

they can yield at twenty-six inches. Having made the drills, the dung should be carefully spread; and here I may mention that some even of our best farmers manage this part of the business uneconomically. A heap of dung to be divided among five rows will cost more to spread than if it were divided among three rows. The Scotch excel in this. The foreman starts the horse up the middle of the first three drills, and pulls out the dung in sufficient quantity into the drill in which the horse walks, without stopping the horse at all. A woman goes up one of the *wheel-drills* (to avoid treading the dung into the ground and making it troublesome to spread) and gives a fork full of manure to all three drills, which fork-fulls are equally shaken about and spread by three women who follow, one in each drill. Unfortunately, in this country we have no field-workers to speak of, so we must be content with one man spreading the three drills, which he will do much more accurately, with much greater ease, and in much less time per acre, than if he were to attempt to meddle with five or more drills at once.

The dung being all spread, as we probably have no manure drill, if we use sulphate of ammonia, or any other artificial compound, the best plan we can adopt is to sow it over the dung. Splitting the drills with the double-mould-board plough makes all safe. (1)

Sowing the seed.—This operation will vary, according to the state in which our seed is: wet or dry. If dry, it should be very dry, as the best machines as we find them here won't sow if the seed is only slightly damp. I remember once starting to sow Belgian carrots, and fortunately, finding out before I had gone over the first three rows that the seed-drill—a very good one too—was completely choked. Mangel seed is freer from dust than carrot seed, but it is mighty apt to clog if the hole in the seed-box is not quite free from stones, sticks, bits of straw, &c. In all sowings with American seed-drills, I should open the seed-distributor a hole or even two above the one indicated on the index, for they are all made to sow too small quantities.

The roller having been passed over the drills, the sower may be started, and great care should be taken that the rut into which the seed falls is of the same depth all over the field. Few things are more annoying to the hoer than to find an irregular braird of mangels or of turnips. After sowing, I always roll again, and on light land I use the heaviest roller I can get. Last year, I trod all my mangels in after the second rolling, walking on the flattered surface of the drills—in moccasins, heeled boots would bury some seeds deeper than the others—and a perfect plant was the result, in fact, with only three pounds of seed to the acre, there was not a vacant spot two inches wide all over the piece.

But for steeped seed, another plan must be adopted. Roll as before, and with the seed-drill, deprived of the back coverers, make a shallow rut not more than $\frac{1}{2}$ of an inch deep. The corner of a hoe will do as well, but you will find it easier to keep the rut straight with the machine, and this, when we get on a little farther, you will find to be a matter of importance. The seed, mixed, as I advised above, with some drying material, is to be sown by hand in the rut, and carefully covered with a wide-toothed rake. Rolling, and treading if you choose, should follow as usual.

The steeped seed will probably begin to show itself in about ten days from the time of sowing—sooner or later according to the season—and the moment the lines of plant can be traced, set the horse-hoe to work. It is for this reason that I laid so much stress upon straight rows, for if the rows

are truly drawn, the horse-hoe can pass along between the drills without damage to the plant even if, here and there, there may be a yard or two of seeds not yet up. Early horse-hoeing is of the very greatest importance: so great is it in my opinion, that in the case of parsnips, which love to linger in the ground, my custom is to mix with the seed half a pound per acre of rape-seed, which, sprouting rapidly, enables the horse-hoe to get to work on the fifth or sixth day.

If your horse-hoe is properly constructed, i. e. with curved side-hoes, it will, at the second time of going over, cut or pare away the sides of the raised drills, leaving only a narrow bit of two or three inches wide for the hand-hoe to look after. A miserable out of my own horse-hoe with curved side-hoes, may be seen at page 163, vol. 1, of the journal. The whole implement is drawn too flimsy, and the curve of the side hoes begins too abruptly. It can be made anywhere for about four dollars, and, where there are no stones, is a perfect machine. No drill-grubber can do the work properly until the tool has pared down the sides of the drill; then, the grubbers are useful enough, though I don't see the good of having two implements when one will answer every useful purpose.

Hand-hoeing Mangels.—Mr. Stephens, in his "Book of the Farm" objects to the deep hoeing of root crops on the drill on account of the danger that the manure will be thereby disturbed in its position; so much the better, say I, for the more intimately the dung is mixed with the soil, the more readily does it yield up its fertilizing juices to the plants. Dung is only spread in drills for economy's sake, and to start the germ of the seed into life. Last year, I was surprised to see the roots of white turnips running across twenty-six inch drills, and, not contented with meeting in the middle, invading each others territory. Some of the roots was as thick as a goose-quill. The cause was plain: the horse-hoe had pulverised the central spaces, the hand-hoe had pulled down the drills, and the turnips found themselves floating, so to speak, on a sea of mingled food and moisture, which gave them unlimited scope for searching after anything they might covet. Now if this is true of white turnips, it is ten times more true of mangels. The greatest possible crop of this root cannot be grown unless the drills are pulled down to the dung, and the growing plants left so naked as to make an unaccustomed observer think that they must perish of inanition. Don't be afraid, however queer they may look. In twenty-four hours they will revive, and all the exposed part of the root will become converted into sound cattle food. The deeper you hoe, and the more thoroughly bare you leave the plants, the bigger and the more nutritious will be the crop. Keep the horse-hoe going once a week until the leaves of the mangels are in danger of being injured by the horse; never pull the leaves, as some do, until the crop is ready for harvesting; and, when ready, let the roots remain in heaps, exposed during the day but covered at night, until the outsides are pretty dry. The tops should be wrung off, not cut, as the knife is apt to cause bleeding, which impoverishes the roots.

Time of Sowing.—In this country, mangels cannot be sown too early,—there is no fear of their going to seed,—the first week in May, if the soil be in a proper state, will do very well. After the middle of that month, I should prefer sowing swedes. Practically speaking, it is as easy to grow twenty-five tons of mangels as eighteen tons of swedes, and I would as soon have a ton of one as a ton of the other, wherefore I am surprised that so few mangels are grown in this province. The solution of the mystery is, I suspect, this: all the good farming of the country has been learned from Scotch agriculturists; the Scotch, except in some few districts, have not been in the habit of growing mangels; hence, their apprentices have never learned the art.

(1) Number of yards along a drill, manured with one pound of any manure, equal to 112 lbs. per acre, at 27 inches apart = 67.