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CARE OF THE CORN BREEDING PLOT

by

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The care of the corn breeding plot during the summer is a very important part and a very large part of corn breeding work. It is by properly caring for the crop that we learn more of the habits of the plant and learn more of giving the plants the best of care. The early cultivation of the breeding plot cannot be over-emphasized. It is only by the very best of care that one can expect to be successful with a corn breeding plot, and of all care given during the year, the early cultivation is by far the most important.

A. EARLY CULTIVATION:

"The main object of cultivating the corn is to destroy weeds and incidently to conserve moisture and liberate plant food. It is cheaper to do as much of the cultivation as possible before the crop is planted. There is much difference of opinion regarding the advisability of harrowing corn land after the corn is sprouted. If the corn ground is harrowed to cover the planter marks and thus make it more difficult for gophers to find the seed, immediately after the corn is planted, it will probably be sufficient cultivation until the corn rows can be seen. However, if cold rainy weather comes on after the corn is planted, preventing prompt germination and growth, it will be well to harrow the field again rather than to allow the weeds to get started and the ground to become hard.

"Corn should never be harrowed just as it is coming through the surface as it is very easy to destroy ten per cent or more of the plants by a single operation at this time. It is often advisable to practice "Blind cultivation" if the harrow is not effective, as for example, when a heavy rain

occurs immediately after planting and crusts the soil. This method consists in cultivating the rows, before the corn comes up, by following the marks made by the planter wheels.

"The weeder or spring tooth harrow is a very desirable implement to use under certain conditions. It is not very effective if the ground is hard, but where the ground has been harrowed or blind cultivated the weeder will kill many small weeds and leave the soil soft and mellow on top of the hills so that the plants can easily push their way out.

"The weeder is better than the harrow for going over corn after the plants are a few inches high, as the teeth are long and there is less danger of covering or pulling or injuring the young plants. Some types of weeders are made with sharp spring teeth, so that they are effective even though the ground is crusted. The weeder offers a very quick method for the first cultivation, the twelve foot size cultivating three or four rows at a time". S. D. Bul. #181.

If the seed bed has not been thoroughly prepared, or if heavy rains have packed a well prepared seed bed after the corn has been planted, the first cultivation should remedy this condition as far as possible. Medium deep cultivation, either before the corn is up, or as soon as the rows can be seen is advisable in such cases. This should be followed by a deep and close cultivation each way by the time the corn is from 4 to 6 inches high.

EXPERIMENTS DETERMINING EFFECT OF WEEDS UPON CORN YIELDS.  
AVERAGE OF EIGHT YEARS.

Experiments conducted at Illinois Experiment Stations are very interesting as regards the effect of weeds upon the growing of corn. With the same preparation of seed bed, corn produced as an eight year average, 7.3 bushels per acre where the weeds were allowed to grow, and 45.9 bushels per acre where the weeds were kept down without any cultivation of the soil. The relative comparison is graphically represented below:

45.9 bu.

(Where weeds were kept down.)

7.3 bu.

(Where weeds were allowed to grow.)

The most important factor in the growth of a crop of corn on fertile soil with a well-prepared seed bed in humid

regions is the killing of weeds. Weeds deprive the plant of moisture, light, and food, all of which are absolutely necessary for the production of crops.

"Weeds are much better foragers than most cultivated crops; and it would be just as reasonable to expect a lamb to thrive among a bunch of hogs as to expect corn to compete with weeds". Illinois Bul. #181.

#### B. THE CORN PLANTS IN THE ROW:

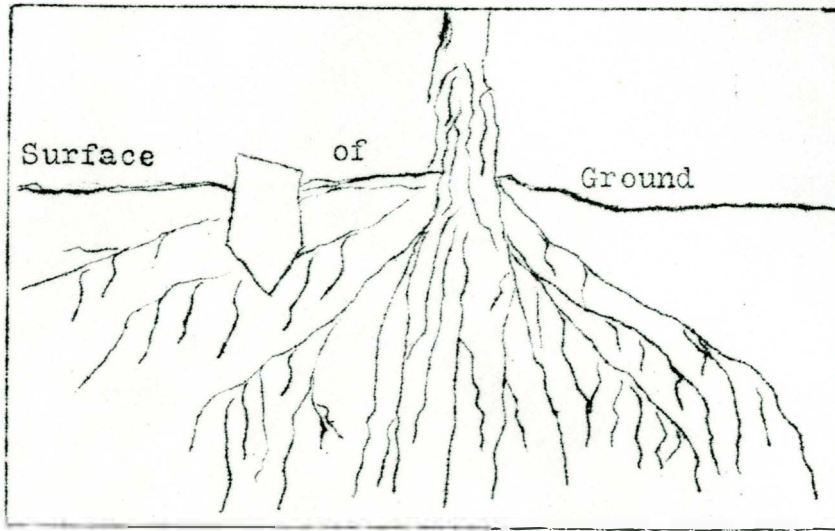
It is very necessary that in breeding plot work that the rows be uniform in every way. Many corn breeders plant the corn for a breeding plot thicker than necessary with the intention of thinning out after the corn is up. The thinning out of the breeding plot should not be done until after the first cultivation. A number of plants are buried by the early cultivation. If the thinning out of the rows is done when the plants are about 6 inches high, an almost accurate stand can be obtained.

The rows should be thinned to three stalks to the hill. In case a hill has only two stalks left at thinning time the hill next to it, or nearby, may have four stalks thus evening up the average number of stalks per hill.

The thinning out should be done with a knife instead of pulling the plant out by their roots. If plants are pulled out the roots of the remaining plants will be badly disturbed.

#### C. LATE CULTIVATION:

The late cultivations as with the early, are mainly for the purposes of killing weeds and conserving the moisture. Shallow cultivation will accomplish both of these purposes. When the corn is large enough to shade the ground thoroughly, or nearly so, there is little loss of water from the soil by evaporation. Also at this time, the corn roots almost completely occupy the upper soil.



Root system of corn plant late in summer being cut by cultivator shovel when run to deep.

Deep cultivation close to the plants late in the season will decrease the yield. When corn plants wilt in the hot sun soon after cultivation, it is a sign that the cultivator is being run too deep.

The frequency of cultivation depends largely upon the character of the soil, the condition of the seed bed at planting time, and the weather conditions during the growing season. Cultivations should be given as needed to keep the surface of the soil mellow and free from weeds. Any cultivations beyond this are unnecessary and only increase the cost of production.

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