

**IMPROVING THE YIELD OF CORN.**

Address of Frank G. Tarbox, Jr., Seed Corn Selection Day, Lancaster, Monday March 6, 1916.

Improving the Yield of Corn. It is hardly necessary for me to tell you how important it is for us to increase the yield of corn in South Carolina. For the past ten years our average yield per acre has been only 16.2 bushels. If this average was taken from our best farmers and our improved land then it would be much higher. There have been numbers of reported high yields made by members of the corn clubs and others, all of them being made on improved land and on highly fertilized land. To me the question of improving our corn yields at present lies much in soil improvement as in securing highly bred seed. Our improved soils will make from 35 to 50 bushels per acre now, without any better seed. Our soils, taken as a whole are poor, and unless we fertilized our crop the average yield would be only about one half of what it now is.

In 1914 South Carolina planted 1,975,000 acres in corn, producing 36,538,000 bushels, or an average of 18.5 bu. per acre. The state of Wisconsin planted 1,725,000 acres, producing 69,862,000 bu. or an average of 40.5 bu. per acre. South Carolina planted 250,000 acres more than Wisconsin, and yet made 33,324,000 bu. less corn. There are probably several things which cause such a difference, but those which are most important to us are, the soil, the labor, and the seed.

Wisconsin has a rich glacial soil, far richer than we can ever make ours, and this one thing is probably the chief reason for the high yields made in that state. If we take fertilizers out of South Carolina where would our farmers be? Our high yields are made by enriching our lands and by the intelligent use of commercial fertilizers. All of the high yields reported in the past few years are the direct result of improved soil conditions, and fertilizers. Should we discontinue the use of commercial fertilizers our state average would scarcely be one half of what it now is. Our first step then is to improve our land.

Cotton is our money crop, and it is but natural for this reason that more care and attention is given to that crop. We cannot borrow money on corn as we can on cotton. The negro tenant knows it, and so why does he want to put in any extra time on his corn. The result is that the best is given to cotton, the best land, the best working, and the most fertilizer. Corn is either neglected or is put on the poorest land. It is often allowed to grow up in weeds and grass. Considering the number of negro farmers in the state, can we be other than surprised that our average yield per acre is no larger? Were all of our farmers white, then we could expect to see our yields increased. The state of Wisconsin has no negro farmer to contend with, and they pay more attention to the corn crop, both as to planting, and cultivation, as well as to seed selection. It is true that it is more of a staple crop with them than with us. We should take steps to make the negro farmer pay more attention to his corn crop. If necessary we should see that he gets good seed, plants it on well prepared land, and then works it as it should be.

Moisture is the final controlling factor in crop production. The most productive soils, no matter how well cultivated, or highly bred the corn, cannot make a crop without water. South Carolina as a rule has ample rain-fall to make a good crop of corn. As the rain-fall varies, and as it is distributed throughout the season, so will the yield vary. We, as a rule, have plenty of rain and by building up our soils we can easily double our present yield.

There are very few varieties of corn in our state, that can be said to be well bred. It takes time and hard work to get highly bred corn. Marlboro, Williamson and Garrick are probably the varieties which have received most attention. According to information received from the county agents Marlboro is more widely grown. There seems to be no one variety predominant

ing in any one county. In a great many cases the variety is a local one, which has been grown for years without any effort at selection or improvement. In such sections we should develop strains of well bred corn and exclude mongrel seed. As long as so many varieties are grown in a section it will be very difficult to develop and to maintain a variety of well bred corn. The small farmer cannot do very much in the way of breeding corn, as he has not sufficient area for an isolated breeding patch. Such work must necessarily be done on the large farms. As soon as a variety has been started in a section and steps taken to keep it pure and well bred, then all farmers should grow that variety so as to make it easier to keep it pure. Live stock men always advise a system of community co-operation in raising any kind of live stock, and we in growing corn should likewise establish a co-operative system for establishing a strain of corn. All of the breeding work with the corn should be in the hands of a large farmer who has the intelligence and facilities for doing the work. To him we should look for good seed for that section.

In selecting a variety to start with, the best local variety should be used. Seed brought in from any great distance will take two or three years to get acclimatized. If the local corn is very badly mixed, or is not very good then outside corn can be brought in to get a start, but where possible a local strain should be selected. We want a variety which will give us the most corn, whether it be a prolific one or not. Once the variety is chosen do not change. Decide on the variety, and the type, and stick to it.

There are very few farmers who do their selecting in the field. Far too many of them take their seed from the crib. We must remember that to breed good corn, and to make intelligent selections we must deal with individuals. By this I mean individual plants in the field, as there is the place to make selections and not in the crib. All selections should be made before a single stalk of corn has been cut or a bale of fodder has been pulled. This is necessary for two reasons, heredity and environment. In making crib selections we cannot tell whether the ear is better on account of its environment or whether that particular ear is better because of inherited qualities. We want those ears, from stalks which show that their good qualities are due to heredity rather than to environment. All selections should be made from stalks grown under the same conditions or as near to it as possible. When we select ears from good vigorous stalks in the field we know that they are good on account of their inherited qualities and not so much on account of environment. No selections should be made unless the stalks from which the ears are pulled have had the same chance as the others. Extra space between the plants, due to poor stand, will make large ears. These we do not want, for it is due to the environment of that particular stalk. It has received more food, more sunlight, and more moisture than others, and it will naturally produce larger and better ears.

**Improving Corn by the Ear to Row Test.**

The importance of selecting good seed corn and taking good care of it cannot be over estimated. Experiments show that well bred corn suited to its climatic conditions will produce from 10 to 100 per cent. more than seed corn now used by the average farmer. Rich lands, thorough preparation, and good cultivation are very important, but no soil will produce the best yield without good seed. Most of our leading farmers have already leaned to pay more attention to careful seed selection, and have as a result of it increased their yields.

To be able to make the best selections we must know something of the parents of the ears, or at least one of the parents. As the live stock breeder studies each individual and selects only the best, so must we work with individuals as well. No two plants are exactly alike. No two have the same powers of making corn. Our object is to select the best and give them a tryout to see which have the

most desirable characters. In raising pigs, some sows will give larger and more vigorous litters than others. Some corn plants are stronger and more vigorous than others, and the ears from such stalks will give larger yields. As the sow which gives but small, weak litters of pigs is gotten rid of, so should all ears which do not show good producing powers be done away with. To do this, field selection and a test of each ear selected must be done.

No corn should be gathered for seed until it is mature. It is a good plan to go through the field before time to make the selection and study the different stalks and become familiar with the type to be selected. By all means decide on the type and stick to it. The character of stalk will be our first consideration. Then the environment of that particular stalk. There is danger of selecting from stalks which have had a better chance than others. This should not be done. Select only from stalks which have an even chance. Select from the average land and not from the best. The stalks should be strong, with wide rather than narrow leaves, and tapering gradually from the ground to the tassel. The shank should be of medium size and just long enough to permit the ear to turn down as the ear approaches maturity. Tall, weak stalks should be discarded, as the ears on such stalks are usually high up, making the corn more difficult to pull, as well as making the stalk more easily blown down by the wind. An attempt should be made to select stalks with ears not more than shoulder high. One should not overlook the suckers. They produce no corn worth while, they merely use up food and moisture which otherwise could go to increasing the vigor of the stalk and the size of the ear. At least twice as much corn should be selected than will be needed. If the corn is to be cut and shocked, or the fodder pulled, all selected stalks should be marked and the corn pulled when it has matured.

After the selected corn has been pulled and taken to the barn, there is still much to be done. Not only must we see that it is taken care of through the winter, but each ear must be examined carefully for a further and closer selection. It should be stored in a dry, well ventilated, room out of reach of rats and mice, and watched closely to see that the weevils do it no damage. It is well to put all the ears in a tight box and fumigate them before putting them away, and at intervals, if necessary, to keep out the weevils.

Before planting time each ear must be closely studied and all defective ones thrown out, only the best saved. First select the ear which most nearly represents the type wanted, as to shape of ear and type of kernel, and then with this ear in our hand, compare all the others with it, one at a time, until a sufficient number have been selected. To make the work easy, a long table, or a wide board, of sufficient length to spread the ears out in rows should be used. There will be a wide variation between some of the ears, but by no means vary from the chosen type more than possible.

In examining the ears more closely there are several points to be considered. First, trueness to type, shape, length and weight of the ear; size of the cob; size and shape of the grain. The shape of the ear should be a cylindrical and gently tapering from butt to tip. The rows straight and with the least amount of space between the rows. The length should be of a good average or better. The grains should be wedge-shaped, thick and plump, and with a smooth dent rather rough or shrunken. Ears with deep grains give the largest per cent of corn to cob. Grains which are too sharply wedge-shaped are usually loose on the cob. A few grains should be taken from each ear to see if there is any space between the grains of rows near the cob. Those which have too much space should be discarded. There should be as little space between the kernels as possible.

After a careful study has been made of each ear it is ready to be prepared for planting. If for any reason the seed looks bad a germination test of each ear should be made.

Now comes the time to test out each ear in the field. Each ear should be numbered. The number of ears to be used in the ear to row test will vary with the width of the rows and the number of ears one wishes to plant. After each ear has been numbered, nub and tip all of them. Then shell off one half the rows from each ear, keeping the seed of each separate. Put it into a small bag and number it to correspond to the ear from which it came. The remainder left on the cob should be carefully stored and kept until the crop has been harvested. The seed from each ear should be planted in a row to itself, on uniform land, under average conditions, and all given the same treatment. Planting should be done by hand, as in this way a more uniform distance between hills will be obtained. About two grains to the hill should be sufficient. The rows should all be the same length, and the corn thinned to the same number of plants per row. As the corn approaches maturity a careful study should be made of each row and notes made of any which look promising. At maturity each row must be gathered separately and weighed to see which row yielded best. Care should be taken that each row have the same number of stalks otherwise one is liable to misinterpret the results. Only the highest yielding rows are to be saved, and all the ears of the row compared to the parent ear which was stored away in the spring. As soon as it has been determined which rows gave the most satisfactory results both as to yield, uniformity and trueness to type, then those ears from which the seed came must be saved for planting, in an isolated place next spring. The others may be thrown away or the seed saved from the highest yielding rows for the general crop.

The object in saving half of each ear is on account of the corn getting badly mixed in the field with poorer yielding corn. One row may yield at the rate of 20 bu. per acre while the row right next to it may yield at the rate of 50 bu. per acre. This pollen from the low yielding rows will fertilize the plants of the high yielding row and so instead of having the high yielding seed we planted, it will be crossed with a poorer yielding strain. And so it is necessary for us to keep one half of each ear until we see how it produces.

The remnants of the high yielding ears must be planted in separate rows as before, and at tasselling time the tassels removed from one half of each row, alternating one with the other. This means that the breeding patch be at least 40 rods from other corn, in order that it does not receive pollen from other corn. A more careful study should be made of each row than before and a still more rigid selection made. Selections should be made for the next year's breeding patch only from the tasseled plants; of the highest yielding rows. Selections should be made as before, taking the same points into consideration. Enough plants should be selected to furnish sufficient ears for the breeding patch the following year. The rest of the seed may then be picked over and that from the best rows planted in the increase patch. By the third year one should have seed for sale. Each year the best ears from the best plants of the highest yielding rows should be selected for the breeding patch.

The remnant system of the ear to row test and the detasselling of one half of each row at alternate ends is the best way to obtain good seed. By this method we obtain seed which has not been crossed by pollen from poor yielding ears. All of the ears planted in the breeding patch are high yielding ears and there is no chance of pollen from low yielding plants mixing with the good seed. The ear to row test alone will do a lot toward increasing your yield but with a little extra trouble we can get much better results and the labor taken in detasselling in the breeding patch will pay well for the trouble. Our object is to increase our corn yields. To do so we must improve our land, improve our seed and in some way encourage the negro farmer to pay more attention to his corn crop. By doing this we can grow more corn and better corn.

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—New York Sun.

**Andaman Islands Custom.**

Natives of the Andaman islands show respect for the memory of deceased relatives by preserving their teeth and wearing them as necklaces.