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RUTABAGA OR SWEDE TURNIP AS A VEGETABLE CROP

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The rutabaga, also known as swede turnip (*Brassica Napobrassica*) differs from the soft turnip in type of foliage, character of flesh and shape of the roots. The flesh of the rutabaga root is finer and firmer in texture. The shape of the root is deeper from the crown to the base of the root. The leaves and petioles of the soft turnip are hairy, coarse and drooping, while those of the rutabaga are smooth and growing very erect. The broad surface of the leaves is covered with bloom which gives a bluish sheen or appearance.

There are two types, those that are known as purple top varieties and the green or bronze top varieties. The purple top varieties are probably more in demand for table use than the green or bronze top swedes. There is still another division that can be made, namely, white fleshed and yellow fleshed varieties.

The finest Canadian rutabagas for winter market are grown from seed that has been sown as late in the spring as possible. In some sections seeding can be done during the last week of June or first week of July. The chief thing to keep in mind in late sowing is to have the plants making their greatest root development during the cool fall weather rather than during the hot, dry weather in August. Cool conditions are conducive to the development of tender, sweet, fine-textured rutabagas.

Roots that have been sown very early in the spring and allowed to grow through the whole season are liable to be strong in flavour and bitter. Small-sized roots selected from a crop of this type are liable to be equally strong in flavour and just as bitter as the larger roots. The most desirable roots are those that have made their growth under cool weather conditions and have attained a size between 3½ and 5 inches in diameter.

There may be sections of the country where moist soil and cool seasonal conditions make it possible to grow this crop from comparatively early sowing. There is the danger however of placing on the market roots of medium size that have been taken from a long season crop. These roots may seem attractive but are liable to be woody and strong in flavour.

Soils and Management

Although almost any soil may be used for the growing of this crop, the most satisfactory soils are those that are friable, deep, moist and rich in plantfood. Therefor, the heavy sandy loams and clay loams are the most satisfactory. Muck soils may also have some possibilities provided that the plantfood requirements are properly taken care of.

Rutabagas do best when grown in a regular three-year rotation following clover sod or the third year from grass sod. Wireworm injury can be practically eliminated by following after clover sod or the third year from grass sod. These worms are usually abundant in grass or sod land and have been found to do considerable damage to the root crop the first and second years after the sod has been broken.

Like all crops grown from seed sown in the open ground, the rutabaga does best where thorough preparation is given the land previous to seeding. The land should be fall ploughed so as to turn under the second growth of clover. Previous to ploughing, any manure that is to be used should be spread. It is preferable that the manure be well rotted so that it will be thoroughly incorporated in the soil. Avoid working the soil while very moist as this is liable to cause lumpiness particularly if the land is of a sticky nature. Soils that have been made lumpy by working when too moist are exceedingly difficult to work into fine tilth again during the season. Disking and harrowing should be done at frequent intervals during the spring, prior to seeding, to keep the land free of weed growth and to conserve moisture.

Drainage

The regulation of the moisture supply is exceedingly important. While the root crops require moisture to make satisfactory growth, yet it is important that excess water be removed from the land quickly and this may best be taken care of either by open drains or tile under drains. The latter system is preferable.

Manure and Fertilizer

For the maintenance of the humus supply and to keep the plantfood supply at a reasonable level, well-rotted barnyard manure is undoubtedly best. From 10 to 12 tons per acre will be found quite satisfactory under general conditions plus a 375 to 500 pound per acre application of a 2-10-12, 0-10-12 or 2-12-6 commercial fertilizer.¹ The commercial fertilizer can be applied to best advantage by means of a fertilizer attachment on the seed drill. The old practice of broadcasting the fertilizer prior to ribbing or drilling the land is not considered entirely satisfactory. Where a fertilizer attachment is not available the fertilizer is sometimes applied in a strip on the top of the rib or drill after levelling and rolling. The seed is then sown with the seeder; thus the fertilizer is incorporated with the soil.

Lime

The application of lime as a soil amendment is important when it is known that the soil is definitely acid in reaction. However, before lime in any form is applied to the land it would be advisable to get definite advice as to the amount to apply. Finely crushed limestone is a very cheap corrective.² This may be applied in amounts from two to ten tons per acre according to the character and acidity of the soil and the degree of fineness of the material. Unlike quick and slaked lime, excesses of ground limestone can do little or no harm and the same holds true of marl.

Under acid soil conditions the disease known as club-root may cause serious damage. By applying lime to the land and practising a long rotation in which the rutabaga, turnip, cabbage or cauliflower is not grown, this condition may be successfully overcome.

Brown-heart of Rutabagas

Large quantities of rutabagas are rejected yearly because of brown-heart. Tests conducted over a period of three years in the Maritime Provinces demonstrated that rutabagas or turnips required boron for normal development and further that application of boron to the land is a safe-guard against brown-heart.³ Finely powdered borax has been the most satisfactory source of boron for this purpose. Ten pounds per acre gives good control but 15 to 20 pounds per acre gives highly satisfactory control without causing injury to ordinary crops in subsequent rotations. Inasmuch as excess amounts of borax are poisonous to many plants, heavier applications should be avoided unless made under the supervision of an expert.

Heavy liming of the soil predisposes this crop to brown-heart, while the naturally alkaline soils render borax less effective. Proved methods of applying borax are as follows:—

(1) in the drill; (2) at the sides of the drills; (3) broadcast; (4) combined with the home-mixed fertilizer and dispersed by means of the ordinary spreader; (5) broadcast in factory-mixed fertilizer containing the correct amount of borax.

Methods of Seeding

Many growers prefer to rib or drill the land with a lister or double mould-board plough. The tops of the ribs or drills are levelled off either by raking or with the field land roller hauled lengthwise of the rows. By this means a relatively even surface is made available on the top of each rib or drill which ensures even seeding. When grown in this way, cultivation, hoeing and weeding are facilitated. During wet seasons there is less danger from scalding out due to water lying on the field. The disadvantages are that during dry years or when seeding is done late, should drought conditions occur the crop may suffer from lack of moisture.

Seeding on the level has been found quite satisfactory for the late-sown crop or when dry conditions are liable to occur. Level seeding is a saving to the grower provided that the land is free from weeds.

The distance between the rows may range from 30 to 36 inches which is ample space for the use of horse drawn cultivators, but where considerable hand cultivation is given, the rows may be 18 to 24 inches apart.

¹The Advisory Fertilizer Board for Ontario 1930.—Ontario Department of Agriculture, Toronto, Ontario.

²Lime in Agriculture, Bulletin No. 80, Division of Chemistry, Dominion Department of Agriculture, Ottawa, Ontario.

³Progress report Dominion Botanist 1935-36 and 37. Also publication 574, circular No. 123, Brown-heart of Turnips, Dominion of Canada, Department of Agriculture.

Seed, Varieties and Seeding

It is important that the best seed procurable should be used. Registered seed of the varieties found to be most satisfactory has proved to produce uniform, high-quality crops. There are however commercial strains of well-known varieties that have been found very good.

Laurentian is a variety of recent origin that on account of the uniform shape of the roots and rich purple skin colour, is remarkably good. Ditmars is a bronze or green top type. These two varieties are now under registration. Other varieties that have been recommended are Canadian Gem or New Century, Good Luck or Best of All, and Perfection. These three varieties are all purple skinned and have given good results.

The seed may be sown by using a single-row hand pushed seeder or a power hauled double-row seeder. For a small acreage the hand seeder will be found satisfactory, but where a large acreage is to be covered, the power hauled double-row machine is to be recommended. These seeders can be used for sowing seed of the other root crops.

The rate of seeding will range from 1½ pounds to 2 pounds per acre. It is advisable to sow the seed thickly enough to be certain of a uniform stand of crop. The best depth to cover the seed in the soil has been found to be about one-half inch.

Cultivation, Hoeing and Thinning

As soon as the seedlings come through the ground it is advisable to go along each side of rows and hoe the small weeds away from the seedlings. The regular horse- or power-drawn cultivator should be used with the medium-sized teeth attached. Moderately deep cultivation should be given during the early part of the growing season and as the plants get larger the cultivation should be quite shallow. There is no set rule as to the frequency of giving cultivation but once a week or thereabouts should keep the weeds in check and maintain a good surface mulch on the soil. When the leaves overhang the rows and there is danger of damaging the plants, horse cultivation should cease. Hoeing can best be done after the cultivator has been put through between the rows. A narrow-backed 6-inch-wide turnip hoe is preferable to the conventional high shouldered hoe. One of the important operations in rutabaga growing is to thin the plants before they get large and tangled. The thinning should be done when the plants are just showing the first pair of rough leaves. This can be done rapidly by means of a sharp turnip hoe. The best plan to follow is to go along the rows cutting out the seedling turnips slightly more than the full width of the hoe, leaving groups of three, four or five seedlings where eventually only one plant will stand. A week or so later these groups may be thinned to two in each place until when the third hoeing is given the plants are thinned to one in each place. The plants should stand, after the last hoeing, about 8 to 10 inches apart in the row. If the thinning is started early and the plants thinned by degrees there is always a better chance of having a uniform stand.

Insects

Flea-beetles, wireworms, aphids, root maggots, cutworms, and green cabbage worms all do considerable damage to this crop. For the control of these and other insects, information can be had in bulletin form from the Publicity and Extension Division, Dominion Department of Agriculture, Ottawa, Canada.

Diseases

A number of common diseases which affect the rutabaga can be controlled if taken in time. Information can be obtained along these lines from Science Service, Dominion Department of Agriculture, Ottawa, Canada.

Harvesting

While this is a very hardy crop that will stand considerable frost, yet it is important that the roots be placed in the storage cellar before severe freezing weather occurs. Late October is the best time for harvesting in most localities. The roots should be pulled and the tops and coarse roots cut off. As with all other vegetables careful handling is important to avoid unnecessary bruising. It is important that the harvesting be done when the roots are dry and will pull clean from the soil. Bright sunshine and dry days should be selected if possible for the harvest. The harvested roots should be hauled to the storage cellar and placed in bins with slatted floors and sides. Slatted triangular ventilation pipes should be installed horizontally and vertically through the piles of roots, particularly if the bins are large.



The best temperature for storage is around 34° F. A root cellar built in a hill side and completely covered with soil has been found to be very satisfactory. Fresh-air inlets should be provided by means of 6-inch sewer tiles brought down through the soil outside the root-cellar walls with the openings in the centre of the cellar floor. Foul-air ventilator pipes should be placed in the roof. These should be about 12 inches square, using three or four layers of lumber with an air space in the walls as well as two layers of insulation paper.

Grading

Only the choicest well-grown roots should be offered for sale. The most desirable roots are those that are of medium size. Large coarse or rough roots should be discarded or used for live stock feeding. For the regulations regarding grading consult The Fruit, Vegetables and Honey Act, administered by the Fruit and Vegetable Division, Dominion Department of Agriculture.

Waxing

By means of a wax coating applied to the roots, the appearance can be greatly improved and in addition they will keep much better in the store pending sale and will be more satisfactory to the consumer.

Before waxing, the roots should be washed, neatly trimmed, and allowed to dry. The wax is then applied using a crude paraffin wax, but not the refined white wax. The addition of about one per cent of paraffin oil to the liquid wax will prevent cracking and chipping off. A number of commercial wax emulsions which simplify the waxing process can also be obtained.

Waxing can be done quickly by using one-half-inch mesh wire baskets. These baskets should be about six inches deep and of dimensions to fit into the wax bath. The clean dry roots are placed in a single layer in the baskets, then dipped into the wax or emulsion and out again quickly. Allow the roots to stand for a few minutes, after which they will be ready for market.

Transplanted Rutabagas

During the past few years there has been a tendency to grow rutabagas for marketing in the early summer to take the place of the soft summer varieties of turnips. For this purpose the seed is usually sown in hot beds about the middle to the end of March and when the weather and soil conditions will permit, these seedlings are transplanted out in rows 18 to 24 inches apart with the plants spaced 6 to 8 inches apart in the row. Rutabagas grown in this way will as a rule be ready for market by mid-July. Usually the crop is pulled when the roots have reached 3½ inches in diameter. The tops are left attached and the tap and fine roots are trimmed off. After washing they are tied in bunches of six roots and marketed in this way.

Owing to the superior quality of the rutabaga it is rapidly replacing the soft, early maturing summer varieties of turnips.



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