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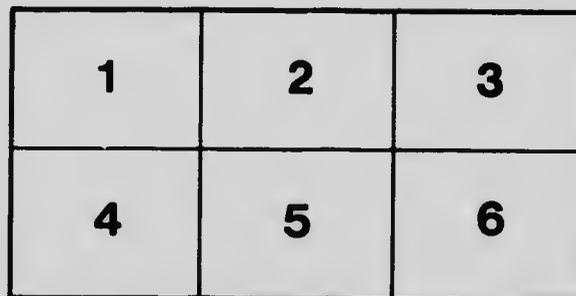
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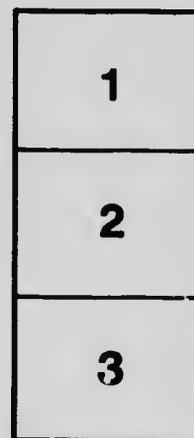
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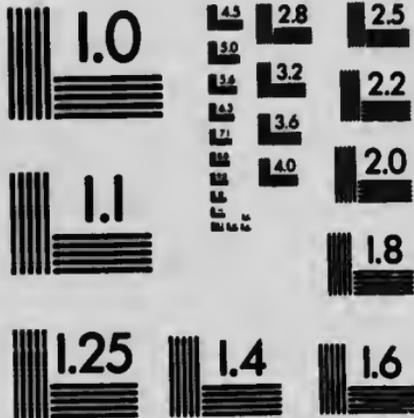
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PROVINCE OF BRITISH COLUMBIA.

DEPARTMENT OF AGRICULTURE
(HORTICULTURAL BRANCH).



ORCHARD COVER-CROPS.

IN fruit-growing sections there is not enough barnyard manure to keep up the soil-fertility, and some other method must be used. Cover-crops add organic matter to the soil, and if they are leguminous crops add nitrogen. They do not altogether replace barnyard manure, but will do more toward keeping the orchard up to a high standard of production than any other one method we can use.

Humus necessary to a Productive Soil.

The maintenance of the productive power of soils depends in a large degree upon the upkeep of the vegetable matter in the soil. Humus is one of the last stages in the decomposition of the vegetable and animal matter in the soil, and its benefits may be summed up as follows:—

- (1.) A well-drained soil rich in humus is rich in nitrogen.
- (2.) Evidence shows that, in the process of the formation of humus, acids are produced which are capable of dissolving mineral plant-food, and in all probability this is how they become available to the plant.
- (3.) Humus increases the water-holding capacity of light soils by consolidating them and making them less porous. It acts as a soil sponge.
- (4.) It ameliorates heavy soils, making them less liable to bake and puddle, so that proper aeration is secured.
- (5.) Humus generally increases the warmth of the soil. The dark surface draws more heat than the lighter-coloured one.
- (6.) Humus furnishes food material for bacterial action in the soil

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Alfalfa as a Cover-crop.

Alfalfa as a cover-crop in the Interior has only met with a limited amount of success. Generally speaking, it has not proved to be a good cover-crop for the average soil and orchardist. Some of the chief reasons for this are as follows:—

(1.) When planted it is usually put in as a permanent cover-crop, and has proved successful on a deep soil with an abundant supply of moisture during the summer months. The success on these soils has led many to sow alfalfa on very light soils where the moisture-supply was already deficient.

(2.) Some orchards have been transformed into hay-fields, the alfalfa receiving more care and thought than the orchard.

(3.) Too much of the crop is usually removed from the land.



A rye cover-crop.

(4.) The land in many of the orchards in irrigated districts was not properly levelled before the orchard was planted, and it is impossible to irrigate satisfactorily, even though there is an abundant supply of water available.

(5.) In districts where water is not too plentiful too many growers have sown the entire orchard to alfalfa.

(6.) Enough care has not been exercised in putting in irrigation-furrows, and many places have them too far apart to even water the trees with clean cultivation. In many cases there are only two irrigation-furrows between two rows of trees, and in others there are no furrows provided.

To grow alfalfa as a cover-crop there must be a good supply of moisture during the summer months, enough to supply the trees and the crop of alfalfa. On light soils none of the crop should be removed, but should be left and disked in thoroughly.

In orchards alfalfa should be sown at the rate of from 6 to 10 lb. per acre, and irrigation-furrows put in at the time of planting not farther than 4 feet apart, and on light soils not more than 3 feet. In young orchards a strip of 4 or 5 feet should be left clean cultivated on each side of the tree-row, and this increased each year as the orchard grows.

Red Clover.

Clover is an excellent soil-builder, and if used as a cover-crop will supply nitrogen and organic matter to the soil. The same



Ploughing in a rye cover-crop. Crop has been allowed to grow a little too long for best results.

difficulties are encountered with clover as with alfalfa and must be guarded against. As a rule, clover should never be left in an orchard for more than two years without being turned under. Special care should be taken with irrigating, and on light soil none of the crop should be removed, and not more than one crop on average soils. Sow about 10 lb. to the acre. Mice, gophers, etc., are usually numerous in orchards where there is a sod-crop and must be fought against.

Annual Cover-crops.

Clean cultivation in the early part of the season followed by a cover-crop later is the most up-to-date and best method of handling

orchard soils, and can be used with good results more generally than any other system of soil-management.

There are two main types of cover-crops that can be grown, the legumes and the non-legumes. The legumes are all those plants which belong to the same family, as the peas, vetches, beans, clover, etc., and the non-legumes all plants not included in this family. Legumes are more valuable than the non-legumes, because they are capable of gathering nitrogen from the air, and when ploughed under increase the nitrogen content of the soil.

Non-leguminous Crops.

Rye is one of the favourite non-legumes of the fruit-growers of this Province. It grows readily on most soils, catches easily, is



An intercrop of mangels in a Kelowna orchard.

hardy, and furnishes a large amount of greenstuff to plough under in the spring, besides furnishing an excellent mulch during the winter months. Sow about 90 lb. to the acre.

Winter wheat where rye is difficult to obtain is a good cover-crop. Sow about 90 lb. per acre.

Buckwheat is a good cover-crop on heavy land, but does not afford much winter protection.

Turnips have been used to a limited extent. When ploughed under they are valuable in liberating potash. Not good as winter protection.

Rape is a good cover-crop sown at the rate of about 6 lb. per acre.

Leguminous Cover-crops.

Hairy vetch is grown with good results in this Province. It is extremely hardy, will withstand hot summer drought, and is a fast grower. Because of these features and its ability to gather nitrogen from the air, it is, perhaps, the best cover-crop grown. It should be sown at the rate of 20 to 25 lb. per acre.

This crop is not used nearly as much as the benefits derived from it would warrant. This is partly due to the high price of seed. This difficulty can be overcome by leaving a strip of plants between the trees. In the fall they can be scattered about and worked into the ground. As vetch is a heavy seed-producer, this should give sufficient seed for a good cover-crop. A better way still is to let a small patch grow and harvest the seed from it.

Crimson clover where it grows well is an excellent cover-crop, but is not hardy in the colder sections. It should be sown at the rate of 15 lb. to the acre.

There are many other plants that make excellent cover-crops. Any plant that will make a good growth in the fall and early spring so as to give a large amount of organic matter to turn under is a good crop to grow.

Time to sow the Cover-crop.

The usual time to sow the cover-crop is from the first to the middle of August under most conditions. Where trees are not coming into bearing as soon as they should because of excessive growth, sowing down the orchard to one of the sod-crops is a good plan, or sowing the cover-crop earlier in the season. This will tend to check growth and throw the trees into fruiting.

Sowing the Crop.

Many make the objection that the crop will not catch in the late summer. This may be true on soils very devoid of organic matter, but where a proper system of soil-management has been maintained in the early part of the summer there will be little trouble in getting any of the crops mentioned to grow. If a seeder can be secured, the seed can be sown below the mulch where the soil is moist and the percentage of germination will be increased. In irrigated sections the crop can be irrigated to start it if the soil is too dry at the time it is sown.

Ploughing down Cover-crops.

Plough the crop under just as soon as there is a good amount of greenstuff to turn under. Do not wait too long for the fast-growing

crops, such as rye, or they are liable to get ahead and give trouble. In non-irrigated districts get the crop under as soon as possible, so that it will not dry the soil out too much in the early summer.

Victoria, B.C., issued January, 1919.

This circular has been prepared by B. Hoy, Assistant Provincial Horticulturist, at the request of the Horticultural Branch.

Copies of this circular may be obtained free of charge on application to the Horticultural Branch, Department of Agriculture, Victoria, B.C., or from local branch offices of the Department.

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