

CONFIDENTIAL*

SUGAR BEET - TIME OF HARVESTING, 1978

NAS 512 ML
3rd year

SUMMARY

In 1978, sugar yield continued to rise through the autumn reaching a peak of over 10 tonnes/ha on 6th December. Yield of tops did not show the steady decline that is normally expected and only fell in yield in early December. In 1977, sugar yield rose steadily throughout the autumn but at a lower rate than in 1978. The dry summer and very wet autumn of 1976 gave a peak sugar yield in early October and yield actually declined in late November.

Four samples of 20m² were hand harvested at fortnightly intervals from a uniform crop of Nomo over the period 13 September to 20 December. The crop had been drilled to a stand on 6 April at 16cm spacing. As in 1977, below average temperatures prevented the crop from making good initial growth and final plant populations were slightly lower than is desirable for optimum yields. A mean of 67,000 plants per hectare was achieved at harvest, and this varied from 64,800 to 70,100.

After a wet March, April had (about) normal rainfall and May was slightly below average. June and July were very wet and dull, and August, in spite of average rainfall, was also dull. Throughout the spring and summer, mean temperatures were below normal, and July and August were particularly cool. The autumn months of September to November were milder than normal, and both September and November had above average sunshine. December was very wet and dull and the mean temperature was slightly below normal. Sharp frosts were recorded on several nights.

Root yield increased to early October, but from then until early November the rate of increase was quite low. During November it became greater, and the yield reached a peak of 59.5 tonnes/ha in early December, and then fell slightly on the last lift. Sugar content rose slowly until early November, and after a peak of 17.3% on 22nd November declined slowly to the end of December. Sugar yield followed the same pattern as root yield, reaching a maximum of 10.2 tonnes/ha on 6th December and then declining slightly.

The mean sugar yield increases were:- 90 kg/ha/day in September, negligible in October, and then 46 kg/ha/day from early November to early December.

Yield of tops remained virtually constant until early December when a gradual decrease was evident. The mild sunny weather was obviously responsible for maintaining leaf growth so late in the season and it was only after the advent of sharp frosts and snow at the end of November that any leaf destruction was apparent.

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1978 was a complete contrast to 1976 in terms of weather. In 1978 a cool dull and wet summer gave way to a mild sunny autumn, whereas in 1976 the warmest and sunniest summer on record gave way to a very wet and dull autumn. It would appear therefore that water is a major limiting factor in summer, but good growing conditions are needed in autumn to achieve the maximum potential of the crop.

In 1977 a cool, dull but mainly dry summer gave way to a dry September and October with about average sunshine, and above average temperatures in October. November was slightly warmer than normal but sunshine and rainfall were below. This resulted in a more normal growth curve with the rate of increase in sugar yield falling off after late October.

HARVEST DATE	1978			
	Root yield tonne/ha	Sugar content %	Sugar yield tonne/ha	Wt of tops tonne/ha
	(±1.172)	(±0.101)	(±0.209)	(±1.75)
13 September	38.15	15.92	6.08	54.8
27 September	44.65	16.32	7.29	50.3
11 October	50.96	16.89	8.61	54.7
25 October	51.46	16.82	8.65	50.4
8 November	51.54	17.27	8.90	50.1
22 November	55.82	17.30	9.66	51.8
6 December	59.91	17.09	10.24	48.0
20 December	57.77	16.85	9.74	40.8
Standard error %	4.6%	1.2%	4.8%	7.0%

wt of tops
@ 2
wt of roots

Month	1978		
	Rainfall(mm)	Sunshine(hrs)	Mean temp(°C)
January	75.2	37.5	2.4
February	52.5	56.9	1.6
March	65.1	112.8	6.3
April	37.9	121.1	6.1
May	32.9	187.3	10.4
June	72.3	168.8	13.7
July	70.7	137.6	14.5
August	49.2	144.9	14.8
September	41.4	164.4	14.0
October	6.4	92.0	11.5
November	24.5	83.5	8.0
December	90.0	38.0	4.1

SUGAR YIELD t/ha (1976-1978)

