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79/R/BE/8 Foliar Nutrition - Beans

Rothamsted Research

Rothamsted Research (1980) *79/R/BE/8 Foliar Nutrition - Beans* ; Yields Of The Field Experiments 1979, pp 333 - 334 - DOI: <https://doi.org/10.23637/ERADOC-1-45>

79/R/BE/8
 SPRING BEANS
 FOLIAR NUTRITION

Object: To study the effects of a range of foliar-applied nutrients on the yield and nitrogen uptake of spring beans - Summerdells II.

Sponsors: J.M. Day, R.J. Roughley, J.F. Witty.

Design: 4 randomised blocks of 15 plots.

Whole plot dimensions: 2.66 x 3.66.

Treatments: All combinations of:-

1. NUT FORM	Form of nutrients:
AP U K	Ammonium polyphosphate + urea + potassium sulphate
AHP U K	Ammonium hydrogen phosphate + urea + potassium sulphate
AHP - K	Ammonium hydrogen phosphate + potassium sulphate (but see NOTE)
PP U K	Potassium polyphosphate + urea + potassium sulphate
PP - K	Potassium polyphosphate + potassium sulphate
U	Urea

2. NUT FREQ	Frequency of applying nutrients:
2	Twice 13 July, 1979 and 20 July
4	Four times 13 July, 1979, 20 July, 27 July and 3 Aug

plus two extra treatments:

EXTRA

-	None (duplicated)
K 4	Potassium sulphate applied four times

NOTE: It was intended that each treatment containing nitrogen should supply about 20 kg N per occasion. The first spray of AHP - K scorched the leaves. The problem with this treatment was overcome by including urea in later sprays to maintain the rate of nitrogen but lessen the amount of ammonium hydrogen phosphate.

Rates of nutrients (kg element) applied on each spray occasion:

	N	P	K	S		
	in urea	in phosphates	in sulphate	in phosphate		
AP U K	20	1.6	4.3	7.5	-	3.0
AHP U K	20	3.6	5.5	7.5	-	3.0
AHP - K (1)	-	20	30.4	7.5	-	3.0
AHP - K (2,3 & 4)	15	5	5.5	7.5	-	3.0
PP U K	20	-	20	1.1	9.9	0.5
PP - K	-	-	20	1.1	9.9	0.5
U	20	-	-	-	-	-
-	-	-	-	-	-	-
K 4	-	-	-	7.5	-	3.0

Treatments were applied in 536 l.

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Basal applications: Manures: Chalk at 7.5 t. FYM at 35 t. Weedkiller: Simazine at 0.82 kg in 220 l. Insecticide: Pirimicarb at 0.14 kg in 220 l.

Seed: Minden, sown at 220 kg.

Cultivations, etc.:— Chalk applied: 26 Oct, 1978. FYM applied: 14 Nov. Ploughed: 23 Nov. Heavy spring-tine cultivated: 19 Apr, 1979. Rotary harrowed: 20 Apr. Seed sown: 21 Apr. Weedkiller applied: 15 May. Insecticide applied: 22 June. Harvested by hand: 17 Sept. Previous crops: Spring wheat, 1977, barley 1978.

NOTES: (1) Content of 15N (added to certain of the treatments) was assessed in whole plants shortly before harvest.
(2) Nitrogen percentages of grain were measured.

GRAIN TONNES/HECTARE

***** TABLES OF MEANS *****

NUT FREQ	2	4	MEAN
NUT FORM			
AP U K	4.11	4.20	4.15
AHP U K	4.06	3.90	3.98
AHP - K	3.65	4.00	3.82
PP U K	3.92	4.27	4.09
PP -K	4.19	4.47	4.33
U	4.34	4.17	4.26
MEAN	4.04	4.17	4.11
EXTRA	-	K4	MEAN
	4.49	4.55	4.51

GRAND MEAN 4.19

***** STANDARD ERRORS OF DIFFERENCES OF MEANS *****

TABLE	EXTRA	NUT FORM	NUT FREQ	NUT FORM NUT FREQ & EXTRA
SED	0.214	0.175	0.101	0.247 0.214*

* USE ONLY FOR COMPARISONS BETWEEN NUT FORM.NUT FREQ AND LEVEL - OF EXTRA

***** STRATUM STANDARD ERRORS AND COEFFICIENTS OF VARIATION *****

STRATUM	DF	SE	CV%
BLOCK.WP	43	0.350	8.4

GRAIN MEAN DM% NOT AVAILABLE

PLOT AREA HARVESTED 0.00112