

Initial studies prompted by the extreme drought in 1976 suggested that the beet crop is capable of rapid growth following such conditions. Those observations agree with those obtained at Sprowston, particularly in 1959 where an increase of 4.3 tonnes/ha was observed between 29 September and 13 October.

Four samples of 20m² were hand harvested at fortnightly intervals from a uniform crop of Vytomo over the period 13 September to 15 December. The crop had been drilled to a stand on 10 April at 16 cm spacing. Below average temperatures prevented the crop from making good initial growth but final plant populations were satisfactory. A mean of 76,300 plants/ha was achieved at harvest but this varied from 67,600 on 15 December to 82,500 on 25 October. Rainfall was slightly below normal during the spring months but because of the wet winter and cool spring and early summer weather moisture was not a limiting factor on growth. The dry weather in July was not as restrictive as expected due to below average temperatures. Cool, dull wet weather in August contrasted sharply with the very warm sunny weather experienced in the same month in 1976.

Root yield remained static in September although sugar content rose by 2.6%. The biggest increase in root yield occurred in October and when the sugar content reached 18%. This gave a mean yield increase of sugar of 70 kg/ha/day.

Sugar content remained near or above 18% for the rest of November. The level fell below 18% in December but because of a gradually increasing root yield, sugar yield reached a maximum on the last harvest day. The mean sugar yield increase in November was 4.3 kg/ha/day and 11 kg/ha/day in December but the latter figure was obtained over a shorter period than all the others.

Yield of tops gradually decreased from 41.7 t/ha on 13 September to 24.8 t/ha on 15 December. This contrasted sharply with 1976 where only 29.5 t/ha of tops were harvested on 13 September. The maximum was reached on 8 November in 1976 and then declined gradually.

In 1977 rainfall was very high in August and sunshine was consequently low. September was dull but dry whereas October was warm dry and sunny. Mild weather continued into November and December and sunshine was normal in November but above normal in December. November was drier than normal but December was moderately wet. December was unusually devoid of air frosts and no sharp ground frosts occurred.

The suggestions are that 1977 is more representative of normal sugar beet growth than 1976.

Harvest date	1977			
	Root yield tonne/ha	Sugar content %	Sugar yield tonne/ha	Wt of tops tonne/ha
	(±0.99)	(±0.204)	(±0.156)	(±1.316)
13 Sept	40.5	14.85	6.02	41.74
27 Sept	39.0	17.46	6.81	38.49
11 Oct	43.4	18.19	7.90	36.62
25 Oct	48.5	18.09	8.77	32.19
8 Nov	48.5	17.67	8.56	26.91
22 Nov	49.1	18.13	8.89	28.00
6 Dec	52.4	17.27	9.03	24.57
15 Dec	52.0	17.58	9.14	24.76
Standard error %	4.2%	2.3%	3.8%	8.3%

Month	1977		
	Rainfall(mm)	Sunshine(hrs)	Mean temp(°C)
January	83.5	48.9	2.3
February	83.2	63.4	4.8
March	43.4	110.8	6.7
April	29.1	163.1	7.0
May	37.1	232.5	10.1
June	34.6	141.3	12.3
July	3.0	193.2	15.5
August	84.6	150.7	15.6
September	15.3	124.2	13.7
October	15.3	137.3	11.6
November	52.2	69.4	6.7
December	63.3	57.6	5.8

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Periodic Lifting Trial - 1977

Periodic Liftings of Sugar Beet were made throughout the 1977 lifting season at fortnightly intervals. The results are quoted below together with comparable results from a similar trial series undertaken at Sprowston over 15 years between 1930 and 1959.

Date of Lift	1977 Results			15 Year Mean-Sprowston	
	Washed Roots/ acre - tons	Sugar/acre cwts	Sugar %	Washed Roots/ acre - tons	Sugar/acre - cwt
13 Sept	16.1	48.0	14.84	9.9	34.2
27 Sept	15.5	54.4	17.46	11.5	40.1
11 Oct	17.3	63.0	18.19	11.7	42.1
25 Oct	19.3	70.8	18.33	12.3	45.0
8 Nov	19.3	67.3	17.43	12.8	46.3
22 Nov	19.5	70.8	18.13	13.1	47.0
6 Dec	20.4	70.5	17.27	13.4	47.2
15 Dec	20.7	72.8	17.59	13.4	46.5

- 1) Yields at Morley in 1977 were well above the 15 Year Mean calculated from the Sprowston results.
- 2) Root yield in 1977 continued to increase throughout the lifting period but appeared to have reached its peak by the middle of December. The mean root weight increase was 1.28 tons/month.
- 3) The sugar content reached its maximum towards the end of October after which there was a steady decline to the end of the season.
- 4) There was little change in the yield of sugar per acre from the end of October onwards.