

may be safely tied up: but to halter a young colt, and at once tie it up alone in a stall, is dangerous. Foals winter better loose and two together, with plenty of room to move about, than when tied in a stall. Exercise is most necessary for the growing animal, and on no account should this be neglected. They should be out more or less every day, no matter what the weather may be. If the weather be very wet, they should not be left out long; but on dry, cold days a good run will do them good. Some have an idea that it makes a colt a hardy horse to expose it to all weathers when young. The contrary is the case. Exposure to cold autumn rains and to winter frost weakens the constitution and makes a delicate horse. Generous treatment with careful nursing gives a stamina that will make a colt grow big and strong. Three pounds of good oats morning and evening will be enough of grain at first. This may be increased as the colt grows. A good-sized carrot or a Swede turnip, cut into small pieces, till it gets to relish them, is good. Afterwards he may be fed whole ones. Turnips are coming more into favor for horse food; many prefer them to carrots. A change is desirable. Good timothy hay or good oat straw as a change may be given. Boiled wheat once or twice a week, alternating with a warm bran mash for supper, is good winter feed for colts. Boiled linseed once a week is desirable; a canful of the boiled mass in bran is the usual feed. Some use boiled turnips mixed warm with cut hay or chaff for supper now and then. Salt should not be forgotten, and the drinking water should be fresh and good. Running water is the best, and soft water is better than hard. If skim-milk be plentiful, a little warmed with a spoonful of sugar will be relished by the young colt, and agrees with it. Remember the exercise. Even the first winter the foal may be hitched up alongside an older horse and given a little exercise. It may thus early be broken in to harness and the road without having any weight to draw. Remember that young things need light and plenty of fresh air for health and growth. Keep a watch on the foal's feet. If neglected, the hoof may grow out of shape and be permanently injured. No foot, no horse; and the hoof is one part we are prone to neglect. Thus looked after with generous food for the first winter the foal will have had a good start. No after care will make up for neglect the first year. Generous feeding and careful treatment are most necessary to get the best results from the young animal.

### ESSAY ON THE CULTIVATION OF CARROTS FOR FODDER.

(Prize essay 1896).

Sort of soil for—Preparation of land for—Sorts of carrots—Seed per acre—Hoeing—Moulding up.

The cultivation of the carrot is comparatively simple when compared with that of other roots; the greatest difficulty is in securing a good beginning and giving them a start.

The carrot, unlike most root crops, is very hardy, when once well started it will withstand more unfavorable weather than any other hood crop, being less liable to the ravages of insects that prey on other crops, and less liable to be injured by frost or dry weather. The soil best suited to

carrots is a black loam with clay sub-soil or clay loam made rich with manure, as they are also heavy feeders on the soil and take about the same amount of manurial constituents from an acre as mangels, the preparation of the soil being much the same. Almost any of the soils in this province is well adapted to the growth of carrot. Take land well drained with surface drains, or underdrained and, after harvest, take second sod (after some of the cereal crops, peas being preferable) and plow light or gang-plow three or four inches deep and when dry, in a day or two or a week, harrow thoroughly until all grass and stubble are on the surface, let it lie in this state, if no grass appears; if so, harrow again, then, about the middle of October apply a good heavy coat of manure, well rotted, and made as fine as possible at the rate of thirty or forty cart loads per acre, spread evenly over the surface and plow under six or eight inches deep (manure from the pig house being most suitable) make sure that all surface water is drained off in order that the land may dry as early as possible in spring.

As soon as the land is dry, and as early as possible, that it will work light and pulverize as fine as can be made, harrow lengthwise and crosswise, until the surface becomes thoroughly smooth, then plow crosswise and let it remain that way for a day or two to dry and warm. Now have seed ready, make sure it is fresh and clean. The carrots best suited for a fodder crop and those most easily harvested, also give the largest yield per acre, are the intermediate or improved Short White, White Vosges, and White Belgian. There are several varieties but those three will be found to give best results for a fodder crop.

Now harrow until all lumps are broken and surface made smooth and fine as possible then raise drills from 24 to 28 inches apart, rake off the surface of the drills with a garden rake (1) to give a level surface for the machine to run on the top of the drill more easily.

Commence and sow at the rate of 1½ to 2 lbs. per acre, which will be thick enough if seed is fresh and good; it is advisable to have them thick as they require to be thinned by hand.

As soon as the young plants can be seen, or as soon as the rough leaf appears, start the scuffler between the drills and cut up within two or three inches of the plants, then with sharp hand hoes trim the remainder, or the shoulders, close up to the plants; now commence thinning before the young plants get too much of a start, which would cause them to become spindly, and check their growth; thin by hand (2) from four to eight inches apart and avoid as much as possible pulling them down; then, in a few days all weeds that have been pulled and cut will have died and disappeared. Now, run the scuffler through them again and with hand hoes, hoe close up to the carrots which will be all that is required until they get well started or about six or eight inches high, then they should be banked or moulded up which will cover all weeds that may have sprung up. Do not mould too sharp unless the season is somewhat wet.

I find from experience that carrots, unlike mangels or turnips, require the moulding as they draw largely from the subsoil and not so much from the surface.

This is all that is required until the

harvesting which may be left quite late in the season.

Carrots, unlike mangels, withstand the frost on account of the heavy top which protects the roots, causing them to remain in the ground until the end of October with safety.

I find the most expeditious way of harvesting them is to pull when dry and lay the roots crosswise on top of drill, three drills on one, which gives two clear drills for the horse and cart to come along, then with sharp knife or sickle, commence and top.

Pick up each carrot with the left hand and trim off the top and throw direct into the cart, be careful that no tops or leaves adhere to the roots for they are sure to heat and rot, which causes too much moisture in the root-houses or cellar, and if a large quantity is stored will cause them to rot at the crown.

If the above methods are closely observed, and followed carefully with favorable weather, the grower will have no difficulty in producing from fifteen to twenty tons per acre of fodder carrots.

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### ESSAY ON THE CULTIVATION OF MANGELS.

Essential points—Preparation of land—Varieties—Width between drills—Horse-hoeing, &c.

There are four essential points to observe to insure the successful growth of a crop of mangels, viz.: first, the soil and its preparation; 2nd, the seed and sowing; 3rd, the thinning and cultivating; 4th, harvesting and storing.

In the first place, the best soil for mangels is a rich clay, sandy or gravelly loam well drained with surface drains, or if underdrained all the better; then take second sod after wheat, oats, barley or peas, the latter most preferable (mangels succeed remarkably well in the same sod year after year) then gang plow three or four inches deep to kill all weeds and rot all stubble and grass, let lie in this state one or two weeks if weather is dry, then harrow thoroughly until all weeds, grass and stubble are on the surface, harrow at intervals to keep the surface smooth, until the middle of October, but if previously cultivated with roots or corn, the land will not require this amount of labour; then apply thirty or forty cart loads per acre of good barn yard manure, for mangels are heavy feeders on the soil, as one acre takes from the soil the following manurial constituents: viz.: Nitrogen, ninety-eight pounds; potash, two hundred and twenty-two pounds; phosphoric acid, thirty-six pounds, which must be applied to the soil in farm yard manure; but if any special manure is used in addition to farm yard manure, nitrate of soda would be the best. The manure should be well rotted, spread evenly and ploughed under immediately, do not let the land lie to dry, or allow any of the valuable parts to escape into the air, plough six inches deep and if low land, in ridges about eighteen or twenty feet in width.

Have all surface water well drained off; with plenty of cross furrows; then, if convenient, apply from thirty to forty bushels per acre of good wood ashes evenly spread on the surface of the ploughing, and let lie exposed to the action of the frost until spring

then, as soon as the soil is dry; mangels requiring to be sown early and firm enough to work fine and carry the horses, harrow the surface thoroughly to break all lumps as fine as possible, and after ploughing crosswise six or seven inches deep, let it lie for a couple of days to dry and warm up.

2nd—Now have seed ready and make sure that it is fresh. The best varieties to sow are Long Red, Intermediate Yellow, Yellow Globe, and Golden Tankard, in the order named, three lbs. per acre is sufficient if seed is fresh.

Harrow the land thoroughly until it is all as fine as can be made. Drill it up thirty inches apart, drills running north and south, if possible, to insure as much sunlight as possible to the young plants. As soon as a few drills are raised, rake the top of drills with a garden rake to level the surface for the machine to run more easily, then commence and sow, do not allow the drills to stand over night unsown, for it is very important that all drills raised be sown before the ground settles. If any are raised and not sown the same day, harrow down next day, for herein, lies the surer of success or failure for the seed to germinate as there is something in the settling of the soil that causes the seed to take root and grow more evenly if sown at once. I have, more than once, had a few drills left raised over night and sown with the same seed, and found that not more than half the seed came up.

3rd.—Now, as soon as the plants are up, so that they can be seen from end to end of drills, go through them, with scuffler or horse hoe cutting up within two or three inches of the plants, but not so close as to disturb the plants, this done, then with sharp hand hoe trim off the shoulders, close up to plants, this will kill all weeds that may have started. Then as soon as the plants get three inches high, or the fourth leaf shoots out, commence and thin, which must be done by hands, and avoid as much as possible pulling them down, as that causes them to grow crooked. (1) If the soil is rich thin to ten or twelve inches apart, and do not leave a weed, that done in a few days run the scuffler through again which will pulverize the soil and retain the moisture. In a few days go through them with hand hoes, and hoe between the plants which will loosen the soil and give them a start to set, if the weather is dry and the soil begins to crack, go through with the scuffler quite light and keep the moisture from escaping; but if the weather is wet that is not necessary. A moderately dry season is much preferred for a good crop of mangels. Watch closely that there is no cracking of the soil; if that begins, run the scuffler quite light through them again. I find from twenty years experience that level cultivation is best suited for mangels, finding they derive more nourishment from a level surface rather than from a moulded or banked surface. But if size is wanted for show roots, apply a good dressing of manure with horse and cart driven between the drills, spread even all over the surface and round the plants, the horse walks in the drill and the ordinary cart runs between the two drills, and can be driven to the other end to turn.

The breaking off of the under leaves (2) is of great advantage and keeps the roots from growing crooked,

(1) By no means. Chop out, and thin with the hoe.—Ed.

(1) A great mistake. The leaves are feeders.—Ed.

(1) A light roller is better.—Ed.

(1) Chop out with the hoes first, and leave in bunches.—Ed.