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1	2
4	5

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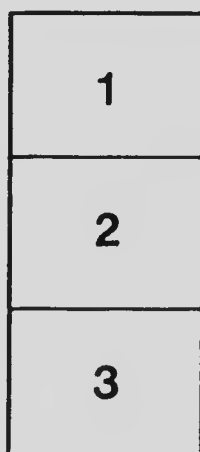
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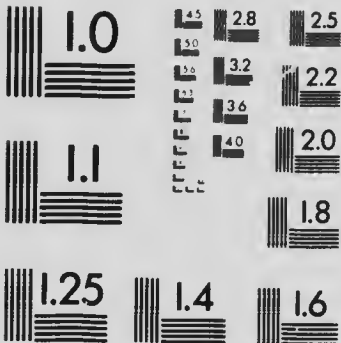
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2	3
5	6

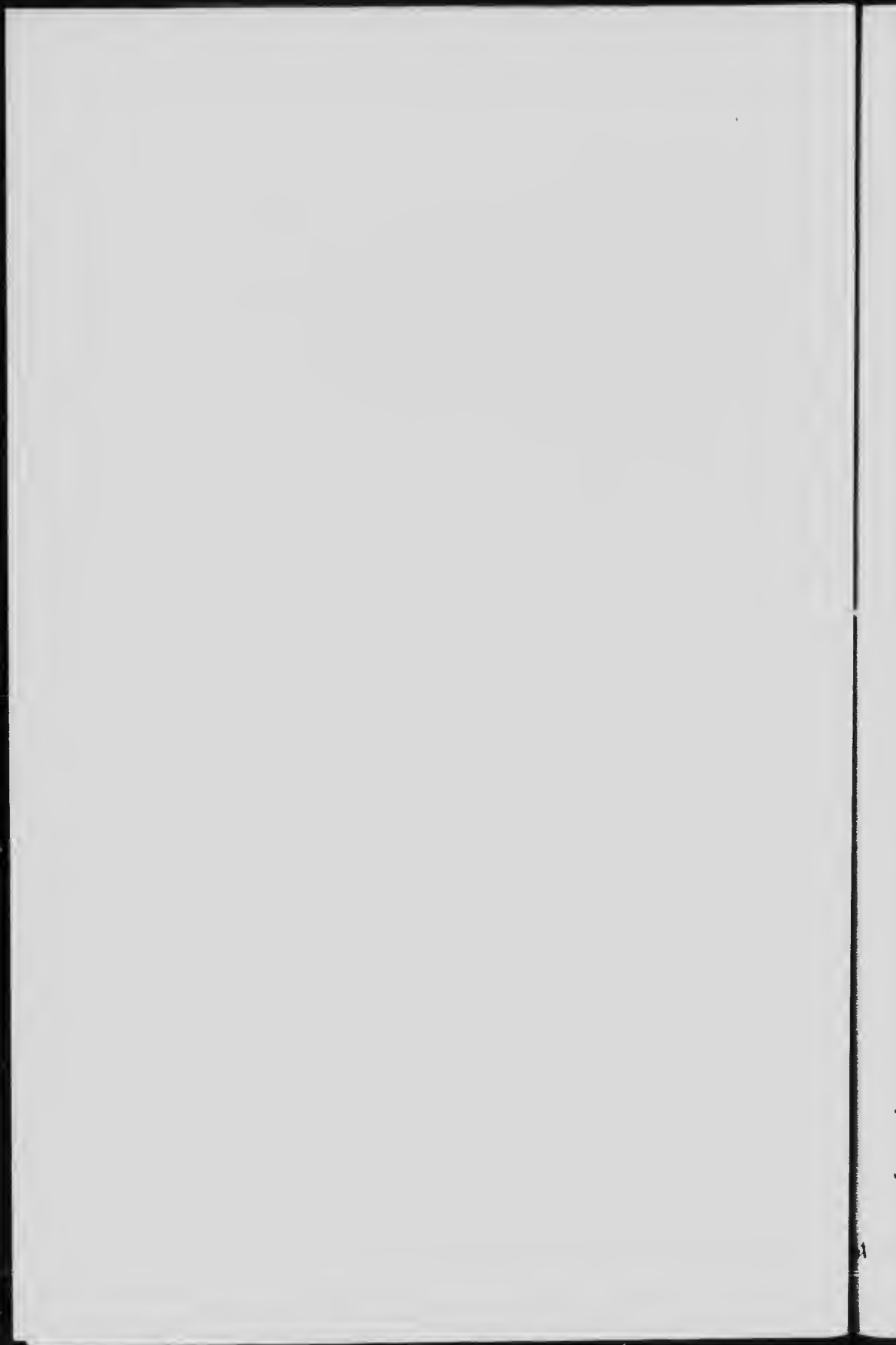
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FACTORS INFLUENCING THE PROFITABLE PRODUCTION OF POTATOES

BY

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- (1.) From imported seed.
(2.) From Ottawa-grown seed.
Both of the same variety, and strain.

DOMINION EXPERIMENTAL FARMS.

J. H. GRISDALE, B.Agr.,
Director.

W. T. MACOUN,
Dominion Horticulturist

EXHIBITION CIRCULAR No. 83.

(January, 1916.)

THE STORING OF TUBERS FOR SEED.

Potato tubers intended for seed should be stored in a cool, dry cellar, as it is important that they should not sprout while in storage. If the cellar is warm and moist the tubers will sprout, and the conditions will be more favourable for the development of diseases than where the atmosphere is relatively dry.

CUTTING THE SETS.

The sets should not be cut until required for planting, as the longer they remain out of the ground after cutting the greater will be the loss in vitality. If, however, it is necessary to cut a few days ahead, immediately they are cut cover the sets with slaked lime. It is also important that the sets be covered with soil as soon as they are placed in the drill.

In an experiment conducted at the Experimental Station, Rosthern, Saskatchewan, Breer Standard potatoes cut and planted at once gave a yield of 379 bushels per acre, while sets planted two weeks after cutting yielded only 209 bushels per acre - showing a loss of 170 bushels per acre due to reduced vitality on account of the sets being kept for two weeks after cutting.

SOURCE OF SEED.

In many cases the source of the seed is of more importance than the variety. Seed of poor vitality from a heavy-yielding variety will not produce as large a yield as seed of good vitality from a poor-yielding variety. In districts where potato tops dry up before frost, the seed is liable to be poor in vitality, due to maturing in hot, dry weather or to the premature drying-up of the tops. Where it is impossible to grow tubers of strong vitality, it will pay to procure seed from parts of Canada where the potato tops remain green until killed by frost. In some parts of the province of Quebec and eastern Ontario it is not always possible to produce potato tubers of good vitality, taking one season with another, although in some years very good seed tubers may be grown. In these districts the yields of potatoes can, in many cases, be doubled or even trebled, by annually introducing from some other part of Canada good seed—seed of strong vitality.

Here is an example from an experiment conducted at the Central Experimental Farm, Ottawa, in 1915. This is only one year's results, but it is backed up by years of experience along the same line.

In 1913 samples of potatoes were forwarded to the Experimental Station at Fredericton, N.B., and grown there until 1915. In the spring of 1915 tubers produced from the seed sent from Ottawa were sent back to the Central Farm and planted side by side with seed that had been grown at Ottawa and which originated from the same lot as the Fredericton seed.

The results of this test are given in the following table:—

Variety.	Plants appeared above ground.	Yield per acre.				Plants appeared above ground.	Yield per acre.			
		Marketable.		Unmarket- able.			Marketable.		Unmarket- able.	
		Bush.	Lb.	Bush.	Lb.		Bush.	Lb.	Bush.	Lb.
Boyer,	18 June	50	36	18	24	18 June	92	24	61	36
Gold Coin	24 "	32	36	17	36	17 "	156	12	110	..
Irish Cobbler ...	21 "	59	24	66	12	17 "	244	12	103	24
Green Mountain	24 "	79	12	44	..	17 "	220	..	118	48
Carman No. 1.	19 "	0	0	22	..	19 "	248	36	110	..

It will be noted that in every instance the Fredericton seed gave much greater yields than the Ottawa seed, showing conclusively that the seed was of stronger vitality. This is further borne out by the fact that in three out of the five varieties the plants from the Fredericton seed showed above ground much quicker than the Ottawa seed. While in this experiment the seed from New Brunswick gave better results than that from Ottawa, it must not be understood that seed from that province is the best that can be obtained. Equally as striking results have been obtained with seed from Saskatchewan and Nova Scotia and other parts of the Dominion. Districts where the growing season is favourable to the tops remaining green until they are cut down by frost will be found to be excellent seed-producing centres.



(1.) From imported seed.
(2.) From Ottawa-grown seed.

IMMATURE TUBERS FOR SEED.

Immature tubers are better than well-matured tubers for seed purposes. In order to ascertain the best stage of maturity of tubers for seed purposes, plantings of potatoes were made at different dates in 1914, and tubers from these different plantings were saved and planted in 1915. The results follow:

Two varieties of potatoes were used for this test, viz., Early Sunrise and Empire State. Empire State was planted on the 29th of May, the 10th of June, 22nd of June, and 3rd of July, respectively. Early Sunrise was planted on the last three dates. Seed from these different plantings was saved and planted on the same date, treated in the same manner and dug on the same date. The results showed that Empire State and Early Sunrise grown from the seed planted on the 22nd of June gave larger yields than the seed planted on the other dates. The seed from the plot planted on May 29, 1914, gave a 50 per cent smaller yield than that from the plot planted June 22, 1914. The seed from the plot planted July 3, 1914, gave a yield 20 per cent smaller than the seed from the plot planted June 22, 1914.

To summarize the results.—The earliest planted seed in 1914 gave the poorest yield in 1915; the next earliest planted gave a somewhat better yield, and the best yield was obtained from seed planted on the 22nd of June, 1914. These results support the immature-seed theory, and until some means are developed whereby satisfactory seed can be grown, it will pay farmers to procure seed annually from favourable districts in the Maritime Provinces, Quebec, Ontario, the Prairie Provinces or British Columbia. Of course in wet seasons similar to 1915 good seed may be produced in those districts which are usually unfavourable for the production of the best seed potatoes.

SPROUTING POTATOES TO PRODUCE EARLINESS AND YIELD.

The actual total yield of potatoes may be greatly increased by using sprouted seed. In addition, the earliness may be materially increased. The potatoes should be sprouted in sunlight so that the resulting sprouts will be green, short and stocky; not long, white and tender like those grown in the dark. A cold frame may be used to sprout them in, or they may be sprouted in the attic or any room where frost can be kept out. Spread the potatoes in a layer not more than four or five potatoes deep; leave in this manner until sprouted, when the tubers may be carefully cut and planted immediately.

Five varieties of potatoes were sprouted at Ottawa in 1915, and planted side by side with tubers of the same varieties *not sprouted*. In every case the sprouted seed germinated or showed through the ground earlier than the non-sprouted. At the first digging on July 29, the sprouted seed, in every case, gave a much larger yield than the non-sprouted seed. The total yield of the sprouted seed was in three cases 50 per cent greater than the yield from the unsprouted, and in one case it was over 50 per cent greater, while in the fifth case it was only 25 per cent greater. This showed that the earliness could be greatly increased by sprouting, and also that the total yield could be largely increased by the same operation.

VARIETIES.

From evidence at hand it seems that varieties of potatoes differ in their yields in different localities. The same varieties cannot be recommended for all districts. For the Ottawa valley and similar parts of Quebec and Ontario the following varieties have been found best adapted:—

Table Talk,
Dalmeny Hero,
Dalmeny Regent,
New Chieftain.

Where the seed is imported annually from a good potato district, the following better known varieties give good results:—

Irish Cobbler,
Green Mountain,
Empire State,
Davies' Warrior,
Carman No. 1.

For the spraying of potatoes see Spray Calendar issued free by the Experimental Farm.

For all other information concerning potatoes see Bulletin No. 49, by W. T. Macoun, Dominion Horticulturist, Experimental Farm, Ottawa, Ont.



