

# THE PROGRESSIVE FARMER.

THE INDUSTRIAL AND EDUCATIONAL INTERESTS OF OUR PEOPLE PARAMOUNT TO ALL OTHER CONSIDERATIONS OF STATE POLICY.

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## AGRICULTURE

### THE INOCULATION OF SOILS.

Superintendent McNair Writes of an Interesting Test Made at the Southern Pines Farm.

Editor of The Progressive Farmer:

That leguminous plants, such as clovers, peas, beans, alfalfa, etc., benefit the soils on which they grow is a fact that was established years and even centuries ago, but the reason for their beneficent action was not definitely known until the researches of Hellriegel and others in the last quarter century demonstrated the existence of "host plants" upon their roots which render benefits to their host and receive benefits in return.

All that has been written in recent years about the ability of leguminous plants to gather nitrogen from the air and about the "warts," "lumps," "nodules," "tubercles" or call them what you will, that are found upon their roots amounts simply to this:

1. That certain minute microscopic plants known as "bacteria" attach themselves to the roots of leguminous plants and multiply, forming colonies which are popularly called "nodules" or "tubercles."

2. That these colonies of bacteria gather some of their nourishment from their host, or the plant to which they have become attached; but, in return, pay for their keep and more too by gathering nitrogen from the air that is in the air spaces of the soil, and passing it on to their host for the benefit of the latter.

The leguminous plant is the host and the bacteria are guests, yet the guests work for the host and keep him supplied with that most expensive and valuable plant food—nitrogen.

Now it is the law of heredity that like produces like. Wheat produces wheat, potatoes produce potatoes and bacteria produce bacteria; but if there are no bacteria in the soil there can be no multiplication of bacteria.

If the leguminous plant (host) finds no bacteria (guest) in the soil it must do without the atmospheric nitrogen which those guests labor to supply.

It so happens that there are many soils which have no bacteria or which have so few that they are of little use during the first year that the crop occupies the soil; or, perhaps the soil may be well supplied with cowpea bacteria but it may have no

clover bacteria, or vice versa. Where such absence of bacteria occurs, the proper thing to do is to introduce them from an outside source and let them multiply.

In the fall of 1901 some plots of crimson clover, hairy vetch and alfalfa were sowed at the Experiment Farm at Southern Pines on our extremely sandy soil and fertilized with potash and phosphoric acid but were not supplied with nitrogen nor was any attempt made at that time to inoculate the soil with bacteria appropriate to these plants. The result was that the great majority of plants were stunted and yellow and showed every evidence of nitrogen starvation and an examination of their roots revealed the fact that they were destitute of nodules. Occasional plants, however, showed more vigor, grew to a good size and had the dark green color characteristic of plants which are well supplied with nitrogen; and on these plants plenty of nodules were found.

It was quite evident that the bacteria in our soil were few and far between; and though they might multiply and fill the soil in the course of a few years, we sought to obtain quicker results by the process of "inoculation."

The "process" is very simple and consists in getting soil from an old field on which the desired crop has been grown and which is known to contain bacteria and spreading it broadcast over the new field.

To inoculate for crimson clover we obtained soil from a field on which a rank growth of this crop had been produced for several consecutive years and in which bacteria were known to exist.

We likewise obtained soil from an old vetch field and an old alfalfa field to inoculate for these two crops respectively.

Not knowing the proper quantity of soil to apply we decided to err, if at all, on the liberal side and spread it at the rate of two tons per acre for each of the crops named.

The application was made the latter part of August and the first sowing of seed was on September 2nd, and was followed by weekly sowings until early in October.

The present appearance of these plots is very encouraging, the inoculated plots being far ahead of the uninoculated plots and examination reveals "nodules" only on the inoculated plots.

The full result will not be known

till next Spring, but it is safe to predict a successful outcome.

Recent experiments in Illinois in inoculating the soil for alfalfa in quantities ranging from 320 to 1920 pounds of old soil per acre show that all of the inoculated plots yielded better than the uninoculated plots but that the best results were from plots receiving the heaviest application.

It is desirable that further experiments be carried on in this State to the end that the best method of growing these and other legumes be established.

We can, of course, grow the cowpea to perfection without inoculating the soil because nearly all cultivated lands contain the necessary bacteria, but we desire, also, to grow the fall sown legumes which mature in the spring and which can be harvested before it is time to sow cowpeas. This is not a difficult matter on soils which have plenty of available nitrogen, but on soils which are poor in nitrogen it will prove a benefit to inoculate them.

A. D. McNAIR.

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### HARRY FARMER'S TALKS.

#### XCIX.

Editor of The Progressive Farmer:

The peanut or ground pea is supposed to have been imported into the United States from some tropical country, perhaps Africa. While it grows in the ground it has its beginning above the surface. The leaves look very much like those of red clover. The blossom is a bright yellow and is not unlike that of the cowpea except it is smaller and of a different color.

#### VARIETIES OF PEANUTS

There are several kinds, but only five varieties are grown much in this State. The common peanut is about 1½ inches long and about ¾ inch in diameter. The pods have about 2 kernels each. This is the peanut usually seen on the market. Then there is the Virginia peanut which is nearly twice the size of the ordinary kind. These two varieties spread out over the ground. The limbs lying close to the ground and some times grow to the length of five feet.

The next one most extensively cultivated is known as the Spanish peanut. The pods of this variety are very small but are nearly always well filled. The plant has leaves and blos-

soms put like other kinds, but grow nearly erect, only falling down when matured. This is the earliest variety and makes the fewest "pops" or faulty peas, and is used for fattening hogs. It is not considered a good pea to eat.

The next variety (called Texas) that has been cultivated to any extent is a large pea something like the Virginia pea but has from one to four kernels in the pods. This variety contains more oil than any other. The plant has an upright growth like the Spanish and the thin skin or covering of the kernel is red, while that of others is buff or brownish color. This variety is not considered good to eat on account of the oil and flavor of the cow pea.

The latest is known as the Baldwin pea. It resembles the Spanish in growth and size excepting the number of kernels to the pod. It contains from 2 to 4 kernels to each pod and more of the latter number than that of the former. It was originated by Mr. John R. Baldwin who lives in the upper part of Columbus County near the line of Bladen County.

#### EXTENSIVENESS OF THE PEANUT INDUSTRY

Peanuts play a larger part in the commercial operations in the South than most farmers are aware of. They are the staple crop of several counties around Wilmington, N. C., besides all the sandy plains along the coast from Georgetown, S. C., to Norfolk, Va. The first named city used to be the largest market for peanuts in the world but Norfolk is now giving her a tight race.

In this latitude they can be planted in March or April and be ready to use in August. The usual plan is to gather the pods while green and boil in a very weak brine for two or three hours when they will be ready for eating. After they fully mature and dry they have to be roasted. When cooked, place some sand in a pot and stir until it is dry and hot, then put the peanuts in and stir until the thin skin or husk will rub off easily, remove the pot from the fire and stir until they cool off and then you will have them at their best.

There are many devices on the market for roasting and keeping them warm so as to have them at their best. A peanut soon becomes stale after being roasted, and is not good.

There was large peanut oil factories running a few years ago, but we do not hear anything said about them now.

HARRY FARMER.