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VEGETABLE GROWING

—

W. FERGUSON,
DIVISION OF HORTICULTURE,
CENTRAL EXPERIMENTAL FARM,
OTTAWA

DOMINION DEPARTMENT OF AGRICULTURE

OTTAWA

CANADA

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VEGETABLE GROWING

Introduction

Since vegetables are grown far more extensively than the average person realizes, it would be as well to show the various branches into which the production falls. In the first instance the home garden is one of the most talked of each spring and through the summer. Almost every farm has a plot where fresh vegetables are grown for immediate use, and in every village, town and city where there is sufficient land attached to the home, gardens of varying size are to be found. These home gardens, both rural and urban, produce a very considerable amount of the nation's cheap but wholesome, high value food, but unfortunately it is impossible to get a correct estimate of this production or of its dollar value to this country. The value of this phase of production can hardly be placed too high. During years of food scarcity or of depression, large areas around towns and cities are devoted to vegetable gardens. Phenomenal yields are often obtained and large portions of the population provided with wholesome food. The farm home garden should not be less than one-quarter acre in extent, but an area of three to four times this size is undoubtedly better, particularly if potatoes are to be grown and successive sowings of short season crops are to be made. The larger sized garden also allows space for growing cabbage, cauliflower, peas, beans and other large growing, long season crops.

The second branch of the vegetable industry, market gardening, is a very important enterprise usually found in the vicinity of each large town or city.

This type of development is usually carried out on holdings of from 5 to 10, and in some cases 15 to 20 acres. Local conditions, market demands and the resources of the gardener will have a bearing on the enterprise. As a rule the market garden areas are located at not too great a distance from the market to be served. Since a great variety of crops are produced on these holdings great care should be exercised in the choice of the site. Types of soils to be found in the area, ranging from sandy loam to medium loam, drainage and a good water supply for irrigation purposes are important considerations. The successful market gardener endeavours to grow some of each kind of crop, placing special emphasis on crops in greatest demand on the local market. This phase of gardening also calls for a wide knowledge of garden practice with training or experience in the growing of tender plants under glass either by means of hotbeds or greenhouses. The market garden business although carried on as a rule on a very limited area is a highly specialized industry.

The third branch of this industry comes under the heading of truck crops, in which case suitable land is found by the growers at a distance from the markets, where land prices and taxes are as a rule lower, but on a site that is well served by good roads or railway facilities. A truck farm may range from 50 to 100 acres to almost any size the management can look after. A limited range of crops is as a rule decided upon including combinations best suited to the land, keeping market demands in mind. Early or light soils as well as medium loams are suited for the production of early crops, while heavier soils are best suited to the production of late crops. Muck soils are well adapted to the growing of midseason and late crops, examples of which are head lettuce, onions, celery, beets and carrots. By careful management muck soils can be used for growing a much wider range of crops than was formerly thought possible.

A fourth branch of the industry is the growing of vegetables for canning. It has a close association with the conservation of valuable food and more or less assists in the even distribution of vegetable products over off-season periods. The canning industry has been so thoroughly mechanized that large-scale production may be processed with such speed that the products possess the finest food value and vitamin content. Areas adapted to the growing of suitable crops to give a full range of products for processing are chosen as a rule. The canning crops are usually grown on a contract basis. The farmer having grown the crops in the regular sequence of the farm crop rotation and subject to instructions from the canning company, harvests and makes delivery to the canning plant.

Location

The farm garden should, if at all possible, be located near the rear of the dwelling house. The location should be sunny and not shaded by trees, and tree roots should not penetrate the area. If there is a possibility of livestock or poultry getting into the garden it would be wise to put a good wire fence around the garden.

Soils

Soils are variable and even garden soils which have been manured for years show a marked difference in type. Soils vary from sand to clay and,

Soil improvement. Organic matter, soil fertility and good texture can be built up and maintained by ploughing down green cover crops and sod. A rotation in which cover crops and sod can be grown for ploughing down should be standard practice.

according to drainage, from dry to wet. The soil may be low or high in organic matter, depending upon its natural fertility and the amount of manure previously used on it either as animal manure or by ploughing in green manure crops.

The soil type can be improved very materially by such manuring which introduces organic matter and makes the soil friable and easily worked.

The surface soil or top layer may be shallow, four to five inches, or deeper, ten inches or more. The greater the depth the better the crops produced. The shallow soils may be improved from year to year by a gradual increase in the depth of ploughing. In general, it may be said that a deep sandy loam, one containing sand, clay and organic matter in a reasonable balance, is the best.

The surface soil is the most important. The layer below the surface soil is also of considerable importance, particularly with respect to drainage. A very gravelly and open subsoil, without the power to carry to the surface by capillary flow the moisture required by plants, will be a disadvantage during a dry period. The hard-pan formation in many subsoils retains the surface moisture, and this condition can be corrected only by subsoil drainage and by providing a free outlet for the surface water which collects. A subsoil layer more or less cemented together by the leaching of soil elements into it does not in most cases permit a ready flow upward of the subsoil waters through it to the plants.

Manure and Commercial Fertilizers for Vegetable Crops

Before the advent of commercial fertilizers, very heavy applications of manure were advised for vegetable crops, even up to 20 and 30 tons per acre. However, more moderate applications, using half the above amounts, with commercial fertilizers in addition, will usually give better crops. The plant food in the commercial fertilizers is in a more readily available form. The manure is necessary to maintain organic matter, unless green crops are grown to plough under for this purpose. The organic matter increases the moisture-retaining capacity of soils, thus providing a more uniform soil temperature, and develops a more friable soil.

Commercial fertilizers are available in a number of different mixtures. There are two reasons why different fertizer mixtures are manufactured. First, to supply the soil with the proper proportions of nitrogen, phosphate and potash to give it the necessary balance or ratio of these chemicals. Secondly, to increase the supply of certain chemicals in the soil to satisfy the requirements of special crops. There are a number of mixtures available as,—

0-14-7	2-12-10	4-12-10
0-12-20	2-16-6	9-5-7
2-12-6	4-8-10	8-24-8
	4-12-6	

The figures used to indicate the fertilizer mixtures refer to the proportions of the different chemicals which are available as plant food. The first figure gives the per cent nitrogen (N), the next gives the per cent phosphoric acid (P_2O_5) and the last gives the per cent potash (K_2O). Thus a 4-8-10 fertilizer contains 4% N, 8% P_2O_5 and 10% K_2O. When making applications of fertilizer to the soil the rate may be varied according to the crop demands and the fertility of the soil.* Some of the above fertilizer mixtures are in common use, others are only used for special crops or soil conditions. As an example, the 8-24-8 fertilizer is a type used to prepare a fertilizer or "starter" solution for use when setting tomato plants out in the field.

Manures improve the mechanical condition of the soil in addition to supplying plant food. They render sandy soils more suitable for plants, because the vegetable matter holds the moisture more uniformly. Manures applied to clay soils open them up so that air and water may penetrate them better and moisture extremes are thereby lessened. The organic matter of soils has about four times the water-holding capacity of a clay soil and eight times that of a sandy soil.

*The recommendations of the Advisory Fertilizer Board published by the various provincial Departments of Agriculture are very useful.

For garden crops a fall application of well-rotted manure free from weeds is advised. This is ploughed under and the action of the elements firms the soil. In the spring it is surface-worked, and such fertilizers as are necessary are applied. Lime, if used, is generally applied before the first spring working.

During the germination of seed and the first development of roots, the seed itself supplies the young plant with food. When this is used up an available food supply becomes important. A reserve, or holdover, of available food supply in the soil is therefore desirable, and such soils will produce better than soils low in the necessary food elements. For this reason fertilizers with manure give better results than manure alone. The decay of manure and the liberation of plant food from it in the spring may be delayed by a low soil temperature which checks the bacterial activity necessary to bring this about.

In some cases a heavy application of commercial fertilizer before sowing is less beneficial than a small application followed by further applications or side dressings during the growing period. Fertilizer applications before sowing should be made several days in advance of seeding. In a small garden this can be done by broadcasting the fertilizer and working it into the soil with hand tools. For large areas the fertilizer can be drilled into the soil with a seed or fertilizer drill or it may be broadcast and disked or harrowed into the soil.

Side dressings for row crops should be applied two to four inches from the plants, at each side of the row and preferably drilled or worked into the soil about two inches. In small gardens a drill can be opened up with a hand or wheel cultivator, the fertilizer placed by hand and covered. For commercial gardens or field crops there are machines available for this purpose.

Well-rotted manure contains approximately ten pounds of nitrogen, five pounds of phosphoric acid and ten pounds of potash in a ton. The actual amounts of fertilizing elements in a ton will vary according to the way it has been stored, the bedding used to absorb the liquids, the quality of the food used by the animals which produced it, and from other causes. The nitrogen in the organic matter is released for plants only after it is broken down by the bacteria causing its decay, consequently it is not quickly available in the soil. Soils previously manured have a good reserve of nitrogen held over in this way which becomes quickly available in the spring.

Sulphate of ammonia is effective in supplying nitrogen in a readily available form and for this purpose is used as a surface dressing at the rate of one-quarter ounce to the square yard of soil (75 pounds per acre) evenly scattered on the surface. This is very effective in promoting early growth of all leafy vegetables, celery, and tomatoes. Care is necessary not to apply it in large amounts as it may cause injury to the roots. Consequently frequent light applications rather than heavy applications at one time are advised.

It may be noticed that manures are low in phosphoric acid. They may also be low in potash if the liquids are lost or have been leached out by rains. Superphosphate is generally used to make up the deficiency of available phosphoric acid. Some soils are deficient in potash and some plants require more potash than others. This can be made up by an additional light dressing of muriate of potash.

In some vegetable areas lime may be necessary to obtain good crops. Whether lime should be added to soil or not will depend upon the acidity of the soil. Unless the grower knows the soil has an acid reaction a sample should be tested before applying lime. If the soil is acid in reaction the usual application of lime is from one to two tons per acre which is roughly equivalent to from one-half to one pound per square yard. This is applied in the fall or early spring as most convenient and should be well worked into the soil. The amount to be added in future years will depend on how strongly acid the soil is. A soil pH value of 5 is considered too low for most vegetables and 6 is usually satisfactory.

Plan of the Vegetable Garden

It is usually advisable to rotate the different plantings so that crops may not be on the same ground year after year. Onions may be continued on the same soil for several years and usually vine crops. Rotation is particularly necessary for some crops such as cabbages and turnips to keep club-root in check.

It is a good plan to place the vine crops in the centre and plant the other crops on each side alternating these year by year. Asparagus and rhubarb and other perennial vegetables are usually planted on the edge of the garden but kept sufficiently back from the grass edge to permit of good cultivation about three feet or so.

For horse cultivation the rows are usually spaced 30 to 33 inches apart. If hand cultivation is practised the rows may be 15 to 18 inches apart. For onions a bed may be made with the rows 12 inches apart. Along the edges of the vine crops usually two rows of early vegetables are placed; these will be out of the way when the vine crops spread. A space eight feet wide is left for the vine crops and seeding done in the centre thus permitting of the spread of the vines four feet each way. Squash usually demands 10 to 12 feet of space.

The more or less square garden is usually more easily handled than a long narrow one although one may have to sacrifice more headland space if horse cultivation is practised. It is always a matter of judgment on the part of the operator as to the best arrangement for after all if the necessary space is given the plants do as well in one place as another unless disease interferes.

The space may be used to better advantage if water is available for an occasional watering. When watering is practised it is wise to give a good soaking at one time rather than light frequent waterings. Under hand cultivation certain paths can be developed through the garden and the plants worked and handled from these.

Seed

A prime essential for a good garden is good seed. The cost of seed, compared to the value of the vegetables harvested, is a small item. Therefore, seed should be obtained from reliable dealers. If it is necessary to pay a little more to be sure of getting good seed the extra cost will be money well spent.

Registered and certified seeds are produced by many of our Canadian seed growers as a means of supplying the public with good seed. This seed is sometimes referred to as pedigreed seed. Seed of most of the best vegetable varieties is produced by Dominion and Provincial agricultural institutions and some private growers and is called foundation seed. This seed is especially selected for Canadian conditions. In co-operation with the Canadian Seed Growers' Association this foundation seed is made available to the seed growers for the production of registered seed. Only a few generations of registered seed and one generation of certified seed may be produced from one lot of foundation seed. This is done under strict regulations. In this way the pedigree is kept pure. The vegetable grower need not hesitate in buying and using registered or certified seed.

Relatively large amounts, as compared with the smaller seeds, are required of peas and beans. Once good varieties of these crops are established they can be retained indefinitely with a little care by allowing some plants of each to mature and storing the seeds for the spring. The root crops can usually be seeded with three or four ounces of each, well distributed. Usually a quarter of a pound of the different corn varieties is ample for the garden. In other cases packages of the different seeds will supply the amount usually required. The quantity required will of course vary with the size of the garden and the needs of the family. Some seeds are extremely small and very small quantities are all that is necessary for the average garden. For example, cabbage may contain as many as 8,500 seeds per ounce, celery as many as 50,000 and tomatoes as many as 7,500 or more per ounce.

Cabbage, cauliflower, onion, celery and tomato plants are usually procurable in season from most greenhouse operators, and this usually is as cheap as growing the plants. It is necessary, however, to place the order early and to give the operator an opportunity to grow the class of plants one desires. Plants transplanted to a good distance apart in flats cost considerably more to grow than do the plants not transplanted to other flats.

Hotbed for Starting Plants

The hotbed should be in a sunny location, preferably on the south side of a building, thus getting the advantage of some protection. Fresh horse manure is the most satisfactory heating material. Because of the difficulty of securing suitable manure and also because temperatures are more easily controlled in greenhouses, the latter are extensively used for starting plants. However, even greenhouse operators use hotbeds, growing plants in flats and placing them in the hotbeds later when space in the greenhouse is limited.

HOTBED SOIL

Sods piled to rot with alternate layers of sod and manure.

The hotbed may be made by digging a hole two feet deep and filling it with heating manure, or it may be developed on the surface, making the bed of manure six to eight inches wider than the frame all around, and usually building it 2 to 2½ feet high, depending on the time when it is started. The frames are usually made to accommodate four sashes 3 feet by 6 feet in size, made up of lapped glass, 18 lights of 10 x 12-inch glass to a sash. The frame is made of planks 13 inches high at the back and 8 inches in the front, in order to give a slope to the glass. The ends are spiked in, and three pieces of 2 by 4 scantling spiked level with the top of the plank to carry the sashes.

The manure is placed in a pile for five days. It is then forked over and evenly built up, being shaken out well. If very dry it is watered to prevent violent heating and to cause settling, so that a moderate heat rather than fire-fanging by violent heating may result. The manure should be tramped to make sure there are no slack spots in the bed.

The sashes are placed and left on for a few days, when they are lifted to give ventilation and allow the removal of gases that will form from the early

violent heating. When the temperature of the manure goes down to about 80 degrees Fahrenheit flats can be placed in the hotbed, or earth five inches deep used and the seed planted. If one uses flats, less soil is required. The flats are set on narrow boards running across the bed.

Because of the limited air space in a hotbed the temperature will run up quickly on a bright day, and the plants may easily be ruined by an excess of heat. The sashes may be pushed back a few inches according to the day and the kind of plants. Tomatoes will stand a higher temperature than cabbages. Watering must be carefully done to avoid too high humidity and to prevent the development of the damping-off fungus. Usually the watering is done about noon so that the soil and air may dry out before closing for the night. During frosty nights and with beds not having much bottom heat it is wise to cover the frames with pieces of old carpet, rugs, or straw.

Coldframes

The coldframe is made like the frame of a hotbed. It is placed directly on the soil. If it is placed early, well banked, and good soil used, reasonably early plants can be developed. Such frames should be closed early and covered with a close carpet to prevent loss of heat during the night. The coldframe is an excellent place in which to harden hardy plants for early planting to the garden.

Flats for Garden Use

The most satisfactory size of flat is about 12½ by 22 inches, with sides 3 inches deep. Such a flat would have end pieces of ⅝-inch wood 12 inches long. The side pieces and bottoms would be quarter-inch wood, 22 inches long and 3 inches wide. The bottom pieces are spaced a little apart to permit drainage. It is better to adopt a definite size of flats so that they can be readily shifted and replaced by others. When not in use they are stored in a dry place, and will give several years of use.

Starting Plants in a House Window

The disadvantage of starting plants in a bright south window in the house is that they usually do not get the full benefit of the sun all day and consequently grow drawn and spindly. However, a seed flat in such a window is excellent for starting the seed early before the hotbed can be prepared outside, and after the plants are transplanted and established the flats can be taken to the hotbed.

Transplanting

Seedling plants are usually first transplanted when the first true leaves are formed. They may be spaced a sufficient distance apart in flats, usually two to five inches according to the variety, or they may be set into flower pots, strawberry boxes, paper pots or plant bands. It is not wise to allow the plants to remain in pot containers until they become pot-bound and checked in growth.

The plants should be exposed gradually to outdoor conditions for several days before setting in the open. The plants are thoroughly watered several hours before transplanting. The transplanting is done preferably on a dark day or in the evening, thus avoiding excessive wilting. When transplanting, the strawberry box is cut at the four corners and the plant removed without disturbing the soil. The pot is turned bottom up in the hand and the plant jarred loose by a tap of the pot rim on something solid. The plants in flats are cut between with a sharp knife to the bottom of the soil, making blocks of soil with the plant in the centre.

The plants are placed in the prepared soil opening, and the soil filled in and pressed firmly around the plant without crushing or disturbing the roots in the

ball of earth. If the plants are set into a very dry soil, watering once to soak the soil thoroughly and settle it around the plant is desirable. When this dries the surface is left covered with a thin layer of dry soil.

Protection of plants with no earth adhering to the roots when set, may be given by placing a board on edge or a shingle shoved into the soil at each plant to break the force of the wind. These are generally placed on the south side to shade the plants as well. The soil should be packed firmly around the plants when they are set but pressure sufficient to crush the tender stalk should be avoided.

The vine crops, corn, and beans do not transplant satisfactorily. If this is attempted they must be handled in pots with the ball of earth fully intact when planted.

Succession of Crops

With the advent of very early-and late-maturing varieties, the advantage of successional sowings is not so important. However, where water is available for the garden and in districts with a moderate summer temperature, successive seeding or planting, at dates two or three weeks apart, can be used to advantage with some crops.

The ground utilized by early vegetables may also be planted between with later crops, that will have the full space after the early crops are removed. How far this may be done profitably can be worked out by the operator. In districts where the season is short at best, it is practicable to only a limited extent.

Wheel-Hoe and Other Garden Tools

The combined garden drill and wheel-hoe is an important tool. After the seeding the seed box can be removed and wheel-hoe parts bolted in its place. The garden can be seeded by hand and the hoeing can be done by hand, but there is no machine so useful as the wheel-hoe, which can be set so as to leave only a narrow row for hand weeding, having cut the most of the weeds and left the soil where it was, in the form of a thin, even surface mulch. It very often happens that in attempting to eliminate the weeds close to the growing plant with the horse-drawn cultivator, the roots of the plants are disturbed by deep, close cultivating. This, of course, should be avoided. The flat Dutch push hoe with a narrow band of steel is more satisfactory for hoeing than the common hoe. The small hazeltine hand weeder and trowel are indispensable garden tools, as are also digging spade and the iron rake.

Insects and Diseases

Bulletins dealing with insects and diseases that attack garden crops are available from the Publicity and Extension Division, Department of Agriculture, Ottawa. It is necessary to combat such pests promptly, and the information should be available when the troubles first appear.

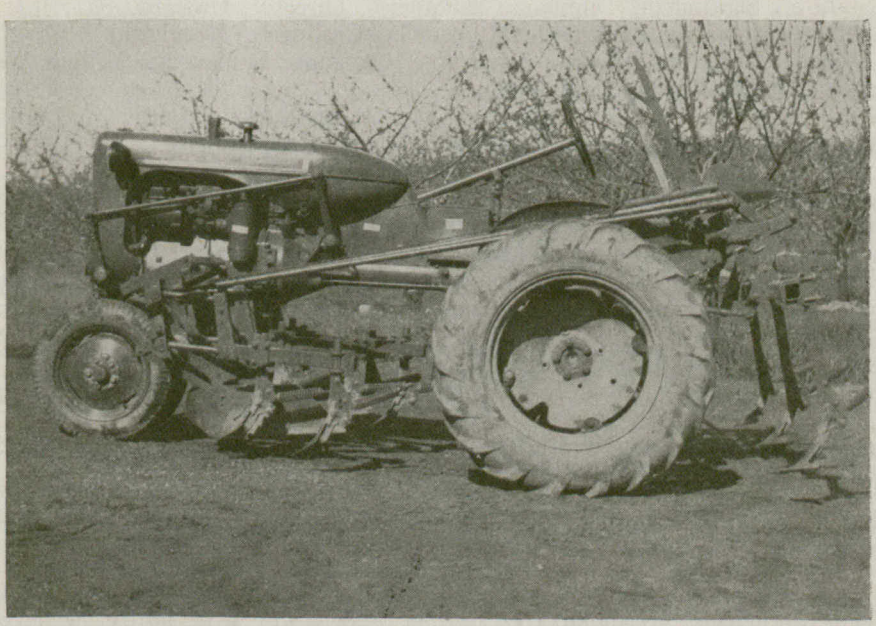
Vegetable Varieties Recommended

Asparagus—Mary Washington, V-35, Eden.

Beans, Bush—Wax podded: Round Pod Kidney Wax, Pencil Pod Black Wax, Unrivalled Wax and Pacer. The last named is one of the earliest wax beans, the pods are tender when young but become stringy as they mature. —Green podded: Stringless Green Pod, Bountiful, Masterpiece and Princess of Artois. The last variety is very early but the pods become stringy as they mature.

Beans, Pole—Wax podded: Kentucky Wonder Wax, Golden Cluster Wax. —Green Podded: Kentucky Wonder, Decatur, Scarlet Runner.

Beets—Detroit Dark Red No. 6 (short top), Detroit Dark Red No. 16 (medium top), Crosby Egyptian and Flat Egyptian.
Broccoli—Italian Green Sprouting.
Brussels Sprouts—Long Island Improved, Catskill.
Cabbage—Early: Golden Acre, Copenhagen Market, Jersey Wakefield.
—Midseason: Glory of Enkhuizen, Succession, Charleston Wakefield.
—Late: Danish Ballhead, Penn State Ballhead, Chieftain Savoy. Suitable red varieties for pickling are Red Acre, Red Rock.
Carrots—Nantes, Amsterdam, Imperator, Chantenay No. 27 (red cored), Danvers Half Long.
Cauliflower—Snowball, Codania, Perfection.
Celery—Blanching type: Golden Plume, Golden Self Blanching, Cornell No. 9
—Green type: Summer Pascal, Utah, Salt Lake.
Chard—Lucullus.
Chinese Cabbage—Chihli, Pe-Tsai, Wong Bok.
Citron—Green Seeded Citron, Red Seeded Citron.



Cultivation.—A row-crop tractor showing the row-crop attachments mounted directly onto the tractor. This arrangement permits quick cultivation with positive control and requires only a small headland for turning. The attachments can be easily removed from the tractor to free it for other work.

Corn—Open pollinated—Early: Banting, Pickaninny (black seed), Dorinny.
—Midseason: Golden Bantam.
—Late: Country Gentleman.
—Hybrid varieties—Early: Seneca 60, Golden Rocket, Sugar Prince, Spancross.
—Midseason: Carmelcross, Kingcross Bantam, Vinegold.
—Late: Golden Cross Bantam, Lee, Lincoln.
Cucumber—Slicing: Early Fortune, Straight Eight, Delcrow, Marketer, Cubit, A & C.
—Pickling: Snow Pickling, Boston Pickling, Mincu, Chicago Pickling.
Egg Plant—Blackie, Black Beauty, New Hampshire Hybrid.
Leek—Giant Carentan, Musselburgh.

Lettuce—Leaf: Grand Rapids, Simpson.
—Crisphead: New York No. 12, New York No. 515, Imperial No. 456, Great Lakes.
—Butterhead: Big Boston, Wayahead.
Muskmelon—Honey Gold, Golden Champlain, Bender Surprise, Delicious.
Onion—Early: Yellow Globe Danvers No. 11, Early Yellow Globe, Early Flat Red.
—Midseason: Ebenezer, Yellow Globe Danvers No. 55, Southport Yellow Globe, Southport Red Globe, Red Wethersfield.
—For Transplanting: Yellow Globe Danvers No. 44, Sweet Spanish, Ailsa Craig, Cranston Excelsior.
—Pickling: White Portugal, White Barletta.
Parsley—Champion Moss Curled.
Parsnip—Hollow Crown, Guernsey, Short Thick.
Peas—Early: Alaska, Wisconsin Early Sweet, Fenland Wonder.
Midseason: Thomas Laxton, Laxton Progress, Little Marvel, Alton, Laxall, Engress.
—Late: Stratagem, Telephone, Kootenay, Director, Onward.
Pepper—Sweet: Harris Earliest, Windsor A, California Wonder.
—Hot: Hamilton Market, Long Red Cayenne, Hungarian Yellow Wax.
Pumpkin—Sugar, Connecticut Field.
Radish—Saxa, Scarlet Globe, Sparkler, French Breakfast, Icicle.
Rhubarb—Macdonald, Ruby, Valentine, Canada Red, Sunrise.
Spinach—Bloomsdale, Nobel, King of Denmark.
Squash—Golden Hubbard, Green Hubbard, Kitchenette, Table Queen (acorn or pepper squash), Buttercup, Butternut.
Tomatoes—Indeterminate or staking varieties: Abel, Bestal, Earliana, Bonny Best, Chalks Early Jewel, Geneva John Baer, Globonnie, Early Stokesdale.
—Determinate or bush varieties: Early Chatham, Bounty, Red Cloud, Redskin, Victor.
Turnip—White Top Milan, Purple Top Milan, Golden Ball.
Turnip (Rutabaga or Swede)—Laurentian, Canadian Gem, Ditmars (Bronze Top).
Vegetable Marrow—Long White Bush or Trailing, Long Green Bush or Trailing.
Watermelon—Early Canada, Sweet Sensation, Peerless, Cole's Early.

Cultural Directions for Vegetables

ARTICHOKE

The Jerusalem artichoke (*Helianthus Tuberosus*) is a hardy herbaceous perennial that produces very strong above-ground growth that may develop to a height of from six to ten feet. Fleshy underground root stalks arise from the base of the stalks and produce oblong tubers at the extreme end of each rootstalk. As a garden vegetable the artichoke is grown as an annual.

Soils that are adapted to potato production will be found satisfactory for the production of this crop. Thoroughness of preparation is very important. Manure applied to the land should be well rotted and thoroughly worked in by harrowing. Commercial fertilizers recommended for potato growing will be found to give good results.

Early spring planting is desirable. Whole small tubers or large tubers may be cut into sections and planted the same as a potato crop. The rows should be spaced three feet apart and the seed pieces spaced 18 to 20 inches apart in the rows and covered to a depth of four inches in the soil. From six to eight bushels of tubers of the smaller sizes will be ample to plant one acre.

Cultivation at frequent intervals is necessary during the early part of the season. Since the artichoke grows very rapidly it soon occupies the whole

space, choking out weeds and precluding cultivation. Very little hand weeding or hoeing is necessary.

Harvesting is rather difficult and is usually done by digging the crop by hand, using digging forks. If the coarse tops are cut off and removed from the field the ordinary potato digger may be used with a fair degree of success. The small tubers, however, will not be taken out very clean which will result in a volunteer crop the following season. The digging is usually done in the late autumn prior to the freeze-up.

ASPARAGUS

The culture of this important spring vegetable is not difficult. It takes time to establish a good bed, and because of this it is little grown. Two years should elapse after planting before much crop should be gathered. This time is necessary in order to develop good crowns for future production. A light cutting not extending over more than two weeks may be made the second year. Cuttings in succeeding years may be continued for a period of six or seven weeks, to early July, when further cutting should stop. Many good beds have been suppressed by late cuttings, which seem to weaken the plants permanently. The period from the last cutting to late fall is necessary to enable the plant to develop the growth necessary to store the fleshy roots with the food required to develop a good cutting of large stalks the next year.

A well-drained friable deep loam is best. Soils with a shallow surface layer should be avoided. There is no danger of making the soil too rich by the use of stable manure. A soil deficient in organic matter should have 40 to 50 tons of manure worked into it per acre. This application is not so important on good garden soils previously well enriched. The preparatory tillage should be thorough and deep.

One-year vigorous plants with strong buds are used for planting. The variety considered to be best is Mary Washington. Plants may be grown in the garden by seeding in the early spring on rich garden soil in rows 15 inches apart, spacing the seed two inches apart in the row and seeding one inch in depth. Soaking the seed for a day in warm water before planting is advised. The plants are usually thinned to average four inches apart in the row. Thick planting in the row gives undersized plants, and is not desirable, as the plants for setting should average a spread of about 15 inches of root. The plants should be kept clean of weeds by frequent shallow surface cultivation. Avoid deep cultivation near the growing plants.

Planting is done very early in the spring, using roots as fresh as possible. Delayed planting, or delay in the planting of roots after they are dug, should be avoided. Much loss has resulted from rot due to the roots heating if left several days in a compact mass or package. The rows are spaced four to five feet apart and the plants set 1½ feet apart in the row, or if set out in beds, the plants are spaced 1½ feet apart each way. Two deep furrows may be run out in row planting, throwing the soil in opposite directions, and the plants placed by digging the soil out where they are to go so that the crown is six to eight inches below the former soil level. One plant only is used to a place. The roots are spread evenly in all directions and covered with three inches of good surface soil. The trench so made is filled in level gradually as the plants grow. In garden culture in beds the practice is to dig holes 18 inches apart each way, of sufficient size to take the plant. There does not appear to be any advantage in working up the soil directly under where the plants are placed. There is an advantage in placing a handful or two of soil directly under the crown, thus giving a less abrupt angle to the roots.

Usually the beds are kept level, but in soils lacking drainage a mounding to the row will provide for drainage midway between the rows. An outlet from

these depressions should be provided. Clean cultivation to prevent weed growth throughout the season is necessary.

Harvesting is done with a sharp narrow knife pushed into the soil directly below the spear, cutting it about one inch below the surface. For large No. 1 grade the spears are $\frac{3}{8}$ inch in diameter at the butt and not less than $5\frac{3}{4}$ inches long, and for medium No. 1, $\frac{1}{4}$ inch in diameter at the butt and not less than $5\frac{1}{2}$ inches long. In both grades at least 85 per cent of the length of each stalk shall be green. The spears are bunched into 8-ounce or 16-ounce bunches. These are evened at the top, and squared at the bottom, and tied with tape at top and bottom. Misshapen and crooked stalks and heads, and tips broken apart, are not wanted.

As soon as cutting is finished a 4-12-6 or 4-8-10* fertilizer is scattered over the soil, at the rate of 900 pounds per acre, and well harrowed in. It is often the practice to spread 10 to 15 tons per acre of well-rotted stable manure free from weeds over the bed in the fall, and this is cultivated into the surface soil in the early spring. In the autumn the tops are cut off and removed from the patch. Dropped seed may result in plants starting up, and these must be removed.

Also see Division of Horticulture circular "Asparagus" by T. F. Ritchie, Central Experimental Farm, Ottawa, Ontario.

BEANS

Beans are probably the most important of all the garden crops. They require heat and cannot be seeded until the ground warms up, and early frost must be avoided. They are seeded toward the end of May or early in June. The soil should be well drained. This crop does not grow well on a clay soil unless considerable manure is used. Stable manure is usually applied at the rate of ten tons per acre and the land ploughed or thoroughly disked. The 2-12-10 or 4-12-10 fertilizer is advised in addition for the lighter and poorer soils, at 600 to 900 pounds per acre. Side placement of fertilizers is advised. A broadcast application thoroughly worked into the soil is usually better than drill distribution, as the germinating seed is very sensitive to injury if the roots come in contact with the fertilizer. Plants stunted at this time rarely recover their vigour fully and are a disappointment. A band of fertilizer on each side, placed 2 inches from the row and $1\frac{1}{2}$ inches deep, avoids possible injury and produces the best crops.

The seed is sown in rows, on light lands usually on the level, and on clay lands in low ridges. The rows are 30 to 33 inches apart. The seed is spaced about three inches apart in the row, and it takes three to four pecks of seed per acre. The seed is covered with an inch of soil, or deeper if the ground is very dry. After planting, only shallow cultivation to control weeds is necessery. Care should be taken not to work among the plants when the foliage is damp.

Pole beans are usually planted in rows, with plants left every five inches and a sapling pole two inches in diameter and seven feet tall to every two plants. Some prepare the hills for pole beans by placing a forkful of manure under a hill of five plants, the hills two feet apart and a pole in the centre of each. The Kentucky Wonder varieties are the most popular. The Scarlet Runner is liked by many because of its added decorative value.

Canning varieties must be free from strings. The varieties used principally for canning and in the home garden are Pencil Pod Black Wax, Round Pod Kidney Wax, Refugee Wax and Stringless Green Pod, and of the pole beans, Kentucky Wonder Wax, and Kentucky Wonder (green-podded).

*Follow the recommendations of the Advisory Fertilizer Board published by the various Provincial Departments of Agriculture.

The small-seeded early Lima bush bean is more suitable for southern districts. It requires a higher soil temperature than the common bush bean and should be planted later to have more heat for germination. Where the season is short it does not form seed before frost.

BEAN

Round Pod Kidney Wax is one of the best of the wax varieties.

BEETS

Beets, like mangels and sugar beets, require a soil high in potash. If a good grade of stable manure is used at the rate of 10 tons per acre, the 4-8-10 potato fertilizer at the rate of 800 to 1,000 pounds per acre may be used to advantage.

Early seeding is best for early market or canning, in order to give rapid succulent growth. For winter storage seeding early in June is advised, as smaller roots, not large and overgrown, are demanded by the market. The seed is planted about one-half inch deep in freshly prepared soil. If seeded in

BEET
A typical root of Detroit Dark Red.

dried-out soil the germination is often very poor, and the crop stunted at the start. If cultivated with the wheel-hoe the rows are spaced 15 inches apart. If the horse cultivator is used, 30 inches apart is advised. Seeding on the level is

BROCCOLI
Sprouting broccoli is an excellent type of crop.

usually preferred on soil with good drainage. The plants are usually thinned to two inches apart. Frequent shallow cultivation is necessary to keep down weeds and keep the surface soil loose.

The removal of beets for bunching for early market may somewhat lessen the thinning required, because of the gradual removal of the best sizes.

The Detroit Dark Red is the favourite for canning and general use. Detroit Dark Red No. 6 has a shorter top and a larger root than Detroit Dark Red No. 16. Flat Egyptian and Crosby Egyptian are earlier varieties but with much more zoning in the flesh of the root.

BROCCOLI

The heading broccoli is similar to a very late cauliflower and is handled as such and usually marketed as a cauliflower. The Large Early White French is one of the best.

The sprouting broccoli develops a loose flower-head, formed on a fleshy branching stalk sent up from the axil of a leaf. The sprouts are cut about six inches long and other sprouts form at the axils of the leaves, thus giving a fairly continuous harvest. They are handled in the same way as cabbage. The Italian Green Sprouting seems to be one of the best varieties.

BRUSSELS SPROUTS

Brussels sprouts may be handled in the same way as early cabbage. The sprouts, or small heads, are developed in the axils of the leaves. The lower leaves are removed as the sprouts commence to form, and when the sprouts are well formed they are cut out and used like cabbage or cauliflower. The plants may be lifted with roots intact and placed in a protected coldframe kept from freezing, and the sprouts used as desired. Long Island Improved and Catskill are popular varieties.

CABBAGE

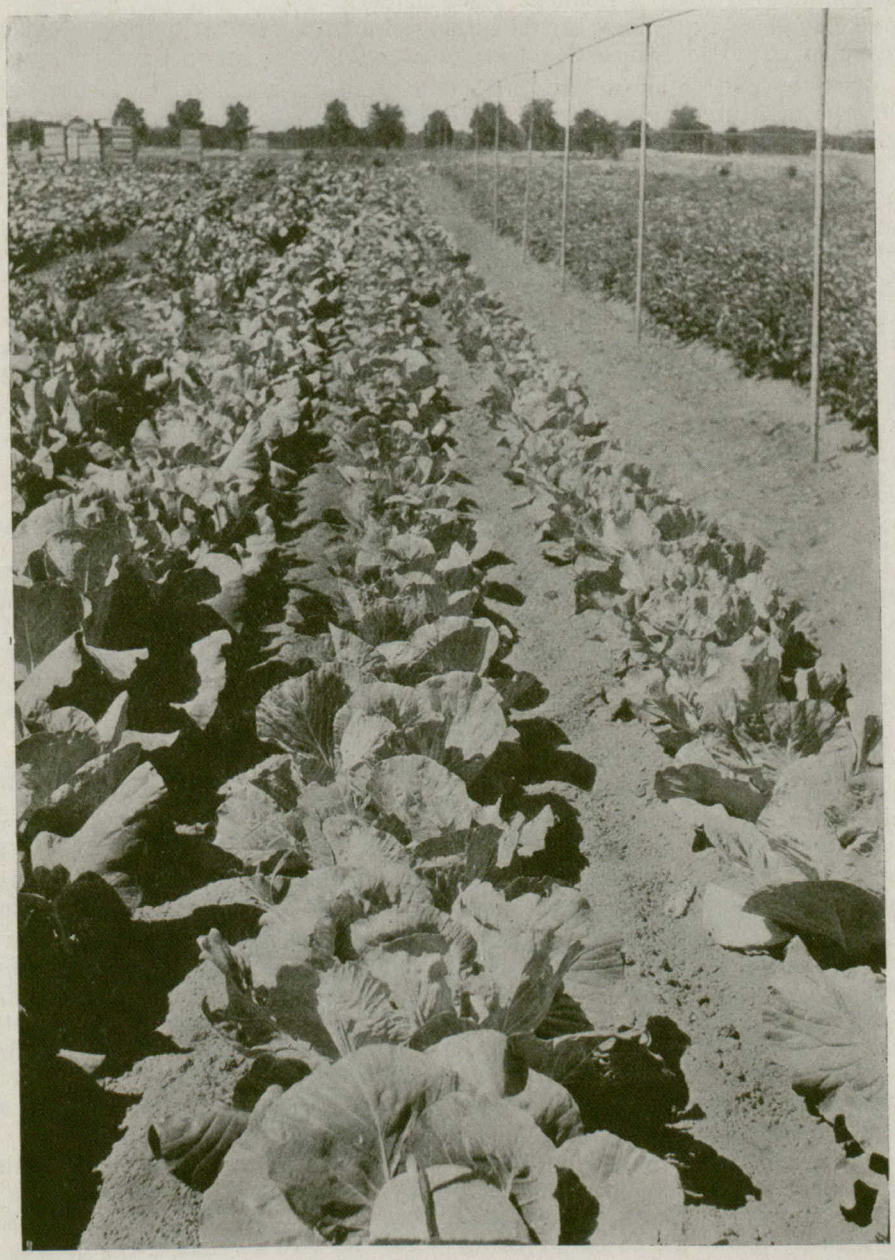
This crop is adapted to a wide range of conditions. It is not particular as to the type of soil so long as there is a well-balanced available food supply and sufficient moisture. It does best under a comparatively cool temperature, and will stand considerable frost without injury.

Manure at the rate of 15 tons per acre is ploughed under and the land thoroughly tilled. Commercial fertilizer, usually 4-8-10, is applied at the rate of 900 pounds per acre. Band placements of the fertilizer have given better results than placing it in close proximity to the young plant. Plants are often seriously suppressed in growth by concentrating the fertilizer used directly to the area where the plant is set. The cabbage, like all of this group of plants, demands a large supply of available phosphoric acid, and very often manure alone, with superphosphate 600 pounds per acre, will give good crops, but manure alone without superphosphate is often disappointing. Lime is necessary on acid soils.

The sandy loam soils are preferred for the early crop because earlier planting can be practised. For fall crops a later soil and one with a plentiful supply of moisture available during the late summer, is preferable. Large well-developed leaves are important in order to form a good head, and a ready supply of nitrogen is necessary; however, excessive nitrogen feeding without the other two essential elements may result in spongy heads instead of the firm crisp head so much desired.

For early cabbage the seed is started under glass March 15 in shallow flats, and when the first true leaves are formed the plants are transplanted to similar flats, being spaced 1½ to 2 inches apart. The soil should be a good rich loam with a good proportion of manure and bonemeal fertilizer. After the plants are well established they should be gradually inured to field temperature

by leaving them in a coldframe for a few days to become hardened off. High temperature should be avoided in growing cabbage plants as a thrifty, stocky development rather than a drawn spindly one is wanted, and a 50 to 60 degree temperature should be the aim.



EARLY CABBAGE

Good seed produces a uniform stand of crop. Left, Early Jersey Wakefield; centre, Golden Acre; right, Golden Acre lacking uniformity.

The plants are set to the field the first week in May in rows 33 inches apart, and 1½ feet apart in the rows for the early maturing sorts, such as Golden Acre,

which form medium-sized firm heads. The plants are taken to the field in flats and each cut out with a square of soil to avoid a set-back from planting.

For the main crop the seed may be sown thinly in well-prepared soil in a coldframe or in the field late in April or very early in May, and the plants transplanted to their permanent place in early June. For the flat-head and large drumhead types they should be spaced 2 to 2½ feet in the row to get good development. The Danish Ballhead is planted 1½ feet apart in the row.

Shallow cultivation to keep out weeds and form a shallow surface mulch to conserve moisture is important. Deep cultivation close to the plant should be avoided.

For best storage a temperature as near to 32 degrees as possible should be maintained. The plants are lifted with the roots on and tiered up with the roots crossed and the heads given a space of a foot between the tiers, thus providing the needed ventilation. The tiers may be made six to eight feet high if care is used when placing the plants.

Golden Acre is one of the best varieties for early market. Glory of Enkhuizen and Succession are good midseason varieties. Danish Ballhead and Penn State Ballhead both produce good solid heads which keep well in winter storage. Chieftain Savoy is a good type of savoy cabbage and retains its green colour longer than the ballhead varieties. Red Acre and Red Rock are good varieties for pickling.

CARROTS

Carrots should have a loose, friable loam, deep, well-prepared, and with good drainage, to secure even well-formed roots. Heavy soils with excess water produce a shorter, thicker carrot with a greater core development, and therefore of lower quality for table use, and are not favoured by the trade. Carrots with a small core are better than those with a large core and contain more vitamins, which thus enhances their value for family use. Carrots above two inches in diameter are not desirable for table use.

The use of 10 to 15 tons of stable manure is advised, with a 4-8-10 fertilizer at the rate of 600 to 900 pounds per acre, well worked into the soil, and the soil levelled with a planker. On light soils it is better to plant on the level, for by so doing the top of the carrot is less exposed in subsequent working. The crown of the root should not in any case be exposed to cause even a slight green discoloration, as this materially lessens the quality of the carrot for table use.

The seed is sown in rows. The rows may be spaced 15 inches apart or more depending upon the method of cultivation. If the seed is good with a high germination two pounds will sow an acre. The disadvantage of thick seeding is the expense of thinning, as the plants should be spaced to average two inches apart. The seed is sown in moist soil not more than one-half inch deep. In order to facilitate early cultivation a small amount of turnip seed may be mixed with the carrot seed in order to identify the rows early so that the wheel-hoe can be used. The turnip seedlings are removed at the first weeding.

When carrots are one inch in diameter they may be pulled for bunching, five to eight to a bunch, according to the size, disturbing the adjoining plants as little as possible. Avoid pulling undersized roots. The richness of the soil, and whether plants are to be pulled for bunching, will determine the spacing of the plants when first thinned. Washing by running water through the roots is desirable for bunched stock.

Carrots for winter use are best stored in a cool cellar, with moderate air circulation to prevent heating. Dry hot air is not good if they are to be kept firm and crisp and close humid air will result in soft rot.

In order to escape the carrot rust fly late plantings the first week in June are advised; these will produce fair-sized roots for winter storage. The main crop is planted early in May.

CARROT
Typical roots of the variety Chantenay 27.

Early cultivation and proper weed control are necessary from the beginning. If weeds are allowed to become too large control is more difficult and the yield may be seriously reduced.

Nantes, Amsterdam and Imperator are good varieties for bunching. Chantenay and Danvers types are usually preferred for storage.

CAULIFLOWER

The cauliflower is perhaps the best of all the vegetables of the cabbage group. It is not an easy crop to grow. It requires uniform moisture and plenty of available plant food, and must receive no check during its full growing period. Extremes of high or low soil or air temperatures are to be avoided. This is made possible by using vegetable matter such as manure, or green crops ploughed under, to hold moisture and modify summer soil temperature. On the other hand a very low soil or air temperature is not desirable in the early life of the plant and may result in small heads that develop prematurely. There is probably no plant more exacting in these requirements than the cauliflower.

The plants for early spring planting are started about seven weeks before planting outside, usually April 1, under glass or in hotbeds in flats. The soil used in the flats should be three parts of well-rotted manure to five parts of good rich sandy loam, well mixed together. Two weeks after germination the seedlings are transplanted to other flats, being spaced two inches apart. A gradual hardening-off of the plants before planting outside is necessary but the temperature should not go below 50 degrees. Good ventilation to hold a uniform temperature is important, and watering requires special care to avoid the development of the damping-off fungus and still maintain even moisture. Six weeks is necessary under most favourable conditions to give good plants for spring setting. It is usually not advisable to set cauliflower earlier than the 15th of May, as otherwise cold soil may check the growth and result in small immature heads being formed. A check from planting in cold soil often results in serious disappointment in the product. Warm rains following planting materially influence the size and quality of the heads produced. A sudden check from wilting due to extremely dry weather will adversely influence good head development.

The soil should be well prepared, manured at the rate of at least 10 tons per acre and 4-8-10 potato fertilizer, well worked into the soil or used as a side-dressing at the rate of 900 pounds per acre.

The plants are set in rows 33 inches apart, and spaced 1½ to 2 feet apart in the rows. In planting, the soil should be lifted with the plant to disturb growth as little as possible. More care in this respect is necessary than with cabbage.

For a late crop seed sown in the open by the middle of May will give plants that can be set in the permanent location early in June. These will give an excellent late summer and fall crop.

Frequent shallow cultivation to keep the soil loose and weeds in check is necessary. Deep cultivation likely to disturb the roots near the plant should be avoided. Compact heads five to six inches in diameter are wanted for market and they should be fully formed, compact and even. The leaves are tied over the heads when they are two or three inches in diameter; this prevents the yellowing of the head. The heads tied at different times should in some way be marked by different colours of twine, as otherwise they may not be noticed when at their best. The stem is cut close to the head and the large leaves next to it are left on to protect it during marketing.

Snowball is probably the most widely grown variety in Canada.

CELERY

Celery, contrary to general opinion may be grown on any type of garden soil except the very heavy clays, which even if well furnished with organic matter are only fairly satisfactory. The important requirements are moisture and plenty of well balanced plant food. In the case of sandy or sandy loam soils, the introduction of manure or similar vegetable matter to hold moisture is essential and watering is sometimes necessary. Celery is, of all garden crops, one of the most sensitive to moisture variations, and uniform moisture is very important even if there is an abundant food supply.

To grow good celery plants for spring planting requires about 2½ months. The seed germinates slowly and soaking overnight before seeding will materially aid in securing a good stand. After soaking the seed, dry sand mixed with it will aid in seeding evenly. Two weeks after the plants appear they are singled out and transplanted to other flats, being spaced 1½ inches apart. These are cut out when transplanted with as little check as possible. Thin seeding in flats and transplanting direct to the field is possible, in which case clipping the leaves to three or four inches from the base of the plants as set is advised.

The soil and air temperature best for vigorous growth is a range from 50 to 60 degrees. The plants may be hardened off at a temperature not below 50 degrees. If plants are started too early and become well developed, and are then placed at a low temperature for a period to harden off, a check is likely to result and the crop may go to seed. This should be avoided, and very often excessive early forcing followed by low temperature may prove to be disappointing. Spring planting thinly in the open soil and later careful transplanting on cloudy days and shading of the plants until they are established often will give excellent celery by fall.

Planting is usually done in rows three to three and a half feet apart and the plants spaced six inches apart in the rows. If the celery is to be banked with soil for blanching four-foot spacing of the rows is better. Double rows six inches apart, the plants alternately spaced, are frequently adopted.

As already stated, manure to increase the organic matter is important, and 20 tons per acre may be used to advantage. Celery requires more nitrogen and potash than phosphoric acid, and much of the hollow stalk so often noticed is due to excess nitrogen and shortage of available potash. The 4-8-10 potato fertilizer at 1,000 to 2,000 pounds per acre seems to be most satisfactory for celery.

If other fertilizers low in potash are used then special applications of potash should be made. Muriate of potash applied as a side dressing at 50 pounds per acre will be found effective. In special cases where the soil is acid two tons of lime per acre may be beneficial.

Celery can be stored in the root cellar by digging with soil on the roots and banking it in the earth floor of the root cellar, covering the roots with earth. A space is left every fourth row so water may be put in with a hose to keep the soil damp. Never run water on the foliage when in storage. Under dark conditions even the green varieties will gradually whiten. Good ventilation to keep the foliage dry, with a temperature as near 32 degrees as possible, should be maintained. The celery should be left in the field as late as possible, but avoid heavy frost injury.

The popular blanching varieties are Golden Plume, Golden Self Blanching and Cornell No. 19. The Utah or Salt Lake varieties and Summer Pascal are popular for green celery.

CHARD

The leaves and stalks of the Swiss chard are cooked and used as greens. The outer leaves can be cut off as wanted without injury to the plant.

The seed is sown in rows 2½ feet apart and the plants later thinned to six inches apart. The "seed", like that of the beet, contains several seeds and after germination care in thinning to one plant is necessary.

Swiss chard supplies greens throughout the summer. The best quality is secured in a rich soil. Manure or fertilizer as advised for beets is recommended. On acid soils the plants are not so good and liming of the soil may be necessary.

Lucullus is one of the best varieties.

CHINESE CABBAGE

This so-called cabbage may be seeded in late June or early July, and will give a good fall crop.

It does not seem very suitable as a spring crop, as the heads require cool conditions for best development. It likes a good rich soil. The Wong Bok, Chihli and Pe-Tsai are the most widely grown varieties.

CITRON MELON

This is of no value except for preserving, and may be handled the same as the watermelon. The Colorado Green-seeded and the Citron Red-seeded are the sorts used.

CORN

Corn does best on a sandy loam, well drained and containing a reasonable amount of vegetable matter. The turning-under of stable manure, 10 to 15 tons per acre, is advised. Clover sod ploughed under may take the place of the manure. This is supplemented with commercial fertilizer. On sandy soils a 4-8-10 is recommended at 600 to 1,000 pounds per acre, on loam soils a 4-12-10 at 600 to 1,000 pounds per acre, is usually more beneficial. If the soil is well supplied with plant food smaller amounts of fertilizer can be used. It is evident that a fertilizer gives the plants a better start than manure alone. It also increases the size of the ears. A concentration of fertilizer in the row and in direct contact with the seed and growing roots suppresses growth, and in tests made it would seem that placement by broadcasting before seeding is preferable. Broadcast applications are as effective as the side placements in getting the corn into good early growth.

Planting is done either in hills or in rows. Hills are usually spaced 3 feet or 3½ feet apart. Usually three plants are grown in each hill, four or five seeds are sown and when the young plants emerge the three strongest plants are left to grow, the others are pulled out. Placing a small amount of manure directly under the hill before seeding sometimes gives excellent results, particularly when there are favourable rains. But if the manure dries out it will be of little or no benefit. If grown in rows the distance between the rows is usually 3 feet and the plants are spaced 6 to 12 inches apart in the row depending upon the variety. A small growing variety can be planted closer than a tall, large variety. The seed should be sown 1 to 1½ inches deep. Corn is usually seeded with a grain drill, corn planter or hand drill. Seeding is done the last of May or early June, as soon as the ground warms up.

The best corn soils are sandy and not difficult to prepare deeply with a disk. Spring ploughing of the heavier soils is advised, as the surface soil thus warms up more quickly and moisture is conserved for the use of the crop later.

Shallow cultivation and frequent hoeing are necessary to control weeds. Deep cultivation close to the roots should be avoided. There is no advantage in removing the suckers from the corn and they aid in the development of good ears.

To get the finest quality, harvesting is done when the ears are in the milk stage but plump and firm, and the silk fairly well dried out. If the kernels become hard they are starchy and lack sweetness and flavour. Frequent picking is necessary as all the ears do not mature at the one time. An even stand secured by using good seed, and careful working to avoid a set-back in the growth, are both important for even maturity.

The use of hybrid seed is extending each year. These hybrid varieties cannot be produced from their own seed. They are produced by controlled cross pollination of two or more inbred varieties or strains. Good hybrid seed varieties are—early: Seneca 60, Golden Rocket, Sugar Prince, Spancross; midseason: Carmelcross, Kingcrost Bantam, Vinegold; late: Golden Cross Bantam, Lee, Lincoln. There are also other good sweet corn hybrids. Many of the standard

or open pollinated varieties are also grown such as—early: Banting, Pickaninny (black seed), Dorinny; midseason: Golden Bantam; late: Country Gentleman.

CRESS

The garden or upland cress may be seeded in the early spring. The seed is fine and should not be covered too deeply. The plants are thinned four to six inches apart. The crop lasts for only a short time and a succession of plantings may be made. A rich soil is best. The leaves and shoots are used as a green salad.

Water cress grows best in rich moist soils along the edge of brooks, running water courses, or near springs. A soil with plenty of lime is essential. The plant grows in water and should be in situations that remain damp from clean pure water. Water cress may be started from seed in the early spring. After once becoming established it is propagated by root cuttings placed in rich moist soil.

CUCUMBERS

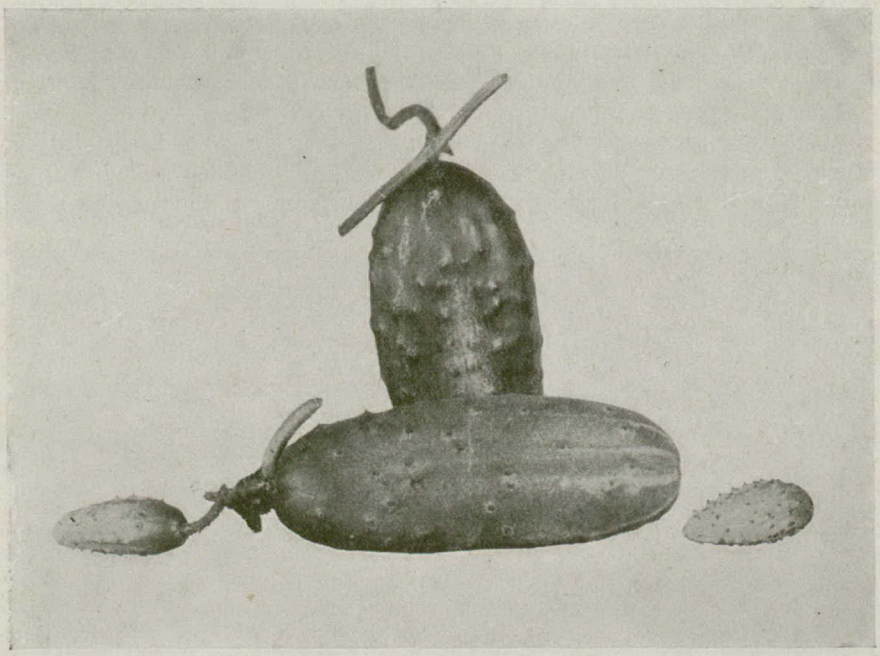
This crop does best on a rich sandy loam in a sunny situation. Good drainage is necessary, yet the soil should retain moisture well. Manure if available is used, spread broadcast at 20 tons per acre. If the manure is limited

CUCUMBER: DELCROW
Suitable for field and greenhouse culture.

it is often placed in wide drills or in hills. Particularly is this desirable on the colder soils, and beds so made one or two weeks before planting will warm the surface soil, resulting in quicker and better germination of the seed. It is well to manure a strip six feet wide on the surface and plough this in to start with, as the roots range in growth. The manure in the hills or rows should be placed separately. Green crops are often ploughed under to supply the necessary vegetable matter if manure is not available and fertilizers are used. A broadcast application of 4-8-10 fertilizer is advised, at from 900 to 1,800 pounds per acre, worked into the soil to a depth of about four inches and to the width of the space given to the full-grown plants. Thorough disking of the land to mix the manure and fertilizer into the soil is important. Side dressings often

will give the plants an earlier start. The placing of fertilizer where the young plants start is not advisable, as they are very sensitive to concentrated applications.

The cucumber should make a continuous vigorous growth. This is possible only on well-fertilized soils with plenty of available plant food, and with heat and such cultivation as is necessary to control weed growth and leave a shallow loose soil mulch on the surface of the soil into which the ranging roots may penetrate. Deep cultivation in these areas should be avoided, as the plants are easily injured by such a practice. Cucumbers are often grown in a spent hotbed frame and excellent crops produced.



PICKLING CUCUMBERS
Snow Pickling, showing the small fruits at the right stage for pickle making and the fully grown fruits. This is a black spined variety

The starting of plants in strawberry boxes a month before setting to the open is practised with good results if the necessary care in transplanting is given. When grown in such boxes the soil should be banked to the top of the sides of the box to make a depression toward the plant, or the corners between the boxes filled with soil, as otherwise the water often runs off and does not properly penetrate the soil in the box. When such plants are planted they should be protected by a wide board placed on edge, as heavy winds often dry out the plants before they are well established.

There is no advantage in putting cucumbers in cold soil but the plants may be set out as soon as the ground is warm. This is usually not before early June for transplanted plants. The planting is usually made in rows six feet apart and the plants spaced three to six feet apart in hills, three plants left to a hill, or one to two feet apart in the case of single-row planting, one plant to a place. In single-row planting, two furrows are run out in opposite directions and manure scattered along the row. In hill planting a hole two feet square is dug five to six inches deep, and manure placed and covered with good surface

soil. This should be done early and, as the soil often dries out before planting, a thorough wetting should be given before seeding or at planting time if rains have not occurred.

Planting of seed should be generous enough to provide for loss and the removal of the weaker-growing plants. Seeding in the open may be done the last week in May. About the time these germinate another seeding in the same soil may be made, and if late frost destroys the first plants the others will be ready to take their place.

The white spine types of cucumbers are the most common. Delcrow which is practically spineless and has a smooth dark green skin and a small seed cavity, originated in the Division of Horticulture, Central Experimental Farm. It is also becoming popular for the manufacture of pickles, particularly chunk pickles. Other popular varieties of cucumbers are: Early Fortune, Straight Eight, Marketer, Cubit, A & C.

For small pickles the following varieties are very good: Snow Pickling, Boston Pickling, Mincu, Chicago Pickling, National Pickling. When growing pickling cucumbers the small cucumbers should be harvested at the proper size and they should be picked every day or not less than every second day. The young cucumbers grow very quickly and if they are allowed to grow too large the yield will be greatly reduced.

EGGPLANT

These, like the pepper, are sensitive to conditions of temperature and require a long season with heat in order to develop properly. They require a deep rich sandy loam, and, like the pepper, can be fertilized with a potato fertilizer to advantage, using side dressings well placed in the soil.

Eggplants are started in the same way as peppers and at the same time and must be kept growing without a check to get early and good-sized fruit. They are spaced the same as peppers. Blackie is one of the earliest and produces satisfactory fruit. Black Beauty and New Hampshire Hybrid are good varieties but are later.

HERBS

Herbs are easily raised and will do well on many kinds of soil. They do best on a sandy loam. They require plenty of sun to develop the best quality. The seed is sown in the early spring and the plants thinned to six inches apart.

Summer savory is cut when the plant produces its flower buds and before they open. Sage and thyme are gathered in the fall before heavy fall rains break down the plants and sand them.

Herbs are gathered in a bunch of several plants, tied together, and hung up with heads down in a dark, warm, well ventilated place so that they may dry out gradually. This is important in order to retain the full flavour and green colour. After they are dry the leaves are rubbed off the stalks and placed in glass jars for future use.

Mint is often grown in the garden in ordinary soil, though it will probably do better in a damp spot. It is propagated by branches with roots on, planted in the early spring about four inches deep. The spearmint, *Mentha spicata*, is largely used in cultivation for mint oil, while the peppermint, *Mentha piperita*, is the common garden mint. The leaves are picked from the plant as needed for use.

HORSERADISH

This plant best develops uniform roots if grown in a deep rich loam soil. Deep working or digging of the soil is advised, in order to secure an even development of the root. Manure or fertilizers may be used.

The plant is generally propagated by cuttings of the roots, about ⅜-inch thick and six inches long, taken when the roots are prepared for storing or marketing. These are tied in bundles and stored over winter in a cool, damp cellar. They are usually cut slanting at the bottom, and square at the top, so that when planting the top of the root can be placed up. These cuttings are placed in rows 2½ feet apart, and 10 to 12 inches apart in the rows, usually on a slant with the lower part of the root about five inches deep and the top just below the surface. Several sprouts may start from a cutting and all but the top one should be removed. This is done by removing the soil from around the cutting, rubbing off the sprouts not wanted and covering over the root again. Horseradish may also be propagated by lifting the plant and cutting the crown into sections, each having a bud and a part of the root. Horseradish winters outside, and the plants may be crown-divided in the early spring.

Clean cultivation is necessary to keep down weed growth. It is wise to remove the plants every year and take out all the roots, as otherwise the plants spread, grow close together, and do not produce satisfactory roots.

The horseradish is used principally as a condiment. The fresh roots are cleaned and grated and mixed with white wine vinegar for use. Thus prepared the grated product may be kept in a tightly sealed container for a few weeks.

LETTUCE

For lettuce a moderate application of manure, preferably made in the fall, is advisable, and the 4-12-6 fertilizer is as satisfactory as any. This is applied in spring at the rate of two to three ounces per square yard and well worked into the soil. Plenty of available plant food is essential for good well-developed heads.

The open-head lettuce can be readily grown on any good garden soil. It is more difficult to grow the head lettuce and more attention and care are necessary to secure good firm heads. One of the reasons for failure is that sufficient space is not given to the individual plant. This is not so important with the open-head sorts such as Grand Rapids.

Lettuce is not injured by low temperature; in fact, it will stand several degrees of frost, and seeding may be done as soon as the soil can be worked. It very often is the case that the plants are not properly thinned. The open-head lettuce should be spaced six to eight inches apart in the rows, and the head lettuce ten to twelve inches apart. The rows are usually spaced 30 inches apart. If cultivated by hand the rows may be 15 inches apart and the plants spaced 12 to 15 inches apart in the rows. If the seed is sown in the open it is better to place the seed at specified distances and thin out to leave one plant in a place. This saves seed and makes sure of cultivation between the plants, which aids materially in the development of large well-formed, firm heads.

It takes six weeks to grow good plants under glass for planting out. The seed is sown in flats the middle of March for May 1 planting, and the plants are later transplanted to other flats two inches apart, from which they are lifted with a square of soil and planted with little check in growth. In any case this is the best way to develop good head lettuce, as it is difficult to develop good heads from seed sown in the open unless the seeding is done early. Lettuce does not tolerate hot, dry weather, and the heads become soft and spongy and seed stalks form. After reaching a certain stage in growth this can happen quickly, and what looked like a promising crop soon becomes useless. This can be offset somewhat by good shallow soil cultivation and good moisture, which is best maintained by giving the plant plenty of room. In addition, some of the newer varieties which have been developed to withstand hot weather might be used with advantage such as Imperial No. 456 for muck soils and Great Lakes for most of the other soils suitable for gardening. Where it is impossible to grow head lettuce, due to high soil and air temperatures, it will

likely be possible to grow leaf lettuce which is more resistant to heat than head lettuce.

There are a number of good varieties: leaf—Grand Rapids, Simpson; crisp-head—New York No. 12, New York No. 44, New York No. 515, Imperial No. 847, Imperial No. 456, Great Lakes; butterhead—Big Boston, Wayahead.

MELON

Like the cucumber and squash the muskmelon requires a rich sandy warm soil. The plants are more sensitive and require more care than the squash. A longer season is required to mature the melons and warm dry weather is necessary at maturity to get good quality in the fruit. The hills are spaced six feet by six feet, and the crop is handled similarly to cucumbers.

Because of the longer season required to bring them to a ripened condition, melons are not often satisfactory when the season is short between frost periods. Under conditions of low summer temperature the only satisfactory way is to start the plants under glass in pots and place them in glass-covered frames in well prepared soil. The glass is placed two weeks before planting, in order to warm up the soil. In such a case the plants may be set early in June and the fruit may be matured toward the end of September. To handle in this way requires much work and special care until the summer is well advanced and the frames removed.

Varieties which are early enough to produce a crop of good quality melons are: Honey Gold, Golden Champlain, Bender Surprise and Delicious.

Watermelon is grown the same as muskmelon. It also requires a long warm growing season to mature the fruit properly. They should be spaced farther apart than muskmelon, usually with the rows 10 to 12 feet apart and the hills 8 to 10 feet apart in the row. Good early varieties are: Early Canada, Sweet Sensation, Peerless and Cole's Early

OKRA OR GUMBO

The okra, from which the pods are picked when young and tender, is useful for thickening soups, stews, etc. The rows are spaced 3 feet apart and the plants about 18 inches apart in the row. They are handled similar to tomatoes and should be grown in a rich, well-drained loam soil. The Long Green Pod types are most commonly grown.

ONIONS

Sown in the Open Ground

The onion does best on a soil that has been manured for several years, thus making it friable, retentive of moisture and well supplied with an abundance of available plant food. Onions may be grown successively on the same land for many years if disease does not interfere. It is best to apply the manure in the fall and plough it in. In the spring the land is disked, levelled and firmed with a planker for level seeding. If manured in the spring the land is worked down and rolled to make a firm compact seed-bed. Well-rotted stable manure at the rate of 15 tons per acre is used.

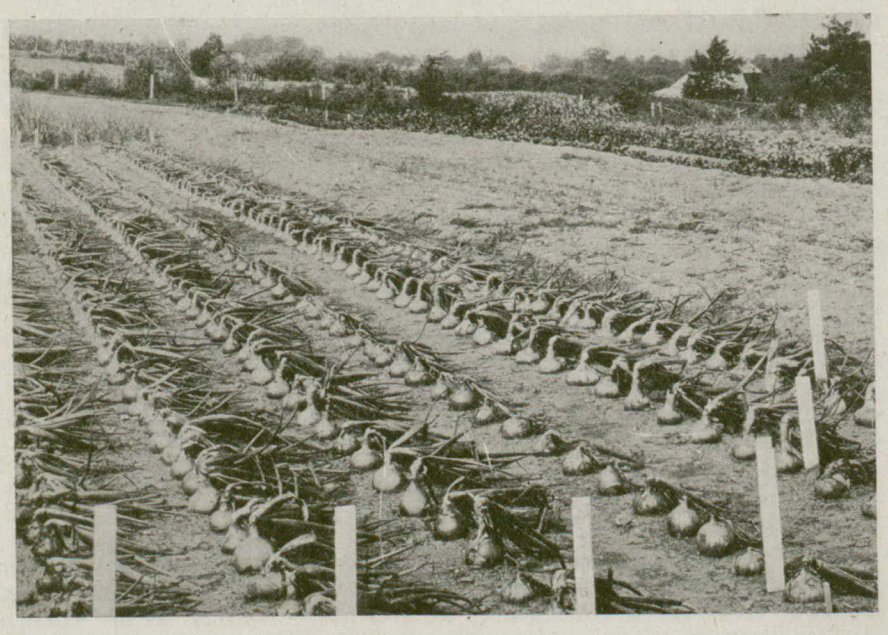
In addition, 800 to 1,000 pounds per acre of 4-8-10 for sandy soils or 4-12-6 for loam soils should be scattered broadcast and worked into the soil to a depth of about three inches. (This would be about 3 ounces of fertilizer per square yard).

Early Seeding.—Seeding in April or early May as soon as the ground can be prepared is of the utmost importance in order to get well-matured bulbs in early September. Late seeding results in poor maturity of the bulb and consequent poor keeping quality. Proper maturity is indicated by a drying out of the neck of the plant and the top falling over. If the neck remains rigid until cool weather and fall rains start this condition will continue and result in thick-necked immature bulbs that will not keep.

Seeding.—The seed is sown in rows spaced 12 inches apart, usually with the garden drill seeder. If seeded by hand, shallow rows are opened one-half inch deep with a hand marker, and the seed scattered in this by hand and covered with one-quarter inch of soil. In field work 3½ pounds of seed per acre is usually considered to be sufficient if the seed is good. Thicker seeding may be practised but makes more thinning necessary. For uniform bulbs the plants should be thinned to three inches apart. Thick planting, because of the crowding of the bulbs in the row, tends to force maturity, and more mature but smaller and more uneven bulbs are obtained.

From Plants Started Under Glass

Onion seed may be sown in flats early in March and the plants grown in a greenhouse or hotbed for setting to the open in early May. It takes about 12 weeks to grow good plants and these should be ready for planting as soon as the ground is fit to work. Flats or shallow boxes about 12 by 22 inches, and with sides 3 inches deep, are used. A rich garden loam soil is used. Fine bonemeal may be used without injury to the young plants, but



Onions grown from seed started under glass and transplanted.

if fertilizer is used care must be exercised not to use too much. The box is filled, compacted and evened off, and the seed scattered broadcast, 12 seeds to the square inch, and covered one-eighth inch deep. The watering should be carefully done and the soil be kept reasonably damp. A fairly low temperature, about 60 degrees, should be maintained, and plenty of ventilation given to avoid damping-off. The plants, before setting to the open, are placed in a coldframe to harden off.

Setting the Plants.—The plants are lifted out of the flats in bunches, the soil shaken off the roots, and the long roots evened off with a knife to facilitate planting. The tops should be trimmed off somewhat, so that when planted they will stand erect. Rows an inch deep are opened up and the plants dropped four inches apart and the earth pressed firmly around them.

Failure often results because well-grown plants are not used, or the plants are set too late and the crop is little if any better than from seed grown direct to the soil.

Onion Sets

Onion sets are small mature onions grown from seed the previous year. The seeds are sown thickly, about 175 to a foot of drill one inch wide. These grow so thickly they can develop into small bulbs only. The varieties usually sown are Yellow Globe Danvers, Ebenezer, Red Wethersfield, Red Globe and White Globe, and the sets are sold as yellow, red or white sets. The sets, when mature, are gathered, thoroughly dried, and kept in a dry, well-ventilated, cool cellar for spring setting. The small bulbs, three-eighths to one-half inch in diameter, are used. They should be planted just as soon as the surface soil can be worked. They are pressed into the soil with only the top showing.

Multipliers are onions which form a compact cluster of small bulbs which may be separated and planted in the spring the same as onion sets. They are splendid for keeping.

The Tree or Egyptian onion is produced in a cluster of little bulbs developed at the top of the stalk. They are known as top sets. The bottoms also divide as is the case with the multiplier onion, and the divided bottom as well as the top sets may be planted. They are excellent for green onions.

Cultivation, Harvesting, and Varieties

It is necessary to do frequent hoeing by hand or with a wheel-hoe to prevent weeds from growing, and this involves much hand work in weeding between the plants in the row. This must be done when the weeds are small, for if allowed to mat around the plants their removal will loosen the onions and seriously check the early growth. If thinning is necessary it should be done at the second weeding, disturbing the remaining plants as little as possible. Frequent shallow hoeing to keep down weeds is necessary, and there is nothing better for this purpose than the hand wheel-hoe.

The bulbs should be matured by the middle of September, and are then pulled and three rows thrown together and allowed to dry for a week. When thoroughly dried they are placed in slatted bushel crates and placed in an airy dry building for further drying and curing, and for later topping and preparing for market or storing. A cool dry, airy cellar is necessary for winter storage. Small slatted crates are best for storage purposes in order to give ample ventilation. A temperature around 35 degrees is best.

The most commonly grown early varieties are: Yellow Globe Danvers No. 11, Early Yellow Globe, Brigham Yellow Globe and Extra Early Flat Red. Mid-season varieties are: Ebenezer, Yellow Globe Danvers No. 55, Southport Yellow Globe, Southport Red Globe, Red Wethersfield. Good transplanting varieties are Yellow Globe Danvers No. 44, Sweet Spanish, Ailsa Craig, Cranston's Excelsior, Prizetaker. The varieties White Barletta and White Portugal may be sown thickly for growing small pickling onions.

PARSLEY

Parsley grows best under cool weather conditions. The seed may be started under glass as advised for celery, and the plants set to the open in the very early spring, or seeding may be done in the open ground. The plants are planted or thinned to six inches apart in the row. The plants may be lifted carefully in the fall, put into a six-inch pot and placed in a bright window for winter use as desired. The removal of many leaves at one time should be avoided.

For garnishing, parsley is the most desirable of all garden plants. Champion Moss Curled is one of the best varieties.

PARSNIPS

A deep friable sandy loam will give the best roots. A heavy soil not readily penetrated does not give good roots unless well spaded to the depth of a foot and with reasonable amounts of well-rotted stable manure dug into it to lighten it. Fertilizers may be applied as for carrots, and worked deeply into the soil. Stony soils usually produce many rough prongy roots, and should be avoided.

The seeds are sown in early May in freshly worked land, in rows 2½ feet apart. The seed is covered with one-quarter inch of soil. The plants are thinned to three or four inches apart. The roots are carefully dug to avoid injury, which might result in rot, and are stored in a cool cellar, or may be placed in pits. The roots should be allowed to dry and cure somewhat for storage, and may be covered with sand to prevent wilting, which is objectionable. If placed in a cool storage room a better quality in the root develops than is possible at a high temperature. For spring use part of the crop may be left in the soil and dug in the early spring.

So far as is known there are no poisonous properties developed in parsnip roots. Some claim poisoning by contact from pulling up growing plants but this rarely if ever happens. After the over-wintered roots start to grow in the spring they lose their quality and are not desirable for use. The varieties Hollow Crown, Guernsey and Short Thick are mostly used.

PEAS

Surface cultivation to prepare a seed-bed about four inches deep is satisfactory for peas. They do best in a good garden loam previously manured. A 4-12-10* fertilizer at the rate of 500 pounds per acre is advised. If fertilizer is applied as a side dressing it should be kept 2 or 3 inches from each side of the row of plants and put about 2 inches below the surface of the soil. Lime will be beneficial on soils which are too acid and should be disked into the soil before seeding. When grown for canning, the seeding is usually done with a grain drill seeder at the rate of three to four bushels per acre, and the fertilizer is spread broadcast and lightly harrowed into the soil. In garden work, rows 15 inches apart are seeded, the yield per acre of peas being practically the same as in grain drill seeding, and the peas usually being of better size. This permits of cultivation or hoeing between the rows to control weeds. Spacing the rows 30 inches apart and cultivating with a horse-cultivator is often practised. This gives larger and better pods.

Peas are a cool-season crop and do not grow well after the dry hot weather starts. They may be seeded in the garden as soon as the surface soil can be prepared, even when frost is still in the soil below. Best crops for canning should be seeded very early in May.

In row seeding the vines lie over the ground if the tall sorts are grown, and seem to produce as well as if staked, but are not so attractive for market. In drill seeding the vines grow better and are more easily harvested with a pea vine harvester, or mowing machine equipped with pea guards and lifters.

The Fenland Wonder is a medium dwarf sort much superior to Alaska for canning, and maturing at the same time, but has not been used extensively because of some loss in harvesting. This can be overcome to some extent by early seeding and using 800 pounds of a 4-12-6 fertilizer per acre, which forces

* Follow the recommendations of the Advisory Fertilizer Board published by the various Provincial Departments of Agriculture.

more vine growth. The vines support each other without lodging when drill seeded, even better than Alaska. The pods, however, form closer to the ground than in the Alaska.

The Fenland Wonder, like the Alaska, matures its crop practically all at the one time, which is important for the canning trade. The peas are a wrinkled, sweet sort, and are much better in quality than Alaska. For some reason the seed has not been much grown and is difficult to obtain. It is the earliest and best of all the early peas tested. Wisconsin Early Sweet is another good early variety and Alaska is still used to some extent.

The midseason varieties include Thomas Laxton, Laxton Progress, Little Marvel, Alton, Laxall and Engress. Good late varieties are Stratagem, Telephone, Kootenay, Director and Onward. In order to extend the productive period early, mid-season and late varieties should be grown.

The variety Engress is a very good producer and it along with Laxall are able to withstand dry conditions better than most of the other varieties. Alton is also a good yielder of large good quality peas. These three varieties are originations from the Division of Horticulture, Ottawa.

PEPPERS

Peppers can be grown with little difficulty if good plants are grown in the same manner as for tomatoes and transplanted with a ball of earth so that they do not receive a serious check in growth. They require heat and are planted about the same time as tomatoes or shortly after.

The plants are started eight weeks before the time the soil is likely to be ready for planting, usually the first week in April. They must be carried under a fairly high temperature, even higher than for the tomato, and not be stunted by over-watering. Thus a rich open sandy loam soil with good drainage should be provided to develop even vigorous growth. Very early planting before the ground warms up is not satisfactory. Peppers do best in a deep rich sandy loam soil. They are planted in rows 2 to 2½ feet apart and 15 to 18 inches apart in the rows.

The hot peppers, such as the long Red Cayenne, are used for pickling. The large sweet peppers may be used sliced for salads, and for cooking by removing the centre and stuffing. Harris Earliest is one of the earliest and best of the sweet sorts.

PUMPKINS

The pumpkin is handled similarly to the squash. It is probably less sensitive under field conditions and can be grown with less care. A great part of the crop is often grown amongst corn, from seed planted in vacant spaces about the time the corn is up nicely. These plants are protected from injury during later cultivation. Pumpkins may also be handled in hills or in rows like squash. The two outstanding varieties are Connecticut Field or Large Yellow and Small Pie or Sugar.

RADISH

The radish is prized for its early succulent root which is ready before other vegetables are available. Rapid growth is important for good quality. Successive seedings may be made but as the season advances and the land becomes dry and hot on the surface, radishes are of little value. They require a rich moist soil. The first seeding is made as soon as the surface soil can be worked enough to cover the seed. From late September seedings good fall crops

are often produced. The roots are often ruined by the root maggot. The early seeded plants may escape this pest. The varieties French Breakfast and Scarlet Globe are extensively used.

The larger-grown radish is extensively raised for winter storage and use. The seed is sown toward the end of June on moist soil, and the roots are gathered in the fall. The Black Spanish and Rose China are considered to be as good as any.

RHUBARB

Rhubarb thrives best in a deep rich mellow soil. It does not do well on shallow poor soils. There is no danger of overfeeding the plant with manure, and if manure is used there is little advantage in using fertilizers. With a

RHUBARB
Ruby; a good stand of leaf-stalks. The flesh of the leaf-stalk is red throughout.

scarcity of manure, and the lessened possibility of introducing weeds if manure is not used, some prefer to use commercial fertilizer entirely, depending upon 900 pounds of 4-12-6 or 4-8-10 per acre each year. This is applied in the early spring and lightly cultivated into the soil. When manure is used it is applied in the fall, 15 to 20 tons per acre, and worked in the next spring. The plants should not be disturbed by deep ploughing or working, and all cultivation after the spring preparation should be shallow, just sufficient to control weeds. Grass or lawn clippings can be used to advantage as a mulch around the plants.

Early spring growth depends largely upon the stored-up nourishment in the root, and the pulling of too many stalks or the destruction of the leaves during the summer and late fall should be avoided. The seed stalks, however, should be removed as soon as they form, before they have attained much

growth. The removal of leaf stems the first year should not be practised, and only a few the second year, in order that good crowns may be developed for the future crop.

Dividing the plant into several parts with an eye and root to each is the method used for multiplying the better varieties. Seed may be used, and from it good plants may be secured for the second year after seeding, but such plants are often variable in growth, colour and quality. The plants are set four by four feet apart, and placed so that the eye is level with the top of the soil. The soil should be thoroughly and deeply prepared, working in the manure so that very early spring planting may be followed. In good deep loam thorough spading of the soil where the roots are to be placed is generally satisfactory. Ruby and Macdonald are two excellent sorts to increase by division. A well-established rhubarb plantation will continue in excellent production for at least 12 years.

For forcing inside the whole root is lifted, leaving the roots as intact as possible. These clumps of roots are left exposed to frost, allowing them to become frozen solid for four weeks. This provides the necessary rest period. The roots are then taken into a dark part of the cellar with the temperature around 50 to 60 degrees, banked with soil, and watered. The first stalks appear in a few weeks. The plants are of no use after they have been forced.

SALSIFY OR VEGETABLE OYSTER

This vegetable is in some respects similar to parsnip and may be similarly used or used in chowders. The soil should be deep and light, with plenty of plant food to develop good fleshy roots. On heavy soils the roots are uneven and not suitable for market. Deep preparation is necessary. The seed is sown early in May and the plants thinned to three inches apart. They are lifted in the fall and stored like other root vegetables. Sandwich Island is the best variety.

SPINACH

Spinach is the most important and nutritive of all vegetable "greens." It is regarded as being high in vitamins and in minerals, such as iron, calcium and phosphorus, deficient in some other foods.

The crop should be seeded early as it will not grow under extreme summer heat. The seed may be planted extremely early, even ahead of other early-seeded crops, and will germinate at a low temperature, even when frost is in the soil below, if the surface can be loosened up enough for seeding. It will do on any good garden land, but likes rich soil high in available nitrogen. A fall application of manure, and in spring 4-12-6 or 4-8-10 fertilizer at the rate of 600 to 900 pounds per acre (two to three ounces per square yard), worked into the surface soil, may be necessary. Limestone at the rate of two tons per acre (about one pound per square yard) may be necessary if the soil is acid. The application of fertilizer in bands is practised with good results.

The seed is sown in rows 15 inches apart for hand cultivation and wider for horse work. About 25 seeds are scattered to the foot and covered one-half inch deep. Seeding in early September will, if rains are abundant, give a fair fall crop.

Frequent shallow cultivation is necesary to keep weeds in check. The plants are harvested by cutting about one-half an inch below the crown, taking the largest plants first. First cutting starts about eight weeks after seeding and continues for about three weeks, when the plants start to form seed stalks and are worthless for market.

King of Denmark is probably less affected by heat and dry weather, and is longer standing before going to seed than most sorts. Bloomsdale is a good variety also. Both are excellent for canning.

NEW ZEALAND SPINACH

This is extensively grown by some for summer greens, and is liked by some people. Rich soil and plenty of moisture result in producing a very good pot green. Seeding is done in early May. The seed is soaked in warm water overnight and several seeds planted in a place every two feet. The plants are spreading and are grown in rows three feet apart and two feet apart in the rows. The tender tips are removed for use. Heavy removal of many tips at one time is to be avoided if best successive harvesting is to be made.

SQUASH

Squash are grown in the same way as cucumbers, but because of the greater spread of the trailing sorts require more space. The soil requirements are similar, but because of their greater vigour squash are less sensitive, though, in general, for the early crop they should be handled as carefully as cucumbers.

SQUASH

Kitchenette — Warted Hubbard — Delicious

Three good varieties for winter storage.

There are two classes. The early summer sorts give edible fruit early and grow largely in the bush form, such as the Bush Scallop, the Summer Crookneck and the Summer Straightneck. The Bush Vegetable Marrow, usually equally early, is generally preferred as it gives a more uniform and deeper flesh and may be used even when quite immature, being cooked in squares likes early turnips.

The favourite variety for late summer is the Boston Marrow, and this is closely followed by the Golden, Blue and Green Hubbards, which are the favourite fall varieties and suitable for storage because of their harder shell covering if properly matured. Kitchenette and Buttercup are both good small fruited varieties. Acorn is a popular small squash of very fine quality.

While the bush sorts may be spaced like cucumbers the trailing kinds require more space, the rows being spaced 10 to 12 feet apart and the hills 8 to 10 feet apart with two to three plants to a hill. In the rows the plants are spaced four to five feet apart.

In gathering squash for storage they are cut when fully matured, taking care to avoid bruising during handling. This is very important. They are carefully placed for curing in a pile on an open floor with good air circulation. If piled outside they should be placed on boards and covered with a coating of straw. This curing dries out the outer rind so that organisms causing

SQUASH
Small Turks Turban called Buttercup.

rot cannot develop. The matured fruits are placed in single tiers on shelves in a dry warm room with a temperature of 40 to 50 degrees. More care than is usually given is important if good keeping is to be hoped for. The fruit harvested should be well matured and gathered before frost as the green fruits with soft immature outer skin will not keep even under the best of conditions.

TOMATOES

Tomatoes require heat for growth and there is no advantage in planting them before the ground warms up. Usually the last of May or early June approaches before planting can be safely done. Southern exposures and light soils offer the best situation. It usually takes from 2 to 2½ months from the time the plants are set out to secure ripe fruits, even with the earliest varieties.

The seed is sown in flats in a hotbed or greenhouse about April 1. In two weeks the plants are singled out and set into similar flats, being spaced three to four inches apart, where they remain until set to the field. Strong, well developed plants which stand upright when planted are necessary to grow a good crop. The plants are cut out with a square of soil, resulting in little check to growth. The plants are inured to field conditions by placing the flats in coldframes or by leaving the glass off the beds. The flats are well watered before planting to help hold the soil together around the roots. Pouring ½ pint of "starter" or fertilizer solution in the hole before setting the plant will

help the plant get a better start. A "starter" or fertilizer solution can be prepared using one of the fertilizer mixtures sold for this purpose or it can be made by dissolving a 4-12-6 mixture at the rate of 8 pounds in 50 gallons of water or 2 ounces in 1 gallon of water. Excessive and repeated watering at planting time should be avoided.

The plants are set 4 by 4 feet apart if not staked, and if staked for training to single or double stems, are placed in rows 3 to 4 feet apart and 1 to 1½ feet apart in the rows. The plants are usually set with the roots about two inches below the soil level, leaving a depression which is later filled in level. This protects the plant from wind and provides better soil temperature and deeper rooting. If the plants are trained to single or double stems, it is necessary to pinch out while they are still young, the shoots which develop in the axils of the leaves. This, and the necessary frequent tying of the plant involves much work, but is advisable in small gardens and gives earlier and usually superior fruit. The plants are topped usually after the fifth cluster of fruit is formed.

Manure at the rate of ten tons per acre, supplemented with 600 pounds to 750 pounds of 2-12-10 or 4-12-10* fertilizer is usually satisfactory. On lands low in fertility applications of double the above amount of commercial fertilizer may be made. This is well worked into the soil before planting.

The tomato does not require so much phosphorus as some plants, and fertilizers lower than the above in this element may be used, but on most soils this element in an available form is not in excess, and it rarely happens that lower phosphorus feeding than that advised is desirable. An excess supply of nitrogen, if growing conditions are such that a large amount is taken up by the plant at one time, may induce excessive growth in the plant and cause an increase in blossom-end rot and cracking of the fruit. A reasonably high potash supply lessens this tendency. Variable weather, such as heavy rains and dark weather followed by bright dry spells, increases the tendency toward these troubles. Shallow cultivation to keep weeds in check and promote even growth is necessary.

Abel and Earliana are both early varieties but are not as smooth and uniform as the later varieties such as: Bestal, Bonny Best, Chalk's Early Jewel, Geneva John Baer, Globonnie, Early Stokesdale. The most popular early varieties of determinate or bush varieties are: Early Chatham, Bounty, Red Cloud, Redskin and Victor. The bush varieties are not suitable for staking.

TURNIPS

Early garden turnips are readily produced by seeding early in the open on good rich soil and thinning the plants to four inches apart. The seed is just nicely covered and in fresh moist soil will germinate in a few days and the roots be fit to use in two months. The Golden Ball is one of the best. White Top Milan and Purple Top Milan are also good.

SWEDE TURNIPS OR RUTABAGAS

Seed should be sown early in soil having plenty of plant food to maintain even growth in order to produce turnips for summer use. For winter storage, seeding may be made early in June, as such roots will be smaller for table use and usually are better in quality. Thorough surface preparation is necessary and drills are usually run up 2½ feet apart and rolled, and the seed planted into the fresh soil.

*See the recommendations of the Provincial Advisory Fertilizer Board for each Province.

Moderate clay soils are preferred, and manure, 15 tons per acre, with 500 pounds of 4-12-6 or 4-12-10* fertilizer per acre can be used with advantage.

The swede turnip is particularly adapted to cool weather conditions, and a serious check to the plant from heat and dry weather may result in much fibre in the root.

If the roots show brown rings in the flesh when cut it is likely due to a lack of the minor element boron. Twenty pounds per acre of boric acid or commercial borax, evenly scattered and worked into the surface soil, before seeding will largely overcome this trouble.

Laurentian, Canadian Gem and Ditmars (Bronze Top) are good varieties.

Vegetables for Canning

The folowing sorts of vegetables have been found to be suitable for canning:—

PAGE

ASPARAGUS .....
Mary Washington

BEANS .....
Yellow Podded:—
Round Pod Kidney Wax or *Brittle Wax.* Round pod, seed white with dark brown eye ring.
Pencil Pod Black Wax. Round pod, seed black.
Sure Crop. Rather flat pod, seed black.
Refugee Stringless Wax. Round pod, seed dark bluish-black, mottled buff.

Green Podded:—
Stringless Green Pod. Round pod, seed dark brown.
Refugee Green Pod. Round pod, seed dun colour, mottled with dark maroon. Later than Stringless Green Pod.

Pole Varieties:—
Kentucky Wonder Wax. Round Pod, seed dark, chocolate-brown.
Kentucky Wonder Green. Round pod, seed olive-brown, or drab-brown, often with veining of darker brown.

Lima:—
Henderson Bush.

Soy:—
Blackeye. Seed large, roundly oval, flat, pale green with black hilum.

BEETS .....
Detroit Dark Red No. 6, Detroit Dark Red No. 16,
Crosby Egyptian

CARROTS .....
Nantes, Amsterdam
Chantenay No. 27 or Red Cored Chantenay

CORN .....
Golden types:—
Golden Cross Bantam and Improved Golden Cross Bantam, Vinecross B5, Vinegold, Sugar Prince, Carmelcross, Tendergold, Ioana, Kingscrost Bantam, Golden Hybrid and Golden Bantam. For canning in short season localities and for canning on the ear— Banting, Dorinny and Golden Gem.

White types:—
Crosby
Stowell Evergreen
Early Evergreen
Country Gentleman

PEAS .....
Alaska, Wisconsin Early Sweet, Surprise, Fenland Wonder, Little Marvel, Thomas Laxton, Perfection (Advancer), Alton, Engress, Tiny (for petit pois), Prince of Wales, Pride, Horsford's Market Garden.

*See the recommendations of the Provincial Advisory Fertilizer Board for each Province.

SPINACH .....
Giant Nobel, Bloomsdale, King of Denmark.

TOMATOES .....
John Baer, Geneva John Baer, Chalks Early Jewel, Bonny Best, Marglobe, Stokesdale No. 4, Scarlet Dawn, Bounty (pale colour reduces the quality of the canned product). In long season regions, such as south-western Ontario, Rutgers and Early Baltimore may be grown. In short season areas Abel, Early Chatham, Bounty, New Alaska may be grown for home canning.

Canning Crops

The production of vegetables for canning purposes has been increasing rapidly in various sections of Canada. In the earlier days of the industry, canning-crop production was confined to certain regions, beyond which it was considered impossible to have much success. This idea has been pretty well proved to be incorrect. It may be that canners locating outside the particularly well adapted regions will have to confine the production to crops suited to the locality, but rapid transit facilities make it possible to bring in from distant centres of production, certain products to make up a complete line. However, the nearer the canning plant is located to the centre of production the better it will be for the canner, producer and consumer.

As the industry has been undergoing some changes during the past few years, it should be kept in mind that the trend has gradually been swinging in some localities from the large plants toward the smaller but independent processors. In this case one or possibly two plants may be under the control of a group. On the other hand there are home canners that grow a limited amount of several crops suited to the particular conditions, part of which may be sold as fresh vegetables and the balance that might bring a low price on the market is used for canning purposes. These home canning plants, on account of the small output must be extremely careful to pack only the best material available and observe the greatest care in the processing.

Canning-crop production in the large producing centres is carried on under contract with farmers. It is desirable to have the crops grown in a properly planned rotation and on the soils best adapted for the particular crop. Where crops are produced in conjunction with a farm rotation, soil fertility and management is properly looked after, which ensure the maximum yields; soil-borne diseases are kept in control, and certain of the troublesome insects are also kept in check. In the pages of this bulletin will be found reference to soil preparation and seed sowing, for each of the crops that will be mentioned, which if followed should be an ample guide in this regard.

The canning industry has been increasing steadily through the years. In doing so it has become a tremendous market for growers of vegetable crops. The 1945 report on The Fruit and Vegetable Preparations Industry in Canada shows this growth in striking fashion. In the year 1927 there were 4,477,570 cases or 8,955,140 dozen cans packed with a selling value at the factory of $11,694,404. In 1945 the production was 19,506,157 dozen cans with a value of $22,643,212. This shows the importance of the vegetable growing industry and the canning industry to each other.

ASPARAGUS

The production of asparagus as a canning crop is much the same as for general market purposes. The sandy loam and light loam soils are well adapted for the purpose since the shoots or spears produced on such soils are as a rule much straighter. This is an advantage to the grower as well as the packer.

These soils can be worked with less effort and the crop responds to manure and fertilizer treatments much more quickly. The use of manure and fertilizer is discussed elsewhere in this bulletin.

Since green spears are much in demand it has been found that Mary Washington is one of the best varieties to use. The tips of the spears of this variety do not spread or open until a good length of grass has developed above ground. In addition it is resistant to asparagus rust and for this reason has been planted very extensively in sections where this disease is prevalent. At any rate this is a splendid variety to use for general crop production.

To get the best quality in asparagus the spears should be harvested once a day during the peak of production or when ready, which will depend upon weather and temperature. All harvested spears should be taken from the field to the canning factory as quickly as possible and the processing done with the least possible delay. The spears are usually cut when from six to nine inches long after which they are washed and trimmed to the desired length. Should it be found necessary to hold asparagus after cutting, it can be kept best at a temperature as close to 32° F. as possible. The yield may vary from 1,000 pounds the third year to around 5,000 pounds per acre in the seventh and eighth year. A plantation that has been carefully handled will produce up to ten or eleven crops. Regional conditions may exert some influence on the life of a plantation.

BEANS

The bean has become one of the important crops for canning and is comparatively easy of culture. This crop does best on the light or loamy soils and being a tender crop must be grown so that the pods will be ready during the warm parts of the season which is late July and early August. The tender pods of the stringless round-podded varieties are the most desirable and are used extensively. The dwarf or bush types are used to the greatest extent but certain of the pole varieties have of late years been gaining in popularity. The lima bean is also in demand but soil and local conditions influence the production of this type of crop to such an extent that it can only be grown successfully in the warmer sections of the country. In this case it is only the shelled, soft green seeds that are processed.

There is the possibility that the soybean may become a desirable canned product. There are a few strains that are large seeded with a very attractive green seed coat. When in the soft immature state these have given promise of being a very useful type for processing. Local limitations such as climatic conditions will probably regulate the distribution of production.

In the production of beans it is important to use only the best of clean seed and varieties that when canned will turn out a desirable quality product. Bean varieties are known under definite variety names as well as synonymous names but as a rule if the varieties are obtained under the accepted standard name a satisfactory product can be produced.

In the bush or dwarf type, yellow or wax beans of the following varieties have been found satisfactory.

Round Pod Kidney Wax sometimes called Brittle Wax.—This is a fairly early variety and as the name implies, is both round in shape of pod and yellowish in colour. The seeds are white with a brownish mark on the hilum side. Ready for canning in 58 days.

Pencil Pod Black Wax.—This has been found to be a very useful, heavy yielding, early maturing, round-podded variety but since the seeds are dark when reaching the mature state, it has to be canned before the seed colour has developed. Ready for canning in about 55 days.

Sure Crop Wax.—In sections where an early bean is required this one will be found useful. The pods are flat, waxy yellow in colour but the seed is dark, making it necessary to process the pods while quite young. The two former varieties are superior in quality.

Refugee Stringless Wax.—This variety is later maturing than any of those mentioned, but where seasonal conditions will permit it being grown the season for canning beans can be extended. In addition to possessing excellent quality it is a heavy yielder of yellow waxy pods that are of medium length, round and stringless, and as the pods mature they become streaked with purple. The seed is mottled bluish-black splashed with buff. Ready for canning in about 60 days.

Green podded beans are quite as much in demand in some sections and as a consequence suitable varieties have been found that will have excellent quality.

Stringless Green Pod.—This is one of the finest quality, early maturing, round-podded stringless varieties that has been introduced. The plants are very sturdy and show a tendency to give more than one good pulling of pods. The seed is plump, short and coffee-brown. Ready for canning in about 52 days.

Refugee Stringless Green Pod.—The stringless strains of Refugee are proving of value in sections where seasonal and soil conditions will permit their use. The pods are a very attractive silvery-green colour, round, stringless, brittle without fibre. The seed is violet-purple, splashed with pale buff. Ready for canning in about 70 days.

The amount of seed required per acre varies slightly with the varieties on account of the size of the seed as well as the distance apart of the rows in the field. From 50 to 60 pounds has been found to give a good stand of plants. The ordinary grain drill may be used for sowing the seed. Stop up the required number of runs to give the proper spacing of the rows, 30 to 36 inches apart being a satisfactory distance. Seed sowing should be done in May or early June to avoid the late frost. Shallow cultivation as well as one or two hand hoeings should be given to keep down weeds. The cultivation should be given when the plants are dry to avoid the spread of diseases. As soon as the pods are ready they should be harvested and canning should be done promptly.

POLE BEANS

Pole varieties of beans are used to a considerable extent. The plants require supports on which to grow. Poles eight to nine feet long and three inches in diameter at the butt end are set 18 to 24 inches deep in the ground and spaced 3 by 3 feet or 4 by 4 feet apart in well prepared soil. From four to six seeds are planted around each pole to ensure three or four good plants. Thinning of the plants may be necessary. In any event it will require between 30 and 35 pounds of seed to plant an acre. Another method of growing this crop is to set sturdy posts at each end of the field where the rows of plants are to be located. These posts should be about nine feet above ground. Then string No. 9 wire at the top and bottom from post to post. Light posts are then placed at intervals along the row about every 30 feet to support the wires, then coarse twine is attached to the top wire and dropped to the lower wire and fastened. The twines are spaced 18 to 24 inches apart along the row. Two seeds are planted at each twine and allowed to develop. Shallow cultivation should be given for weed control and to maintain a surface mulch.

The pods of the pole bean develop in succession from the first clusters upwards. Careful attention to harvesting when the pods are ready will give a succession of crop possessing the highest quality.

There are two types of pole beans namely, the wax-podded and green-podded varieties.

Kentucky Wonder Wax.—This variety is a moderately strong growing type that will develop to a height of around nine feet. The pods are long, slender, somewhat rounded with undulating surface, thick, tender walls and lacking fibre. As the name implies the pods are golden yellow wax. The seed is flat, oval, elongated and bent sideways, with a coffee-brown seed coat. Ready for canning in 65 to 70 days.

Kentucky Wonder Green Pod.—This variety is identical to the former in plant and pod characters except that the pods are a very attractive green colour. The seed is identical in shape to the former but has a buff-brown seed coat. Ready for canning in 65 to 70 days.

LIMA BEANS

The lima bean crop is more difficult to grow on account of the very tender nature of the young seedlings. This crop should not be sown until soil moisture and temperature, particularly the latter, are right. Sowing is best deferred for several days after the common bean varieties have been sown. Light loam soils are necessary for the production of lima beans. A long, warm season is required if a satisfactory crop is to be harvested and in most sections in Canada only the early maturing varieties can be relied upon to give satisfactory results. The more thorough the soil preparation is carried out the greater the chances of a good stand of plants. The amount of seed required for sowing an acre will depend upon the germination, variety used and the distance apart of the rows. Sow the seed 1½ to 2 inches deep in rows 24 to 30 inches apart with three to five seeds per foot of row. Since the bush varieties are earlier maturing and easier to grow, they are used more extensively. It is only the tender, well formed, immature seeds that are processed. The seeds can be removed from the pods either by hand where only small quantities are to be handled or they can be shelled by means of a regular pea vining machine.

Henderson Bush.—This is also known as Baby Lima or Sieva Lima. The plants are medium to strong growing, of bush form and very productive. The pods are flat and contain from three to four pale green to white seeds. Ready for canning in from 65 to 70 days.

SOYBEAN

In this class of bean the ones of greatest importance should be the vegetable types that are large seeded and rather mild in flavour. This crop has been in the process of improvement during the past few years and a promising strain is now available under the name Blackeye.

The soybean requires a moderately rich, light loam soil that is retentive of moisture but with ample drainage. The seed can be sown slightly earlier or at the same time of sowing the regular bean varieties. For best results the rows should be spaced 30 to 36 inches apart and the seed sown so as to have one plant every six to eight inches apart in the row. Thirty pounds should be sufficient seed to plant an acre. The plants grow to a height of around 24 inches, are quite spreading and produce hairy blunt thick pods with from three to four seeds per pod. The seeds may be shelled out of the green pods by hand or they may be put through the regular pea vining machine.

When the pods are just commencing to show a change from green to brown is the best time to harvest the crop. Cut the plants off and handle the same as green peas.

Blackeye.—This is a selection made from material obtained from Manchuria. The plants are moderate in size, quite early maturing or ready for use as green beans by mid-September and fully ripened by the first week in October.

Numerous hairy pods are produced that average about two inches long, by five-eighths of an inch wide and three-eighths of an inch thick. The pod walls are tough and leathery. When ripe, they turn leather brown and shatter fairly easy. There are as a rule three large green coloured beans in each pod that are roundly oval and slightly flattened. When ripe the shape is retained, but reduced in size. A dark marking is on the hilum and occasionally dark smudging extends on the sides.

BEETS

The soils best suited for beet production are those that are of a loamy nature, deep and moist but well drained, with an abundance of available plant food. Beets can, however, be grown on almost any type of soil. Very acid or alkaline soils should be avoided. It is better if the soil is just slightly on the acid side. The very light soils dry out too quickly while the heavy soils are difficult to work and produce irregular shaped roots. Thorough preparation prior to seeding is important. A finely prepared seed-bed will ensure uniform depth of seeding and more even germination. It will also be found that cultivation and weeding will be greatly facilitated. The seed is sown in the level ground at the rate of from four to six pounds per acre using a seed drill or for uniform rapid seeding, four or six seeders can be attached and drawn by a garden tractor thus covering a large acreage quickly. The drills are spaced 15 to 18 inches apart if cultivation is to be given by wheel-hoe or by means of a garden tractor. If a tractor is used equipment can be had that will make it possible to cultivate three or four rows at a time. In some sections three or four sowings can be made at intervals of two weeks apart to extend the season of harvest. Frequent shallow cultivation, using the flat cultivator feet, will be found most satisfactory for weed control and the maintenance of a surface mulch without injury to the root system.

Since the seed itself is not a true seed but a fruit from which several plants will develop, thinning of the plants to three or four inches apart in the row will be necessary. This should be done early while the plants are small, to avoid injuring the roots of the plants left.

It should be mentioned that very tender beets can be produced on well prepared muck soil. Applications of fertilizers low in nitrogen, high in phosphorus and potash should be used.

Detroit Dark Red is one of the most widely used varieties. A number of strains of this variety are very good, including the registered strains Detroit Dark Red No. 6 and Detroit Dark Red No. 16, and the strains Ohio Canner and Good For All. These are dark red fleshed and produce a very fine product.

Crosby Egyptian or Early Model is a good variety. This matures earlier than the Detroit type.

CARROTS

The soil type and method of preparation suited for beets applies also to the production of carrots for canning. The distance apart of the rows and method of sowing the seed and cultivation are also the same as for beets. The seed required for an acre is between two and three pounds. Two or three sowings at intervals of two weeks apart will give an extended season of harvest. Should the germination of the seed be known, thin seeding may be done which will lessen the labour in thinning. For small or bunching size of roots two inches apart in the row will be ample space while for larger root production four inches apart will be a satisfactory distance. Carrots grown on muck soil will be found to possess very high quality and be tender, brittle, sweet and very smooth.

The following varieties will be found very satisfactory.

Nantes.—The Nantes variety is a parallel sided or cylindrical blunt-ended carrot with thick bark and a very small core. The flesh is rich, orangy-red, very brittle and tender. This is an excellent variety for packing whole on account of the straight sides, rich colour and very fine quality.

Amsterdam.—The registered and certified seed of this variety also produces a parallel sided carrot, blunt-ended and with a relatively small core. The rich deep coloured flesh and its tender quality make it a good variety for packing whole. At the mature stage it is large enough to make a very good variety for dicing.

Chantenay No. 27 or Red Cored Chantenay.—It is hardly necessary to mention the quality of this medium early, good cropping variety since it is known very widely and used quite extensively for whole carrot pack and for dicing. The roots are stumped or blunt ended with a slight taper from the shoulder to the bluntly pointed root end. The colour, both external and internal, is an attractive, deep orange with the core almost indistinct when the roots are in the bunching sizes.

SWEET CORN

The growing of sweet corn for canning is limited to a considerable degree by climatic and soil conditions. Since corn is a very tender annual that will not stand light frost, it is therefore important that regions be selected where the frost-free season will be from 85 to 120 days. Not only is this crop injured by frost but also by very high temperatures when drought conditions prevail. Under dry conditions with high temperatures the crop has been found to ripen prematurely which decreases the yield as well as impairing the quality. Where the average seasonal rainfall is between 30 and 40 inches and equally distributed throughout the year, corn usually does well.

Soil type will also have a very decided effect on crop production. Those soils that are classed as loam to medium heavy loam are very desirable. Good drainage is an important feature, but sufficient moisture should be available for the normal growth of the plants. The light sandy soils are not adapted to the production of corn for canning since it is not necessary to have the crop mature as early as in the case of corn for ordinary market purposes. However, the light soils that are well supplied with humus and retentive of moisture are easily worked and may be used.

The heavy clay soils are not well suited to the production of this crop.

It is best to grow corn in a four- or five-year rotation, since it will occur on the same land but once in four or five years. This is an advantage in the control of diseases and troublesome insects.

For soil management, cultivation and the use of manure and fertilizer, refer to the other section in this bulletin under the heading of corn. It is difficult to lay down a hard and fast rule for the use of fertilizers on account of the variation in the soils.

Sweet corn is not particularly sensitive to acidity in the soil, but will be found to do well on soils that are only slightly acid to neutral. Lime may be found beneficial to this and other crops in the rotation.

Corn may be planted in hills spaced three by three feet apart or three and one-half feet by three and one-half. It may also be grown in rows three or three and one-half feet apart with the seed 12 to 15 inches apart in the row. The seed should be covered to a depth of 1½ inches in the soil. When the crop is grown in hills, the planting may be done by means of a check-row planter or

by means of the regular corn marker, in which case the field is marked off in squares and the seed dropped by hand. Six kernels should be dropped in each hill and when the plants are well established thin to three or four good plants in each hill. Row planting can be done with a regular corn planter with the check-row device put out of gear or an ordinary farm grain drill may be used by stopping up the required number of runs and carefully adjusting the rate of seeding.

From 10 to 14 pounds of good seed will be required to plant an acre. Planting should be done when the danger of late frost is past and when the soil is warm.

The advantages of planting when conditions are best may be lost if early cultivation is neglected. By using the light harrow or finger weeder before the plants are up, the surface of the soil can be kept loose, preventing the formation of a crust that might retard the young plants coming through. The finger weeder may be used even when the plants are five or six inches high. This also destroys weeds and conserves soil moisture, thus giving the corn plants complete use of the soil.

Shallow inter-row cultivation, as a rule, has been found most satisfactory. Deep cultivation may be employed while the plants are small, but if continued on into the season will injure the roots. Cultivation to a depth of one or two inches should not harm the roots, but will destroy weeds and conserve the soil moisture. Occasional hand hoeing will be necessary to control all weeds. When hoeing a little soil may be brought up to the plants.

The removal of the suckers from the plants is of very doubtful value and will not pay for the time spent at it.

Harvesting time will vary with the locality, variety grown, the time of planting and it also varies in a single locality from season to season. The kernels should be plump and well filled with milk. This stage usually is indicated when the silks begin to turn dark brown. An experienced harvester can tell the properly matured ears by the silks and by grasping them to ascertain the firmness of the kernels. The ears are snapped in the husks, leaving a short stalk at the base of the ear.

High quality in sweet corn is closely associated with the sugar content of the kernels. Changes from the milk to the dough stage take place very rapidly. Harvesting when the kernels are in the early milk stage will reduce the number of tons of ears per acre as well as reduce the number of cases of canned corn per ton. Immature corn lacks body, therefore it is of the greatest importance that the ears be broken from the stalks when they have well filled kernels that are in the full milk stage. Late harvesting will result in a tough-skinned, starchy, tasteless product.

The ears should be harvested in the morning, hauled direct to the factory and processed as quickly as possible that same day. High temperatures due to weather or to ears being left in piles or in the wagon box for several hours will cause a loss of flavour and quality.

It is important to have uniform maturing crops and this can be achieved by using the best seed of varieties that have been produced for the purpose. Strains of corn that mature unevenly are unprofitable to grow. It is the usual practice to harvest a field only once and to get the best returns a strain must be uniform in maturing. However, in years of short crops a second harvesting may be done.

The quality and grade of a pack will be lowered if early, mid-season and late plants are grown as a mixed crop.

The yield per acre will vary with the locality, the variety and conditions under which it is grown, which will include such factors as the soil type, preparation, fertilizer used, distance and rate of planting, thoroughness of cultivation, weather conditions, insects and diseases. The yield per acre of prime ears will vary from slightly over two tons to four tons. From 600 to 900 pounds of canned corn from a ton of sweet corn as delivered to the factory is a fair estimate.

By means of silos, the husk and other refuse material can be turned into useful fodder for live stock feeding. Since the corn is grown and delivered on contract the growers can arrange for any quantity of this material required. In some localities stacks are built of the refuse and covered with refuse from the pea viners.

Varieties

In recent years there has been a very decided swing from the white to the yellow sweet corn. In fact the old standard varieties are fast disappearing and the hybrid types of corn used very extensively. This has been brought about by the demand for greater vigour in the growing plants, uniformity in size of ear, maturity, depth, width, thickness of kernel and freedom from disease. Keen competition and the desire to pack a better product makes it necessary to obtain the best returns by using sweet corn types that can be relied upon.

Vinecross B5 is vigorous, reaching 6 to 7 feet with moderate suckering. The ears are 7 to 8 inches long, borne fairly high and with two or three per stalk. There are 8 to 10 rows and the quality is good. It requires 75 to 78 days to maturity.

Vinegold is about the same season, is strong and vigorous and averages two good ears borne high on the stalk. They are 6½ to 8½ inches long and 8 to 14 rowed with the majority 12 rowed. Good quality.

Sugar Prince.—This hybrid reaches a height of 5 to 5½ feet with little or no suckering. The ears average 7 to 7½ inches long and are 12 to 14 rowed. It is ready to use in 80 days and has good quality.

Carmelcross grows about 6 feet tall with little suckering. The ears average 7½ inches long with 12 to 16 rows but mostly 12 rows. It requires about 86 days to ready for use, quality is fair.

Tendergold is a good variety slightly earlier than Golden Cross Bantam. Growth is sturdy, averaging 5½ feet. The ears average 7½ inches in length with 12 to 16 rows. It requires about 83 days to ready for use and is of good quality.

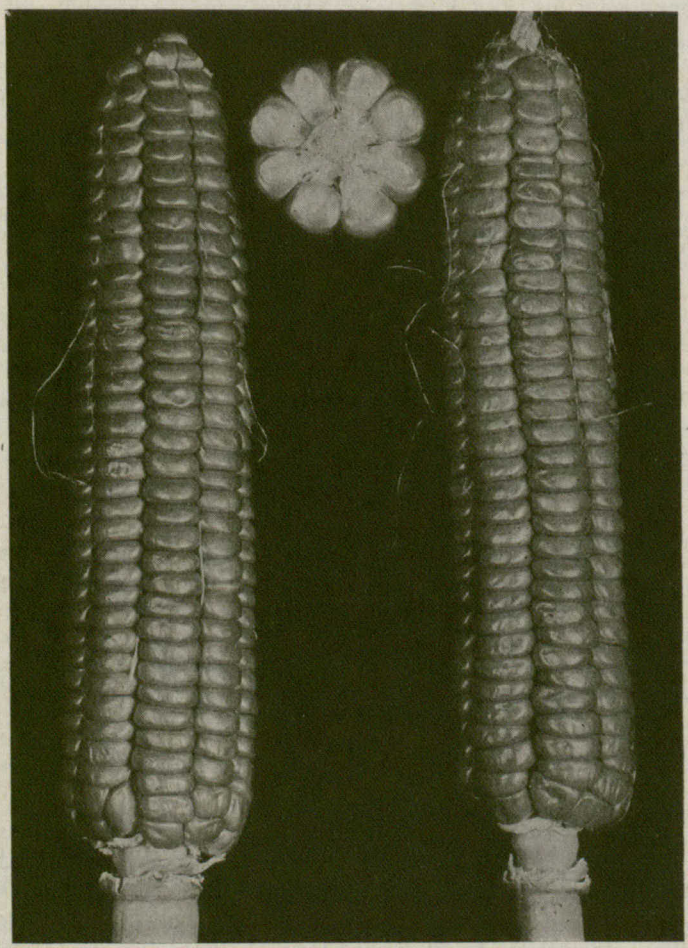
Kingscrost Bantam is a strong grower averaging 5½ to 6 feet with moderate suckering. The ears are 5½ to 6½ inches long on the eight-rowed strain and 6½ to 7½ inches long on the twelve-rowed hybrid. It requires about 85 days and is of good quality.

Ioana is a later variety requiring 87 days. It is a strong vigorous variety reaching 6½ to 7 feet with very few suckers. The ears are 7½ to 8 inches long, quality is fair. It does best in a very warm season.

Golden Hybrid is a strong vigorous grower averaging 7 feet with moderate suckering. The ears are a good size averaging 7½ to 8 inches with 12 to 14 rows of kernels. It is somewhat late, requiring about 90 days. Quality is good.

Golden Cross Bantam has been and is one of the outstanding sweet corn hybrids. It is vigorous, growing 6 to 7 feet with moderate suckering. The ears average 7 to 8 inches in length with 10 to 14 rows. It requires about 85 days and has good quality.

Golden Bantam.—This is one of the well known standard, high quality varieties. Ears are eight rowed, 6 to 7 inches long. Kernels deep, broad, thick and with excellent flavour and tenderness. Well adapted for canning as whole ears. Ready for canning in 75 to 80 days. Produces only a fair amount of stalk growth. Height of stalk 5½ to 6 feet.



CORN: GOLDEN BANTAM
Typical ears of a true strain of the variety.

Dorinny.—A golden variety of the eight rowed type that matures ahead of Golden Bantam, but has a tenderness and flavour that rivals if not surpasses Golden Bantam. Ear length ranges around 6 inches. Ready for canning in 70 to 73 days. Height of stalk 5 feet, medium in vigour. Excellent for canning as whole ears.

Banting.—Where a short season precludes the growing of a bigger growing variety this eight to ten rowed yellow, sweet corn will be found useful. The ear length ranges from 5 to 7 inches. The quality and flavour is only fair. Height of stalk 4½ feet.

PEAS

The pea crop is one of the most important grown for canning purposes and has a wide distribution in Canada. The seed will germinate and the plants make vigorous growth at considerably lower temperatures than many of the other vegetable crops. To obtain maximum yields and high quality, cool weather conditions are essential. The pea crop requires an ample supply of moisture, therefore it has been found that where the annual precipitation is between 30 and 40 inches a year, the crop can be grown with success.

For successful pea production fields that are quite level and uniform in soil type should be chosen. Knolly land is unsatisfactory since the crop growing on the knolls will mature in advance of the remainder giving uneven maturity, which will result in ripe and prime peas for canning, thus lowering the grade of the pack. A good pea soil should be deep, rich in plant food and have a liberal amount of humus or fibre present. For early peas the light, well drained, loamy soils will be found good. Sandy or gravelly soils should be avoided since they respond quickly to drought conditions. Peas require an abundance of moisture yet if excessive moisture is present damage to the crop will result. Mid-season or late maturing varieties will do well on the medium to heavy loam soils.

Hot weather checks the growth of the plants, causing premature flowering and setting of pods before the plants have developed to a sufficient size to produce a satisfactory crop. Under ideal soil and cool seasonal conditions vine growth will be satisfactory and numerous, well filled pods will develop.

The pea crop fits well into a four-or five-year farm rotation and should be grown the year following a hoed crop such as corn, tomatoes or potatoes. It has been found that the manure should be applied to the land for the previous hoed crop and that pea refuse should not be included in the manure. Where pea vine refuse is included in the manure there is always the danger of perpetuating or increasing the spread of disease.

It may be advantageous to use a commercial fertilizer as a supplement to the fertility already supplied to the land in the form of manure. Should this be considered desirable the recommendation in the section of this bulletin dealing with peas should be followed.* The fertilizer may be spread broadcast by hand or by means of a lime distributor, and harrowed in previous to seed sowing. Certain types of seed drills are fitted up so that the fertilizer can be applied at the time of seeding without the fertilizer coming in contact with the seed. Where the seed and fertilizer come in contact damage is liable to occur. Peas are gatherers of nitrogen and improve the land, but when grown for canning purposes they are cut before complete development has been reached. Therefore it is important to have some nitrogen present to aid the young plants to make quick growth.

A fine, well prepared seed-bed is essential to promote even germination, uniformity in the stand as well as evener maturity at harvest time.

The use of lime on pea soils may be found beneficial if the lime requirements are known by analysis to be over 1,000 pounds per acre. Peas are not appreciably injured by soils that are slightly acid.

Inoculation of the seed by using a nitro-culture may have a beneficial effect on the plants, particularly where peas are to be grown for the first time on land that has not been used for growing leguminous crops. The inoculation of the land may be accomplished by the transfer of soil from fields that are known to have the organisms in it. This is a dangerous practice on account of the possibility of spreading soil-borne diseases that do damage to peas. The nitro-culture method is to be recommended.

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* See page 32. See also recommendations of the Advisory Fertilizer Board for each province.

Good clean seed of pure varieties is the best assurance of uniformity of the crop produced. Registered seed produced under the supervision of competent growers and given careful inspection may cost slightly more but the difference in the uniformity of the crop and quality of the product will take care of this. Early maturing, off-type or rogue plants scattered through a field will reduce the quality and uniformity of the pack.

Peas for canning are divided into two general groups, the round-seeded, smooth to dimpled-smooth and the wrinkled type. The smooth types are used for early sowing when the soil is cold. The seed is not as likely to rot if heavy rains should occur before the plants emerge. The wrinkled peas are called "sweets" and are used for the later crops.

Certain varieties are more popular with the canners due to their ability to produce a large number of pods ready for use at one time. This is important where the whole crop is cut with a mower or pea harvester and taken to the viner. The varieties that are most extensively grown are Alaska, Surprise and Wisconsin Early Sweet. Fenland Wonder is a very good quality, early maturing variety but its dwarf habit of growth makes it difficult to handle as a field crop. For main crop production Little Marvel, Thomas Laxton, Perfection or Advancer, Pride, Prince of Wales and Horsford's Market Garden are widely used. The variety Alton has promise as one of the large, good quality canning peas. Engress also shows good possibilities as a main crop variety which stands up well under dry conditions. Tiny is a useful variety for canning very small peas; even when mature the peas of this variety remain very small. These last three varieties are originations of the Division of Horticulture, Central Experimental Farm, Ottawa. Where fusarium disease is present in the soil it is well to use the disease-resistant strains. In commercial canning the crop is grown on contract, the seed being supplied by the canner to the grower.

It is necessary to sow the seed at the earliest possible date. Local conditions will influence this. The plants will not be affected by light frosts but it is unwise to have the crop above ground in sections where hard freezing would occur. The smooth seeded varieties are usually sown first since they are hardier than the wrinkled varieties.

Sowing the seed with a disk drill is far superior to broadcasting and harrowing it into the soil. With the drill method the seed is sown at a uniform depth which gives a much evener germination and a better stand of uniform maturing plants.

The amount of seed to be sown per acre will vary with the variety being used; the germination of the seed, as well as the type, fertility and preparation of the soil. The usual rates of seeding range between $3\frac{1}{2}$ and $4\frac{1}{2}$ bushels per acre.

Set the seeder to cover the seed between $2\frac{1}{2}$ to 3 inches deep in the soil. Shallower covering may be advisable for the early crop, which will depend on the soil character and seasonal and weather conditions. Rolling the land after seeding to crush the lumps will give a smooth field for harvesting. The finger weeder can be passed over the field before the peas are up, to destroy seedling weeds. Mustard can be destroyed by spraying on a bright sunny day with a solution of 12 pounds of copper sulphate in 50 gallons of water. Best results will be secured if the spraying is done when the mustard is approaching the blooming period. Canada thistle heads should be cut off just before pea harvesting.

As the peas approach harvesting stage the whole field should be carefully watched, since soil variation will have some effect on patches developing more rapidly than the rest of the field. The harvesting will be determined largely by the appearance of the pods. When a large number of the pods are well filled with tender, succulent peas and there is a change in colour from dark to light green, harvesting must be started. Peas mature very rapidly, particularly if the weather is hot. During wet seasons second growth may develop. It may

be found necessary to harvest the early maturing patches in the fields and complete the cutting later on. The time of cutting cannot be predetermined but will be decided upon by the field inspector in the employ of the canning company. It is important that the growers co-operate with the canners to obtain the best quality product.

The harvesting or cutting is done by means of a mowing machine fitted with special guards on the cutter bar. Some of these attachments include a device for rolling the cut vines back to avoid damage to the peas when the next swath is cut. An ordinary mowing machine may be used but the cut vines have to be bunched by hand with forks. Cutting should be done in the cool of the morning and only enough cut to make a load. The material should be hauled to the viner and put through the machine as promptly as possible. Vines cut and left on the field will wilt or if bunched and left for any length of time will heat. Weeds in the cut peas will cause heating to take place more rapidly than is usual in a clean crop.

Hauling may be done by wagon or truck, but it is important that the vining be done promptly. Should a load be brought to the viner too late in the evening for immediate processing, the vines should be unloaded and spread as thinly as possible to avoid heating. Portable field viners have been brought into use to cut down on long hauls. This method has proved successful, but the shelled peas have to be hauled as rapidly as possible to the canning factory for processing. Shelled peas should be put into the cans the same day as harvested.

The yield of shelled peas per acre will vary with seasonal as well as varietal differences. It may vary from nothing to 1,500 pounds per acre during a poor season to 2,000 pounds per acre or more in good seasons.

Peas are usually paid for in accordance with the practice followed by the canners in the particular locality. It may be based on the bushel or hundred pounds of shelled peas, or on a sliding price, adjusted upon inspection of the loads as they arrive from the field. In some cases the small, tender peas bring the highest price. The settlement would be on the basis of the percentage of each size and cover about five sizes that are usually recognized in this industry.

The brine flotation or specific gravity method separates the peas according to maturity and grades purely for quality leaving size out of the question.

Peas sizes run as follows: No. 1 $\frac{9}{32}$ of an inch, No. 2 $\frac{10}{32}$ of an inch in diameter and so on up to No. 6 size which is $\frac{13}{32}$ of an inch in diameter and over.

In an effort to assist the growers and canners to be in agreement on the grading of fresh peas a pressure tester or "Tenderometer" is often used as a guide to help in determining the proper time to harvest and to indicate the tenderness of the crop when shelled.

The most troublesome insect pest of peas is the common aphid. Pea weevil and pea moth are also injurious. Control measures have been recommended by the Division of Entomology, Dominion Department of Agriculture, Ottawa.

SPINACH

As a crop for greens, spinach is undoubtedly the one used to the greatest extent for canning. This crop belongs to the group of plants classed under the heading of pot herbs. The popularity of spinach has resulted from its being rich in minerals as well as high in vitamins. It is essentially a cool season crop. Early spring sowing of seed is important to have the plants ready for harvest before the hot weather occurs. The spinach plant, soon after emerging above ground, develops a whorl or rosette of leaves on a rather short main stem close

to the ground level. Hot weather conditions will start the development of the central seed stalk, hence the importance of early spring crops.

The fall crop of spinach can be grown to advantage if the seed is sown in well prepared land during early August or in some localities late August or early September. Spinach will stand rather heavy frosts if the plants are well established before the severe weather occurs. For this crop there should be an abundance of plant food to promote quick growth and moisture to meet the needs of the crop.

Soil types suited to spinach growing are varied from the light, sandy and silty soils to the loamy soils. In some localities the black muck soils are used with remarkable results. The plants grown on muck are tender, brittle and very free from grit or sand. In any event the land should be well drained but retentive of sufficient moisture to promote quick growth. Very acid soils should be avoided as well as soils that are very alkaline. The use of rich loam and silt soils that have been carefully managed will be found to give excellent results.

The use of well rotted manure is the most satisfactory method of maintaining the humus supply in the mineral soils. Fresh strawy manure is not desirable on account of the weed-seed content. Fall application of manure and immediate ploughing is recommended. On the lighter soils the harrowing and fitting may be done late in the fall and as soon as the surface of the soil is dry enough in the spring the seeding may be done without further fitting. By this means considerable time can be gained. On the heavier soils careful, thorough cultivation should be given to ensure a fine seed-bed. For commercial fertilizer recommendations for mineral soils see the section dealing with spinach on page 35.

Muck soils are constituted chiefly of vegetable matter and are easy to prepare for seeding. Excellent crops can be produced with the application of from 500 to 1,000 lb. of a 2-8-16 fertilizer put on broadcast and disked in prior to seeding. Side dressings of a water-soluble nitrogenous fertilizer may be necessary during growth.

The amount of seed required to sow an acre will range from 15 to 30 pounds depending on the distance apart of the rows and the amount of seed sown per foot of drill. From 20 to 25 seeds per foot will give a good stand. If the germination of the seed is known, the rate of seeding can be economically regulated. The usual distances apart for the rows are between 12 and 15 inches.

Seed sowing can best be done by having four seeders attached to a drawbar and hauled by a horse or small tractor. Hand pushed wheel-hoes or tractor pulled gang cultivators will be found effective. Shallow cultivation is essential for this crop and should be given frequently.

For canning purposes it is not customary to thin the plants. Thinning to from four to six inches apart will give very well developed plants. Harvesting can be done by means of a long handled Dutch push hoe or by means of the onion harvester knife attached to the wheel-hoe.

The yield per acre will vary from 300 to 400 bushels according to conditions and methods employed.

There are a number of very good varieties used for commercial canning the three main varieties or types being,—Bloomsdale, Giant Nobel and King of Denmark. The smooth, thick-leaved varieties are the most popular for processing.

Seed treatment with Arasan, Semesan or red copper oxide (CU_2O) dust for the control of seedling diseases should always be carried out before seeding. Four ounces of Arasan to 100 pounds of seed ($\frac{2}{3}$ teaspoon to 1 lb. of seed) or

five ounces of Semesan to 100 pounds (½ teaspoon to 1 lb.) will give good results. Ten ounces of red copper are recommended for 100 pounds of seed on mineral soil and thirty ounces per 100 pounds on muck soils.

The seed and the dust to be used are placed in a tightly covered container and the mixture agitated for a considerable time so as to cover the seed as thoroughly as possible. The seed and dust are placed in the seed drill and sown.

TOMATOES

Canning tomatoes are grown chiefly as a main or mid-season to late crop. Early maturity is not so important with tomatoes for canning as it would be for early marketing as fresh fruit. In the case of tomatoes for canning the crop is grown under contract with the price prearranged per bushel or by the ton. In the shorter seasoned sections, earliness is undoubtedly an important factor, but as a rule the bulk of tomatoes for canning is produced in sections where there is a long, frost-free period.

The soils best adapted to the production of maximum yields range from heavy sandy loam, silty loam, gravelly loam to light clay loam. These soils are retentive of moisture and easy to work. In addition they are suitable for the production of other farm crops that would be used in the regular rotation. The place for tomatoes in the rotation is either following after a clover sod or after a crop of corn. In any event good tomato land should have a liberal supply of humus which will keep the soil friable and aid in retaining moisture. Ten to twelve tons per acre of well rotted barnyard manure will be found ample to maintain the humus supply as well as adding some plant food.

Fall ploughing is employed in some localities as it encourages the decomposition of sod and crop residue.

Early spring ploughing has also been found quite satisfactory provided that the land is worked with the harrows to avoid moisture loss.

A finely prepared soil is just as important for this crop as for any other. Care should be taken not to work the heavy types of soils when too moist since this will cause lumpiness.

The application of manures and fertilizers may be made in accordance with the recommendations made in another section of this bulletin under tomatoes. It is a good plan to follow the fertilizer recommendations made by the various Provincial Advisory Fertilizer Boards.

Satisfactory plants can be started in a greenhouse, hotbed or in a coldframe. The greenhouse and hotbed will be found most satisfactory in sections where it is necessary to have the plants well developed at planting time and particularly where the frost-free season is short. The coldframe method is quite satisfactory for regions where the season is long. In this case the covering for the beds may be regular hotbed sash in the early part of the season, and when the weather warms cotton covers will be satisfactory.

Good seed of the best varieties should be used. It is very desirable to make a germination test of the seed before sowing. When the germination of the seed is known the rate of seeding can be regulated, which will result in much sturdier plants. Thick seeding is very objectionable as it frequently results in spindly, weak plant development. Two ounces of seed should be sufficient to produce enough good plants for one acre. One ounce of good seed should produce 2,000 plants. It is always advisable to sow enough seed, however, to produce a surplus from which the best plants may be selected.

The varieties that are recognized as suitable for canning are Bonny Best, John Baer, Geneva John Baer, Chalk's Early Jewel, Marglobe, Stokesdale No. 4, Scarlet Dawn, Rutgers and Early Baltimore may be used in regions with a long

growing season. For short season areas Abel, Early Chatham, Bounty and New Alaska may be grown. Globonnie is satisfactory for canning whole tomatoes.

The time to sow the seed will be regulated by the time when the last spring frost would be likely to occur. Figure back from this date six to eight weeks. If the seeding is done at that time, good stocky plants that are from nine to twelve inches high will be available.

Seed sowing may be done in flats or directly in the soil of a hotbed or coldframe, in drills spaced two inches apart in flats or four inches apart in the hotbed or coldframe. Thin seeding is important if the germination of the seed is good. If the plants are to be left in the hotbed without transplanting, thinning to two inches apart in the row will be necessary. It is much better to give the plants at least one transplanting, spacing them two by two inches apart each way.

About two weeks before the plants are to be set out in the field the soil should be cut into squares by means of a sharp spade. This is called blocking out and tends to confine the root system within a small square of soil, so that when the plants are lifted from the beds a fine root system will have developed. Plants handled in this way will check very little when planted in the field. For best success the tomato plants should make unchecked continuous growth. The plants should be hardened off before field planting is done.

For seed-bed work a compost soil made up of alternate layers of sods and manure that has been piled and allowed to rot for one or two years will be found most satisfactory.

For this kind of work the soil should be friable and capable of draining well. The addition of clean, sharp river sand will ensure the soil draining easily and yet permit of the application of sufficient water without danger of wet conditions developing.

To prevent damping-off which is caused by a soil-borne disease, sterilization of the soil with dry live steam will be found beneficial. The use of a mercurial disinfectant on the seed will be a further safeguard against serious losses.

Planting in the field should be done after the danger of late frost has passed. This will vary, in the various localities from May 24 to June 12 or thereabouts. Soil fertility as well as the varieties being grown will influence the distance apart for planting. On soils that are of moderate fertility a satisfactory planting distance for the smaller growing varieties is rows four feet apart and the plants three and one-half feet apart in the rows. However, four feet by four feet apart each way is the distance usually used for the stronger growing varieties. This spacing is now giving way to wider spacing of the rows and closer planting in the row. The widespread damage caused by late blight has necessitated control measures. To permit spraying equipment to pass through the tomato field and do a thorough job the rows are spaced 6 feet apart and the plants are spaced 3 feet apart in the row.

The plants will receive very little setback if they are planted out during dull, moist, warm weather. Planting may be done in three ways. The field can be checked off with a marker and a hole dug with a spade for each plant where the marks cross. Furrows can be opened up with a plough to a depth of six inches. The furrows will be spaced 4 feet apart or 6 feet apart according to system of spacing and the plants will be placed in the furrows the required distance apart. The third method of planting, used for large acreages, is the most rapid. A mechanical transplanter pulled by a tractor or horses sets the plants at an even depth, firms the soil and, if required, will apply water or starter solution as the plants are set.

The use of a starter solution when setting out tomato plants is now a standard practice with progressive growers. The starter or transplanting solution can be prepared using one of the fertilizer mixtures sold for this purpose such as an 8-24-8, in which case the manufacturer's instructions for preparing the solution should be followed. Some of the regular fertilizer mixtures may be used. A 4-12-6 is quite satisfactory. This mixture is dissolved at the rate of 8 pounds in 50 gallons of water. It should be thoroughly stirred with a paddle as the fertilizer is added to the water. Pour one-half pint of this solution into the hole or around each plant as it is being set. Then firm the soil about the roots.

It is good practice to slope the plants a little, in the direction of the prevailing wind, when setting them out. This will help greatly in reducing wind damage to young plants. The slope should be increased for plants which are too "leggy" (over 12 inches in height) so that only about 8 inches of the plant will be above ground.

Cultivation should be commenced as soon as possible after planting and given at intervals of ten days apart until plants cover the ground. Moderately deep cultivation may be given in the early part of the season, but shallow cultivation will be found effective, and not do injury to the root system of the plants. A loose surface mulch will check moisture loss and keep weeds in control. Weeds are one of the worst causes of moisture and plant food losses and should be destroyed in the very young stages. The single-horse walking-type of cultivator may be used but the two horse, two-row riding-type of cultivator will be found more efficient. However, to increase the efficiency of workers and machinery more growers each year are adopting the system of mounting crop row attachments directly on the tractor.

Harvesting should commence as soon as the fruits are fully ripened. The skin should be showing full, red colour to the calyx or stem, and be firm. Fruits fully ripened on the vines will possess flavour; texture and quality. All diseased or split tomatoes should be discarded. It is a good plan to collect and destroy all spoiling fruits. Tomatoes that are split or rough are undesirable for canning on account of the heavy waste in trimming and loss through rotting. It is, therefore, important to sort out all such materials.

Grading the fruit on delivery at the canning factory is now standard practice in some regions.* This is not only a protection to the grower but is also a stimulus for the production of high quality tomatoes.

Publications on processing and grading of the products as well as disease and insect control can be obtained from the Dominion Department of Agriculture, Ottawa, Ontario.

*Information on grading may be obtained from the Provincial Department of Agriculture.

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