

Insuring Crop Yields

By J. S. Murphy

If I were asked what is the one thing above all other things necessary in dry farming, I would say, deep plowing. For purposes of dry farming, a great deal of the subsoil in Canada lying west of Red River is practically the same, and is composed of drift brought here during the Glacial Period, one of the most stupendous events this old earth ever experienced. Now, this subsoil or drift is chiefly decomposed or disintegrated rock, and has all the crop-producing properties, such as nitrogen, lime, potash and phosphorus, which are the elements especially needed in cereal production. Deep plowing is the very first essential in moisture conservation, as the thing it does is to increase the absorbing storage capacity of the soil; and the first step in dry farming is to get water into the soil, and deep plowing is the first aid in this particular.

Then, too, deep plowing prevents the formation of what might be called, for the want of a better name, a plow-pan. I have examined literally hundreds of fields, and I never yet examined a field, in a dry year especially, that this plow-pan was not in evidence when the plowing was less than seven inches. This plow-pan is caused chiefly from the plow pressure on the subsoil, producing a sort of a glazed surface, and this prevents any proper contact between the furrow-slice and the subsoil. In dry farming, the plowing should be so deep that you would find it quite impossible to find where the furrow-slice ends and the subsoil begins. When that condition is present, there is always a proper contact between the furrow-slice and, without even thinking, you can see that this is necessary, when you are depending chiefly on the water stored in the soil, which you get by capillarity, and not on free water, to mature your crop. Furthermore, when this plow-pan exists, the average rainfall, up to one inch, never penetrates the subsoil at all, any more than it did the sod, and for the same reason.

The subsoil is the farmer's reservoir for the storage of water that supplies the moisture during the season. After you have once plowed your land to, say, a depth of ten inches, it is not necessary, of course, to plow so deep each year. When I summer-till a piece of land, I plow deep, for this is the time to bring up new soil so as to give it plenty of time to become weathered. Now, as soon as the crop is harvested on this land the next season I disc it immediately; and when I plow it for the next crop I only plow it about six inches deep.

Hard-pan at Five Inches

Some four years ago I acquired a piece of land that had been tilled (so-called) for twelve years. No part of this land was ever plowed five inches deep, and I determined to get down into it, and I did. Now I estimate, and my men thought my estimate conservative, that it took a full third more power to break up this hard-pan formed by twelve years plow pressure than it would to break the original prairie sod. I find that the average farmer—and the average farmer is always attempting to do more than his power justifies doing—rarely plows more than five inches deep, and he will come nearer plowing four inches. Turning four or five inches of the top soil over this year and flopping it back next year is not dry farming; it isn't farming at all; and the man who follows that slipshod system, whether he is handling 160 acres or 1,600 acres, is going to lose out.

Now you might properly ask right here, "How deep do you advocate plowing in beginning this system?" I answer, "Not less than eight inches and nine would be better." You can always plow deeper in the spring and early summer than you can in the summer proper or fall, and the land should never be plowed when dry.

Weed Extermination

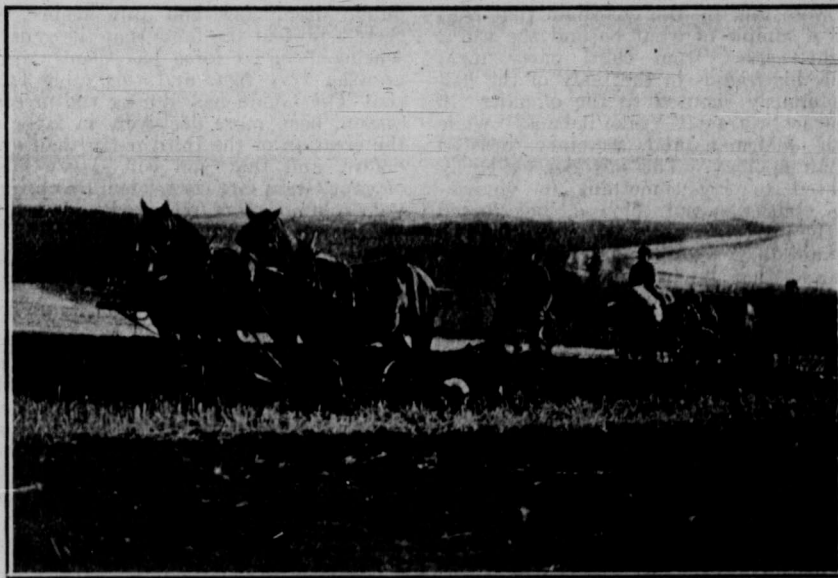
I want to say right here, if you have a piece of land that is full of weeds and that has been farmed indifferently, like the average farm is run, just double-disc that land the first thing in the spring. This discing will break the crust, establish

The storing up of every available drop of moisture in the soil for use by the crops is one of the most important objects of soil tillage in Western Canada. By following certain definite rules it has been found by experience that average grain yields can be practically assured each year. The general scheme followed has been loosely called "dry farming," a term which is misleading, but which for lack of a better describes the methods employed in moisture conservation. The basis of all good farming has been proved over and over again to be deep plowing followed by thorough cultivation. Seager Wheeler has already outlined in these pages the wonderful results which he has obtained from common sense tillage methods and the writer of this article is another of the progressive farmers who have proved to their own satisfaction the value of more intensive cultivation. There are a great many such in the West and The Guide would be glad to hear from any of its readers and publish their own results in increasing crop yields thru thorough cultivation methods.

a mulch, conserve the moisture in the soil and enable the spring rains to penetrate; also it will help to germinate millions of weed seeds. Then about June 1, or as soon thereafter as possible, plow that land eight inches deep, follow the plow promptly with a harrow—and when I say promptly I mean the day you plow, and the hour you plow would be better. Now sweep over that land with a harrow—and it should be a fairly heavy harrow for this work—after every good rain. This not only breaks the crust caused by the sun and rain and prevents

apt to get a dust mulch; because you do not want a dust mulch—a mulch that the first little gentle rain will run together—you want a granulated mulch that will not exclude the air altogether.

Now in the fall, about October first if you can spare the time, disc this land comparatively deep; for after October first little evaporation as a rule takes place in the West. This discing roughens the surface and leaves it in better shape to hold the snow; also it aerates the soil and it helps to weather the new soil you turned over in June—and, remember,



Where a cast iron packer is too expensive, a wood float well weighted down will serve the purpose admirably. Better farming can be practiced without going to any great extra expense.

evaporation of moisture, but it re-establishes the mulch, drives the moisture down and kills more weeds. Keep the field good and black all the next summer.

Use Different Implements

I might say here, by way of parenthesis, that it is better in summer tillage, I find, to use different implements. By this I mean, after you have plowed the land, use a common smoothing harrow; then in a month or so, or after the first good rain, or after the first weeds appear, use a disc. In this way you have a variety of depth in cultivation and you are less

every time you go over that land with any implement you increase the fertility. Then the land should be disc the first thing in the spring again. This is necessary, for you will find in the spring that the melting of the snow caused the surface to run together and form a crust, thus preventing the early spring rain from entering the soil reservoir. Now, plant your crop; and if you plant wheat, do not put in a pound over fifty pounds of good clean, plump, well bred seed; and recollect that it should be a criminal offence to plant anything but good, plump, pure seed that tests well up toward 100.



The packer to be effective should follow as soon as possible after the plow. Ox team on a western homestead.

Now, I am willing to risk any reputation that I have as a farmer—and I am generally consulted in my neighborhood—that the man who handles a piece of land as I have here indicated, will have more net dollars off each acre of this land next year than he would in 1914 and 1915 together if handled in the ordinary way. Besides, you have added fertility to you land, you have eradicated millions of weeds—and don't forget that a weed is always a robber—and you have taken the first long step in dry farming and away from the ever-feared crop failure that is always hanging like a Damocles' sword over the head of the farmer living in the so-called semi-arid region who is trying to farm like he did or would in a humid region.

Now, the thought may occur to you right here that I have put you to a lot of work for one year to get this dry farming proposition started. So I have, but I will guarantee that you will never receive such a high price for your labor as you will have received for the labor here expended. Then, too, you have put water in the soil, and water in the soil is money in the bank; and when you put money in the bank and have drawn out half of it, you know you have half left—the same with water. It might be argued that many of our new settlers have not the necessary team power or machinery to go thru this process. In answer to that I will say that instead of working 150 acres poorly, if a man will work 50 acres thoroughly he will have more money at the end of the year.

Dry Farming vs. Irrigation

And in reference to working under the dry farming system, I want to remark that we hear much nowadays about irrigation and the wonders accomplished under this kind of agriculture; but those who are not trying to sell you an irrigated tract, will tell you that less power and attention are expended in handling 160 acres under dry farming methods than in handling 30 acres under irrigation. Irrigation means unremitting toil, and the beginner in irrigation is always up against the proposition of water-logging his land and at least temporarily ruining it. It is also a question if too much water does not quickly exhaust and permanently destroy the original humus so necessary and yet so scarce in a semi-arid region.

Those who have given this subject some study, and have read something about this, will observe that I have said nothing about subsurface packing the soil. Well, I purposely omitted this. I have given the subsurface packer a fair and thorough test, and I am convinced that this much-advertised implement is overrated. Especially is this the case in summer tillage. I find from experience that in spring plowing, when the plowing is only six inches deep or less, the subsurface packer helps to firm the seed-bed and establish a quicker and better contact between the furrow-slice and the subsoil; but the ordinary good disc, set nearly straight, accomplishes practically the same purpose.

Follow Harvester with the Disc

Now, getting back to the piece of land you are handling under the dry farming system, you should follow the harvester immediately with a disc, for at this season of the year, about August, the amount of moisture evaporating and escaping into the atmosphere is simply tremendous. Up to this time, the crop has shaded the land somewhat; but a crust has formed and, unless you disc immediately, hundreds of tons of precious moisture are daily getting away from you. Professor Whitney of Cornell, I believe, some few years ago devised an instrument for measuring the amount of moisture evaporation. This instrument was used on a wheat field in Western Kansas, and it was found that for the first ten days the moisture going into the atmosphere averaged 370 pounds each day from each square rod, or 5,900 pounds per day from each acre. So you can see the absolute necessity of discing after the harvester.

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