

## HOED- OR FALLOW CROPS.

A lecture delivered at the Meeting of the Dairymen's Association of the Province of Quebec; January 10th, 1888: by Adolphe Bruncau, M. D., Sorel.

*Mr. President and Gentlemen,*—The soil of the greater part of our older districts having lost its wonderful fertility of ancient days, it behoves us to abandon the empirical cultivation of our forefathers, and to adopt a regular system of farming, that we may be in a condition to supply the wants of the present generation, and to be up to the level of the times in which we live.

Both theory and practice teach us that, on a well conducted farm, whatever rotation may be followed, it is essential that one member of it should be in fallow or fallow-crops: otherwise, it is impossible to enter boldly upon an improved system of cultivation, the only one that can tend towards true progress in the art of agriculture. Here, then, hoed- or fallow-crops appear to be absolutely necessary, since they lead us most surely to the end we have in view, since their effects are to thoroughly pulverise the soil, to expose by turns all its parts to the action of the atmosphere, to free it from weeds, and, thanks to the necessary manuring, to leave it in a favourable state of fertility.

These two propositions are now-a-days so generally accepted as true, that it would be a waste of time to demonstrate them.

Almost every sort of soil is adapted to fallow-crops, provided it is treated properly, and sown with the plants suited to its quality. The general rule is to put the fallow or the fallow-crop immediately after a grain- or pea-stubble which has been autumn-cleaned, still, on very light land, I have grown turnips and corn on a three-year-old ley (*Friche*).

Some time in the autumn preceding, the piece must be carefully ploughed at a depth proportionate to the state and quality of the soil, the depth of the top-soil, the quantity of manure at hand, and the habit of growth of the plant we intend to cultivate. Water-furrows in abundance must be drawn across the ridges to allow the escape of heavy falls of rain and of the melted snow in spring, that the land may enjoy the benefit of the alternate frosts and thaws which, during the winter, will destroy the weeds, and, in spring, will render the soil pulverulent and ready to produce any crop entrusted to it.

When the spring arrives and the land is thoroughly dry, the grubber or cultivator should be put to work along and across the ridges. My cultivator is of the kind called in England a "Duck's foot cultivator;" in other words, a large heavy harrow made of iron, six feet wide, with twenty-four teeth, curved towards the front, and flattened at the ends. With this implement, the ground is worked at a trifling expense, to the great improvement of its mechanical texture; the destruction of the weeds, too, will be complete if the operation is renewed after a few days of fine weather.

A short time before sowing, a last ploughing is given, which should not exceed the autumn furrow in depth; alternate harrowings and rollings follow until the soil is perfectly pulverised to the very bottom of the top-soil, taking care to finish with a rolling, to facilitate the passage of the drill, if sowing on the flat, or of the double-mould-board plough, if drilling-up is practised.

As manure is seldom abundant on our light, worn-out farms, in order to make it go as far as possible we always sow on raised drills, as this plan enables us to manure a greater extent of land, and, at the same time, increases our crops by 25% to 50%. The dung must be partially fermented, and should be in such an advanced state of decomposition that its fertilising constituents have become assimilable

and easily absorbable by the rootlets of the young plants. Besides, if raw dung is used, the weed-seeds of all sorts that infest it are sure to germinate, and the soil will be full of rubbish, which will greatly increase the cost of hoeing.

The hoed-crops suitable to our farms in general are: potatoes, mangels, Belgian carrots, swedes, white and yellow turnips, horse-beans, haricots or beans, pease, and Indian corn. As all these require pretty nearly the same style of cultivation, I shall speak to-day of the cultivation of the potato, the mangel, the carrot and the turnip; adding, perhaps, a few remarks on any operations peculiar to any one of them in particular. Pease and potatoes may be sown during the three first weeks of May; beans and corn, from the 15th May to the 1st June; carrots and mangels, from the 10th to the 25th May; swedes, from the 10th to the 25th June; and the turnips, from the 1st to the 15th July. (1)

## THE POTATO.

The advice that I give in another part of this lecture, to grow sugar-beets after a well managed crop of potatoes, necessarily leads me to explain what I mean by "a well managed crop of potatoes": it is this:

After having prepared the land in the above manner, we draw out, with a double-mould-board plough, drills with 24 inch intervals for the early sorts of potatoes, and 30-inch for the late sorts, the drills being made 4 or 5 inches deep, according to the distance between them, and the depth of the top-soil. We spread the manure in the drills at the rate of 40 one-horse loads to the acre, but if the dung is raw and full of litter, we add one-half more. (2)

After having planted the sets in the rows at a distance of from 9 to 12 inches, according to their sort, the drills are split with the same plough, which covers both potatoes and dung completely. A pair of horses do all this work better than one horse, as the drills are made more correctly. The large whittle-tree for this job should be 4 feet long for 24-inch drills, and 5 feet long for 30-inch drills. The operation is completed by rolling the drills to compress the earth and assist the germination of the sets.

About eight days after planting, the drills should be harrowed with a pair of light harrows, to destroy the sprouting weeds, and the operation may be repeated in a few days. There need be no fear of injuring the young shoots which the harrows uncover. This form of cultivation levels the ground, completely frees it from the first growth of weeds, and pushes on so rapidly the growth of the young potato plants, that they soon become masters of the soil.

As soon as the rows of potatoes are clearly defined, the horse hoe must be set to work, once a week, if possible, but always when the ground is dry. This should be continued up to the time when the flowers begin to open, and then, after the last horse-hoeing, the earthing-up plough should be passed between the rows. The plants should be only earthed up enough to preserve the young tubers, which will now be rapidly growing, from the sun and from early frosts.

There now remains nothing to be done, except to guard the crop from the attacks of the potato-beetle, which must be fought from the very first appearance of the plant. The second hatch must be destroyed as carefully as the first, or the loss of yield will be great, and the beetles will appear the following spring in even greater numbers than before. Paris-green, mixed with burnt and sifted plaster, is, in our opinion, more effective than when mixed with water, though, in our

(1) I should sow carrots and mangels as soon the land could be got ready.

(2) The Sorel one-horse load does not weigh more, as a rule than ½ of a ton.