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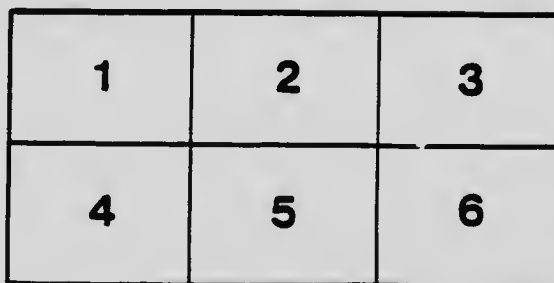
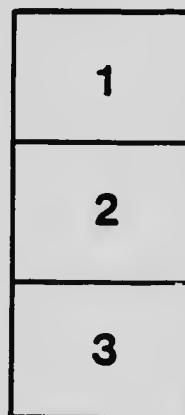
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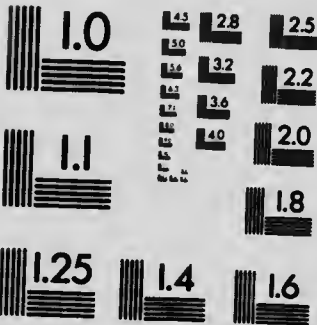
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PROVINCE OF BRITISH COLUMBIA.

DEPARTMENT OF AGRICULTURE (HORTICULTURAL BRANCH).

CABBAGE, CELERY, AND TOMATO PRODUCTION.

By P. E. FRENCH, B.S.A., ASSISTANT HORTICULTURIST.

CABBAGE.

THERE are three groups of cabbage commonly grown: the red, white, and Savoy types. The red cabbage is commonly used for pickling. The white cabbage is commonly used as a vegetable, while the Savoy cabbage, which is of the best quality, is little cultivated because production is not so abundant as with the common kinds. The three types of cabbage as to shape are the pointed, round, and flat. The pointed are early, the round medium, while the flat are usually late varieties.

SOIL AND MANURE.

The best soil for cabbage is a rich loam, moist, yet well drained, and in fine condition. Early cabbage usually need richer soil than late cabbage. It is a good plan to occasionally change the land. Cabbage are gross feeders and need lots of rich manure. A small quantity of hen-manure placed around each plant and mixed with the soil will give very good results, especially with early cabbage.

EARLY CABBAGE.

Seed should be sown in the greenhouse or hotbed about the middle or end of February. If only a few plants are required they can be grown in shallow boxes in the house. When the plants are about 2 inches high, transplant them into flats, placing the plants  $1\frac{1}{2}$  to 3 inches apart, depending whether they are to be transplanted once or twice before setting in the field. The ground should be ploughed in the fall and well prepared in the spring, and the plants should be hardened off before setting them in the open ground.

It is important that early cabbage should be planted out as early as possible in the spring and set deep enough to bring the base of the leaves below the ground. Cabbage-plants will grow at a low temperature. They may not show much increase in the leaf surface at first, but they form roots rapidly. The distance apart for planting depends somewhat on the variety grown, but the usual distance for early cabbage is 18 inches apart, in rows 30 inches apart. If there is very hard frost after planting, the plants may be covered with earth for two or three days, but should be immediately uncovered if the weather turns fine. Cultivation should begin as soon as possible and be continued every week or ten days, and after every rain until the heads are well formed.

The crop should be ready for market from July 1st on. If the land is at once ploughed when the early cabbage is harvested, it can be used for some late crop, as beans, spinach, or celery in some districts. If the market for early cabbage is oversupplied, the heads may be retarded by pulling the plant to one side and so breaking off some of the roots.

#### LATE CABBAGE.

The seed for late cabbage is sown in a seed-bed in the open ground. Sow the seed, four to six weeks before you want to transplant to the field, in a well-prepared seed-bed. Sow in rows about 12 inches apart. The ground should be well prepared before planting. If necessary, late-cabbage land may be used for some early crops, such as peas, in the spring. If horse-cultivation is to be employed, set the plants not less than 2 feet apart in rows 3 feet apart. During the forepart of the season the cabbage may be cultivated both ways. If this is done very little hand-labour is required. On very rich land it is necessary to plant the cabbage fairly close together, or they will grow too large, and very large cabbage are not wanted for commercial use.

#### HARVESTING AND STORING LATE CABBAGE.

Late cabbage may be harvested and sold at once, or stored for marketing during the winter. They are usually marketed with the outside leaves trimmed off and are shipped in crates.

Cabbages will stand 10 degrees or more of frost, but severe freezing or repeated freezing and thawing is injurious. They are seldom injured very much unless the stump is frozen solid.

Cabbage are generally stored in cellars or specially constructed pits in the field. If stored in the cellar they are placed on shelves, and the cellar should be cool and moist, but not wet. The pits are made by constructing an A-shaped wooden structure, which is covered over with earth. This is made about 8 or 9 feet wide at the bottom and the point about 6 feet high. A false floor is put in to keep the cabbage off the earth and to allow the air to circulate through the cabbage. While in storage, cabbage should be well ventilated and kept as cool as possible without freezing.

Cabbage may be stored for the winter by setting them in a trench, roots downwards, and covering the heads with about 6 or 8 inches of soil and mulch. This is done at hard freezing. The roots will show above ground. Soft cabbage stored in this way will harden up by spring.

#### RAISING SEED.

For raising seed, cabbage are placed together, in a trench about 18 inches deep, head upwards, and covered with soil and mulch to prevent severe freezing. Hard heads give a good quality of seed, but a small quantity. Medium hard heads give a fair quality and a medium quantity, while soft heads give a poor quality and large quantity.

#### CELERY.

##### SOIL.

Celery can be grown on any fertile, well-drained soil, but best results can be obtained from a loose, rich sandy loam or a black-muck soil. Well-drained swamp land is often excellent soil for the commercial growing of celery. Special attention should be given to the maintenance of humus in the

soil, as celery-growing not only exhausts the chemical fertility of the soil, but also injures its physical condition. This is not so important in the case of swamp lands, where there is generally an extra large supply of humus. The maintenance of humus in the soil can be accomplished by the application of large quantities of barnyard manure, or by planting the land every third or fourth year to some leguminous crop, such as clover. Celery requires a soil which is retentive of moisture.

#### FERTILIZERS.

Where fresh manure is used, it should be ploughed under in the fall at the rate of about 20 tons to the acre. Well-rotted manure may be applied as a top dressing a short time before planting, and harrowed into the soil. If the manure is ploughed under, the land should be reploughed a short time before planting, in order to bring the manure near the surface, as celery is a surface feeder.

Many growers are getting excellent results from the use of commercial fertilizers at the rate of 600 or 700 lb. per acre. This is especially true where swamp lands are used for celery-growing. In such land there is often so much humus that it is difficult to plough under manure, so that commercial fertilizers are used almost exclusively. The best results seem to be obtained by making a furrow where the plants are to be set. Then scatter the fertilizer in the bottom of this furrow and mix it well with the soil and then set the plants on top. Nitrate of soda might be applied in light applications during the growing season just before cultivating. When celery is grown on the large scale, it is advisable for the grower to experiment with different mixtures of commercial fertilizers, and find out what gives the best results with his own particular soil.

#### RAISING THE YOUNG PLANTS.

Celery-seed loses its vitality very quickly and is practically worthless when kept over until the second year. Order your seed early, before the supply of the best is exhausted, and there will be very little difficulty in getting good seed. One ounce of seed will give about 5,000 plants. Celery-seeds are slow in germinating, and the temperature of the seed-bed should be kept low. The seeds for the production of early celery are sown about the end of February or beginning of March in hotbeds or flats, which are placed in the window of a moderately warm room in the dwelling-house. Where grown in flats there is less danger of damping off if the seeds are covered with sand.

For late celery the seed is sown in an old hotbed, cold frame, or in a well-prepared seed-bed. The seeds should not be covered to a greater depth than  $\frac{1}{2}$  inch. Watering should be attended to very carefully and the bed should not dry out. After the plants are up, care should be taken that the bed does not become too wet and the plants damp off. A better root system and a stronger plant can be obtained when transplanting into flats is practised, but this is seldom done when celery is grown on a large scale. The cost of labour is too great to recommend two handlings for commercial celery-production. The plants should be thinned out in the seed-bed to prevent overcrowding.

#### TRANSPLANTING TO THE FIELD.

The ground should be well ploughed, harrowed, and smoothed before the plants are set out. The rows in which the celery-plants are to be set should

not be marked until a short time before planting, in order that the soil may remain moist. The seed-bed should be thoroughly soaked with water before the plants are dug. A portion of the top is generally trimmed off the plant when transplanted. When raised on a large scale, celery is grown in single or double rows, 3, 5, or 6 feet apart, with plants 5 or 6 inches apart in the rows. Most of the growers in this Province prefer the double-row system. Early celery is generally planted close together than late celery. If the weather is warm, after setting the plants in the field, they should be shaded for a few days.

#### CULTIVATION.

The young plants should be frequently cultivated, but at no time should deep cultivation be practised, as the roots are to be found very near the surface of the soil. As soon as the plants attain considerable size the leaves should be drawn up and a little soil compacted about the base of the plant to hold it upright.

#### BLANCHING.

Early celery is usually blanched by means of boards, as there is less danger of disease during the warm weather. Late celery may be blanched by the use of boards or by banking up with earth. There is much less labour required when boards are used for blanching, but if the celery is to be left in the ground late in the fall, there is more danger from frost than when it is well banked with earth. If boards are used, care should be taken to have the boards carefully piled after harvesting the celery. Otherwise they will warp and be of little use for the next season.

#### DIGGING AND PREPARING FOR MARKET.

In the field the celery should be loosened only as required for removal to the storehouse or washing-house, as a short exposure to the sun after the roots have been disturbed is very injurious and detracts from its keeping qualities. When ready for market the celery is washed free of adhering soil, the outside leaves are removed and the roots trimmed, and it is packed in boxes or crates. A lining of paper is usually placed in the box before packing the celery.

#### STORAGE.

When only a small quantity of celery is kept for winter it may be well banked in the field and covered with straw, or put in a trench and covered. This method is, however, too laborious for application on a large commercial scale.

Celery may be safely stored in cellars or storage-houses, provided the temperature is kept low and plenty of ventilation maintained. Make bins 3 or 4 feet wide, 2 feet high, and any desired length, and put in about 5 inches of strong soil. Plant the celery, leaving the roots on, close together in rows about 3 inches apart. After the plants are set in, water heavily without putting any more than necessary on the tops. Leave the bin open until the plants are dry and then cover.

#### VARIETIES IN ORDER OF MATURITY.

Golden, Self-blanching, White Plume or Chicago Giant, Paris Golden, Giant Pascal, Evan's Triumph, and Winter Green.



## TOMATOES AS A FIELD CROP.

### GROWING THE PLANTS.

Tomato-seed should be sown in hotbeds or flats about the middle of March. It requires about 1 oz. of seed to produce enough plants for 1 acre. When the second leaf shows, the plants should be transplanted about 2 inches apart each way, into flats, and allowed to develop in these quarters until they have attained a height of 1 to 3 inches. They are then transplanted to about 4 inches apart each way in flats or into berry-boxes, pots, etc., and from these quarters to the field. In growing the young plants it is very important to keep the temperature fairly even, and not allow draughts to strike the plants. The less water used as long as the plants are growing well, the better. It is very important that the plants should be well hardened off before set in the open ground.

### SOIL AND ITS PREPARATION.

Tomatoes if given proper treatment can be grown on almost any well-drained soil which is in good condition, but probably a rich, sandy loam will give the best results. The treatment of the soil previous to planting is very important. Tomatoes do well after clover-soil. The ground should be ploughed in the fall or early spring, and deeply cultivated in the spring.

### FERTILIZERS.

Barnyard manure may be applied in the fall and ploughed under, or if well-rotted it might be applied as a top dressing in the spring and worked into the soil. Since the tomato belongs to the potash-consuming class of plants, the fertilizers used should be especially rich in potash. The commercial fertilizer used will be determined largely by the character, mechanical condition, and composition of the soil. However, it should generally contain a fair amount of potash.

### SETTING AND CULTIVATING THE PLANTS.

The plants should be set in the field as soon as all danger of frost is over. If the plants are transplanted from flats to the field, cut the soil in the flat into cubes two or three days before removing the plants. Soak with water two or three hours before transplanting. If the plants are to be allowed to run over the ground, they should be set about 4 feet apart each way. If trimmed and tied to stakes, they may be planted in rows 3 feet apart, and 18 inches apart in the rows.

Tomatoes need thorough cultivation, but the first time should be deep, and all later cultivations should be shallow, as they are a surface feeder.

### PRUNING AND TRAINING.

Tomato-plants under field cultivation are generally allowed to run over the ground in any direction. For early market it will pay not to leave more than three sets of fruit. Even for the main crop it is advisable to take off all the small fruit and cut back the young shoots about the middle of August, especially if the plant is growing rapidly. Staking is often practised for early market. The stakes should be driven firmly into the ground 1 foot before the plants and the plants carefully tied to them, to keep the plants from being pulled over by the wind and to expose the plants to the action of the sun for the

purpose of bringing the fruit to early maturity. From one to three main stalks are allowed to grow. All side shoots should be kept pinched back and only the central leading stems allowed to develop.

#### SELECTION.

Tomato-seed should be saved from the best tomatoes, from vines producing a large amount of fruit. The crown setting is always the best for seed purposes.

#### VARIETIES.

A good variety is one which bears medium-sized, smooth spherical fruits, which ripen evenly and have small seed-cavities and thick walls. Some of the common varieties grown in Canada are: Red—Earlana, Bonny Best, Wealthy, Chalk's Jewel, Success, Livingstone, Baltimore, and I.X.L.; Pink—June Pink and Globe. In British Columbia, where we have cool nights and fairly short season, we want an early-maturing variety such as the Earlana.

#### HARVESTING AND MARKETING.

The fruit should be gathered two or three times a week if the tomato is grown as a truck crop. If used for canning purposes the harvesting periods need not be quite so close. For home markets the fruit should be allowed to ripen upon the plant. If the fruit is to be shipped long distances it should be harvested just as the ripening process begins. Only sound fruit should be marketed. In packing tomatoes for the market the fruit should be graded, and those that are symmetrical in form and uniform in size and of a like degree of ripeness packed in any one receptacle.

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