

Supposing our plants are to be singled at 12 inches apart in the rows, then:

27 x 12 = 19,300 plants to the acre;
and 24 x 12 = 21,800 do do

2,500

Now, 2,500 plants, to good, at 3 lbs. a plant besides the tops, are equal to 3½ tons, about 180 bushels which is no trifling gain on an acre labour, rent, and manure remaining the same.

And this, in a degree, will prove true with the potato crop, for 2,500 divided by 2, taking half a pound to be the average yield of each set, gives 1250 lbs. which divided by 60, the numbers of pounds in a bushel is equal to 14 bags, worth in the Montreal market to day \$16 000; and this is, except the additional trouble in harvesting and marketing, clear gain.

For ourselves, we may say that we have tried the system of 24 inch drills over and over again, and are perfectly satisfied that, except for a tall plant like corn, the distance is quite sufficient.

Well, our drills are made: the dung is ready, not far from the place where it will be needed, having been turned over about ten days before seed-time; and the bone dust, superphosphate or other artificials have been properly pulverised and mixed: now, to apply them.

Let the manure be laid down for three drills at each passage of the dung-cart; the horse going at a slow pace. It will be far easier to spread the dung equally over three than over five drills, which is, as far as we have seen, the usual number chosen here. The dung being spread, in as small pieces as possible, sow the artificials as equally as possible over the whole piece, not along the top of the dung, for if some falls on the top of the drills, it will stand a chance of being nearer the roots of the young plants than if the whole is deposited at the bottom of the drill.

This being finished, cover the whole as soon as possible, and sow at once; the great point is to get the seed in before the upper inch of the drill has had the slightest chance to get dry. Never leave a drill unsown when you go home at night, particularly if, as in the case of mangels and carrots, you have steeped the seed. Steeped seed is more likely to *chip* and die than unsteeped seed, but its rapid starting into growth, — *braiding*, the Scotch call it — is so desirable in such slowly sprouting seeds as those cited, that it should always be practised. When mixed with dry sand, the Planet Jr. drill sows steeped seed perfectly. The steeping is simple enough, put the seed, in a bag, in water, remembering that in *running* water it will imbibe as much moisture in 12 hours as it will imbibe in a tub of water in 18 hours, and after, say, 30 hours in steep, hang the bag up to drain in a warm place. When the little white points begin to show themselves at the edge of the seed it is ready for sowing; at any rate, four days should fit it.

Roll the drills with a *light* roller, before and after sowing. In this climate, the land dries up so quickly that every means should be taken to confine the moisture, and the little rolls attached to the hand-drills usually employed here are too light to be of any material use for this purpose.

When the farmer is fortunate enough to possess a regular manure- and seed-drill, he will of course know how to save himself the trouble of hand-sowing the artificials.

Do not spare the seed; 3½ lbs of swede, 5 lbs of mangolds, 6 lbs of carrots, is not too much seed for one acre. As to depth of sowing, in this country we must sow a little deeper than in Britain,

from ¾ of an inch to an inch in depth is about safe. Keep the sowing machine carefully in the middle of the rolled drill, so as to preserve a regular distance between the rows of plants.

As soon as the rows begin to show themselves, at that very instant the horse hoe should go to work. It should not be set too wide at first, but the second and third time of hoeing, it should work close up to the plants, cutting down the sides of the drills: this will make the subsequent singling and hoeing much easier of execution, as, if the horse-hoes curved side hoes have done their work properly, not more than two inches of each row will be left to be done by manual labour. One great cause of expense in singling is thus obviated.

A horse-hoe of proper construction, that is, with the curved side hoes, will be exhibited at the Mile-End Show next September. (1) The implement is so light that a 500 lbs pony can draw it with ease, and yet its power of "sticking to its work" cannot be excelled. It will work at any depth from one inch to five inches — and at any width from twenty to forty inches. Where stones of any great size are to be met with, what is called in Scotland a "drill-grubber" is more efficient, but in all land free from stones the writer's horse-hoe does what may be called *perfect work*.

Singling. Many farmers have begun root-growing without ever having seen the work done properly: consequently, an acre of roots costs them about three times as much as it ought to cost. As this *singling* is evidently the cause of the abnormal expense, it would be well for all intending root-growers to study the question thoroughly.

Now, in Britain, where swedes, mangels, &c. have been grown on a large scale for more than a century, the average cost of singling an acre of roots may be fairly set down at 4 shillings = \$1.00; but, then, it must be remembered on most arable farms — always excepting the heavy clays — about ¼ of the whole is in roots every year: so the men get thoroughly accustomed to the work, and, as it is invariably paid for "by the job," they look forward to root-hoeing as a kind of harvest-work.

A good singler uses his hoe alone: he never stoops to single with his fingers. Standing straight across the rows, at right-angles to the one he is going to attack, he cuts out his plants with an eye that practice has made unerring; perhaps, he gives a light push, perhaps, a draw to his tool; he drives it in deeply; pulling down the drill as level as before it was made, and leaving the best plant of the ten or twelve inches lying on its side, in such a condition that a novice would imagine it would die in an hour. In fact, we have often been told that: "you have killed all the plants." Next morning however, they were all stiff, healthy, and vigorous.

Thus, the land is completely stirred from one side of the piece to the other, the horse-hoe having left two, or at most three, inches of the drill untouched, which, as we have just seen, the hand-hoe finishes. Surely, this must be better for the soil than a delicate scraping with the tool. The secondary object of root-growing in the cultivation of the land as a substitute for *fallowing*, and the combined work of the horse- and the hand hoe secure this object if the process is conducted as just described.

But as our people in many districts are not skilled *singlers*, it may be well

(1) Alas! I hear that there will be no show this year. Ed.

to describe the process we recommend to be followed here.

Two hoes, women, with 7 inch hoes, start, each at the end of a row, and chop out, at regular intervals, the plants growing on about 10 inches of drills, leaving bunches of plants about ten or eleven inches apart, which plants being disturbed by the action of the tool, will fall to the ground in a disentangled fashion. Following these hoes, two others, women or children, single the bunches, leaving one, the best, plant of each bunch. The work is easy enough, as the horse hoe, if properly used, leaves such a trifling width of drill to be cut by the hand-hoe.

As for the cost, Mr. James Drummond, of Petite Côte, Montreal, puts it thus:

Two women chopping..	\$1.20
Two women singling...	1.20
Second hoeing.....	0.60

\$2 00

M. Séraphin Guévremont, of Sorel, who grows on an average 20 acres of root-crops annually, calculates the cost of singling thus:

Two women chopping out..	\$1.20
Two do singling by hand...	1.20

\$2.40

Something more must be allowed for going over the drills a second time with the hand-hoe, but if the horse-hoe is kept going until the leaves begin to "shake-hands" across the rows, an active man can get over a good deal of land in a day.

The writer applied to the editor of the *Agricultural Gazette*, England, for his opinion on this subject. The reply was as follows:

"We know that in Scotland two women will single an acre of swedes in a day. In the south of England, where the distance between the rows is from 18 to 20 inches, 8 shillings = \$1.92 — is the price paid for singling and second hoeing. We perfectly agree with Mr. Jenner East that two women gapping out the rows with a 7-inch hoe, followed by two more women singling the bunches, could finish and acre in one day of ten hours.

In Norfolk, Eng., one of the leading farmers of that highly cultivated county, Mr. Alfred Learner, of Wymondham, says:

"The price given for hoeing roots is 7s. 6d. an acre for *chopping out*, picking (singling the bunches), and hoeing once afterwards."

M. Pierre Guévremont, our pupil, who manages the large farm of his father, Senator Guévremont, at Sorel, told me, in 1887, that the cost of hoeing and singling his root-crop — swedes and mangels — did not exceed \$3.00 an acre. Not one of the hands who did the work had ever seen a piece of roots hoed or singled before. The land was very foul, the manure, taken raw out of the dung-pit, having never been fermented, and being full of weed-seeds. His swedes, that year, certainly yielded 1,200 bushels an acre.

Thus, we must come to the conclusion that roots can be grown in the province of Quebec, if the hoeing and singling are properly conducted, almost as cheaply as in England.

CLOVER.

Mr. Terry, a contributor to the *Rural New-Yorker*, who farms without stock of any kind, except one cow and the plough-team, upon being asked: What can be done for land that is *clover-sick*? replies: "Have you any such land?" "No, but I hear of it sometimes," is the retort; "So

do I," rejoins Mr. Terry," but I have never been where it existed. Such land always belongs to some one a long distance away."

In other words, Mr. Terry is absolutely incredulous as to the existence of land that is, for some reason or other, tired of growing clover. Of course there is such land, and we lived for some years in the midst of farms where to attempt the repetition of the clover-crop oftener than once in eight years was utterly useless.

The farmers of the Eastern counties of England know the value of the red-clover as well as any people, and thousands of them found themselves obliged to give up growing it except at long intervals, and Mr. Terry will arrive at the same result if he continues his 3 course rotation wheat, clover, potatoes, many years longer.

CLOVER QUESTIONS ASKED AND ANSWERED.

"What shall we do for the pest that eats off the clover plant at its crown?"

"I have had no trouble with it. So far as I have observed, it makes no trouble until the second year of the clover. I turn the plant in and rot it, working it into money at its earliest maturity, and so avoid the worm. Regular rotation will reduce its destructiveness."

"What can be done for land that is clover-sick?"

"Have you any such land?"

"No, but I hear of it sometimes."

"So do I, but I have never been where it existed. Such land always belongs to some one a long distance away."

"How much stock do you keep?"

"A single cow and horses necessary to run the farm."

"If you needed no horses, would it be more profitable for you to keep only one animal on the farm?"

"After years of careful experiment, I have demonstrated that stock farming does not pay me as well as water crops. A ton of steers that would bring \$80 at four cents per pound remove \$11.80 of fertilizing ingredients from the farm when sold; \$80 worth of potatoes take but \$9 worth and make quicker and easier money, besides more of it."

"How early should clover seed be sowed?"

"There is no danger of sowing it too soon in spring, and every danger of loss from too late sowing. Hundreds of bushels of seed are wasted every year by sowing it so late that the frosts cannot work it into the soil before it sprouts. In this case, the tender young plants are frozen because they start before killing frosts cease. Had the seed been sown at Christmas or midwinter, the cracking of the surface would have given Nature's burial to each seed, and none of the plants would have appeared on the surface until well rooted and late enough to be safe."

"I have some sandy loam which I wish to stock with clover. But I desire also to get a crop of grass to cut next summer. Can I sow clover and Hungarian grass or millet together?"

"Not with safety to the clover, unless the accompanying crop is sowed so thinly as to prove unprofitable. Clover must not be crowded and shaded when starting. This is one great cause of the failure of so many with it. Make the land rich and give it up wholly to clover. It will pay handsomely."

"M. Terry how do you succeed in making such a late growth?"

"This is one of my secrets, and an open one. I harrow it when a foot high in the fall before it turns brown. This