic disease on the right



Pumpkin

Pumpkins are in reality a farm crop, but on occasion a gardener may have some ground which is not useful for intensive home gardening purposes, or may find a place to plant two or three hills of pumpkin, allowing the vines to trail upon a wall or out of the way of other vegetables. In this event, seeding and culture do not differ from those of cucumbers or cantaloupes, excepting for the greater area needed for the vines. The principal varieties of "pie pumpkins" are Large Cheese, New England Pie, Table Queen, Winter Luxury, and Small Sugar. Incidentally, our bush-type varieties of scallops and vegetable marrows are in reality pumpkins. Seedsmen usually list these small pumpkins under Squashes, but they are here treated separately from both Pumpkins and Squashes under the heading "Vegetable Marrows and Scallops."

Radish ★ ★

Suggestions have been made that radishes be planted to mark the rows of certain garden plants which are slow or difficult of germination, such as parsley, carrots and parsnips. Radishes may, however, be grown in closely spaced rows. The seed may be broadcast, or it may be interplanted with other crops. Depending on the variety, rows may be six, eight or ten inches apart and thinned to 1½ to 3 inches apart in the row. Only shallow covering of the seed is necessary, but the seed bed should be firmed with the feet or with the butt end of the hoe or rake, especially on lighter soils. Winter varieties might best be separated by three to five inches in the rows, or, if the large Chinese or Japanese sorts are planted for winter storage, they should be spaced six to ten inches apart.

Culture. Any good rich garden soil, supplied with plenty of moisture and organic matter from manure or compost material, will grow excellent radishes. Quick maturity usually determines quality. Such early varieties as Scarlet Globe will produce crisp and sizable roots in three or four weeks after sowing. Crimson Giant is somewhat larger in size, but Sparkler and Scarlet Turnip are excellent home-grown sorts. If you prefer your radishes white, then the White Icicle will usually produce straight pure white roots. A succession of almost any variety may be planted, although after July 1st such summer varieties as White Strassburg and Chartier or Giant Stuttgart should be planted. Among the more desirable winter varieties, are Chinese White, Black Spanish, and Chinese Rose.

Rhubarb

This standard hardy perennial of the garden, otherwise known as "pie-plant," has much to commend it, even when limited for needed space for perennial garden crops. As few as four or five clumps of rhubarb will supply a small family with a goodly supply of wholesome fruit.

Culture. Although rhubarb is readily grown from seed sown under glass, it is best to purchase good strong roots with well-developed eyes. These are set with their crowns three or four inches below the surface of the soil. With proper cultivation, hand hoeing, and weeding, rhubarb may be depended upon for at least six or eight years. If judgment is used in harvesting, at no time should the plants be deprived of more than two-thirds of their leaves and stalks. Cuttings should cease in early summer. Although deep rich sandy loams bountifully supplied with



organic matter are more nearly ideal, some of our heavier soils can readily be conditioned by liberal use of well-rotted manure and judicious use of coal ashes.

Rutabaga ★

The rutabaga or Swedish turnip differs from our ordinary turnip or "cow turnip" in several important particulars. The larger edible roots contain less moisture, finer-grained flesh, a richer flavor, and in cool climates are more productive. The quality of the rutabaga is adversely affected by warm weather.

Culture. In the North rutabaga seed should not be sown until after the middle of June, and probably not later than the middle of July if grown for winter storage. When sown in rows, the plants should be thinned to six or eight inches in the row, and rows are preferably twenty to twenty-four inches apart. Long Island Improved and Purpletop Yellow are the popular yellow-fleshed sorts, and Macomber is the usual selection for those who want to grow white rutabagas.

Salsify

Salsify or Vegetable Oyster may be grown north, south, east or west unless you or your family are prejudiced against the otherwise delectable flavor of this vegetable, which suggests but does not resemble the flavor of the oyster. This root crop can be depended upon for fall use, and for winter use if properly stored.

Culture. Any good loose garden soil implemented with plant food, will grow salsify, the growing habits of which are very much like those of parsnips or

carrots. The use of fresh manure should be avoided, and if well-rotted animal manures are not available, reliance should be placed on commercial fertilizer. The seed may be sown in the open ground very early in the spring, and the rows need not be more than one foot apart, the plants being thinned to three or four inches in the row. Only fresh salsify seed should be used since it loses its vitality often after one year. Sandwich Island is the best known variety.

Shallot ★

The true shallot is a very mild-flavored type of onion, but it should not be confused with the Potato or Multiplier onions, which are sometimes sold on the market as shallots. The bulb, which is the edible portion, somewhat resembles that of garlic, but the bulblets or cloves, instead of being enveloped in a membrane, are loosely joined at the base.

Culture. The culture of the shallot is so similar to that of onions grown from sets as to require no specific instructions other than to suggest the use of a good, rich, well-drained soil and a supply of ample moisture during the growing season. Although a permanent bed of shallots may be established, the better practice is to store the cloves and put out the sets every year.



Soy Bean

The development of edible varieties of the soy bean has now reached a stage which will justify the growing of the edible soy in our garden because of its high protein and vitamin content, and also its usefulness as a "fill in" or "in-between" season crop. In many gardens they will take the place of pole or runner beans, and varieties may be chosen to provide a succession of tender green soys.

Culture. Seeds should be planted when all danger of frost is over, in rows two feet apart, thinning to six or eight inches in the row. Although soy beans do not give an immediate response to fertilizer as do snap beans, better yields are obtained on richer soils that have been manured or fertilized the previous year. A selection from a dozen or more newly developed varieties might well include Agate, Easycook, Funk Delicious, Bansei, Chusei, Kanro, or Nanda.

Spinach ★ ★

Believe it or not, spinach is the most popular pot herb or green in the United States. The dietitians' favorable propaganda is justified by the intrinsic merit of spinach. This hardy cool weather



plant is with us spring, summer, and fall in the North; and it is an ideal crop for many sections of the South throughout the winter. Although spinach will not withstand the extreme heat of summer or the extreme cold of winter, it deserves its well-earned place in home gardens.

Culture. Almost any fertile well-drained, properly limed soil, and a reasonable moisture supply, along with moderately cool growing weather, will produce an abundance of spinach. To be true, larger yields will be obtained on the richer soils that are well supplied with organic matter. The preparation of soil for growing spinach should provide for the use of about a bushel of manure and forty pounds of a high-grade commercial fertilizer per one thousand square feet. Since spinach rows are planted close together, a broadcast application of both manure and fertilizer is desirable. However, use one-half of this quantity if applied only in the row; and thoroughly cultivate into the soil before final preparation of the seed bed.

Spinach seed may be sown one or two weeks before the last expected spring frost, in rows twelve to sixteen inches apart, and thinned to two or three inches in the row. A succession of plantings may continue until the approach of hot weather. For the fall crop, seedings may be made any time up to six weeks in advance of the first expected fall frost.

Although the new *yellows*- and blight-resistant strains are just as desirable for the home gardener as for the commercial producer, many of us prefer to plant the variety Nobel, or Giant Thick Leaf, for the early crop, since it is productive and does not bolt or prematurely go to seed. Virginia Savoy is the leading blight-resistant variety. Spinach is remarkably free from insect ravages.

Edible soys for the garden are no longer a novelty



New Zealand Spinach ★

Although New Zealand Spinach is not even "first of kin" to our common spinach, it is an excellent substitute for it. Furthermore, it may be relied upon to carry on during the hot summer when other spinach is not available. A single planting of either seed or plants early in the spring is all that is necessary, since the tender leaves and tips are regularly clipped without injury to the plant from June until October.

Culture. The rather large seeds, although slow to germinate, are readily started indoors under the same conditions specified for tomato and pepper plants, excepting that it is not necessary to transplant or pot before setting out in the garden. A spacing of about three feet apart for the rows and eighteen to twenty inches apart in the row will provide room for the development of the plant with its spreading branches. If grown from seeds, cover them with about one and a half inches of soil but do not plant sooner than ten days before danger of frost is past. Quality as well as quantity of this excellent pot herb will follow liberal fertilization in the presence of ample sunlight and moisture.

Squash

The true squashes differ from pumpkins by their soft, spongy stems, which are not ridged or furrowed like the hard, woody stem of the pumpkin. Thus the vegetable marrow and bush scallop and so-called summer crookneck squash are in reality pumpkins. To make this distinction clear, these will be separately treated under "Vegetable Marrows and Scallops."

Culture. The culture of squashes and pumpkins is similar to that for cucumbers. While a place for a hill here or there might be found in larger home gardens, it is rare that a space may be found large enough to grow the trailing varieties, which should be planted ten to twelve feet apart in each direction. The smaller bush varieties may be set as close as five or six feet apart each way. In any case, a good, deep hill should be made up with well-rotted manure, a small handful of fertilizer, and ten or twelve seeds covered in it to a depth of not more than 1½ inches. Cultivation underneath the growing vines and hand weeding are important until a matted growth is formed. Usually only the best of two or three specimens on a vine are allowed to mature in the case of the larger varieties.

The Boston marrow is a pear-shaped, true squash and should not be confused with the vegetable marrow. Such late maturing varieties as Golden Delicious, Kitchenette, Table Queen, Des Moines, and the various types of Hubbard will provide the variations so often seen in shapes, colors, wartiness, and smoothness. Nearly all late winter squashes, excepting Mammoth and Mammoth Whale, have good table qualities.

Sweet Potato

Sweet potatoes are at their best in light, sandy soils, and when planted in heavy soils are usually of poorer quality. Like white potatoes, they are not a standard home garden crop; but if sweet-potato sprouts (or slips) are available in your market, and you have some light, loamy sand that will not produce other vegetables during the heat of summer, you may be able to grow good "sweets" for winter consumption. The sweet-potato sprouts are set twelve to sixteen inches

apart in ridges thirty inches apart instead of in furrows. They should preferably be set in the late afternoon, with a pint of water used to each plant. As cultivation is carried on throughout the season, the ridges are gradually broken down, the vines being lifted or turned two or three times to effect weed eradication and to prevent their taking root in the soil.

Fertilizer. Sweet potatoes demand plenty of potash, and get along on relatively little nitrogen. For this reason, sweet-potato fertilizers usually run about two to three per cent of nitrogen, eight per cent of available phosphoric acid, and ten to eighteen per cent of potash. The use of too much lime may induce the development of scurf, but since "sweets" are not so sensitive to scurf as the white potato is to scab, they may be grown in rotation with other crops on soils that have been moderately limed.

Your choice of distinct sweet-potato varieties will no doubt be limited, but if you like the dry, mealy types, Nansemond, Big-Stem Jersey, and Gold Skin will answer your purpose. The moist flesh types common to the South are more often yams, such as Dooley, Southern Queen, Nancy Hall, and Porto Rico. Sweet potatoes are dug after the first light frost and will "keep well" only if storage temperatures are high—75 degrees to 90 degrees for two or three weeks, and 50 to 60 degrees thereafter.

Tomato ★ ★

The tomato is so well adapted for use in all sizes and kinds of home gardens that we may truly say it is the most popular home garden vegetable. Tomatoes are almost entirely grown from plants started from seed indoors in the North, or in specially prepared beds in the South.



Cool, damp seasons may cause pale complexions

Although they may fruit in almost any soil, the full development of tomato plants with an abundance of fruit can only be attained on the most fertile and best-drained garden soils. Warm weather and plenty of sunshine and absence of strong winds at blossoming time will favor the early crop, although moderately heavy clay loams produce large yields of good quality late tomatoes. Clean and shallow tillage to keep down weeds and trimming of the lower branches of tomatoes *if staked* are accepted practice.

Culture. Seeds should be sown six to eight weeks before the plants are needed. The small home gardener may even start them in a window box, transplanting them into paper drinking cups after the second pair of true leaves appear. Then when three or four inches high, the plants should be hardened in open windows during the warmer portions of the day. Plants that are so hardened should of course not be kept in warm rooms at night. Tomato plants may be set in the garden when danger of frost is definitely over. Raising one's own tomato plants may be justified only by the owners of larger gardens, since a goodly supply in many desirable varieties is available in cities and country

towns alike. The variety and habit of growth of the tomato will determine the space required in the garden. On the average, plants set three feet apart each way will have ample room for development, especially when staked. It is always well, after punching a hole for setting tomato plants, to set them down an inch deeper than they grew as seedlings, soak with water, and pack the moist soil well after setting,—then protect them with a well-ventilated sunshade for a day or two.



It pays to set stocky tomato plants

Fertilizer. Only well-rotted manure should be applied before the tomato plants are set. The soil should be thoroughly prepared and properly fertilized. At least ten pounds per one hundred feet of row of a 4-8-8 or a 4-8-10 fertilizer should be broadcast and thoroughly worked into the soil, or half this quantity applied in the rows. On the heavier clay loams, a 4-10-6 fertilizer is satisfactory. If fertilizer is not applied broadcast or in the row, a small fistful may be thrown around the plants. This should be worked into the soil, but contact with young roots should be avoided.

Varieties. From the scores of varieties of tomatoes offered the public, the

home gardener's choice should be narrowed down to one good *extra-early*, a *second early*, and a *late tomato*, thus providing a continuous supply in most sections from the 4th of July until after frost. The best varieties for you to grow are those that have been tested and accepted in your locality. Of the varieties which have almost nation-wide acceptance, and in order of their normal fruiting from early to late, are select strains of Earliana, Break-O'-Day, Bonny Best, Marglobe, Globe, Greater Baltimore, and Stone. There are also new and excellent disease-resistant strains of both Early and Greater Baltimore, Marglobe, Scarlet Topper, Rutgers, and Illinois Pride, which are heavy-yielding wilt-and-rust-resistant sorts adapted for the main- or late-season crop. The Ponderosa is still a home garden favorite for large specimen, solid-fleshed fruit. Other large thick-fleshed, small-seeded specialties, such as the Beefheart, are undoubtedly improvements over the original Ponderosa or Beefsteak types. There are white-skinned and yellow-skinned novelties, but the small red or yellow "plum-or-pear"-type tomatoes are well worth the planting—just to have a bushel or more for tomato preserves.

Diseases. Home gardeners usually escape the troubles of market gardeners, who often suffer losses from leaf spot, blossom-end rot, and wilt; but vigilance in persistently "hand picking" the large, green, tomato fruitworms and Hornworms or else killing them with a standard stomach-poison spray of calcium arsenate or Paris green will often prevent a total loss of vines and fruit. Plants sprayed with bordeaux mixture are provided with a resistance to wilt and are less subject to attack by flea beetles.



A wealth of vegetables in a community garden

Turnip ★

Turnips may be grown in the North both in spring and fall. Being a cool weather crop, they should be sown in the South during the fall and early winter. In the northern home garden, turnips will fill in a gap and form an excellent succession crop to early peas, spinach, or potatoes.

Culture. Both white-fleshed and yellow-fleshed varieties of turnips with or without purple tops may be selected from the seed catalog. As turnip is a succession crop, seeds may be sown broadcast, but most gardeners prefer to grow them in sixteen- or eighteen-inch rows, thinning the plants to an average of three inches apart for the young tender turnips, or up to five or six inches if the turnips are to reach maturity for winter storage. A good fertile soil, a fine seed bed, plenty of plant food and ample moisture favor good quality and large yields of turnip.

Varieties. Purple Top White Globe is probably the most popular white-fleshed sort, and either Orange Jelly or Golden Ball is a good yellow-fleshed variety. Rutabaga, which is a different species of turnip, is given separate treatment. Home-grown turnips are usually free of diseases.

Vegetable Marrows and Scallops ★

The small varieties of pumpkins known as vegetable marrows and bush scallops, including the so-called summer crookneck squashes, are of distinctive character from the standpoint of household use. In order to distinguish them from true squashes, they are here given separate consideration. The early White Bush scallop, or White Pattypan, is usually preferred to the yellow-skinned strains. Of the scallops, the Long White Marrow is one of the best, but the English Marrow, although of a good strain, is of the vining type. Increasingly popular, the Italian Marrow, otherwise known as Cocozelle or Zucchini, is very prolific and well adapted to home gardens. There are several variations of the summer crooknecks and Early Prolific Straightnecks. One of the best is Yellow Summer Crookneck.

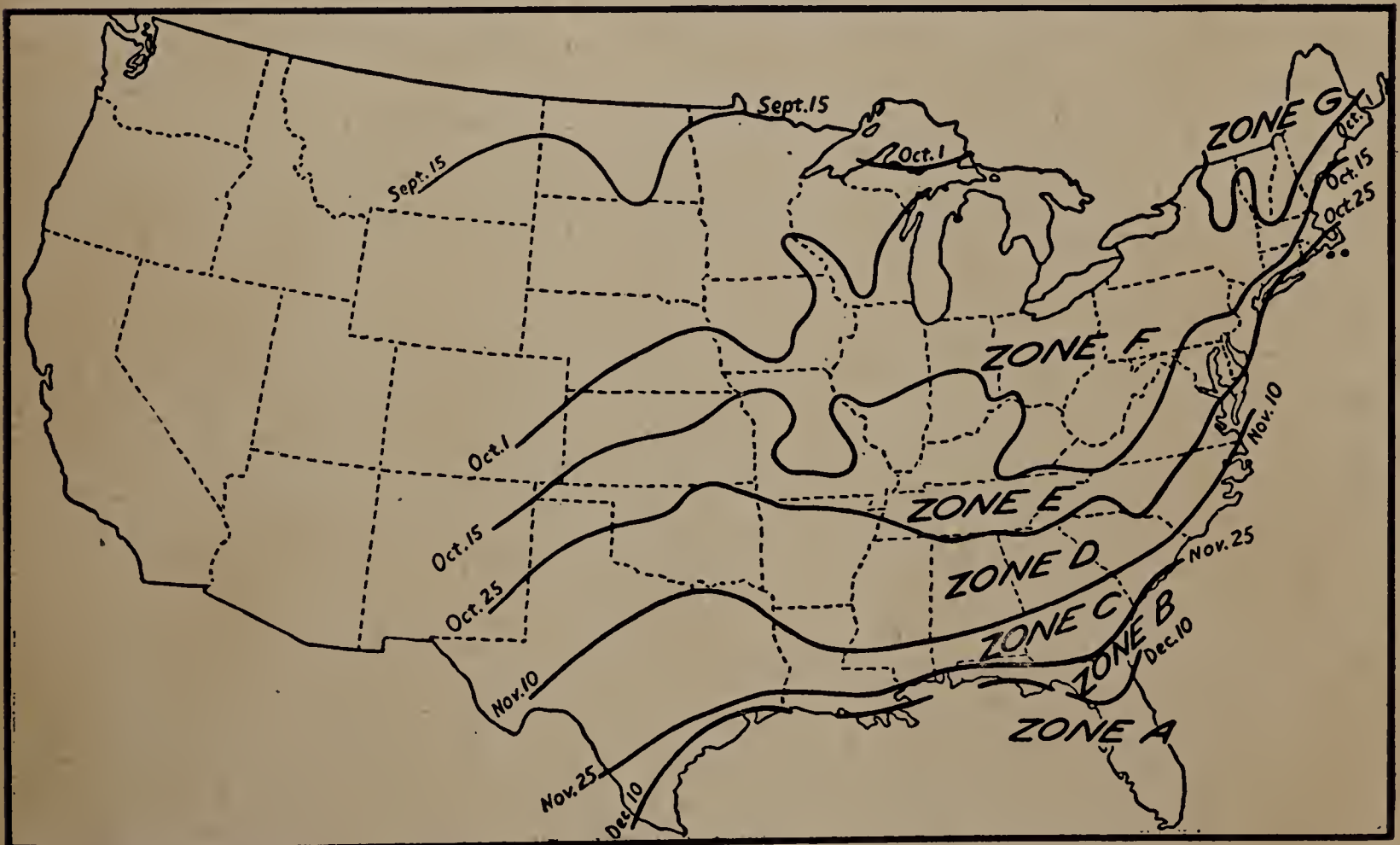
The bush and small-vine varieties may be planted in hills as close as four feet apart, or the seed may be dropped in rows and thinned to the desired distance. Cultivation should be shallow to avoid injury to the roots and limited to destruction of weeds.



Can it if you can, sell it if you must, or give it with a smile



A zone map of the United States, based on the average date of the latest killing frost in spring east of the Rocky Mountains. Reference to the Planting Chart on Page 62, prepared for Zone E, will enable the reader to estimate earliest safe planting dates of various vegetables in other zones



Zone map of the central and eastern part of the United States based on average date of first killing frost in autumn. By referring to the Planting Table prepared for Zone E, the latest safe planting dates of vegetables in other zones may be estimated

PLANTING TABLE FOR HOME GARDENS — Zone E

For EARLIEST SAFE Planting Dates in Zones Other Than E, Consult Adjoining Map (A) and Plant Earlier by 2 to 4 Weeks in Zone D—4 to 6 Weeks in Zone C—6 to 8 Weeks in Zone B. Plant Later by 2 to 3 Weeks in Zone F and 3 to 6 Weeks in Zone G. LATEST SAFE Planting Dates in Other Zones Are Determined by Days Needed to Grow Crop Before the Date of 1st Killing Fall Frost. See Map B. Always Be Guided by Local Conditions.

Vegetable	Earliest Safe Planting Date	Latest Safe Planting Date	Seed for 100 Feet of Row	Distances Apart		Days From Seeding to Harvest
				Depth of Planting (Inches)	Between Rows	
Artichoke (Globe)	Apr 1-15	May 1	25 plants	4 in.	4 ft.	100-120 Days
Artichoke (Jerusalem)	Mar 15-Apr 15	May 1-15	15 tubers	2-3 in.	2-3 ft.	120-140 Days
Asparagus	Apr 15-May 1	Nov 1-Dec 1	60 roots	8-10 in.	36-48 in.	2-3 Years
Bean:						
Lima (Bush)	May 15-30	Jun 15	12 ounces	1½ in.	24 in.	60-75 Days
Lima (Pole)	May 15-30	Jun 1	8 ounces	1½ in.	36 in.	70-100 Days
Snap (Bush)	May 1-30	Jul 15	12 ounces	1½ in.	24 in.	40-65 Days
Snap (Pole)	May 1-30	Jul 15	6 ounces	1½ in.	24 in.	75-90 Days
Beet	Apr 15-May 1	Jul 15	2 ounces	1 in.	14-16 in.	45-70 Days
Broccoli:						
Heading	Mar 15-Apr 15		1 packet	½ in.	24-30 in.	14-24 in.
Sprouting	Mar 15-Apr 15	Aug 1 (plants)	1 packet	½ in.	24-30 in.	14-24 in.
Brussels Sprouts	Mar 15-Apr 15	Aug 1 (plants)	1 packet	½ in.	24-30 in.	14-24 in.
Cabbage	Mar 15-Apr 15	Aug 1 (plants)	1 packet	½ in.	24-30 in.	14-24 in.
Cabbage (Chinese)	Mar 15-Apr 15	Jul 15 (plants)	1 packet	½ in.	18-24 in.	8-12 in.
Cantaloupe	May 1-Jun 1	Spring Plntng Only	1 packet	1 in.	6-7 ft.	Hills, 6 ft.
Carrot	Apr 15-May 1	Jul 15	1 packet	½ in.	14-16 in.	2-3 in.
Cauliflower	Mar 15-Apr 15	Aug 1 (plants)	1 packet	½ in.	24-30 in.	14-24 in.
Céleriace	Mar 15-Apr 15	Aug 1 (plants)	1 packet	⅛ in.	18-24 in.	4-6 in.
Celery	Mar 15-Apr 15	Jul 15 (plants)	1 packet	⅛ in.	18-24 in.	4-6 in.
Chard (Swiss)	Mar 15-Apr 15	Jul 15	2 ounces	1 in.	18-24 in.	6 in.
Chives	Mar 15-Apr 15	Jun 15	1 packet	½ in.	14-16 in.	In clusters
Collards	Mar 15-Apr 15	Jul 15 (plants)	1 packet	½ in.	18-24 in.	18-24 in.
Corn (Sweet)	Apr 15-May 15	Jul 15	4 ounces	2 in.	24-36 in.	Hills, 30-36 in.

Cucumber	May 1-Jun 1	Jul 15	1 packet	1 in.	6-7 ft.	Hills, 6 ft.	60-75 Days
Egg Plant	May 1-Jun 1	Jun 15	1 packet	½ in.	24-30 in.	36 in.	80-100 Days
Endive	Apr 1-May 1	Oct 1	1 packet	½ in.	18-24 in.	12 in.	60-90 Days
Fennel (Finocchio)	Apr 1-May 1	Jul 15 (plants)	1 packet	½ in.	18-24 in.	4-6 in.	85-90 Days
Garlic (Cloves)	Mar 15-Apr 15	Spring Planting Only	1 pint	1-2 in.	14-16 in.	2-3 in.	90-100 Days
Kale	Mar 15-Apr 15	Sep 15	1 packet	½ in.	18-24 in.	12-15 in.	55-200 Days
Kohlrabi	Apr 1-May 1	Jul 15	1 packet	½ in.	14-16 in.	5-6 in.	55-75 Days
Leek	Mar 15-Apr 15	Jun 15	1 packet	½-1 in.	14-16 in.	2-3 in.	120-150 Days
Lettuce (Head)	May 1-Jun 1	Jul 15	1 packet	½ in.	14-16 in.	8-12 in.	50-80 Days
Lettuce (Leaf)	Apr 1-May 1	Aug 1	1 packet	½ in.	6-12 in.	3-6 in.	30-60 Days
Mustard Greens	Apr 1-May 1	Sep 1-Oct 1	1 packet	1/3 in.	12-15 in.	6-8 in.	35-50 Days
Okra	May 1-15	Jun 15	2 ounces	1-1½ in.	36-42 in.	24 in.	80-120 Days
Onion (Seed)	Apr 1-May 1	Spring Planting Only	1 packet	½-1 in.	14-16 in.	2-3 in.	130-170 Days
Onion (Sets)	Mar 1-15	Jun 15	1 quart	1-2 in.	14-16 in.	2-3 in.	40-120 Days
Parsley	Apr 1-May 1	Aug 1	1 packet	⅛ in.	14-16 in.	4-6 in.	65-95 Days
Parsley (Turnip-rooted)	Apr 1-May 1	Jul 1	1 packet	⅛-¼ in.	14-16 in.	2-3 in.	80-100 Days
Parsnip	Apr 1-May 1	Jun 1-15	1 packet	½ in.	18-24 in.	2-3 in.	120-170 Days
Peas	Mar 15-Apr 15	Aug 15	1 pint	2-3 in.	18-36 in.	1 in.	45-70 Days
Peppers	May 1-Jun 1	Jun 15 (plants)	1 packet	½ in.	24-36 in.	18-24 in.	65-90 Days
Potato	Mar 15-Apr 15	Jul 15	½ peck	4 in.	24-36 in.	10-18 in.	80-130 Days
Pumpkin	May 1-Jun 1	Jul 15	1 ounce	1-2 in.	5-8 ft.	3-4 feet	90-115 Days
Radish	Mar 15-Apr 15	Sep 15	1 ounce	½ in.	14-16 in.	1 in.	30-65 Days
Rhubarb	Apr 1-May 1	Nov 1 (plants)	30 roots	2 in.	3-4 ft.	3-4 feet	2 Years
Rutabaga	Mar 15-Apr 15	Jul 1	½ ounce	¼-½ in.	14-16 in.	2-3 in.	100-120 Days
Salsify	Apr 15-May 1	May 15	1 ounce	½ in.	18-24 in.	2-3 in.	140-160 Days
Shallot (Cloves)	Mar 15-Apr 15	Apr 1-15	2 quarts	1-2 in.	14-16 in.	2-3 in.	100-120 Days
Soy Beans	May 1-15	Jun 1-Jul 1	8 ounces	1-2 in.	24-36 in.	2-4 in.	80-120 Days
Spinach	Mar 15-Apr 15	Sep 1	1 ounce	½ in.	14-16 in.	3-4 in.	45-60 Days
Spinach (New Zealand)	May 15-Jun 1	Jul 1	1 ounce	1-1½ in.	36 in.	18 in.	60-80 Days
Squash (Summer)	May 15-Jun 1	Jul 1	¾ ounce	1-2 in.	4-5 ft.	Hills, 3-4 ft.	60-90 Days
Squash (Winter)	Jun 15-30	Jul 1	1 ounce	1-2 in.	8-10 ft.	6-10 feet	90-120 Days
Sweet Potato	May 1-Jun 1	Spring Planting Only	75 plants	2-3 in.	3-3½ ft.	12-14 in.	100-150 Days
Tomato	May 1-Jun 1	Jul 1	1 packet	½ in.	2-3 ft.	18-36 in.	75-120 Days
Turnip	Mar 15-Apr 15	Aug 1	½ ounce	¼-½ in.	14-16 in.	2-3 in.	60-90 Days
Turnip Greens	Mar 15-Apr 15	Sep 1	1 packet	¼-½ in.	14-16 in.	2-3 in.	45-60 Days
Vegetable Marrows	May 1-Jun 1	Jul 15	¾ ounce	1-2 in.	Hills, 3½-4 ft.	3½-4 ft. Hills	50-70 Days

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