

harrow. If, however, it is found that the land is not yet in perfect tilth, then it might be necessary to repeat the disc harrowing and the rolling. In any case, seed should not be sown until the soil is in perfect shape for crop production. It is usually safe to harrow again after conditions seem nearly perfect for seeding.

The spike-toothed harrow may often be run over the land when the average farmer would consider it utter folly to use it at all; for instance, in the corn field a few days after sowing or planting the corn, and in the same field a few days after the corn is up. Harrowing the field at such times is almost certain to materially help the crop.

Where large areas of corn are grown, an implement likely to prove of considerable value is what is known as the slant-tooth or tilting harrow. This enables one to control the depth to which the harrow shall sink in the soil, and so permit of harrowing the corn or potatoes at times and under conditions when the common spike-toothed harrow might do some small amount of damage.

Seeding.—Seeding is now rarely done by hand. It is, however, in too many districts still done broadcast; that is, what are known as broadcast seeders are used. Such seeders are not nearly so satisfactory as drill seeders. Much of the seed is insufficiently covered, while another part is buried too deeply. Consequently it comes up unevenly, grows unevenly, ripens unevenly, and there is thus considerable loss at harvesting, to say nothing of the seed lost by being buried too deeply or by being insufficiently covered.

The hoe drill and the single disc are the best seeders, and of these, I believe the single disc to be the better. Here, as in the case of the plough and the harrow, as large an implement as possible should be selected, since such implements aid materially in reducing the cost of production.

The Roller.—The roller is commonly looked upon as the implement wherewith to give the finishing touch. It is just at this point, however, that the greatest danger lies. It is as an operation after seeding that rolling is, on the average, of least value. There are, of course, conditions when it is advisable to roll after seeding, but the true value of this implement lies in its usefulness as a means of preparing the land preparatory to seeding, as already mentioned in connection with harrowing. The use of the roller in preparing sod land for grain or corn is much to be commended, and it is here that this implement is of the greatest value to the farmer. In certain soils, as for instance, mucky or peaty soils, it is often advisable to roll once or twice before seeding, and two or more times after seeding; this more particularly, if the land is to be seeded down to grass or clover, at the same time as sown to grain.

No land should be rolled after seeding if the surface is at all damp. The surface should be allowed to dry a few days before the roller is put on. Rolling in this way a few days or even two or three weeks after the grain is up, breaks the crust, forms a mulch, and so helps to conserve moisture, as already mentioned in the preceding paragraph.

On light dry soils, rolling is an essential operation after seeding to insure quick germination of both grain and grass seeds. Here again, however, it is often advisable to roll a second time two or three weeks after the grain is up. This helps firm the soil and breaks the crust as before stated.