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5,000,000 Bushels of Corn Lost by Cultivating Too Deep.

In *The Progressive Farmer* last July our Dr. Butler estimated that the farmers of North Carolina lose 1,000,000 bushels of corn a year by cultivating the crop too deep after the root growth becomes extensive, and for the five States of *The Progressive Farmer's* territory 5,000,000 bushels is probably not too high an estimate of the loss. "Deeper plowing before planting, shallower culture after planting"—this is the great need. Through the courtesy of the *Chicago Farmers' Review* we are glad to print herewith a photograph showing the development of the root growth of a young corn plant—a picture pointing its own moral—and a striking article by Mr. D. C. Wing, one of Missouri's most progressive farmers, telling how shallower culture side by side with deep culture increased his corn yield five bushels per acre; in Mississippi experiments the difference in favor of shallow culture was 9.8 bushels. But here is Mr. Wing's article based on his own experience, and we commend it to our readers:

If we knew as much about the root of the corn plant as we know about its aerial part and the ear we should secure larger yields per acre, for this knowledge inevitably would do away with deep cultivation, which is fundamentally wrong.

At last I have been able to secure a photograph which shows to my satisfaction the root development of a corn plant six weeks old. Of course some of the roots were broken off in getting this plant out of the ground, but it will be seen that it still is pretty generously supplied. In length the principal roots of this plant range from two to five feet. Imagine what a mass of corn roots is in a field when the plants are six weeks old or older!

The More Broken Roots the Harder for the Plant to Grow.

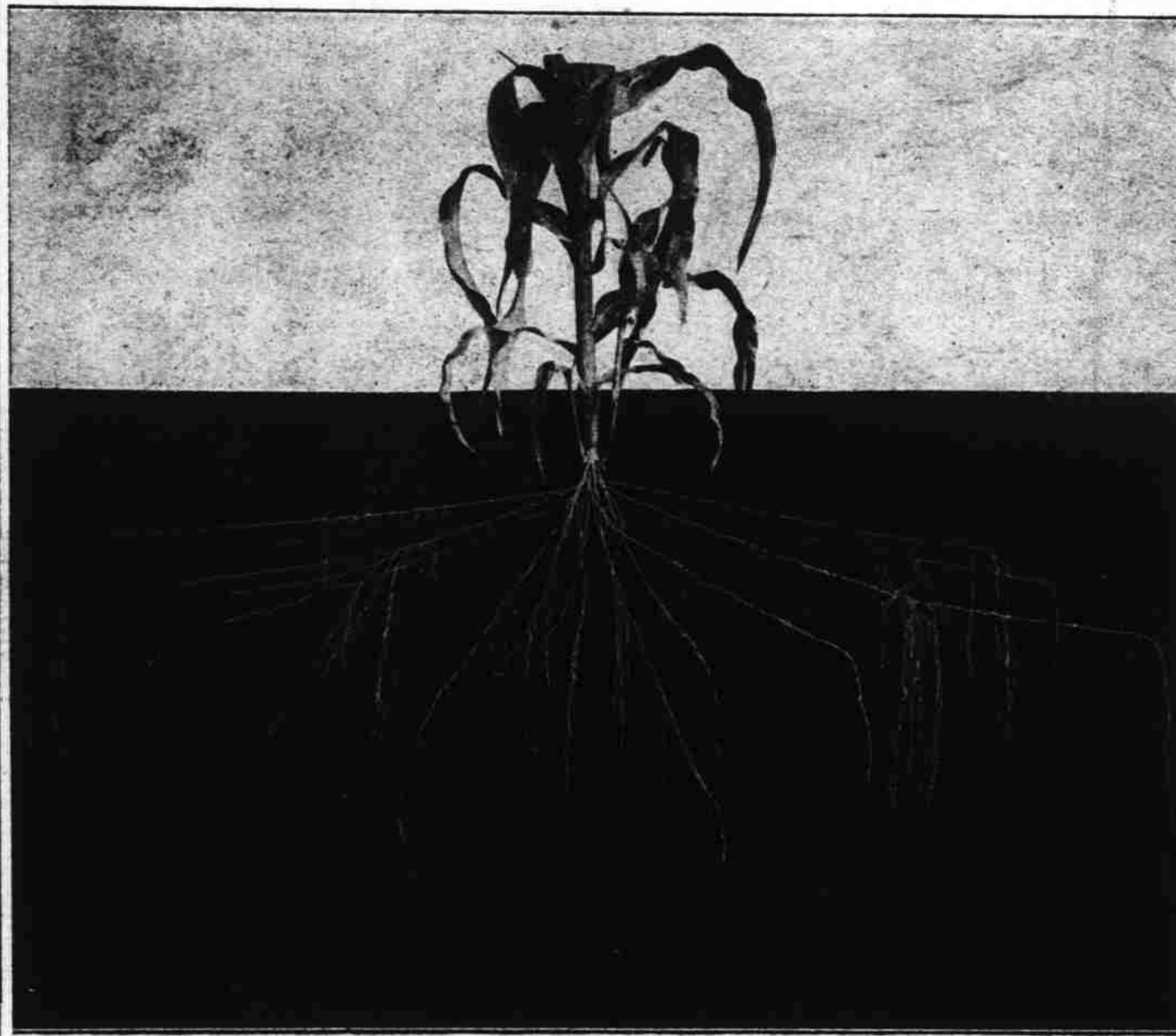
A good healthy plant should have about as much root growth as the photograph shows. This plant three weeks later would show a much more elaborate roots system. It would be about this time that corn would be laid by.

Plants feed through their roots, taking in food and water through the root hairs that branch off from the larger roots. Roots being the feeders of the plants, great care should be taken not to injure them. But this is not done by the generality of corn growers. They practice deep culture, and lay by the crop by plowing deep and ridging the rows. Many soils naturally are shallow, so that in order to secure plant food, roots must confine themselves near the surface, especially when the moisture supply is adequate to their needs.

Now it is evident that deep culture of corn after it is five weeks old or older is sure to prune the roots. Every grower has had proof of this when he lifted his gangs out at the end of the row and noticed clusters of fine roots wrapped round the shanks right over the shovels. These are corn roots that have been torn out. The more of them you break off the more difficult it is for the plants to gather feed; you handicap them just that much, and cause them to use their energies in overcoming the injury.

Making Five Bushels More Per Acre Converted Mr. Wing.

Every root is busy conveying food and water to the plant. Cut it off and the plant suffers. You may not



ROOT DEVELOPMENT OF A CORN PLANT SIX WEEKS OLD.

It is through its roots that the corn plant must feed and grow. While there is little danger from deep plowing the first time over, it would be as foolish to break out the teeth of your young growing stock as to tear up the root growth of young corn plants by plowing deep after the root system becomes as extensive as here indicated.

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notice the injury, but its effects will be reflected in the yield, even though you may secure what you think is a good yield—it would have been larger if you had not pruned the roots by deep cultivation.

If you don't believe this, all you have to do is to try deep and superficial tillage side by side. You will be convinced. I had my doubts about

the matter until I showed myself in this way. The difference on my farm in favor of the shallow culture was five bushels per acre. It has been more in tests made by other growers and by Experiment Stations. In any case I am sure a farmer will find shallow culture more profitable, and the beauty of it is that it does not cost any more. In fact, it is easier

on the team. It has other advantages, too.

Better Not Cultivate at All Than Ruin the Root Growth.

Surface tillage leaves the field level so that it is more easily got over by wagons, mowers, binders and other implements that are used the same or the following year. Deep cultivation facilitates soil erosion, especially in rolling districts, such as we have here. Plowing deep at the last, or when laying by corn, is a severe shock to the plants, severing thousands of roots, disturbing others and promoting the evaporation of moisture. It is worse than no cultivation at all. Many a grower has injured his crop to the extent of eight or ten bushels per acre in this way.

No Excuse for Ridging Corn at Any Time.

There is no excuse for ridging corn at any time, especially when laying it by. Some men think the brace roots should be covered, and for this reason practice throwing dirt to the corn. This is a mistake; brace roots do not require such attention. Let them stick out naked. They are for emergencies. If the corn plant should be lodged, then these brace roots will get busy and help it get up or aid it in overcoming the injury inflicted by the wind or other cause of the plant's downfall.

Most farmers practice deep cultivation in order to cover up the weeds that are not cut out by the operation. If they would use the right kind of cultivators there would not be any weeds to cover, provided there was a favorable season for farm work. I appreciate that rains in the spring often delay cultivation of corn so long that weeds get a big start, and are mastered with much difficulty, but this is not generally the case. Weedy corn-fields are usually to be attributed to an inferior seed-bed and poor culture at the outset. There isn't much excuse for them. We have been able to keep our corn clean, even in wet seasons, by doing the right thing at the right time.

The Right Way to Cultivate.

Should a rain occur immediately after planting, we either run the harrow or a weeder over the field just as soon as the soil is sufficiently dry to work satisfactorily. Any weed seeds that may have sprouted in the meantime are promptly killed by

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