ROTHAMSTED RESEARCH

Yields of the Field Experiments 1977

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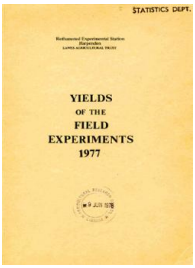

77/R/BE/6 Drills and Plant Populations - Beans

Rothamsted Research

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77/R/BE/6

SPRING BEANS

DRILLS AND PLANT POPULATIONS

Object: To study the effects of precision sowing, seed rate and pathogen control on yields and incidence of pests and diseases - Pastures.

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Design: 2 randomised blocks of 2 plots split into 15 sub plots with a further 11 sub plots, for sampling only, duplicating certain of the treatments.

Whole plot dimensions: 8.23 x 119.

Treatments: All combinations of:-

Whole plots

1. PATHCONT — Pathogen control:

STANDARD	Standard, aphicide only
ENHANCED	Aldicarb to seedbed at 10 kg on 6 Apr, 1977 + aphicide

Sub plots

2. DRILL — Drills, plant spacings and populations:

	Drill	Spacing between rows	Spacing within rows	Target population	Population achieved
MF 18 4	Massey-Ferguson	18 cm (7 ins)	Random	500,000	524,000
MF 18 2	Massey-Ferguson	18 cm (7 ins)	Random	250,000	311,000
MF 53 4	Massey-Ferguson	53 cm (21 ins)	Random	500,000	398,000
MF 53 2	Massey-Ferguson	53 cm (21 ins)	Random	250,000	230,000
NG 36 4	Nodet-Gongis	36 cm (14 ins)	7.7 cm	500,000	408,000
NG 36 2	Nodet-Gongis	36 cm (14 ins)	15.4 cm	250,000	252,000
NG 53 4	Nodet-Gongis	53 cm (21 ins)	3.8 cm	500,000	103,000
NG 53 2	Nodet-Gongis	53 cm (21 ins)	7.7 cm	250,000	217,000
NG 53 1	Nodet-Gongis	53 cm (21 ins)	15.4 cm	125,000	213,000
ST 10 8	Stanhay	10 cm (4 ins)	9.9 cm	1,000,000	1,006,000
ST 10 6	Stanhay	10 cm (4 ins)	14.7 cm	750,000	717,000
ST 10 4	Stanhay	10 cm (4 ins)	19.8 cm	500,000	608,000
ST 10 2	Stanhay	10 cm (4 ins)	39.9 cm	250,000	346,000
ST 20 2	Stanhay	20 cm (8 ins)	19.8 cm	250,000	277,000
ST 20 1	Stanhay	20 cm (8 ins)	39.9 cm	125,000	156,000

NOTES: (1) On all plots of treatment DRILLS NG 53 4 the drill malfunctioned and yields are not presented.
(2) On one plot of treatment DRILLS MF 18 2 the drill malfunctioned. An estimated value was used in the analysis.
(3) Populations achieved with treatment DRILLS NG 53 1 were nearly double those intended.

Basal applications: Manures: Chalk at 7.5 t. FYM at 20 t. Weedkiller: Simazine at 0.8 kg in 340 l. Insecticide: Pirimicarb at 0.14 kg in 280 l.

Seed: Minden.

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Cultivations, etc.:- Chalk applied: 1 Sept, 1976. FYM applied: 16 Sept. Ploughed: 17 Sept. Heavy spring-tine cultivated twice: 7 Mar, 1977. Spike rotary cultivated: 7 Apr. Seed sown: 21 Apr. Weedkiller applied: 9 May. Insecticide applied: 19 July. Combine harvested: 29 Sept. Previous crops: Wheat 1975, barley 1976.

NOTE: Plant counts were made after establishment and again before harvest. Components of yield were measured before harvest. Nitrogenase activity of the roots was measured at monthly intervals. Incidence of Sitona, viruses and foliar fungi was measured at intervals through the season.

GRAIN TONNES/HECTARE

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

PATHCONT DRILL	STANDARD	ENHANCED	MEAN
MF 18 4	3.02	3.51	3.27
MF 18 2	1.84	3.61	2.72
MF 53 4	3.09	3.51	3.30
MF 53 2	2.42	2.90	2.66
NG 36 4	2.94	4.15	3.55
NG 36 2	2.95	3.40	3.18
NG 53 2	3.03	3.80	3.41
NG 53 1	2.78	3.36	3.07
ST 10 8	4.05	4.62	4.33
ST 10 6	3.83	3.87	3.85
ST 10 4	3.95	4.82	4.39
ST 10 2	3.52	3.67	3.59
ST 20 2	3.04	4.40	3.72
ST 20 1	2.69	3.34	3.02
MEAN	3.08	3.78	3.43

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

TABLE	DRILL	PATHCONT* DRILL
SED	0.305	0.431

* WITHIN THE SAME LEVEL OF PATHCONT ONLY

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

STRATUM	DF	SE	CV%
BLOCK.WP.SP	25	0.431	12.6

GRAIN MEAN DM% 78.2

SUB PLOT AREA HARVESTED 0.00002

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