

THE SUGAR-BEET.

By F. ABBOTT, JUN., Superintendent Botanic Gardens.

Read 13th June, 1871.

It may be remembered that in 1869 a plot of ground in the Society's gardens was planted with the Silesian sugar-beet, for the purpose of testing the suitability of the colony for the culture of this plant. The intention at the time was to have endeavoured to manufacture a small quantity of beet sugar, not only with the view of ascertaining the probable percentage obtainable, but also because it was thought it might have the effect of stimulating the industry, if it could be proved that sugar was obtainable in paying quantities.

Owing to various causes, among others the want of proper appliances and funds, to carry the experiment to a successful issue, no attempt was made to extract sugar from the roots at the proper time, I therefore thought it advisable to select the best roots for the production of seed, of which there now is about 10 bushels on hand. It would be very desirable that this seed should be distributed to persons willing to give the root a fair trial; as the season for sowing is now at hand no time should be lost in the distribution.

It may not, perhaps, be generally known that the Silesian beet is much more nutritious as cattle food than the common mangold. According to recent analysis by Dr. Voelcker, 1 ton of sugar-beet is equal to at least $1\frac{1}{2}$ tons of common mangold. The weight of roots produced per acre is generally about 20 tons, but 30 and even 40 may be secured by good cultivation, so that apart from the value of this crop for the production of sugar, it is worthy to be more generally grown for feeding purposes. It enjoys as great an immunity from insect pests as the mangold.

The following remarks bearing on its cultivation may not be without interest to intending planters:—The proper time for sowing the seed in Tasmania is about the middle of August; in the midland districts a little later, say about the beginning of September. It should be dibbled in, a foot or fifteen inches apart, or it may be sown in prepared beds, and transplanted with as little risk as the mangold. From 10 to 15lbs. of seed will be found sufficient for an acre of ground. The soil must be in good condition, it should have been well worked, and if not in good heart manured in the autumn. Unless the soil is in a finely pulverised state, the roots cannot properly develope themselves. It is essential that the root be well imbedded in the soil; if this is not the case the amount of saccharine matter is greatly diminished, as in both man-

golds and sugar-beet the portion above ground contains little else than scouring salts, and would be rejected as worthless by the manufacturer. Analysis proves that the portion farthest removed from the light contains most sugar. Heavy dressings of manure near seed sowing or transplanting time should be avoided. Freshly manured and new land are not favourable for the production of sugar, and, although under such circumstances the roots grow to a large size, the amount of saccharine matter is but small; roots from $1\frac{1}{2}$ to $2\frac{1}{2}$ lbs. weight are found to be richer than those of a larger size.

The after culture is very similiar to that for the common mangold, and consists of thinning the crop and hoeing from time to time, taking the precaution while hoeing to work the soil round the tops of the roots, in order to bury any portion that may chance to be exposed to the light. These are the only operations necessary until the plant is sufficiently ripe for harvesting, which may be known by the leaves having a flabby, yellow appearance, when care should be taken that the plants do not make a second growth, which they will be apt to do should rain fall at this period. Should the autumn be dry the roots may remain longer on the ground than if warm and moist, but they should be harvested before frost sets in; both second growth and frost would greatly diminish the amount of sugar. The leaves should not be stripped from the plants during their growth, because if this be done the light will have free access to the tops of the roots, causing them to turn green, and diminishing the saccharine matter.

Should the weather be fine and dry when the crop is taken, it is a good practice to allow the roots to remain on the ground for a day or two, covering them with leaves to shelter them from the direct rays of the sun; by thus exposing them, they part with a portion of their moisture, and are in better condition for stacking. When carted from the field the roots should be stacked in ridges, covering them but slightly at first, in order that more moisture may pass off and heating be prevented. So soon as all danger of heating has passed, the heaps may be sufficiently covered with soil to exclude frost; beating it well down that rain may also be thrown off.

There can be little doubt but that the climate of Tasmania is admirably suited to the requirements of this plant. With an autumn sufficiently long and dry to thoroughly mature the roots, the quantity of saccharine matter should be great. In England and on the Continent this varies greatly, in some cases being only 3 and in others as much as 15 per cent.; the average appears to be from 10 to 12 per cent.; 8 per cent. can be profitably manufactured into sugar, but all over this materially increases the profits of the manufacturer.

The most essential point for us to ascertain at present, is the percentage actually yielded by roots grown in different parts of Tasmania under different conditions. This most desirable information once obtained, would be the key to all future success in the cultivation of sugar beet in the island, whether for the production of spirits, sugar, or for feeding stock only.

The profits arising from the manufacture of spirit and sugar, both in England and on the Continent, depend greatly upon the amount invested; the greater the amount invested in the industry, the greater the profit. From 15 to 30 per cent. is said to be realised from the manufacture of sugar; the profits arising from distillation are said to be much greater; according to recent continental returns from 30 to 60 per cent. of clear profit is said to be netted.

At Lavenham, Mr. Duncan realised last year a profit of 15 per cent. on the manufacture of beet-sugar, although he could not obtain sufficient roots to keep his machinery in full work; in addition to which he had to pay a duty of 8s. per cwt., chargeable on English made sugar.

The object in penning the above lines being to draw the attention of agriculturists to the importance of sugar beet culture, sufficient has, I trust, been said to that end. I would only add, that the more the root becomes cultivated the greater the probability of manufactories being started in the colony. It is not to be expected that capitalists will embark in such an undertaking until the raw material is forthcoming to warrant the importation and employment of skilled labour and machinery.