

long winter season. The feeding of roots, even in very moderate quantity, to stock that are expected to turn hay and straw into manure, will prove of vastly more benefit to them in helping them to digest and assimilate their dry fodder, and also in giving them an appetite to eat, than is generally supposed; for it must be known that the more food we can get them to consume, where that food is not of too heating and stimulating a nature, the better they will thrive, and the more manure they will make.

Second, it is desirable in all cases not only to keep up, but to improve the productive capabilities of the soil, and in no cheaper and better way can this be done, than by growing roots on it. Roots require manure and good cultivation, while at the same time they may be grown so late in the season, after the rush of spring grain seeding is over, that they are without question the most desirable crop to which barn-yard manure can be applied, and that too in a state that would prove positively injurious to most other crops. The benefit of the manure thus given tells on the succeeding grain and grass crops for several years afterwards, and where a proper system of rotation of crops is followed, the growing of roots must form the beginning and end of good farming, the first and last course in every rotation. Land left in such good condition that grain

At the same time we think the cost of labour on the root crop might be considerably reduced without proportionately reducing the value of the crop. The system of culture followed is, in many instances, too slavishly copied from that of the farmer of Britain, where labour is so cheap that hand-hoeing can be almost exclusively employed, and consequently the plants grown much closer together and of a more moderate size. Hand-hoeing is slow and laborious work, and should be avoided as much as possible; in fact, one thoroughly good hand-hoeing at the time of thinning out the crop ought to be all of that kind of labour required. But in order to cheapen the cost of labour in a root crop, we must have the rows wide enough apart to enable the soil to be constantly stirred by means of horse-power implements, and what is more, we need to have implements of such construction that the work of stirring the soil and keeping down weeds can be done expeditiously and thoroughly at the least possible cost for implements and labour. We believe that under proper management the ruta baga crop need not and does not cost nearly so much to raise as is supposed or claimed by some writers, and that its value is greater, to the wide-awake farmer, than its actual selling price. Suppose we have a crop of 800 bushels of ruta bagas per acre, which should be the average of a good crop, we have 48,000 pounds of cattle food. Agricultural chemistry will have it that four-fifths, or even more, of this is nothing but water; even with this allowance, there is still 9,600 pounds, or very nearly five tons, of cattle food of the most solid and nutritious kind to the acre, and the

land left in such good condition that grain and grass can be grown for four or five years afterwards without needing any heavy application of manure, while at the same time the soil has been cleaned of foul weeds and made mellow.

#### Artificial Surface Ponds.

It is a matter of great convenience to the farmer, and adds much to the value of his farm, if he has a stream of water, however small, running through his land; and if it runs near the centre of the farm, the fields may be laid out in such a manner, that whenever stock are confined in any one of them, they can have free access to water without the labour and trouble of driving them two or three times a day to the yard, or a distant corner to enable them to obtain water to drink. In many cases, however, from neglect and want of observation, these little streams—rills they may be called—have their courses so overgrown with rushes and weeds, and their banks so broken into by the trampling of stock, that they become practically useless, either for drainage or a supply of water in summer. This should be remedied by having their courses cleared of all obstructions, at least once a year, the best time for doing which is in June, between seed-time and haying, when work is slack. At some point in each field, a small basin, with gently sloping sides, can be made, and a load or two of gravel dumped in to make a firm bottom for the cattle to drink at, and stock will soon get accustomed to go to drink at that place where the water is deepest and clearest. On farms that have not the advantage of running water, spots may often be found where springs lie under the surface, often in the side of a hill or in small damp hollows filled with aquatic plants, and commonly known as frog ponds. By making an artificial basin in such spots and covering the bottom with gravel, one may often obtain a supply of water for stock. Should there be springs in a hill-side, it will be advisable to try and collect them together into a point by little open drains, and from that point convey the water through a pipe to some point below, where a small basin can be made to collect the water, and the overflow be carried away to the roadside ditch or some point where it will not saturate the surrounding soil with moisture. When a pond already exists on the farm, and it is apt to become stagnant and filled with weeds and rubbish, the water is sure to be unwholesome for stock, especially milk cows, and great pains should be taken to have it cleaned out, and the bottom coated with gravel, and if a spring can be led into it, and an outlet made, the water will be less likely to get stagnant.

The increase in the manufacture of beet sugar in Europe for the previous year over that of the year, is about 100,000 tons. The product already exceeds that of Cuban sugar cane. France exported 70,000 tons of beet sugar during 1869.

#### Culture of Indian Corn.

The roots of corn extend to a considerable distance near the surface, hence the necessity of having the soil for this crop made mellow near the top, and kept clean and free from weeds by constant culture, until the plants have acquired a strong growth and hold of the soil, after which they should rather be left undisturbed; otherwise the spreading rootlets will be cut off, just at the time when they are most needed to help the development of the blossoms to seed. No soil that is cold and compact, or hable to retain moisture for any length of time, will produce good corn. A good clover ley, or even an old sod, if not too full of grubs and cut worms, if properly turned over, so as to give a bed of mellow surface soil four or five inches deep, will raise good corn.

When coarse barnyard manure is applied, it should be spread on the soil and ploughed under; but if fine well-rotted manure can be had, it is most profitably employed in the hill. Too close planting should be avoided; the hills ought not to be a less distance apart than three feet each way, while three by three and a half or even four is often better. In selecting seed, it is requisite to obtain that which is not only sound and good, with small cobs in proportion to the bulk of the ears, but also that which is earliest in ripening. A good farmer will always make a practice of selecting the earliest ripening ears in the fall when on the stalk, and this carried on from year to year will ultimately result in producing an earlier maturity of the crop. To ensure a quick germination, it is well to soak the corn and roll it in plaster before planting. In planting the seed, allow at least eight kernels in each hill, spread out, to ensure enough plants, as the saying is:—"Two for the cutworm, two for the crow, and four will be left for the farmer to grow." When the corn is well up and strong, pull out what may have been left over four in each hill. Some prefer having but three, but if the soil is good and rich, four are not too many to succeed well. These directions have reference to the varieties of corn usually planted in Canada; for the large Western corn such a seeding would be superfluous. Four kernels to a hill would be ample, and no after thinning would be required.

Much of the success of the crop will depend on the after culture, and as most of this can be done with the horse-hoe, it should not be neglected. When the plants are about a foot high, they should get one good hand-hoeing around the hills, and have a little earth drawn to them to support the stalks, and at the same time a handful of equal parts of plaster and unleached wood ashes to each hill will be a great help to the crop. During the hottest and driest weather the corn should get as frequent stirrings with the horse-hoe as can be given, and as soon as the plants show their tassels, they should be left undisturbed until the corn is