

The Summer-fallow

An extravagance which is an essential factor of all-grain growing

One of the chief factors which is impressed most forcibly on the minds of eastern farmers visiting the West for the first time is the factor of waste. "Down East" farmers would hold up their hands in dismay at many of the methods which are practiced in this western country. To some extent this criticism is justified, because any thoughtful man can find many instances of carelessness on the farms to which needless loss is due, but at the same time this is not true of a large number of methods which, by reason of the circumstances under which they are practiced, are followed generally throughout the three prairie provinces. One of these methods is that of summer-fallowing a portion of the farm each year. That a large portion of the land, in many instances nearly a third of the farm, should be plowed, constantly top-worked and allowed to lie idle all summer is, on the face of it, a very wasteful proceeding, even if the interest on the value of the land is the only loss taken into consideration, but as long as all grain growing is practiced to any extent the summer-fallow must be made use of.

Reasons for Summer-fallow

It is found that after a piece of land has grown constantly the same crop year after year, that the yield becomes lower as time goes on, until it becomes necessary to lay the land off for a year to allow it to regain some more of the elements of plant food of which it has been depleted by constant cropping. Different crops require different amounts of the various food elements contained in soils, and since a grain crop, to reach maturity, usually uses up its available plant food more quickly than it is produced in the ground, the yield is lower and the stand in the field is generally thinner. This allows of another factor entering into consideration, namely that of the growth and increase of weeds in land cultivated for any long period. Grain plants require one kind of plant food, weed plants another, so that when the stand of the grain plants gets less, more room is given for the weeds to develop and this is one of the conditions which makes the adoption of the summer-fallow method so valuable. More than this, however, in many parts of the West the rainfall does not amount to more than fifteen to sixteen inches during the year, and since it has been calculated that three inches of rainfall are required to produce ten bushels of wheat, it is evident that, in order to have a sufficient margin of available moisture to produce a paying crop some means whereby moisture can be stored up for the crop use must be put into effect. Hence the chief object of summer-fallow. If the idea of storing up of moisture is kept constantly in mind when the plowing and subsequent tillage is being done the land will be worked so as to give the best returns.

Conservation of Moisture

As someone has said, "There are two essentials to the conservation of moisture; one is getting it into the soil, and the other is keeping it there." Now, the more open and porous the soil is, the more water it will be able to take up. To illustrate, plowed soil might be likened to a sponge, while unplowed soil might be represented by a block of wood of the same size as the sponge. If an equal amount of water is poured on each of these materials, it is obvious to anyone that the sponge will take up and retain more of the water than the block of wood. Hence the necessity for deep plowing. Deep plowing is rightly discriminated against in the spring for the reason that it tends to bring too much cold soil to the surface, which takes too long to be broken down by the weather into available plant food, but in summer-fallow matters are dif-

ferent. The land is to lie open to the action of the weather for fully nine months, and sun, rain, wind, frost and snow all will play their part in decomposing the compounds contained into food which may be readily taken in by the growing crop. More than this, there must be an open porous layer formed with which to capture as large an amount of moisture as possible throughout the year and hence the deeper the plowing the more water there will be retained.

Plow Once or Twice?

The practice in some localities is to plow the land twice during the year, shallow the first time and as deep as possible the second time. This is a good practice in very weedy districts the object being to get the surface weeds to germinate right away, so that they may be killed with the next working, rather than plowing them in deep with the possibility of their coming up again at a future plowing. Some weed seeds, especially those belonging to the mustard family (Cruciferae), among them being stink weed, are provided with an oily covering or shell, which resists moisture for years. Such seeds

more than the two fourteen-inch furrows, and a very good tilth will be the result. The use of this extra horse is scarcely any added trouble, and the work done, together with the amount of moisture saved, will mean bushels in the crop in the following years. The point is this: When the soil is first turned over, it contains moisture, hence is somewhat plastic yet mellow or crumbly. At this time it readily breaks down into fine particles which lie close together and form a compact mass, there being less surface exposed through which, altho the air can freely circulate, the action of the sun and wind cannot readily withdraw the moisture. If, on the other hand, the soil is allowed to remain unharrowed, the wind and sun have full play thru the many openings to dry the soil out, and it then becomes hard and chunky and requires two or three times as much working to get it into anything like the tilth which would have been obtained by harrowing immediately after the plow. But why does harrowing the plowing keep the moisture in? Moisture in the soil rises to the surface by means of a physical law known as capillarity. The particles of soil form small hair-like tubes in the

ments used to keep a fine tilth in the land are just the ones to control special weeds. Take the Canada thistle, for example. The best method of controlling this perennial is to keep its leaves covered from the sunlight. This can best be done by the duck-foot cultivator, an implement which, at the same time, puts the ground in first class shape for retaining moisture. The same is true also in the control of couch grass, altho it has to be supplemented by the harrows, which will collect the root stocks by means of which this grass spreads. These should be put in piles, usually at each end of the field, when the harrows are cleaned, and burned. There are some weeds, however, which summer-fallowing does not seem to have very much control over, chief among which are wild oats. About the best possible means of controlling wild oats, once they have been allowed entrance onto the farm—because, after all, "prevention is far better than cure" in coping with the weed problem, just as with everything else—is to disc the summer-fallow land early, then plow and harrow and immediately sow a light crop of oats or barley. The crop is then cut green before the weeds have a chance to seed. In this manner, while less moisture will be conserved, in most of the western districts sufficient will be retained, besides having caught and destroyed many of the weeds which cause an enormous loss annually to the farmers, in threshing, freight, dockage, and lower grade in the marketing of their staple product.

To Prevent Blowing

A good practice, and one often followed in conjunction with summer-fallowing is to plow early and seed down to a light crop of oats—about a bushel to the acre. Then, when the crop is fairly tall, say ten or twelve inches, depending largely upon the special needs of the farmer, to turn in a bunch of sheep or cattle to eat it down. This plan has many advantages. If sheep are turned on they will practically clean the land of weeds, since they crop so closely to the ground, all the stock will pack the ground, thus retaining moisture, and they will add to the fertility of the ground with their droppings. Seeding down in this manner has an even greater advantage still in that it tends to overcome one of the directly harmful results of summer-fallowing, namely, that of blowing. By constantly working up the land the fibre, which is the binding material in the soil, is exposed to the weather action, which has the effect of rapidly decomposing it. As soon as this cementing material is lacking in the soil it is easily blown from place to place by the wind, it tends to become more sticky when wet, harder or more baked when dry and less able to retain moisture. Thus, if a catch crop is sown as is described above, in addition to providing pasture for the stock it will keep the land from being blown about by the prevailing winds. A system of summer-fallowing is not the most economical method to follow in the management of the farm. But while a system of all grain farming is carried on over a large area, it is the most expedient, in fact almost the only practical method to follow. All land constantly growing grain must have a rest. In this country moisture must be absorbed and stored. Hence the points to keep in mind in connection with summer-fallow are to disc first, plow early and deep, harrow immediately, pack, if the land requires it, either seed down to a light crop of grain which will be subsequently eaten down by stock, or else constantly top work the land all summer with suitable implements, having in view the control of certain weeds and the constant upkeep of a good dust mulch.—E.J.T.

Weeds, like cats, are more easily disposed of when young.



"One way is to plow deep, harrow the same day, and after keep top working the land"

will remain in the ground for varying periods before they eventually decay. By plowing twice more moisture is conserved, but from observation of actual western conditions it must be admitted that in many instances the intention to plow twice is bona fide, but, when the time actually comes, too much has been left for summer-fallow, hay harvest is upon the farmer before he realizes it, the weather has been very unfavorable, and the outcome is that a large portion of the land is left after having only been plowed shallow. Rather than this should occur it is better to plow deep once and in any event a large portion of the benefit to be derived from the first shallow plowing can be obtained by double disking the land as soon as seeding will allow in the spring. In this way weed seeds will be encouraged to germinate and moisture will be kept from evaporating from the land.

Constant Cultivation

And now for the second requirement of moisture conservation—keeping the water in the land. Land, as soon as it is plowed, should be harrowed. It will be found to be economical to follow the plow immediately with the harrows. In any case all the plowing should be harrowed on the same day as it is plowed. A good plan, which the writer has found to be exceedingly practical and economical, is to lead a horse (a spare horse is available on most farms) behind the plow having attached to it one section of harrows. This will cover

ground, thru which the soil water rises. If this rise of the soil water is not checked very soon a great deal of the moisture will have risen to the surface and have been evaporated and lost to plants by the sun. Harrowing fines the surface soil to form a blanket of dust or dust mulch which is composed of particles finer than those in the lower earth and hence the small tubes are disconnected and stopped up by the finer soil above. As long as this soil is kept fine it serves its purpose in keeping the moisture in the ground, but the tendency is for this top layer to become gradually saturated. This is the case especially in clayey soils, since they have a particular property by means of which they attract moisture. Of course, as soon as the mulch becomes wet connection is made with the moisture below the surface and rapid evaporation takes place. The point to remember is to always keep a fine, dry dust mulch on top of the summer-fallow. Harrow after every rain or even when the weather has been damp. Never allow a crust to form on the top of the ground.

Weed Control

There is another equally important part which summer-fallowing plays in farm management, and that is in relation to the control of weeds. Constant cultivation, such as is essential to this method, serves the purpose of destroying immense quantities of the weeds which it has been impossible to deal with when the crops have been growing on the land. Some of the imple-