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J. H. GRISDALE, B.Agr.,
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W. T. MACOUN,
Dominion Horticulturist.

Selection and Wintering of Biennial Vegetables for Seed

By W. T. Macoun.

By the term "biennial" vegetable is meant one which takes two seasons to produce seed. The vegetable must be stored over the first winter and replanted, for seed production, the following spring. Some well-known vegetables of this class are beets, cabbage, carrots, celery, parsnips, salsify, and turnips. Seed from these can easily be grown in Canada if the vegetables to be so used are kept in good condition over the winter. Some information on the selection and storing of roots and plants intended for seed production is herewith given.

Unless a rigid selection is made, each year, of specimens which are true to type it will not be long before a large proportion of the crop will be not true to type; hence great care should be taken to select well-shaped, medium-sized roots, typical of the variety, of beets, carrots, parsnips, salsify and turnips, firm-headed cabbage true to type, firm stalked and disease-resistant plants of celery, and firm, shapely onion bulbs. If this is done and varieties are kept far enough from others so that they will not cross the crop from Canadian grown seed should compare favourably with imported seed in regard to purity, as it does in other characteristics.

The methods of wintering vegetables for seed will vary in different parts of Canada but in most places it will be necessary to give them some protection. When possible, it is best to store them in a frost-proof cellar. But, if necessary, the vegetables may be stored outside, both in small and in large quantities, except in the case of onions, which must be kept dry, and stored in a cool place where there is little or no frost.

Cabbage.—One of the simplest and most successful methods of wintering cabbage at Ottawa has been to place the plants side by side, heads up, in a trench or pit, the top of the heads being about six inches below the level of the ground, the trench being filled with soil to the bottom of the heads. About a foot of straw is placed over the heads and, when cold weather sets in, from six to eight inches of soil is put over the straw. Forest leaves, no doubt, would prove as satisfactory as straw. When winters are not very severe or where a heavy covering of snow is fairly sure, the cabbage may be simply heeled in with the heads above ground and the latter covered with leaves or straw just before severe frosts. There should be only a light covering at first to help prevent heating and rotting, and later a heavier application when the weather becomes cold.
**Celery.**—Good results have been obtained at Ottawa by wintering celery for seed purposes as follows: The plants are set in a trench deep enough so that the tops of the celery come even with the surface of the ground. The plants are set close together in the row, but each row is separated by soil. Before severe frosts, the plants are covered with a heavy layer of straw and when cold weather sets in with about fifteen inches of soil. In 1917 nearly every plant came through the winter with the heart in good condition, which is all that is necessary to ensure good crops of seed.

**Beets, Carrots, Parsnips, Salsify and Turnips.**—When harvesting, the tops are cut to within two inches of the end of the specimen, thus leaving the central shoot. This is better than cutting off the leaves close to the root. The pit in which good success has been obtained in wintering roots at Ottawa is made as follows: A hole is dug of the necessary dimensions, six inches deep, in a well-drained place. Poles are laid on the ground and covered with boards, leaving about five inches of air space under the flooring. A sink hole three feet deep is dug six feet away from the pit. An inverted trough-shaped pipe connecting this hole with the air space under the pit gives a chance for air circulation and drainage of any water that might soak in. The roots are put in bags to separate them better, though this is not always necessary, and piled three tiers high, running to a peak. A peaked roof of boards is put over the pit, high enough above the bags to allow about fifteen inches of straw to be packed in between. Over the roof is put a light coat of straw and then fifteen inches of soil. A vent hole nine inches square is left in the centre of the roof. Before hard frost the sink hole is filled with straw and covered with boards and twelve inches of soil. The covering with soil should be deferred until cold weather sets in to avoid danger of heating, and during the winter the temperature inside the pits should be taken if the pits are large. In many places parsnips may be left in the ground over winter and transplanted in the spring when better results will be obtained than if pitted, as they are very hardy.