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Is "Thorough Cultivation" Necessary to Bumper Crops?

With Proper Drainage, an Adequate Supply of Humus, and Skill in Determining When to Work We May Secure Good Crops With a Minimum of Spring Cultivation.—W. C. Good, Brant Co., Ont.

It will not be long now before the farmers will be in the fields plowing, cultivating, harrowing, and seeding, in preparation for next season's crops. One's thoughts turn, therefore, to the general question of soil cultivation, and a few remarks in this connection may not be amiss.

Last spring I recall seeing in most of the farm papers manifold exhortations to "prepare well the seed bed," to "work and work again." The burden of these exhortations was that the resultant crop work done in preparing the ground. Now my work is, perhaps, one of the least important factors in crop production, and, consequently, I viewed with some apprehension the disproportionate emphasis thus placed on the mechanical working of the soil is of no importance; rather that good crops may be had with this work, and that under certain conditions no amount of mechanical working will avail to encourage or produce good crops. This agricultural heresy, if such it be, I proceed to elaborate as follows, appealing only to those observations which any intelligent farmer may make for himself.

The Condition of Virgin Soil.

I will begin by quoting an old farmer whom I once heard comparing crop yields now with crop yields in the early days. Said he: "We only had to scratch the surface in those days, but now we can't get scratch crops anyhow." Admitting that statistics quite disprove the accuracy of this comparison—taking the province as a whole—there is, yet, a great foundation of truth in it. A field may be in such a condition that a rough broadcasting, followed by a couple of harrowings, will produce a bumper crop, whereas another field, under exactly the same climatic conditions, may be cultivated three times, harrowed four times, and seeded evenly with a seed drill, and yet not produce one-third as much. These things should, at once, be taken into consideration, and it is my purpose to call the attention of Farm and Dairy readers to a class of facts that have not hitherto received the attention they should have received in the farm press.

Roughly speaking, soils may be divided into sand, loam and clay, remembering that each kind may be of various sub-kinds, and shades off into the next in the series. Sandy soils, by reason of the large size of the soil particles, have poor water holding capacities, clay soils, by reason of the small size of the soil particles, have good water holding capacities. Every farmer knows in a practical way the differences between these different constituents of soil. There is, however, another important constituent of all soils—humus, or decaying organic matter—which makes itself less felt to the senses, but which is of prime importance.

Humus Makes a Soil "Workable."

A soil with plenty of humus is generally "easy to work" and fertile; and one should bear in mind that the amount of mechanical work will take the same time and stir up the soil. Plowing, of course, has but, speaking generally, cultivation is done with the idea of loosening, stirring and pulverizing the soil. Now, anyone knows that there are spots in a field that "pulsate themselves" while there are other spots that can be "worked" only with the greatest difficulty. Such a difference may be due to the moisture content, upon the size and nature of the soil particles, upon the amount and distribution of the humus, or upon certain climatic conditions. If a man goes on to a clay soil when it is wet, and tries to work it up, the more work it gets the worse

it is, an everyone who has to do with clay soils knows. A sandy soil, on the other hand, can be "worked" almost as soon as it is firm enough to bear the horses.

In this district the spring of 1915 was dry, and heavy clay spots were so pulverized by the action of salt water freezing and thawing, without rains, that they crumbled up with scarcely any effort. If such spots had been subjected to heavy beating rains before seeding, as happened in 1916, there would have been a different story to tell. Now the determination of the exact degree of moisture, which is conducive to the easiest working of soils, is a matter upon which can only be decided by observation and experience. Unfortunately all parts of a field are not in the same condition in this respect at the same time, and one has to strike a happy mean if one can, remembering always that the ideal of uniformity can only be got by thorough drainage—natural or artificial.

I presume everyone has had the experience of taking away an old fence and plowing over the old

same manure and the same tillage, with the result that some sections produced a crop while others were barren.

Get Acquainted With Your Soils.

I commend to my farmer readers to do a little walking behind the spring tooth or disc this spring, when they first go on the land, and notice how the soil breaks up, under different conditions of moisture or humus content. One can learn a great deal by walking instead of riding; and, having learned the soil conditions make it easy to work land, the good husbandman will try to approximate to these conditions, in so far as he can. We cannot, of course, control the weather, nor, when we are once settled on a particular farm, can we alter the fundamental character of its soil. But we can contrive the humus content of a soil, and cultivate it at the proper time, as well as drain it thoroughly if it needs draining. In such ways we may reproduce generally the soil conditions we find in our old fence bottom, those referred to by the old farmer already mentioned when he spoke of the good yields and the poor tillage of virgin soils.

There are sections of many fields which have plenty of humus, but the conditions are such that this humus remains undecomposed. Such are many swamp, or peaty soils. Drainage, so as to permit ailing, also, if the soils are "sour," is often of great advantage. I have seen an underdrain put through a low wet section of a field with the result that what was once a wet sour and unproductive area is now giving big crops with very little or no manure, and with no great effort of cultivation.

Summing Up.

What, then, is the conclusion of the whole matter? As I see it, it is this: If we see that our fields are properly and sufficiently drained, and supplied with the requisite amount of humus in the right places; and if we are skilful in determining at what particular stage of drying out the soil is "fit to work," we may practically disregard the question of spring cultivation and get good crops with a ridiculously small amount of actual mechanical working of the soil.

Now, a final word of warning, lest I be misunderstood. My remarks apply primarily to the spring cultivation of fall plowed land for the early spring crops. They are only partly applicable to other circumstances. Where land is spring plowed it is also largely true that certain conditions render the securing of good crops with a minimum of tillage, while the absence of these conditions will effectively neutralize the effects of good tillage. For example, what amount of tillage would produce a crop on a heavy clay soil deficient in humus and "pudding"?

As for summer cultivation of various kinds, the situation is different, and new factors come into play. To kill weeds, to maintain a soil mulch, etc.—all these purposes are not conspicuous in the spring preparation of the seed bed, and must, necessarily, modify farm practice. But in respect to the preparation of the seed bed in the spring, after fall success are proper drainage, a sufficient amount of humus and plant food in the soil, and the working of the soil at the proper stage of drying out, the most important of all, and may be largely dispensed with if other conditions are right, and in any event will be useless if other conditions are wrong.

See that the manure spreader is in shape and that the plow points, harrow and cultivator teeth are sharp. The horses will know it.

God Give Us Men

GOD give us men! A time like this demands
Strong minds, great hearts, true faith,
and ready hands;
Men whom the lust of office does not kill;
Men whom the spoils of office cannot buy;
Men who possess opinions and a will;
Men who have honor,—men who will not lie.
Men who can stand before a demagogue,
And damn his treacherous flatteries without winking!
Tall men, sun-crowned, who live above the fog
In public duty, and in private thinking;
For while the rabble, with their thumb-worn
dresses,
Their large professions and their little deeds,—
Mingle in selfish strife, let Freedom weep,
Wrong rules the land, and waiting Justice sleeps!

J. G. HOLLAND.

fence bottom, which has been in soil for a generation or more. How beautifully the soil "crumbles" where the old sod is turned under! There one does not need to expend effort on pulverizing. If the plowed down after plowing, the seed bed is all ready crop; whereas, a few feet away it may happen that the soil is pulverized only with the greatest difficulty, and produces less than half a crop. Such a difference may, it is true, be due to a difference in fertility, in the amount of plant food available, but not condition—in the one case favoring plant growth, and in the other case retarding it.

This last fall I cut a field of corn which had some fairly heavy clay knolls in it. A combination of cultivation or more. A combination of cultivation of these knolls both difficult and useless, and the corn which grew on them was not over two feet high, whereas, that which grew in sections of the field which had a greater amount of humus, and which consequently pulverized on cultivation, was 5 or 10 feet high. The field all got the