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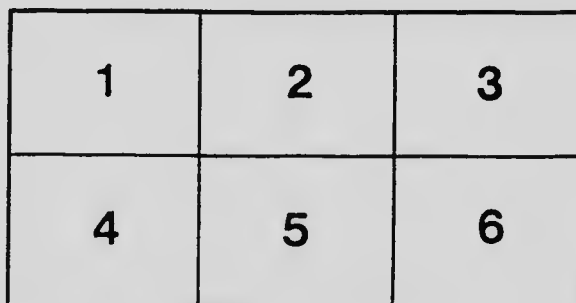
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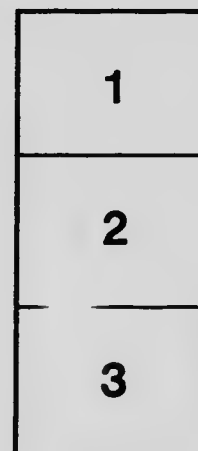
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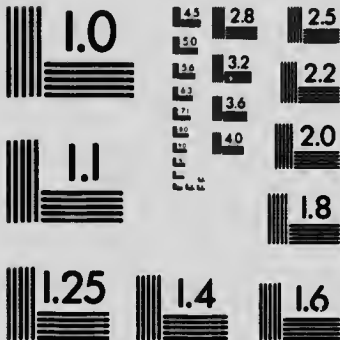
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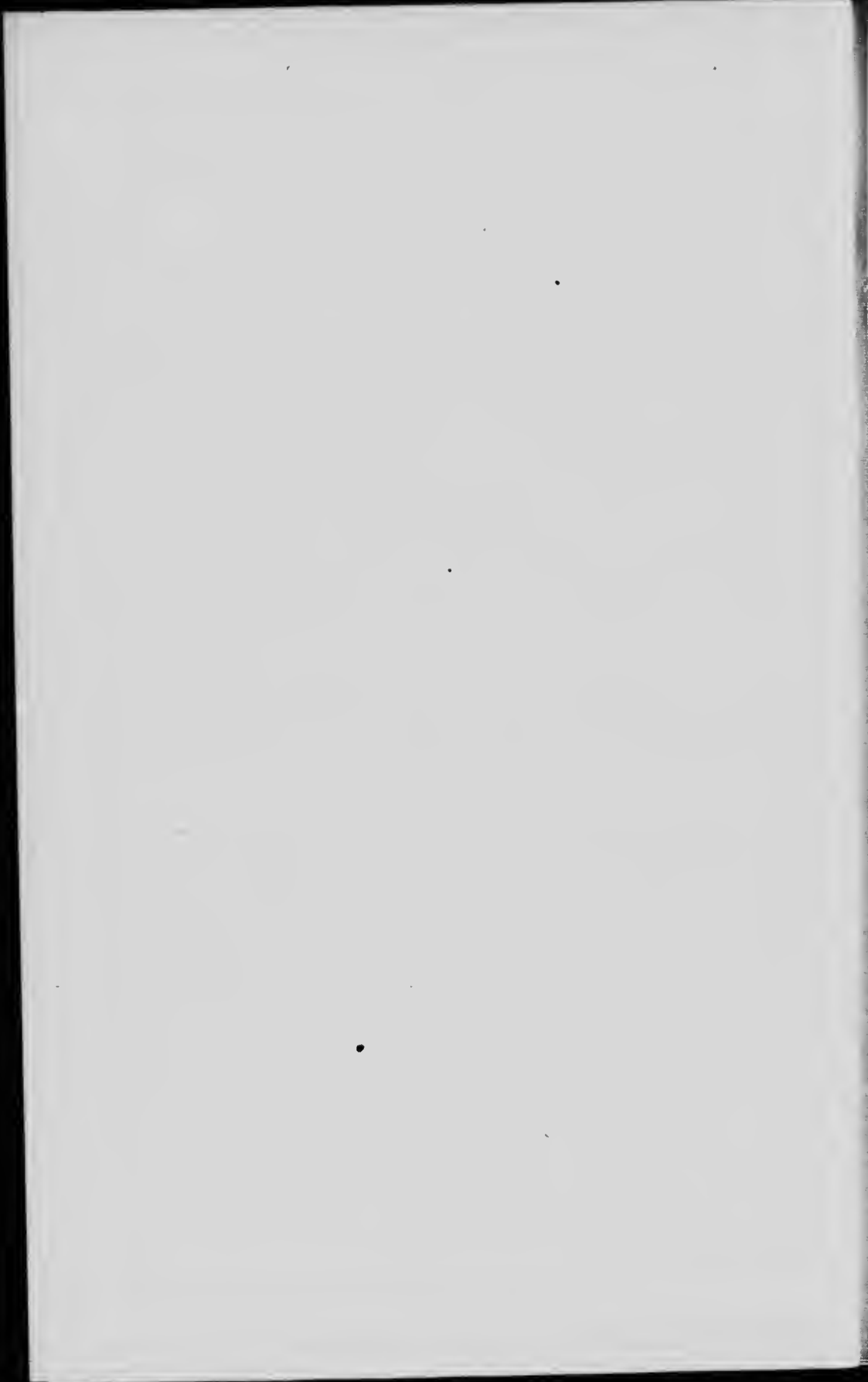
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PAMPHLET No. 21.

DOMINION OF CANADA.

CENTRAL EXPERIMENTAL FARM.

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**THE CONSTRUCTION AND CARE OF TOBACCO SEED BEDS IN THE
PROVINCE OF QUEBEC.**

BY F. CHARLAN,

Chief of the Tobacco Division.

In view of the severe spring weather in that part of the province of Quebec where tobacco growing is carried on it is absolutely necessary, in order to obtain tobacco plants ready to set out in good time, to observe certain precautions in connection with the seed beds. The use of glazed sashes for these beds is necessary, and also the construction of a fairly hot seed bed, one which can easily be protected against cold weather. However, these precautions are useless if the seed is not sown on sufficiently fertile soil.

Soil for the Seed Beds.—For this purpose forest soil, gathered the fall before and placed in a pile after having been mixed with twenty-five per cent of well-rotted barnyard manure, may be used. The pile should be protected from bad weather so that it will not freeze too deeply or be washed out by rains.

Good results are more certain, however, if a mould is specially prepared from a mixture of good light soil and well rotted manure in the proportion of one part of manure to two of soil. This compost should also be prepared well in advance.

One of the best composts is made up of turf, which has been pulled up in strips two inches deep and mixed with manure in the proportion of one part of manure to two parts of turf. The strips of turf are placed in horizontal layers, between every two of which a layer of manure is placed. In view of the fact that the turf decomposes very slowly, this compost should be prepared at least a year before it will be needed for use.

The soil for the seed beds may also be enriched by the use of chemical fertilizers which are spread on the seed bed some days before the seed is sown, at the rate of one ounce of fertilizer to each square foot of seed bed. The fertilizer is mixed with the surface soil to the depth of about one inch and then over the surface is sprinkled about half an inch of fine soil. The composition of commercial fertilizers varies greatly. Good results will be obtained from the use of nitrate of soda alone mixed with fine soil in equal parts. This mixture is spread in the same way as the complete chemical fertilizer and in the same proportions.

Hot Bed Frames.—The hot bed frame should be tight, that is, it should be constructed of good material and well made. Planks one inch in thickness will serve this purpose admirably.

The frame is more easily handled if it can be taken to pieces. By this means it can be stored when the season is over and will therefore have a longer period of usefulness. The dimensions of the hot bed frame are not important, at any rate as far as

the length is concerned, but it is not advisable that the width be more than five feet, corresponding to the length of the sashes. The frame should be placed in a sloping position, in a north to south direction, at an inclination of one inch to the foot.

Sashes.—The glazed sashes should be solid and easy to handle, so that one man can, without help, adjust them without pulling them out of shape. The best size is five feet by three feet. A larger size than this is always liable to get warped when being handled, and then there is always the danger of breaking the panes and loosening the joints.

Canvas Covers.—It is advisable to have good, thick canvas sheets available, which should be thick enough to protect the seed beds against frost at night. During the day lighter sheets can be used for sheltering the young plants from the sun.

Semi-hot Beds.—A semi-hot bed can be made in the following manner: A trench about $5\frac{1}{2}$ feet wide, 8 inches deep and as long as required, is dug in a sheltered, high, and easily drained spot, having a southern exposure.

This trench is filled with tobacco or corn stalks laid perpendicular to the length and as evenly as possible, well packed down. On this bed of packed stalks a hot bed frame is placed. A thin layer of straw is put down, on which is spread the soil for the seed bed, which has been prepared in advance, to a depth of from four to six inches. The remainder of the trench around the frame is filled in with barnyard manure, heaped up and covered by a platform made of planks.

As soon as the frame is placed on the site of the seed bed, the glazed sashes are put on, so that the stalks forming the foundation may commence to heat before the bed of compost is laid. The mould for the seed bed is left to heat in its turn, this taking place during the time allowed for the spreading of the chemical fertilizer, after which the bed is ready to be sown.

Sowing.—On a seed bed similar to the above, dry seed can be sown in the province of Quebec from the 10th to the 20th of April, according to the locality.

The surface of the seed bed must be carefully levelled and the soil made as fine as possible. Immediately after sowing the surface of the seed bed should be poked lightly with a smooth board, and watered very lightly with a watering can with very fine holes, in order not to displace the seeds.

During the first few days after sowing, it is useless to allow light to enter the bed. Care should be taken to maintain a temperature of about 80 degrees Fahrenheit in the bed, as this is the temperature most favourable to germination.

Tobacco seed is very fine and consequently difficult to spread. In order to facilitate this even spreading, it should be mixed with some coarse material, such as fine sand, in the proportion of one part of seed to 200 or 300 parts of sand.

Ventilation-Watering.—When two leaves of the plant appear above ground, a little more light may be allowed, in order to avoid the danger of the plants growing spindly. Moderate watering should be continued, and advantage should be taken of all sunny days to raise the sashes at the upper end, so as to renew the air in the beds. Care should always be taken that the temperature is not raised too much, for the young plants can easily be scorched by too much sun. Light canvas sheets may be placed over the sashes during the warmer part of the day in order to avoid this.

As the plants develop, the watering can be increased as well as the temperature of the beds. After the plant has grown six leaves there is little danger of scorching, even if the temperature rises to 90 degrees Fahrenheit, provided the bed is well ventilated. In a close atmosphere a temperature of 80 degrees may be sufficient to kill the plants.

Density of the Beds.—By the term density is meant the number of plants per square foot of seed bed. This should not be too great if the plants are not to be crowded. Good results will be obtained by sowing one-seventh of an ounce of seed to each 100 square feet of seed bed.

Thinning.—Even in using such a small amount of seed it is almost always necessary to thin the seed bed, as very often the seed, because of faulty sowing, has been distributed more thickly on one part of the bed than on another. Thinning should be done early, as soon as the plants show a little crowded on one part of the bed. This operation may easily be performed by hand, by means of a knife with a pointed blade.

Seed-Bed Diseases.—These are sometimes caused by accident while growth is going on in the seed bed, sometimes by infected soil containing germs of fungous diseases.

Accidents can be avoided by sowing thinly, thinning early those parts of the bed where the plants are too thick, watering moderately and, above all, by ventilating as much as possible whenever conditions are favourable.

Disinfection of Seed-Bed Soil.—Soil used for the seed-bed may be disinfected, after being put down, either by steam or some chemical disinfectant. The disinfectant which, up to the present, has proved most practical is formalin.

This is used in a solution containing one part of commercial formalin to 49 parts of water. After the soil has been placed in the seed-bed, it is watered with this solution, about half a gallon to each square foot of seed-bed. If this quantity is too great to be absorbed without flooding, two waterings should be given, about one-quarter gallon per square foot each time, with at least 24 hours between the two. Immediately after the watering, the soil should be covered with canvas sheets or rather thick paper, so that the formalin vapour may not escape. The canvas or paper is finally taken away twenty-four hours after the second watering, and the bed should then be well aired in order to permit the formalin vapour to disperse.

Sowing before the formalin vapour has dispersed should, above all, be avoided: the presence of the vapour may easily be detected by its odour.

SUMMARY.

The success of tobacco seed in the province of Quebec depends upon the following precautions being taken:—

1. The use of fertile and clean soil.
2. The use of well-built frames and good glazed sashes.
3. Thin sowing, in order to avoid diseases and spindly plants.
4. Abundant ventilation. Moderate watering, tepid water being used in order to avoid, as much as possible, cooling the surface of the bed.

In a general way, new soil, that is to say, soil which has never been used for growing tobacco before, should be used for seed-beds. Soil that has been used before may contain disease germs, and if the use of this old soil is unavoidable it should most certainly first be disinfected.

In the latter case, the date for sowing as indicated above remaining the same, it is necessary, in order to be sure of the complete evaporation of the formalin, the fumes of which are injurious to moistened tobacco seed, to prepare the bed a week or at least some days, sooner.

(For further information see Experimental Farms Bulletin No. 21, Second Series.)



