

occupy an intermediate position in this respect. Mangels and sugar mangels are grown for feed production and sugar beets for the manufacture of beet sugar.

Numerous experiments have been conducted at the Ontario Agricultural College in growing mangels and sugar mangels as feed for farm stock, and in growing sugar beets to determine the quantity and the quality of the roots produced in Ontario for sugar production.

For six years in succession fourteen varieties of sugar beets and sugar mangels were carefully tested under uniform conditions in the Field Husbandry Department at the College. The tests were made in the experimental field which is composed principally of an average clay loam. The land received one application of farm-yard manure in each rotation of four years, no commercial fertilizers being used. The roots followed grain crops, the land being ploughed in the autumn. The rows were 21 inches apart and the roots 7 inches apart in the rows. At the time of harvest careful determinations were made of the weights of both the roots and the tops and of the number of roots of each variety. A number of average roots were collected each year and taken to the Chemical Department, where they were analyzed. The following table gives the average results of the six years' experiments in showing the yields per acre and the quality of the roots for sugar production:

Varieties.	Average 5 years.		Average 6 years.				
	Length of Roots.		Weight per Root (lbs.)	Yield per Acre.		Analysis of Juice.	
	Above Ground (ins.)	Below Ground (ins.)		Tops (tons).	Roots (tons).	Purity.	Sugar.
1 Improved Imperial....	.57	5.66	.99	5.98	18.42	88.5	17.0
2 Kleinwanzlebener ....	.58	6.02	1.04	8.47	20.68	87.8	16.6
3 Petzscheke's Elite....	.62	5.97	1.06	6.62	19.07	87.1	16.1
4 Champion .....	1.31	6.77	1.05	7.70	20.69	85.0	15.6
5 White Silesian.....	1.14	6.14	1.19	5.77	22.57	83.0	13.7
6 Lane's Improved ....	1.61	5.73	1.11	5.22	21.54	82.5	12.8
7 French Yellow.....	1.45	6.36	.95	4.59	17.81	82.7	12.7
8 Green Top White....	1.06	5.77	1.15	5.72	22.61	81.0	12.6
9 Red Skinned.....	1.83	6.22	1.18	4.45	22.94	80.8	11.7
10 Red Top.....	2.72	5.47	1.24	3.96	24.54	81.4	10.9
11 New Danish Improved	2.65	5.59	1.27	6.66	25.20	80.3	10.8
12 Giant Rose Feeding...	3.22	5.15	1.29	2.48	25.93	81.7	10.3
13 Royal Giant.....	3.50	5.27	1.36	2.95	26.97	79.7	9.9
14 Giant White Feeding..	3.78	4.68	1.49	3.48	29.91	72.2	8.4

Of the fourteen varieties of roots included in the table here presented, the Kleinwanzlebener gave the highest average total yield of sugar per acre, when both the yield and the quality of roots were taken into consideration. This variety originated in Germany by selecting for many years only those roots which had a very high sugar content. The Kleinwanzlebener variety of sugar beets has been used more extensively for sugar production in America than any other variety. It will be seen that those varieties of beets which gave the highest percentages of sugar produced medium sized roots, which grew almost entirely underground. In comparing the different varieties it will be noticed that as the percentage of sugar decreased there was usually an increase in the yield of roots and a decrease in the