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94/W/SB/1 Sulphur, Nitrogen and Sugar Beet - S. Beet

Rothamsted Research

Rothamsted Research (1995) *94/W/SB/1 Sulphur, Nitrogen and Sugar Beet - S. Beet* ; Yields Of The Field Experiments 1994, pp 167 - 168 - DOI: <https://doi.org/10.23637/ERADOC-1-49>

94/W/SB/1

SUGAR BEET

SULPHUR, NITROGEN AND SUGAR BEET

Object: To assess the effects of nitrogen and sulphur fertilizers on the growth, yield and quality of sugar beet grown in a sulphur deficient soil - Woburn, Butt Close II.

Sponsors: C. Bell, J. Jones.

Design: 3 randomised blocks of 3 x 3 plots.

Whole plot dimensions: 2.5 x 24.0.

Treatments: All combinations of:-

1. **NITROGEN** Nitrogen fertilizer (kg N) as 34.5% N, 30 kg N to seedbed, remainder at 4 to 6 leaf stage:

N1	75
N2	120
N3	180

2. **SULPHUR** Sulphur fertilizer (kg S) as gypsum at 4 to 6 leaf stage:

S0	0
S1	25
S2	50

Experimental diary:

- 03-Apr-94 : B : Scythe at 3.0 l in 200 l.
- 15-Apr-94 : B : PK as (0:18:36) at 600 kg.
- 22-Apr-94 : B : Rotary harrowed, Saxon dressed Thiram, drilled at 9.3 seeds per m².
- 25-Apr-94 : B : 34.5% N at 87 kg.
- 09-May-94 : B : Goltix at 1.7 kg with Adder at 1.7 l in 200 l.
- 24-May-94 : T : **NITROGEN** N1, N2, N3: 34.5% N applied.
- 27-May-94 : T : **SULPHUR** S1, S2: Gypsum applied.
- 12-Jun-94 : B : Goltix at 1.7 kg with Adder at 1.7 l in 200 l.
- 08-Jul-94 : B : Inter-row cultivated.
- 21-Dec-94 : B : Hand lifted.

Previous crops: S. barley 1992, w. wheat 1993.

NOTE: Plants were sampled sequentially throughout the growing period and were analysed for shoot and root dry matter, nitrogen and sulphur content. The roots were also analysed for sugar, potassium, sodium, amino-N and glycine betaine. Root osmotic pressure was measured.

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ROOTS WASHED TONNES/HECTARE

***** Tables of means *****

SULPHUR NITROGEN	S0	S1	S2	Mean
N1	26.3	28.0	25.2	26.5
N2	29.2	29.2	26.6	28.3
N3	25.6	34.2	23.4	27.7
Mean	27.0	30.4	25.1	27.5

*** Standard errors of differences of means ***

NITROGEN	SULPHUR	NITROGEN SULPHUR
1.87	1.87	3.24

***** Stratum standard errors and coefficients of variation *****

Stratum	d.f.	s.e.	cv%
BLOCK.WP	16	3.97	14.4
PLOT AREA HARVESTED	0.00100		