

Harrowing Growing Grain

The Proper Time to Harrow---Killing Weeds---Kind of Harrow

By Seager Wheeler

The harrowing of growing grain may be said to be in the experimental stage as far as Western Canada is concerned. There are some conflicting opinions as to the advisability of harrowing grain after it is above the ground. Some will advise harrowing at a certain stage, others advise harrowing with the rows, while others advise harrowing across the rows. Some claim it is beneficial, while many claim it is detrimental to the crops, while many advise harrowing the crop without giving any details, so that there appears to be no safe rule to go by, and many that would harrow their crops are afraid to do so. Anyone who puts the harrow on growing grain simply because he is advised to do so, and does it without any definite purpose in view, or does so at any time is likely to be disappointed



Grain in single leaf stage, when it should not be harrowed.

with the results and may condemn the practice. On the other hand he may happen to go on the field just at the proper time, and, as a result will likely advise all his neighbors to harrow.

In harrowing growing grain one should have two objects in view, i.e. to destroy weeds and to maintain a mulch. The most important point is to control the weeds, and in doing this he is also able to maintain a mulch. Apart from the question of weeds it is beneficial to the crops in the cultivation received. As far as the conservation of moisture is concerned it is not necessary to do this except in certain districts, as at that period of the season when grain may be harrowed we rarely have rain heavy enough to form a crust.

After many years' experience in harrowing grain at different stages of growth and condition of the soil and season, I have found that there is a period when it is beneficial to cultivate the grain with the harrow to keep weeds under control and conserve moisture. Every kind of crop is benefited by cultivation but every kind of crop cannot be cultivated at any time and the grain crop may be cultivated only at a certain stage. Until the time when we have special implements to cultivate up to the time the grain is in the shot blade, we must depend on the harrow to do the work.

As the main object is to control weeds in the crop this article will deal with that operation only. This is written to dispel some of the general ideas that it is detrimental to the crops to harrow, and I would first point out that unless one has a full understanding of the operation, there is a probability that if one goes on a field of grain to harrow it simply because someone has advised him to do so he is very likely to pull off the field very quickly when he notes what a mess of it the harrow is making.

Smothering Causes the Damage

It took me many years before I got the feeling that I was not doing harm to the grain at the time I was harrowing it, although I knew that it was all right. I have made a field so black after the grain was covering the ground that the only green portion on the field after it was finished was that part that escaped between the harrows. Fields sometimes look pretty sick after such treatment and I find it is best for the inexperienced to keep away from the field for two weeks or he is apt to worry over it. After that length of time the field may be a revelation in the recovery and growth made, par-

ticularly if the field was very weedy. In such a case I would advise harrowing anyway, as it is a case of kill or cure, and I would always, without fail, rather take the chances of injury to the crop than let the weeds get control. Where the weeds are thick between the rows of grain the chances are greatly in favor of the weeds controlling the crop. Another general idea is that in harrowing grain it will pull out or kill considerable of the growing young shoots. There is very little danger whatever of injuring the grain by the harrow. What is harmful is the smothering, and altho it will not kill the grain out it will retard growth to some extent and delay maturity. It would be well to point out here that it is not possible to harrow any or every field of grain. Preparation should be made beforehand. There are large areas that are too loose to harrow. When the seed bed is too loose there is a greater possibility of smothering the grain and retarding growth. In every case the plowing should be firmly packed before and after seeding, to firm the soil round the seed in the surface. As the packer leaves the soil in a corrugated condition, it is well to harrow with a light harrow to pull down the ridges left by the packer.

Killing Weeds Important

Again, there are many kinds of weeds to be considered. Wild oats are weeds, but these cannot be controlled by harrowing. This treatment will only encourage more rapid growth. Many weeds, however, may be controlled by this method. Winter annuals and some of the bi-annuals and perennials will require special treatment. Where these are in evidence they must be looked after before the crop is sown. They will be found on summerfallow early in the spring and may escape observation, or not be seriously considered. This is the danger point. French weed, blue burr, shepherd's purse, pepper grass and other similar weeds, as well as mustard, should be looked after early in the spring. They may be destroyed by cultivation of the fallow before seeding. If they are thick altho very small a cultivator that will cut under the surface is the best implement. Care should be taken not to stir the soil more than 2 1/2 inches deep. After the field is seeded and any weeds start again they may be controlled by the harrow.

Annual weeds such as the lambs' quarters, and wild buckwheat and similar weeds may be controlled by the harrow. There are only two periods that I can recommend harrowing. The first period is just previous to when the point of the grain is showing up through the soil or at that stage. The second period is after the plant is well established

After it gets that high it begins to tiller or throw out more stems, but does not grow much higher until a little later in the season. When it is in the stooling stage it will stand considerably more harrowing than when in the single leaf stage. When it is in the single leaf stage I advise against harrowing. The growth is rapid and the leaf is tender, and the harrows as they go through the soil act as miniature plows, rolling the soil out, covering the single tender leaf and smothering it to some extent and retarding growth. If a heavy shower falls soon after this is done it packs the soil around the leaf and it is apt to turn yellow.

Right Kind of Harrow

I find by actual experience that the most good



Grain in stooling stage, when it is safe to harrow.

may be done just at the time the plants are peeping through the soil. Weeds are then very small and tender and a double stroke of the harrows will destroy them and keep them under control until the plant is firmly established and in the stooling stage when it may be harrowed again if necessary. If time is pressing at the time of seeding harrowing may be done later when the points of the grain are showing. It would be well to advise against leaving the operation too long, for if the field is to be harrowed it should be closely watched. Sometimes in a night it comes above ground, or if left over Sunday to Monday morning it comes up into the single leaf stage, and the opportunity is lost.

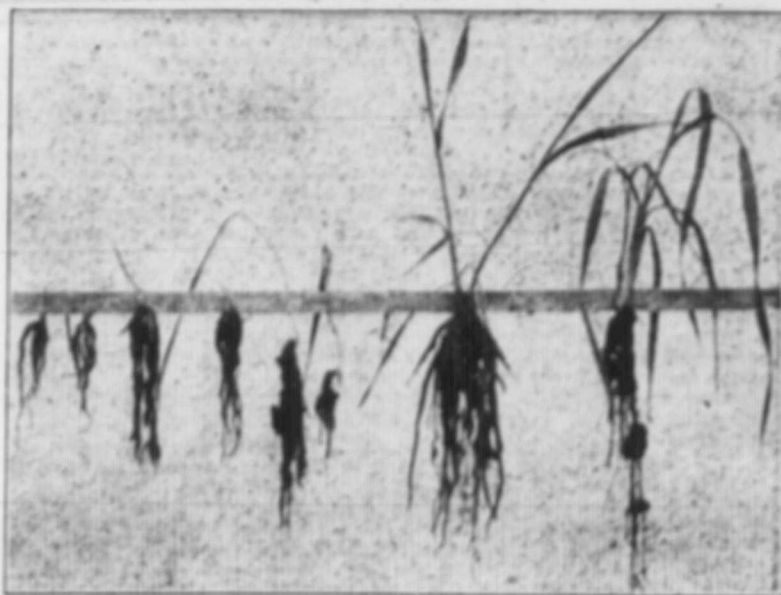
In harrowing after the grain is up at the second stage I would advise going with the drill rows and not across. There are several makes of harrows suitable for this work. While the heavy diamond harrow will answer if no other harrow is available the best kind are the lighter makes similar to the Boss harrow. There are harrows that cover twenty-six feet at one operation, and it is advisable to cover the ground as quickly as possible. If it is necessary to give a double stroke I would recommend coming back in the same stroke instead of lapping.

The best time to harrow is on a warm dry day, and it should not be done when the grain is wet or damp with dew. To dispel any impression that any hesitating grower has with respect to pulling out of the grain I would say that when the seed is planted it first shoots out roots about two or three inches long, and may have anywhere from three to six inch roots before the sprout comes out of the seed. As the sprout pushes up through the soil the rooting of the plant is fairly well established and braced in the soil, especially if the seed bed was well prepared. It would be even quite hard to pull the growing plants out by hand. Some plants will pull out if harrowed in the single leaf stage, but these are where the seed is very shallow and not firmly established. No grain will be pulled out at the first period of harrowing.

INFLUENCE OF CROP ROTATION

Most old agricultural countries have found the order of cropping that gives the greatest monetary return consistent with the maintenance of productivity. Practically no information on the question is available in Western Canada, yet in the not distant future—even now on many soils—crop rotation other than a fallow followed by from two to four grain crops should be established. To get light

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Showing germination of seed grain. The two on left hand show the roots before the sprout comes out from the seed. Next two, after sprouting and before it gets thru the soil, the first stage to harrow. Next two show at single leaf stage when harrowing should not be done. Next two, show stooling stage, the second period when it is safe to harrow the crop.

and shows two or more stems, or is in the stooling stage. Too much advice is given to harrow grain when it is four to six inches high, and is responsible for much disappointment. Grain may be four to six inches high and harm may be done it. It may be six inches high at the right stage and be beneficial. By taking measurements of the grain from time it is showing through the soil up till it is about six or eight inches it will be seen the growth is very rapid. This is when it is in the single leaf stage.