

Does Wheat Turn to Chess?

BY JAMES FLETCHER, OTTAWA.

There is perhaps no question in connection with farming which is so fertile a source of discussion, and concerning which such positive opinions are held on both sides, as the relation which is by some supposed to exist between chess and fall wheat. The mistaken idea that fall wheat under various adverse circumstances can change into chess, is certainly held by many farmers throughout the country. Such a view has no foundation whatever in fact: *Under no circumstances can fall wheat be changed to chess, nor chess to fall wheat.* A. A. Crozier, in his charming little book "Errors about Plants," says:—"The causes assigned for the alleged transmutation of wheat to chess are numerous and varied: sowing shrunken wheat; sowing in a certain time of the moon; injury by Hessian Fly; eating off of the plants by stock or by fowls; trampling by animals, or injury by passing vehicles; drowning or freezing out during winter; cutting off the 'tap-root' in imitation of heaving during winter." In different parts of Canada all of the above views are held by some, and in addition there is a widespread belief that chess will not reproduce itself from its own seed. What seems very strange to the writer is, that more do not prove the truth or fallacy of these views by actual experiment; for, even if the information gained has not much value in advancing the agriculture of the country, at least it may prevent the waste of much valuable time at farmers' institute meetings, as has been too often the case.

During the last summer some thousands of visitors to the Central Experimental Farm at Ottawa had the opportunity of seeing with their own eyes the experiment of which I now give the details.

In my annual report of 1891, as botanist to the Dominion Experimental Farms, I stated that, at the request of one of my correspondents, I had planted 100 grains each of chess and fall wheat, with the purpose of proving that:—

1. Chess will come true from seed and produce seed from which chess and nothing else can be grown.

2. No adverse treatment can produce a plant of chess from a grain of fall wheat.

On 21st of September, 1891, one hundred grains each of chess and fall wheat were sown, and each grain was marked with a small picket. An assistant was present and watched carefully while taking a record of the whole operation, so that no mistake could be made. In addition to the 100 grains, a single row of each kind of seed, eight feet long and two inches wide, was sown on the same plot.

Chess.—The chess seed all germinated and appeared above the ground in the autumn of 1891. In the spring of 1892 it grew rapidly, as soon as the surface water which lay on it for a fortnight after the snow melted had soaked away. On May 2nd it was three inches high; on May 15th, six to eight inches high; on May 27th it was from sixteen to eighteen inches, and had speared; on June 24th many of the stems were still in flower, thirty inches high. On July 8th the seed was fully formed, and was ripe by the end of July.

Fall Wheat.—Most of the seed germinated and came up in the autumn of 1891. During the winter the snow was shovelled off half of the bed three times, so as to expose the young plants to the effects of the weather. In the spring of 1892, surface water lay on part of this plot for a fortnight after the snow melted. In April half of the single row was stamped down into the ground with the heel of my boot, and certainly no fall wheat was ever more injured by cattle trampling on it in spring. At the same time the other half of the same row was cut off close to the ground with shears, and later, half of this cut portion was again cut off.

RESULTS.

Chess.—Nearly every one of the 100 grains grew and produced a strong plant of chess with many stems, which bore an abundance of chess seeds. Of the single row, all of the chess apparently grew and produced a heavy crop of flowering stems. These were cut down when in flower, and later bore again a lighter crop of flowering stems.

Fall Wheat.—More than half of the plants from the 100 grains were drowned out by the water lying on them in the spring; forty-two, however, grew, and all produced fall wheat. Of the single row, the plants which were stamped into the muddy soil, as well as those which were cut down, grew equally well with those left undisturbed, and all produced fall wheat.

In view of the above experiment, I must repeat what I have often insisted upon, that there is only one remedy for chess in fall wheat, and that is, to sow clean seed wheat in clean land. If this be done, there will be no trouble with chess.

An illustration of the absurdity of the contention which one frequently hears, that "Chess is a bastard grain, and therefore cannot produce seed,"

The Cultivation of Field Roots.

BY ELMER LICK.

By field roots I wish to be understood as meaning turnips (swedes), mangels and carrots. The first thought in connection with the subject should be, What position shall these hold in the rotation of crops? In nearly all cases it will be found the best practice for turnips to be the last crop previous to seeding to clover and timothy. Such a course may lead to more work in cleaning the land than if the crop was placed earlier in the rotation, but even this will depend on the length of the rotation. In the older settled portions of the province a four or five years' rotation will soon become a necessity in order that success may be the lot of the farmer—a rotation somewhat like this: clover followed by peas or oats, then a hoe crop (roots or corn) followed by barley or wheat, seeded to clover with timothy added, so that in case clover should fail then previous year's seeding could remain another year. Such a rotation as the above would clean the land, give a minimum amount of work on the hoe crop, increase the fertility of the soil, especially in nitrogen, and ensure a good "catch" of clover. Someone will say, That is all right, but I have very dirty land full of foul weeds; I cannot secure a "catch" of seeds except in favorable seasons. To such the best advice is, put on the hoe crop, manure liberally and cultivate thoroughly, then by following some such course as above indicated ultimate success is reasonably sure. It is a better practice in this section to grow hoe crop than to summerfallow, which is probably true in nearly all sections. A good crop of roots is an expensive one to raise, nevertheless a very valuable one considering its feeding value. There are several things to consider when deciding which to grow—mangels, turnips or carrots.

The first would be, For what purpose is the crop to be used? For making butter turnips, except white and greystone varieties, are very objectionable, whereas mangels and carrots do not injure the quality of the product.

For beefing cattle, sheep and young cattle turnips are generally accepted as being superior in quality for feeding purposes. Many contend that they can feed turnips successfully without noticing the taste in milk or butter. Where one can do it ninety-nine fail. Another consideration that would have an influence in guiding us is the quality of the soil. Turnips do not do well on heavy clay, but are fond of a loamy soil, while mangels do very well on clay except in wet or dry seasons. Climatic influences also vary the prospect of success in various localities. The carrot is not adapted to growth on a large scale, owing to work of thinning plants and also labor in harvesting. The mangel will not stand heavy frosts and requires early harvesting—scarcely safe to leave them out after October 10th to 15th. A mangel crop will usually produce more to the acre than turnips. Carrots should be placed on soil free from weeds. The preparation of the soil should begin in the fall as soon as the previous crop is removed. The usual practice is to plow thoroughly once and leave until spring. If possible, and particularly if weeds are abundant, one plowing early and another late would be preferable. This is not always possible, owing to pressure of fall work. I find particular difficulty in securing the late plowing, owing to apple picking coming in October. If the field should be infested with Canada thistles, this fall work will be found of very great advantage, in at least weakening the plants and thus making their destruction more readily accomplished and more certain. Under favorable circumstances many weeds will sprout during the fall cultivation.

Root crops have a short season of growth, and require a thoroughly manured soil, and one well prepared in every possible way. Farmyard manure liberally used, say 20 to 25 loads per acre, would furnish plant food, provided such manure were from well-fed cattle, horses or pigs. It must not be too strawy, otherwise difficulty will be found in working the soil. As corn likes strawy manure, all such had better be kept for that crop, and only well-rotted manure used. The quantity of manure required will vary according to the fertility of the soil. If a person has manure left over from spring, have it applied in the fall and plowed under for carrots and mangels, as these crops require early sowing. For carrots and mangels I have tried for some years to have the land manured and ridged in the fall, but so far have failed to find time for the work, my intention being to simply split the drills in spring and thus sow very early. Having the land plowed in the fall, when spring comes cultivate with spring-tooth cultivator or similar implement, harrow, and if time permits roll as early as other work will allow. The object of this is to encourage the germination of as many weeds as possible. About two weeks later apply the manure, unless such has been done in the fall, plow under, harrow thoroughly, and roll. If this has been done by the 20th of May or 1st of June, about two weeks later a light gang-plowing or thorough cultivating will bring more weed seed near the surface and encourage sprouting. Every possible means should be used to destroy weeds, as it makes the subsequent hoeing easier, and also the freeing of the land from weeds more complete. For mangels and carrots, unless the land has been manured and prepared as previously indicated, apply the manure and plow under as early as possible. Mangels and carrots should be sown early in May—the earlier the better. Often good crops will be secured even if they are not sown



A ROOT OF CHESS.

is that it is now largely grown in Oregon and Washington States as a hay grass, and it is claimed to have a special value from the fact that it will grow upon land impregnated with alkali and unfit for the cultivation of many other grasses. Mr. W. Tasker, of Ladner's Landing, B. C., writes:—"Chess is harder than fall wheat. I had some last winter which was covered eight inches deep with salt water for three days, and yet came through all right."

Kirkpatrick and Cookson, produce commission merchants, of Montreal, state that their Liverpool correspondents, referring to the oat trade, write as follows: "White oats are much more saleable than the mixed. Try and get the dealers to encourage the cultivation of whites more than mixed or blacks. It is, of course, well known that the oatmeal men also much prefer the white, and in this connection we would just say again that the American Banner oat gives almost universal satisfaction in Manitoba and the N. W. T."