FARM AND DAIRY & RURAL HOME

We Welcome Practical Progressive Ideas. The Recognized Exponent of Dairying in Canada

Trade increases the wealth and glory of a country; but its real strength and stamina are to be looked for among the cultivators of the land.—*Lord Chatham*

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Feeding the Soil That Feeds the World

We Can Make Our Labor More Effective by Keeping Our Fields Fertile—*By "Oxford"*

No one appreciates more fully than does the farmer the seriousness of the world's food situation, for on one else is so closely in touch with the labor situation, the seed situation, the farm implements situation and all the other obstacles in the way of "normal", let alone "increased" production. And while the city press and governments generally are talking themselves black in the face in their efforts to urge us on to greater production, we farmers are quietly studying how we may make the best use of what labor we can get on our farms in keeping up as nearly as possible to our normal production.

In studying out a plan for my own farm, it has occurred to me that the best way for me to utilize the labor at hand is not in an attempt to crop more land, but rather, by fertilizing the acres that I can cultivate to advantage, to reap a bigger yield per acre of ground worked. Of course there is doubtless a point past which it does not pay the farmer to force yields, but I think there are few farms in Ontario which could not profitably be made to produce larger crops per acre by the judicious use of fertilizer, whether barnyard manure, green manure or the commercial commodity.

I have been looking up for my own information in this connection some experimental results in an endeavor to find out what type of fertilizers I might most profitably employ on my own acres, and it strikes me that perhaps a digest of what I have found of interest might also be of value to some fellow farmer, who also is out for maximum production off his farm, through the use of fertilizers. One of the plans for keeping up the fertility of land which has appealed most strongly to me is the "Illinois way" which comprises the following:

1. Use legume crops in rotation and return the manure to the soil, or plow under for green manure once in four or five years. 2. Apply limestone to acid soils, previous to seeding legumes, usually about two tons per acre, once in four years. 3. Supplement the manure for legume crops used as green manure with rock phosphate or other phosphate fertilizer, the amount depending upon the quantity of manure used. Where grain crops are removed, the application should be about 1,000 lbs. rock phosphate every fourth year.

Essential Plant Food.

The essential foods for plants which are liable to be lacking in soils are nitrogen, phosphorus, potash and calcium. Nitrogen is the most important constituent of plant food, not only in its relation to the yield of crops, but also in the feeding value of these crops for animals. This element is used heavily by growing crops and precautions must be taken to see that the supply of nitrogen in the soil does not become depleted. The chief source of nitrogen in the soil is obtained through growing clovers or alfalfa. It is also supplied from barnyard manures and from such fertilizers as nitrate of soda.

Phosphate fertilizers are particularly beneficial to grain crops. They may be applied to young clover or plowed under with manure, previous to the growing of grain crops. The acid produced in the decay of manure favors the solution of phosphate rock. Good results are not secured from this fertilizer when applied alone. In many sections where soil surveys have been carried on, this element has been found most deficient. Acid phosphate is a fertilizer made by treating the rock phosphate with sulphuric acid. This makes the phosphorus more quickly available for plant food. The great increase in the price of sulphuric acid this last couple of years has made this form of phosphate fertilizer very expensive.

Potash is essential for the best growth of plants. Its presence in a soil will give the stems of grain the necessary strength to prevent lodging. Potash is abundant in normal soils, but is usually in an insoluble condition, so that plants are unable to use it. In the presence of lime and decaying organic matter, the insoluble potash compounds are gradually dissolved and the potash is made available for plants. Legumes, manure and lime in a soil will usually bring about a supply of available potash. This element is practically unobtainable in the shape of commercial fertilizers at present. The potash salts that were formerly used as fertilizer came largely from Germany. This supply, of course, is cut off.

Methods of Increasing Fertility.

Where grain crops are grown and sold off the farm the soil will become depleted of those elements necessary for profitable crops unless some arrangements are made for their return. The essential plant food elements may be applied to the soil in one of three ways, by the application of live stock manure, through the growing of legume crops and green manures, and by the use of chemical fertilizer. Of these three plans, choice should be made in the order given.

Live stock manure is the cheapest and most popular fertiliser used on the farm. It is the most important single source of fertilizer for the soil. It is superior to other fertilizers because of its greater and more lasting benefits. Manure is one of the most efficient means at the disposal of the farmer to permanently improve his soil. No other fertilizer possesses to so great a degree, the power of restoring worn soil to productive use as does this.

Legumes and Green Manure.

The most important source of supply of nitrogen to the soil is that obtained through the growing of clovers or other legumes. These plants are peculiar in that on their roots live little colonies of bacteria which have the power to convert the nitrogen of the air into nitrates, which may be used by the plants as food. These plants not only supply a great deal of nitrogen from the roots and stubble left after a crop is taken off, but much of the nitrogen contained in the portion harvested will be returned to the land in the form of manure.

Some farmers practice plowing under green manure in order to keep up the supply of humus in the soil. This is usually a less economical source of supply of fertility than manure. It is usually much more profitable to feed the crops and return the manure. One drawback to green manuring is that the best parts of the field produce the heaviest crops for turning under. Thus the portions of the field that are in the most need of this manure get the least. Pasturing off a field of clover before plowing is usually the most economical method of adding fertility to the soil. All the roots and some of the tops are left for plowing under and 40 to 50 per cent. of the portion eaten is returned to the land. The higher the price of feed the more a farmer loses in plowing under green manure. In either manuring or plowing under green manures, humus is added to the soil. This is one substance which cannot be added by commercial fertilizers. Humus gives soils their dark color and makes them warmer because more heat will be absorbed by a dark colored soil.

Commercial Fertilizers.

Unless properly used in combination with manure and legume crops, chemical fertilizers are usually but temporary in their effects. Where the crops are grown and hauled off the farm the soils become depleted. Complete fertilizers are very often bought and applied to such soils to bring them back to normal. Usually the mineral elements will not be found equally deficient, and it may be necessary to apply only one or two mineral foods along with the nitrogen added by the legume rotation. Phosphorus and lime are most likely to be needed on the average soil.

Ground limestone is being largely applied to soils the last few years. The increase in the amount of limestone used has doubtless been found due to the increase of legume culture. It has been found that clovers or alfalfa will not do well in an acid soil. Lime therefore, is applied to such soils as are intended for legumes. Lime is not only valuable in sweetening the soil, but also in improving its physical condition. It is especially valuable on clay soils in that it causes the particles to flocculate, that is, it makes the clay more friable and less likely to "puddle" in the working. Ground limestone may be applied in the manure, but quick lime should never be mixed with manure, since it causes a rapid decomposition of the organic matter and a loss of nitrogen.

So much for the knowledge—now for the application. What are we going to do about it? Grain crops are high in price, the demand for farm products was never greater. We have therefore an unparalleled opportunity to not only increase our farm profits, but also to help out in the most humane of all causes, the feeding of a hungry world, if we can increase or even maintain the production from our farm. It would be well for each of us to give a little thought to the state of fertility of the acres we are cultivating. Are they growing as much as they should? If not, they should be given the necessary stimulants to make them produce. With the price of labor as it is, we have no place for a "slacker" acre in our cultivated area.

The Wonderful Earth

If one has drained his land, and plowed it, and fertilized it, and planted it, and harvested it—even though it be only a few acres—how he comes to know and to love every rod of it. He knows the wet spots and the dry spots, the warmest and most fertile spots, until his acres have all the qualities of a personality, whose every characteristic he knows. It is so also that he comes to know his horses and cattle and pigs and hens.

It is a fine thing, on a warm day in early spring to bring out the beehives and let the bees have their first flight in the sunshine. It is a fine thing to watch the cherries and plum trees come into blossom, while all the remainder of the orchard seems still sleeping. It is a fine thing to see the cattle turned for the first in the spring into the green meadows. It is a fine thing, one of the finest of all, to see and smell the rain in a corn field, after weeks of drought. How it comes softly out of gray skies, the first drops throwing up spatters of dust and losing themselves in the dry soil. Then the clouds sweep forward up the valley, darkening the meadows and blotting out the hills, and then there is the whispering of the rain as it first sweeps across the corn field. At once what a stir of life! What rustling of the long green leaves. What joyful shaking and swaying of the tassels! And have you watched how eagerly the grooved leaves catch each early drop and, lest there be too little rain after all, conduct it jealously down the stalk, where it will soonest reach the thirsty roots? What a fine thing is this to see!

One who thus takes part in the whole process of the year comes soon to have an indescribable affection for his land, his garden, his animals. There are thoughts of his in every tree, memories in every fence corner. Just now, the fourth of June, I walked down past my blackberry patch, now come gorgeously into full white bloom, and heavy with fragrance. I set out these plants with my own hands. I have fed them, cultivated them, mulched them, pruned them, staked them, and helped every year to pick the berries. How could they be otherwise than full of associations. They bear a fruit more beautiful than can be found in any catalogue, and stranger and wilder than in any learned botany book.—David Grayson.