

The better land, the better the beets. Avoid all peaty and boggy soils and new land. Some parties lately tried to grow sugar beets on flat Moss in England. The beets grew well, but contained no sugar. Avoid all salt in the manure, and particularly fresh or leached ashes. The beet root has a special faculty for extracting these substances from the soil, and they are very difficult to get rid of in the juice. At the same time, a proper proportion of these substances in the soil is necessary, but they must not prevail.

Plant thick in the row, so as to have not more than one foot to fourteen inches between the roots; one foot is quite enough for most soils; but have the rows wide enough for a narrow horse hoe. When the beets begin to grow well, they must be gradually earthed up by the double-breasted plough, so as to keep the root covered. The part exposed to the light yields but a small portion of sugar. Keep the weeds well down with the hoe in the rows, and with the horse-hoe between them, until the leaves shade the spaces. The best beet in England have been grown with sewage water, on what without sewage water would be a desert of sand and gravel. This proves that the right kind of manure, and plenty of it, and moisture, are what the plant requires.

Never calculate to grow large roots; but get as many off the land as you can in numbers, provided they are not stunted. Different kinds of land require different manure. Nothing but experience can show exactly what is required.

In getting up the roots be careful not to cut off the lower part of the root, either with the plough or fork; for the lower down you go into ground, the more sugar there is. It has been ascertained by special analysis of a sufficient number of roots to prove the fact that the following is the relative per centage of sugar in different portions of the root, the root being divided into six parts, and beginning at the bottom or tap root:—

The first part contains (according to kind planted) from	
11.062 per cent. of sugar to 9.57 per cent.	
The second, 10.734 per cent. of	
sugar to	\$ 24 "
The third, 10.500 per cent. of	
sugar to	\$ 24 "
The fourth, 8.647 per cent. of	
sugar to	\$ 50 "
The fifth, 7.212 per cent. of	
sugar to	6.02 "
The sixth, 5.230 per cent. of	
sugar to	6.02 "

Inferior kinds contain less. These analyses are by Dr. Voelcker, the best authority in England. It will therefore be seen how important it is neither to waste or spoil the bottom or tap-root end of the plant.

If you want your roots to keep well, break off the leaves, but never cut the crown of those roots that are to be stored. Store them so that they can neither heat nor grow;

better too cold than too hot. Growth in the pit or store destroys the sugar. Beet roots protected by earth, and well covered and dry, bear a good deal more frost than people generally suppose could be borne by them.

During the season of growth, keep your beets growing without check. As to the time of sowing, parties differ greatly. When Mr. James Fleming, of Toronto, was in France, enquiring into the matter, the person he consulted recommended late sowing. The Germans advocate early sowing. Possibly the best course lies between the two. Certain it is that if you want sweet and tender table beets, you should sow as late as the first week in June. No doubt a good deal depends on the time you can begin sugar making. In the trials of the American Commissioners, they found that the most sugar per cent. for the weight of the root was yielded in September; but the growth of the roots is considerable after that. The weight of the crop increases, and doubtless the quantity of sugar per acre; but in per cent. for the weight of the root, the sugar is less. Here again, no doubt, the best time for harvesting lies between the two extremes. All agree, however, that roots for keeping should be well ripened before they are dug. Where they are to be worked up at once, their being ripe does not signify. Unripe beets furnish more sugar for weight than ripe and full grown ones; but the latter keep best. The roots may be stored in the house or pitted in the field; but they must neither heat, grow, or dry up and wither. Any plan that keeps them in the freshest and soundest condition is the best.

We now come to the manufacturing—and first the grinding.—The various plans for maceration and diffusion which of late have been so successful, prove beyond a doubt that the old and original system of fine grinding and pressing is not the best that can be adopted. But the very fact that either way will work, and work well, is most important, as it leaves so much to circumstances and to common sense; and in this latter article we in Canada, from the necessity of thinking for ourselves, have the advantage of other countries, where everything is bound down and carried on by rule. It may therefore safely be said that the method of grinding may be left to the judgment of the operator. If he grinds with any kind of common rasp rollers or crushers, he must squeeze out the juice in a screw or lever, or roller press; either will get out four-fifths of the juice, and the remainder may be leached out by water. The operator need not be bound down to any system. If he can feed his pressed cake at once, it is perhaps not worth while to waste time and labour over the last drop of juice. What you don't get your cattle do, and beet juice is not like the stippings of a cow—the last the best.

As fast as you get out the juice it should be run off to the defecating vessel or boiler, but if you cannot arrange that owing to any

reason, add a little milk of lime to the juice. It will then keep some time without mischief; without lime it turns black very quickly; but lime stops this and restores the colour. Keep your presses, press cloths, or bags, tubs, vessels, everything, as clean as possible, and wherever anything is likely to get either stale or sour, use lime water and lime wash.

When you get the juice into the defecating vessel, heat it up to 170 or 180 degrees of heat. Let it remain there some little time, and see if the juice breaks—that is, if lime has been added during any part of the process. If no lime has been added, add the milk of lime to the juice, little by little, stirring and mixing it well, and from time to time let it pause until you see if the juice separates from the flocculent matter in the pan, and becomes of a clear amber or white wine colour. If so, you have put in enough lime; if it does not, but looks greenish, or does not separate add more until it gets of the right colour. When this has been done, raise the heat pretty quickly to the boiling point. A thick scum rises, which must be removed with a proper skimmer. Then bring the whole to a boil, and see that you get off all the scum. The juice that you take off with the scum will filter through a flannel bag, leaving the scum, which forms a most valuable manure.

You then proceed to carbonation, will be described in the next article.

NO. XVIII.

We now come to the evaporation, and here our troubles really commence. In grinding and pressing, if we do not grind quite as fine as we ought, and press as close as might be, our cows get the balance that remains in the root; but if we do not evaporate properly, we lose the whole results of our labour. When the juice has been defecated with lime, then carbonated with the bellows and the fumes of burning charcoal, then strained or filtered, and all the chalk and lime taken out of it, it is then in the proper state to reduce to syrup, but it must be perfectly clear and transparent, and will be the colour of Madeira or sherry wine. The boiling this with a portion of bone-black, is supposed, and indeed is positively stated in the works before quoted, to destroy and weaken the brown or yellow colour; but the writer, in his experiments, has not found it produced any very sensible effect. Doubtless, however, he did not go about it in the right way, as bone-black (which is bone charcoal) is a well known destroyer of colour in syrups, and is most extensively used by sugar refiners.

The chief trouble you will find in evaporating, however, is not the colour you will naturally have in the juice, but the colour you will make in it by burning it, sensibly or insensibly, and the colour which all vego-