Home Course In Modern Agriculture

VII.—The Selection of Seed

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SINCE corn is the principal crop grown over so large a section of the United States it is important that we learn as much as possible regarding the best methods of producing it. The average yield of corn in the United States in 1907 was only 23.7 bushels per acre. Many of the best farmers are able to obtain an average yield of sixty to seventy bushels per acre year after year. There is no secret in their methods. They are simple enough to be applied to every farm in the corn belt. There is no reason why the average yield per acre should not be fifty bushels or more instead of less than half that, as at present.

In preparing to raise a maximum crop of corn there are two main factors to be considered—the soil and the seed. Of these two the first is probably the more important. We have already learned how the plant obtains food and water from the soil. The first step in preparing the soil for a corn crop, then, is to see that there is a plentiful supply of plant food on hand. This we can do by using barnyard manure liberally and by following a consistent system of rotation that will equalize the demands made on the soil and keep up the supply of nitrogen and humus.

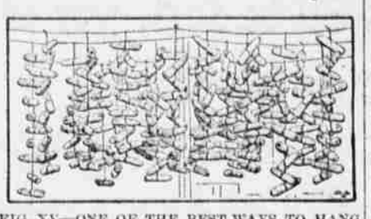

FIG. XV—ONE OF THE BEST WAYS TO HANG UP SEED CORN.

The next point is to see that the soil is in such condition that the roots will have little difficulty in branching out to secure the needed plant food and water. Thorough plowing, disking and harrowing will make the soil fine and mellow, so that the roots will have little trouble in obtaining all the plant food they can use, provided it is there at all.

The water supply can be regulated to a considerable extent by tile drainage and by keeping the surface loose to check evaporation. The temperature of the soil is also an important factor in hastening germination and early growth. Drainage, cultivation and the maintenance of a plentiful supply of humus will aid greatly in securing a warm seed bed by planting time.

With a warm, well prepared soil containing sufficient quantities of plant food and water the next question that comes up is regarding the kind of seed to put into that soil. Almost any kind of seed will grow and produce a fair crop under favorable conditions. What we are after, however, is not a fair crop, but an extra good one.

The seed of different strains of corn varies greatly in its ability to produce yields. In the spring of 1905 the Iowa experiment station gathered seed from nearly a hundred different sources and planted it on the station grounds. Under conditions that were as nearly alike as it was possible to make them the yields from the different strains varied from thirty-one to eighty bushels per acre. This variation shows that a large share of the improvement in corn production must come through the breeding of high yielding strains.

It is not safe to ship in seed corn from a distance. Corn is very sensitive to changes in climate and soil. To obtain the best results the work of breeding must be done for each locality and to some extent for each farm.

A method of improving seed corn that will surely result in some improvement and one that has simplicity to recommend it is that of selecting a number of the best ears each year and planting them in a field by themselves or in one corner of the main field. By selecting the best ears from this breeding plot each year to plant next year's breeding plot and using the rest of the good ears to plant in the main field some improvement can be effected. The weak point in this plan, however, is that the yielding power of an ear cannot be told from its appearance. Neither is it possible to prevent inbreeding by such a method.

To avoid these difficulties the "individual ear" plot has been devised. This should preferably be at least forty rods from the nearest cornfield. Where this is impossible a strip along the south side of a field of the same variety may be used. As the prevailing July and August winds are from the south, very little pollen from the main field will blow over on the breeding plot.

Each row in the individual ear plot is to be planted with the kernels from a single ear. As any fair sized ear will plant a row forty rods long, this is a convenient length for the plot. Select from 50 to 100 of the best ears you can find among your seed corn and plant them in as many rows across the plot. The work can be done with a planter if care is taken to clean the seed boxes out thoroughly each time across. The cultivation given to the plot should be the same as that which the main field receives.

The time for special treatment comes when the tassels begin to appear. We have already learned that inbreeding is weakening and that cross fertilization develops strength and vitality. In order to prevent inbreeding in the individual ear plot the tassels on every alternate row should be pulled out as soon as they appear. In order that these may be removed before they shed any pollen it will be necessary to go over the field every other day for a week after the first tassels start. At the same time any tassels from weak, barren or spindling stalks in the other rows should be removed. In this way only pollen from healthy, vigorous stalks is allowed to mature. Thus the ears on the detasseled rows, being cross fertilized and having only strong, healthy male parents, have a much better chance of producing large yields when planted than would ears picked from the general field.

The most important point, however, is the selection of high yielding strains that is made possible by having the ears planted in individual rows. When harvesting time comes the produce of each row should be husked separately and weighed. It will be found that there is a great difference in yield. The highest yielding rows, provided the corn is of good quality, should furnish seed for next year's breeding plot. The rest of the good seed ears from the detasseled rows should be planted in a small field, known as the "multiplying plot." The best of the seed from this multiplying plot can be used to plant the general fields and for sale.

By continuing this breeding process from year to year a strain of corn may be built up that will far outyield the ordinary corn of the neighborhood. In addition to the increase in yield which will result on your own farm, a trade in seed corn may be built up that will add materially to the year's profits. There are many variations in the plan of breeding here outlined, but the essential point in all of them is to select the best yielding individual ears and to prevent cross pollination as much as possible.

After the seed corn has been picked it should be stored in such a manner that it will pass through the winter uninjured. The hints in regard to seed storage as given in article No. 6 should be followed.

Some time toward the close of winter the corn should be tested. For a preliminary test a hundred kernels may be taken from as many ears in different parts of the room. If the corn has exceptionally strong vitality the kernels may all germinate. In case some of the kernels fail to grow or any considerable number show weak sprouts each ear should be tested separately in order that the weak ones may be discarded. The method of making this test has been described so many times in agricultural papers and bulletins that it will be unnecessary to give it in detail here. It simply consists in placing several kernels from each ear in a corresponding square in the germinating box. In this way the vitality of each ear may be readily determined.

Shortly before planting time the ears should be shelled and run through a seed corn grader to take out the butt and tip kernels and divide the rest into even grades. The next step is to block up the planter and run through a sample of each grade, changing plates until a set is found that will drop the required number of kernels practically every time. If this is done and well tested seed used a good stand will almost certainly result.

Avoid too deep planting. All that is necessary is to have the seed well covered with moist soil. If this can be done without putting it down more than an inch or two, so much the better. Since the plant cannot begin to digest and use the plant food of the soil and air until it has unfolded its leaves it is plain that the less soil it has to push through before it can spread out its leaves and get to work the sooner it will commence to grow. Deep planted seeds often so nearly exhaust the plant food in the endosperm before they reach the surface that they are never able to develop into strong, healthy plants.

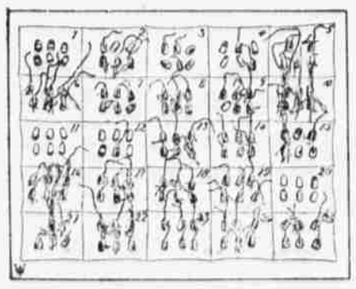

FIG. XVI—A GERMINATION BOX SHOWING THE RESULTS OF AN INDIVIDUAL EAR TEST.

After planting the aim should be to keep the soil in the same fine tilth it was in at planting time in order to provide large feeding ground for the roots and prevent the escape of capillary moisture.

A solid gold fob with C. M. engraved on it. Finder please bring to the Republican office.

a-22-a29 C. M. MARQUIS.