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## Yields of the Field Experiments 1978

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### 78/R/BE/9 Drills and Plant Populations - Beans

#### Rothamsted Research

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78/R/BE/9

SPRING BEANS

DRILLS AND PLANT POPULATIONS

Object: To study the effects of precision sowing, plant populations and pathogen control on yields and incidence of pests and diseases - Gt. Harpenden II.

Sponsors: R. Bardner, A.J. Cockbain, J.M. Day, K.E. Fletcher, J. McEwen, R.J. Roughley, G.A. Salt, J.F. Witty.

Design: 3 randomised blocks of 2 plots split into 8 sub plots.

Whole plot dimensions: 18.2 x 38.4.

Treatments: All combinations of:-

Whole plots

- |             |   |
|-------------|---|
| 1. PATHCONT | Pathogen control:   |
| STANDARD    | Standard, pirimicarb foliar spray only                    |
| ENHANCED    | Aldicarb at 10 kg to seedbed plus pirimicarb foliar spray |

Sub plots

- |          |   |
|----------|---|
| 2. DRILL | Drill and row spacing:  |
| MF 18    | Massey-Ferguson, irregularly spacing seed in rows 18 cm (7 ins) apart |
| ST 20    | Stanhay, precision-sown in rows 20 cm (8 ins) apart                   |

- |             |                        |                     |         |
|-------------|------------------------|---------------------|---------|
| 3. POPULATN | Populations of plants: |                     |         |
|             | Population planned     | Population achieved |         |
|             |                        | MF 18               | ST 20   |
| 3           | 300,000                | 147,000             | 126,000 |
| 4           | 400,000                | 187,000             | 203,000 |
| 5           | 500,000                | 276,000             | 188,000 |
| 6           | 600,000                | 348,000             | 272,000 |

NOTE: Seedbed conditions were unusually poor and both drills malfunctioned leading to gaps in rows and a failure to achieve the planned populations. The yields reported from these treatments should not be regarded as representing those likely under normal conditions.

Basal applications: Manures: Chalk applied at 7.5 t. Weedkiller: Simazine at 0.56 kg in 220 l. Insecticide: Pirimicarb at 0.14 kg in 220 l.

Seed: Minden.

Cultivations, etc.: Chalk applied: 12 Oct, 1977. Ploughed: 11 Nov. Spring-tine cultivated: 9 Mar, 1978. Test aldicarb applied: 13 Mar. Spike rotary cultivated after treatments: 15 Mar. Spring-tine cultivated: 6 Apr. Harrowed, seed sown: 7 Apr. Weedkiller applied: 17 Apr. Insecticide applied: 10 July. Combine harvested: 29 Sept. Previous crops: Barley 1976 and 1977.

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 fortnightly intervals. Incidence of Sitona and viruses was measured at intervals through the season.

78/R/BE/9

GRAIN TONNES/HECTARE

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

DRILL	MF 18	ST 20	MEAN		
PATHCONT					
STANDARD	5.21	5.02	5.12		
ENHANCED	5.37	5.55	5.46		
MEAN	5.29	5.29	5.29		
POPULATN	3	4	5	6	MEAN
PATHCONT					
STANDARD	4.22	5.58	5.22	5.44	5.12
ENHANCED	4.78	5.66	5.44	5.94	5.46
MEAN	4.50	5.62	5.33	5.69	5.29
POPULATN	3	4	5	6	MEAN
DRILL					
MF 18	4.30	5.47	5.47	5.90	5.29
ST 20	4.70	5.77	5.19	5.48	5.29
MEAN	4.50	5.62	5.33	5.69	5.29
POPULATN		3	4	5	6
PATHCONT	DRILL				
STANDARD	MF 18	4.03	5.54	5.35	5.90
	ST 20	4.40	5.62	5.09	4.98
ENHANCED	MF 18	4.57	5.41	5.60	5.90
	ST 20	4.99	5.92	5.29	5.98

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

TABLE	PATHCONT	DRILL	POPULATN	PATHCONT DRILL
SED	0.240	0.152	0.216	0.284
EXCEPT WHEN COMPARING MEANS WITH SAME LEVEL(S) OF: PATHCONT				0.216

TABLE	PATHCONT POPULATN	DRILL POPULATN	PATHCONT DRILL POPULATN
SED	0.357	0.305	0.469
EXCEPT WHEN COMPARING MEANS WITH SAME LEVEL(S) OF: PATHCONT	0.305		0.431

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

STRATUM	DF	SE	CV%
BLOCK.WP.SP	28	0.528	10.0
GRAIN MEAN DM%	80.4		
SUB PLOT AREA HARVESTED	0.00251		