

**FERTILIZER TALK**

**HOW GREEN MANURES ACT**

**Turned Down Green Crops Do Not Add to the Supplies of Plant Food, But They Make It Easier For the Growing Crops To Get What there Is in the Soil.**

When a crop of rye or a sod of grass is turned down into the soil and left to decay, there is added to the soil in addition to the elements taken from it by the crop, that part of the crop which was taken from the air. Green plants are usually about 80 per cent. water. The dry matter is mostly cellulose or starch, and cellulose and starch are made up of carbon, hydrogen and oxygen, elements which the plant obtains from the air and of which there are unlimited supplies. In other words, when this grain or grass crop is turned down, there is added to the soil no more of the three plant foods commonly lacking than was already in it. Yet every farmer knows that most land is greatly improved by having vegetable matter of any kind mixed with it.

The reasons for this are largely to be found in what has been said of humus and the physical condition of the soil; for these green crops as they decay supply the soil with humus, enable it to hold more moisture without becoming too wet for plants to do well, retain this moisture better in a dry time, furnish food for the soil bacteria to feed on, and by putting the soil in better condition, enable the roots of the crop that may be growing on it to gather larger supplies of food. That is, while the turned down green crop does not add to the supplies of plant food in the soil, it makes it easier for the growing crops to get what are there.

It does this, not only by keeping the soil in better filth and holding more moisture for the use of the plants, but also, as has been said, by furnishing more food for the soil bacteria. These exceedingly minute plants are what causes the vegetable matter in the soil to decay. They draw the food for their growth from it, and as they die leave this food in such shape that it can be dissolved in the soil water and used by the crops planted on the land. Their growth and death also help to make more available some of the other foods, since as has been stated, it is only when this food is in such form that it can be dissolved by the soil moisture that it

can be of service to the farmer. LEGUMES ADD NITROGEN AS WELL AS HELP BACTERIA.

But while the crop of rye or grass does not add to the supply of nitrogen, phosphoric acid or potash in the soil, there are some crops that do add largely to its supply of nitrogen. These crops are what we call legumes, and include the clovers, alfalfa, soy beans, all our garden beans and peas, the lupines and other crops less well known. The different locust trees and the redbuds are also legumes.

These legumes get much of the nitrogen used in their growth from the air, so that when they are returned to the land on which they grew, or even when only the roots and stubble are left, there is a distinct increase in the soil's supply of nitrogen. This nitrogen is obtained from the air by the aid of certain bacteria which live upon the roots of the plants in question. These bacteria have the power of taking the nitrogen needed for the growth directly from the air in the inter-soil spaces, and as they die, this nitrogen may be used by the plant upon which they are growing.

By pulling up a healthy cowpea or clover plant, little lumps, or nodules, may be seen on its roots. These nodules are the homes of millions of these nitrogen-gathering bacteria, and by their size and number one can form an idea of the work the crop is doing in adding to the nitrogen contents of the soil.

Sometimes none of these nodules will be found, for the bacteria that live on the various plants do not seem to be present in all soils. When these bacteria are not present, that is, when the nodules are not found on the roots of the crop, it seldom thrives, as it should and, of course, does not add to the nitrogen in the soil.

WHY WE INOCULATE LAND. Different kinds of bacteria live on different plants; and one legume may be well supplied with these nodules on land where some other crop shows no trace of them. Thus the bacteria that live on the roots of the cowpea seem to be abundant all over the South, while those that grow on crimson clover are not present in many soils. In such cases, it is necessary to "inoculate" the soil—that is, to supply it with these bacteria before it can be of value to the farmer as a gatherer of nitrogen from the air. This inoculation may be done by spreading soil from a field where the bacteria

are known to exist over the land in which they seem to be lacking or by the use of "cultures" of these bacteria. These cultures are simply preparations, usually of some jelly-like substance, in which the bacteria have been grown in great numbers. Ordinarily the soil method of inoculation is the surest and best.

SUMMARY. Green manures, then, are crops of any kind returned to the soil on which they grew. They may, of course, be applied to other soils, and they may be allowed to mature or to die before being mixed with the soils, or be used while still green. They (1) supply humus, (2) improve the texture of the soil, and (3) in the case of the legumes, add to it nitrogen, which is taken from the air.—Progressive Farmer.

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**THE JOY OF REMEMBRANCES.**  
**Homely Hints for Blessing Every Day Living.**

Rebecca Harding Davis in September St. Nicholas. There are probably today millions of worthy young folks in this country who are beginning their lives with the honest intention to "get on" in business and in society, to do the best they can for themselves and the world. They are earnest American boys and girls with the American zeal for progress, and the honorable principles which make progress worth while.

But is this all that is necessary? Is "getting on" to be the only object in their training for this life, and the life to come?

A devout old clergyman of New England, in old age, said to his wife: "Ah, my dear, the times in our life that I like best to remember now are the days when we went camping and fishing together in the woods. We learned to know each other in those dear old frolics."

Whoever we may be, we cannot afford to leave such frolics out of our lives. An idle day in the woods will bring us no money, but, it may be, will leave with us a new thought of happiness.

There are things, too, which should belong to us, not as bread-winners, but as human beings, which we are apt to neglect in fitting up our homes and designing our lives.

One of the most important, perhaps, is music. No house should be without an instrument of some kind, if it is only a cheap accordion. We never may become skilled performers; but music is the natural voice of a human soul, and it does not need a costly grand piano or Stradivarius for its expression. The girls and boys of a family may never be great musicians, but they should have their piano or violin. However tuneless, it will give them relief from ill humor and wretchedness, and perhaps sometimes, as it did to Carlyle, "lead them to the edge of the Infinite, and bid them look down into that."

No home, too, should be without its animal intimates—cats, dogs, or birds. The life of every girl and boy is unconsciously made deeper and broader by contact with these mysterious dumb brothers of ours. Without it no man is as human and tender at middle age as he would have been if he had had their love and companionship in his childhood.

Another uplifting factor in the life of a family, though one which earns not a penny, is the habit of keeping anniversaries. Crowd as many into the year as it will hold, and fill them with significance and joy. Let the birthday of no great man and no member of the household be forgotten. Nothing helps more to lift our lives to higher levels than the story of great men and women. A boy or girl is made stronger and happier for life because in one home his or her birth is celebrated every year as a gift direct from God; and the old grandmother finds her last years less lonely when loving hearts still thank God that long ago she was born into the world.

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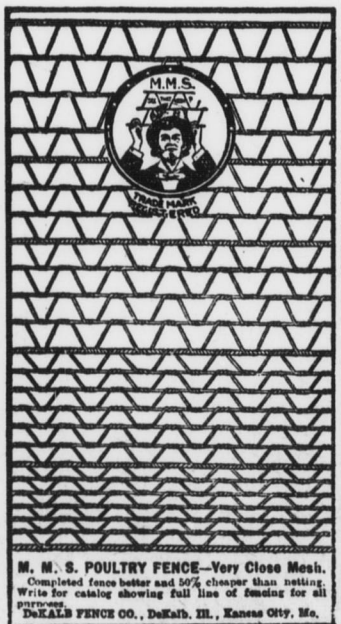
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