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A SUCCESSFUL FARMER'S VIEWS ON CROP ROTATION. HIS PRACTICE.*

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Different Conditions Require Different Rotations. A Knowledge of the Principles of Rotation Will Enable One to Select the Right Rotation. An Exposition of these Principles. What Mr. Northcott Does on His Own Farm.

WHY is it that more farmers do not follow a regular rotation of crops? Most of us farmers follow a change of crops of some sort. We do not as a rule grow the same crop on the same land year after year. The change we make, however, is not as a rule made in order to follow any definite plan or rotation.

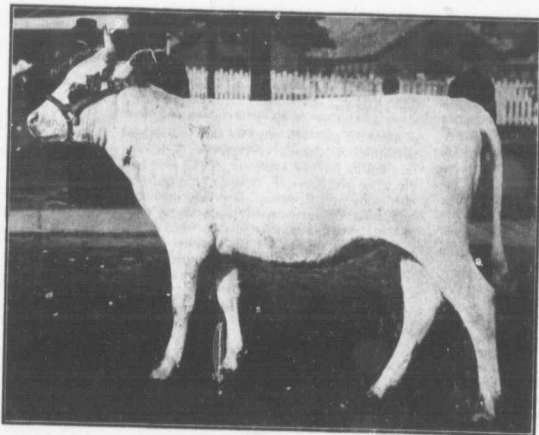
Rotation may be defined as the growing of profitable crops in a regular succession so that the growing crop will make good use of the available plant food and still leave the soil in such a shape that better crops may be grown year after year.

There are no hard and fast rules that can be laid down why any particular rotation should be followed on any or every farm. Each farmer must work out his own rotation to suit his own farm. The lay of the land, the kind of soil, its fertility, freedom from weeds and the kind of crop to be grown we have to take into consideration when deciding on a rotation. In order to study out the rotation most suitable in any particular case, it is advisable to study the principles of rotation and then apply them to our case.

A FOUNDATION PRINCIPLE

While all farm crops are made up of the same chemical elements, the proportion in which they use these elements is different. Our chemical knowledge of soils is very incomplete. It has, nevertheless, been thoroughly established that a fertile soil must contain certain substances to permit any crop to come to maturity upon it; these substances are potassium, calcium, nitrogen, phosphorus, magnesium, sulphur, iron and probably chlorine. Let any one of these elements be absent from the soil (or its moisture) and crops fail to develop upon it. The three chief elements are potassium, nitrogen and phosphorus. These must be in available forms, so as to be of use to plant life. The proportion of these elements required by different crops varies widely. A crop of oats, turnips, potatoes and corn will take from the soil the following weights of these elements:

	Bus. an acre.	Nitrogen. Lbs.	Phosphorus. Lbs.	Potassium Lbs.
Oats ...	60	65	24	62
Turnips..	600	68	43	176
Potatoes.	150	29	11	414
Corn ...	12 tons.	67	26	89



A Grand Good One—First in a Strong Class at the Recent Canadian National Exhibition

Spicy Lamb—35.58—(Aug. 26, 1910), bred by Alex. Hume & Co., Menie, Ont., and exhibited by Mr. Hume at Toronto this year, where she captured first in the class for Ayrshire heifer, 1 year old, out of milk. Her sire is Spicy Sam, Jr. (Imp.)—26.52—dam, Highland Lass—12.91. As in painting out the hands the artist rather marred the striking beauty of this animal. Note her excellent lines, substance, depth and constitution. She is but one of many top-notch good ones bred by Alex. Hume & Co. —Photo by an editor of Farm and Dairy.

As the different crops differ in their chemical composition it is necessary, if the best results are to be obtained, to apply a fertilizer that will meet the needs of the crop to be grown. For instance, a large application of barnyard manure applied to a field of oats would likely cause an excessive growth of straw at the expense of the kernel. If we had made the same application to a root or corn crop the yield in these crops would have been satisfactory and the land left in good shape for a crop of oats the following year.

The range of roots and the power of assimilating plant food differs in different crops. The cereal crops are generally shallow rooted. Corn roots, clover, etc., are deep feeders; hence a surface feeding crop may follow deep feeders without deep cultivation. In fact plowing root land is often a bad policy as it turns up weed seeds to grow in the following crop.

The most important point in the rotation is the

frequent growing of leguminous crops, especially clovers. If, for example, we are growing cereals continuously the soil will become deficient in humus and nitrogen. Clovers supply humus and nitrogen.

Nitrogen is the most expensive element required for plants, and also the hardest to retain in the soil; but clovers, by means of the bacteria on the roots, obtain the most of their nitrogen from the air. They not only use this nitrogen for developing the clover plant, but nitrogen is stored up in the roots and becomes available for the crop to follow. Clovers, therefore, do not need nitrogenous fertilizers.

Some cereal crops are easier feeders than others. Oats and rye are able to obtain a good growth where wheat would starve.

DISTRIBUTE THE WORK

A third principle in planning our rotation is the difference in the length of time it takes different crops to come to maturity. To be economical in fertility and labor we want a variety of crops. Spring grains mature in a short time, root and corn crops later in the season and hay and clover fills in the remainder of the growing season. Rotation as a means of destroying weeds, fungi and destructive insects must be considered. Weeds are a curse to the farming community. But where regular cultivation is not followed and they cause cultivation to crops which would not otherwise be given they are a decided benefit. Hood crops need cultivation. Where these crops are grown we have a good chance to clean the land without a summer fallow.

Fungus diseases, such as potato scab and those causing rot, will live in the ground over winter and will be detrimental to that crop if grown on the same ground from year to year. Insects, such as white grub and wire worms, which live in the ground, are killed by being interfered with through a regular rotation.

LARGER CROPS EASILY POSSIBLE

Rotation will take from a field a wider range of ingredients. For example, we generally get a good crop of grain after potatoes or clover. The cereals need a good deal of nitrogen and phosphoric acid. The potatoes only use a small percentage of these ingredients, while the clovers use a large amount of nitrogen, but they obtain the most of this from the air.

Rotation reduces the risk of the farming business. When a rotation is followed we not only get larger crops, but should a season be unfavorable for any particular crop, it will be favorable

*Mr. Northcott's farm secured second place in District No. 1 in the first year of the Interprovincial Prize Farms Competition conducted by Farm and Dairy. Mr. Northcott's rotation was especially good. His idea on crop rotation will be of value at this season of the year, when our farmers are already beginning to plan for fall plowing and the rotation of next year.