

of the manure under or near enough to where the young plants are to start.

2.—If the seed is good and fresh (and none other should be risked), 2½ lbs. of turnip, 5 lbs. of mangel, and 4 lbs. of carrot seed to the acre is enough; if doubtful, add accordingly, but here let me say, provide your seeds in advance from the best seedsmen you know of, send samples of these seeds by mail to the Central Experimental Farm at Ottawa, asking for a test and report of the percentage of vitality of each, and be guided by their reply, which can reasonably be expected within two weeks. Rows 27 inches apart, plants 12 inches apart in the rows, I find convenient distances for turnips and mangels. For white carrots I make two rows, 9 inches apart on top of each flat drill, the drills being 30 inches apart, cultivating in between, and close outside where the horse cultivator does not reach, with the hand Planet Jr. cultivator; plants left from 4 to 5 inches apart.

3.—In securing uniform germination of mangel and carrot seed, I have always found that if the land is well rolled, and if the seed drill has a small roller to follow the seed, there is no trouble, but the seed should be fresh. As to time of sowing, the earlier the better, as soon as the ground can be worked. Mangels first, carrots next, and turnips to follow, and now that the fly gives less trouble than in former years, turnips not later than June 10th.

4.—Cabbage seed sown with carrots would cause more blanks than they would fill. The large bottom leaves, which in the end drop off, would shade the carrots and so cause blanks. Turnip ground would be more suitable, and late cabbages could be transplanted to fill blanks, if any, but only as an expedient, not as a practice, and other vegetables can be more profitably grown for cattle than cabbages. By the double-row system in field carrots, blanks, if any, can be corrected by leaving more plants where the rows are single. This double-row method I have found by measure will give one-third more of a crop than single rows 27 in. apart.

5.—In preparing ground for turnips (and the same holds good for mangels, cabbages, carrots, etc., save that carrots will not succeed on stiff or clayey ground, preferring a deep, sandy loam), I am aware that in most systems of rotation root crops follow grain after grass, in some cases even two years of grain; but, for many reasons, I prefer a clover sod plowed under in August or early September, using a skim coultter if the second crop is not high, or a chain drag from the eveners if it is. If any green shows between the furrows, harrow lightly to smother it. This gives a clean, mellow soil, just suited to roots or cabbages, free from weeds, easy to work, and not so liable to have couch grass or thistles as land that has been lately in grain, and barley would follow with far better success than if it came after oats. Of course, if no such provision has been made by turning down a clover or grass sod early enough in the autumn to insure its being rotted, it would be better to resort to stubble rather than try to work up sod that is at all lumpy. Sow the seed early, press it in well and be prepared to sow land plaster on the young plants if the fly makes its appearance.

6.—Pumpkins, I believe, have their place as of old as a stolen crop in the corn fields, helping out in a way but not of sufficient importance to make their cultivation profitable by themselves. Their milk-producing qualities are inferior to much else that can be more cheaply grown. Boiled with meal for pigs they answer admirably in assisting the fattening process.

7.—Rape sown with grass seed on new land makes capital fall feed, ensures the sprouts of bushes being eaten by the cattle, and the grass seed takes better for the tramping by sheep and even cattle. I have never tried it with grain and should think it would hardly make growth enough, unless after early barley, to be of much use. By itself it makes the best of fall feed for fattening cattle or lambs that have to be pushed, and leaves the land in good order for plowing for any root crop save turnips, cabbages or any of the Brassica family.

8.—Soils and situations differ so widely that only a local choice can be made in most localities. Turnips—i. e., Swede turnips—practically are a failure on the Island of Montreal, while the Mammoth Long Red mangel grows there to perfection; the reverse is the case in and near Quebec. In Scotland the Swede turnip gives far better returns than the mangel, while in many parts of England the reverse is the case. In a general way, the Champion Purple-top and Laing's Improved are the favorites, the latter particularly so for market purposes. In mangels, the Yellow Globe does best on most soils, particularly sandy loam; is easy to harvest, keeps well, and is ready for feed earlier than the reds. In field carrots, the Improved White is taking the place of the White Belgian. In red carrots, for general purposes the Danvers is the favorite, and even for a farm crop either to feed out or to sell I usually prefer the Danvers, sown on the level, rows 14 inches apart, plants 3 to 4 inches apart in the row, and all the cultivating done with a hand Planet Jr. cultivator. These carrots I could often sell readily for \$10 a ton, delivered from the field, while there was little or no sale for white carrots, though the latter, when fed to milk cows, impart to the butter just as much of a "June" color as the red carrots do.

Sherbrooke Co., Que.

W. A. HALE.

Believes in Surface Manuring.

For roots we like to apply the manure in the spring just as soon as the ground is fit to be driven upon with the team—the ground having been plowed late the previous fall. Spread about twenty loads to the acre (more or less, as the condition of the field may demand), and work it in with the cultivator. We use the disk harrow chiefly. In this way we get the manure well mixed with the soil on the surface. I am strongly opposed to plowing manure under for any crop if it can possibly be avoided. The manure, at least the best part of it, will soon find its way down far enough into the "bowels of the earth" without us trying to hasten its downward course with the plow. We should aim to put and keep our plant food just as near where it is going to be used by the crop it is intended to benefit as possible. We often seem to forget that every shower of rain that falls will help to work the manure down into the soil. How do we usually find orchards and fruit trees manured? Why, very often by simply spreading the manure or fertilizers on the top of the ground, and on top of an old sod at that. We all know that that it not where it is going to benefit the fruit crop, but it must find its way down to the little rootlets of the trees. Does it not seem reasonable that we should endeavor to keep the manure just as near the surface as possible for all our field crops, and then as it works its way down it will be absorbed by the roots of the growing crop?

For turnips the manure need not be applied as early as above stated, any time before May 15th will be soon enough.

Do not grow mangels. Carrots.—We sow about two pounds of seed per acre in drills about twenty-four inches apart, and try to have them sown as near May 1st as possible, and thin to six inches in the row. By sowing good, fresh seed, and having the ground thoroughly prepared, we have had little difficulty in securing a "catch." If we "missed it" would work the ground over and sow with turnips.

Our turnip ground is plowed in the fall, the manure is applied in the spring. The disk harrows are kept working on it till from the 12th to 25th of June, when they are sown—a few at a time, so that they will not all be ready for thinning at once. By sowing some wheat late we find we are less troubled with the fly.

We always grow the "Improved Short White" carrot, and believe it is the best all-round field carrot. Of turnips there are many good varieties—Hall's Westbury, Carter's Imperial, Sutton's Champion, and East Lothian are good varieties.

Waterloo Co., Ont.

JOHN TAYLOR, JR.

Salt for Mangels, and Soaking the Seed—Shallow Cultivation for Turnips.

1.—We find that short manures spread on the land during the winter when snow is not too deep, and well cultivated into the land in the spring, gives us the best results. About fifteen loads per acre is all we usually apply. For mangels we also sow about 300 pounds of salt per acre just previous to sowing seed.

2.—Mangels, 4 pounds per acre; carrots, 2 pounds. Mangels, drills 30 inches apart; carrots, 20 to 25 inches. Mangels, 10 to 14 inches, depending on the varieties; carrots, 4 to 6 inches in drill. We tried sowing alternate rows—carrots and mangels—this year, and it was very satisfactory. We made the drills 27 inches apart.

3.—We usually soak the mangel seed in warm water until there are a few sprouts starting, and then dry with ashes or lime, but have never tried anything for carrots. We like to sow as early in spring as the soil will admit.

4.—Have never tried it.

5.—Plow in the fall, manure during the winter, and cultivate frequently during May. If soil is loamy or sandy plow previous to drilling, but if it is clayey drill up the cultivated soil only. We usually sow from 10th to 15th of June, and sometimes earlier.

6.—No.

7.—No.

8.—There are one or two varieties that are very popular in each: Turnips—Jumbo, Selected Purple-top, Hartley's Bronze-top. Mangels—Mammoth Long Red, Yellow Intermediate, and Golden-Fleshed Tankard. Carrots—Steel's Improved Short White and Large White Belgian.

Bruce Co., Ont.

JAS. B. MUIR.

Nova Scotia Methods of Root Culture.

1.—I apply the manure in the spring in drills, at the rate of one cartload to about fourteen rods length of drill.

5.—The ground is plowed in the fall, well harrowed in the spring, then gang-plowed crossways and thoroughly harrowed. The drills are opened up with a double-moldboard plow, and are 25 inches apart. Seed is sown every evening upon what has been prepared during the day, at the rate of about 2½ lbs. of seed per acre. The plants are thinned to at least 9 inches apart. From the 15th to 20th of June I consider the best time to sow.

8.—D. M. Ferry & Co.'s Improved Purple-top yellow ruta-baga has given the best results with me, being a heavy yielder of very uniform and flatly-shaped roots. Of white-fleshed varieties, the Yellow Aberdeen has proved the best.

Antigonish Co., N. S.

JOHN GIBSON.

Corn and Potato Growing.

1.—How, when, and in what quantities do you apply manure to land for (a) corn, (b) potatoes?

2.—How do you select and prepare seed potatoes; how do you prepare the ground; what time do you plant for a field crop, and for very early potatoes? How wide apart do you put sets, and how many in a hill?

3.—In the light of your experience and observation, kindly compare hill and level cultivation for potatoes.

4.—After what crops do you prefer to grow ear and fodder corn; how do you prepare the ground; and at what time and how do you plant the seed, and how much seed per acre do you consider best?

5.—Have you ever grown pumpkins alone or with other crops for fall feed? If so, how do you grow them, and how much value do you place upon them for hogs and milch cows?

6.—Have you observed or grown rape alone or with grain or other crops to be pastured in the fall? If so, what do you think of it in either or both cases?

7.—What varieties of corn are giving most general satisfaction in your district for ear, fodder, and the silo?

Prefers Hill Cultivation for Potatoes.

1.—(a) As to applying and the season to apply manure for a potato crop, I have tried several ways, but the way that has given me best results is to plow land the fall previous and apply the manure (which should be well rotted) at the rate of about 2½ loads to the acre and have it well worked under. (b) For corn the manure does not necessarily need to be rotted, but would be better so, and the land should not be fall plowed.

2.—In selecting and preparing seed potatoes, I usually select the largest if possible, and cut them into sets a few days previous to planting. The soil should be of as loamy a nature as possible, and fall plowed heavily, manured in spring and well worked under. Plant about the 15th to 20th of May for general crop, and for early potatoes about the 1st of May, as near as possible. Plant three sets in a hill, and have the hills 18 inches one way by 36 inches the other.

3.—My experience teaches me that hill cultivation is by far the best for this locality. The reasons I assign for it are: (a) If the potatoes are hilled immediately after a light rain the moisture is retained to a certain extent in the hill and the result is larger and better potatoes. (b) Where flat cultivation is carried on, when the vines of the potato die away in the early fall a large amount of the crop is left exposed to the sun, thereby damaging them for sale or to keep.

4.—For hill or fodder corn I prefer either clover sod or pea stubble. Manure heavily in spring and plow as early as convenient, and by frequent cultivation I start all noxious weeds and grasses before planting, and cause the land to be packed also. Plant about 15th or 20th of May, and insure a crop that should be matured before it is frosted. For hill one peck of shelled corn is sufficient for an acre, and from three pecks to a bushel for fodder.

[NOTE.—Two pecks at the outside is, in our experience, ample, and some would not use more than one peck. Mr. Rennie, Farm Supt. at the O. A. C., says the latter is sufficient.—EDITOR.] I mark my ground with a one-horse marker, 3 feet 8 inches each way for hills, and the same applies to fodder.

5.—When planting corn I usually plant pumpkin seeds in the hill, as the plants do not interfere with cultivation till corn cultivation is out of question. In this way I receive two crops off same ground in the one season. I find them very good feed for milch cows when pasture is short. For hogs, I have never tried them only in their raw state, and they are not of much value fed in that way. However, I know them to be good feed if boiled and mixed with chop or grain, they being both cheap and of good fattening quality.

6.—I have tried rape sown alone after fall wheat was harvested, and must say I am more than pleased with the result, as there is nothing I know of can equal it for fall and early winter feeding for sheep and lambs.

7.—The varieties of corn I have sown for ear with the best satisfaction are: 12-rowed Yellow, Red Glaze and Yellow Dent. For fodder I find a mixture of Mammoth Southern Sweet and any of the above mentioned varieties very good. And for silo the Red Cob Ensilage and 12-rowed Yellow are generally sown.

Elgin Co., Ont.

CHARLES C. FORD.

Thorough Cultivation Important—Sugar Corn.

1.—From 15 to 20 team loads to an acre, applied on sod, last of March, when danger of winter washing is over, to be plowed down in spring.

2.—I select best specimens of each kind, discard very large and small ones, split in two—in three if very large—and drop sets 15 inches apart in marks made by marker 30 inches apart. This and the carrots are the first crops I put in the ground, say May 1st to 7th. No limit to our cultivation; but shallow when bulbs begin to form and always harvest when tops turn yellow, showing ripeness, generally Aug. 12th to 25th. It is a mistake to leave potatoes in the ground one day after they are ripe.

3.—I am a firm believer in level cultivation, but finish up by raising a slight mound around all hoed crops.

4.—On our soil—a day loam—always prefer a pasture sod top-dressed with manure, as already stated, and plowed under in spring, just before planting. May 1st to 10th. Cultivate thoroughly with a disk harrow, and a harrow fine, then mark in each hill in the rows made by marker when we have time or get them to buy. Like to drop a pin of ashes around each hill to be worked