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# Yields of the Field Experiments 1983

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## 83/R/BE/9 Effects of Pests and Pathogens - S. Beans

### Rothamsted Research

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83/R/BE/9

SPRING BEANS

EFFECTS OF PESTS AND PATHOGENS

Object: To assess the benefits from three amounts of pest and disease control on irrigated and unirrigated s. beans - W. Barnfield II.

Sponsors: J. McEwen, R. Bardner, A.J. Cockbain, D.H. Lapwood, R.M. Webb, T.D. Williams, D.P. Yeoman.

Design: 4 randomised blocks of 2 plots split into 3.

Whole plot dimensions: 4.27 x 13.7.

Treatments: All combinations of:-

Whole plots

|             |                     |
|-------------|---------------------|
| 1. IRRIGATN | Irrigation:         |
| NONE        | None                |
| FULL        | Full (total 138 mm) |

Sub plots

|             |                                                                             |
|-------------|-----------------------------------------------------------------------------|
| 2. PATHCONT | Pest and pathogen control:                                                  |
| STANDARD    | Pirimicarb at 0.14 kg on 13 June, 1983                                      |
| ENHANCED    | Phorate at 2.2 kg, combine drilled                                          |
|             | Pirimicarb at 0.14 kg on 13 June                                            |
|             | Maneb at 0.8 kg with mancozeb at 0.8 kg in 450 l on 18 July                 |
| FULL        | Aldicarb at 10 kg on 9 Mar.                                                 |
|             | Phorate at 2.2 kg combine drilled                                           |
|             | Fosetyl-AI at 2.0 kg on 5 May                                               |
|             | Pirimicarb at 0.14 kg on 13 June                                            |
|             | Benomyl at 0.50 kg on 5 July and 4 Aug                                      |
|             | Maneb at 0.8 kg with mancozeb at 0.8 kg in 450 l on 18 July, 26 July, 4 Aug |

NOTES: (1) Irrigation was applied as follows (mm water):

|         |        |
|---------|--------|
| 1 July  | 20     |
| 6 July  | 25     |
| 15 July | 18     |
| 27 July | 25     |
| 8 Aug   | 25     |
| 14 Aug  | 25     |
| Total   | 138 mm |

(2) Treatment sprays were applied in 340 l except where stated.

Basal applications: Manures: Chalk at 5 0 t. Weedkillers: Glyphosate at 1.4 kg in 250 l. Trietazine and simazine (as 'Aventox' at 2.4 l) in 250 l.

Seed: Minden, sown at 230 kg.

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Cultivations, etc.:— Chalk applied: 16 Sept, 1982. Glyphosate applied: 19 Oct. Ploughed: 25 Nov. Spring-tine cultivated twice: 8 Mar, 1983. Seedbed treatments applied, rotary harrowed, seed sown: 9 Mar. 'Aventox' applied: 12 Mar. Combine harvested non-irrigated plots: 12 Aug. Combine harvested irrigated plots: 22 Aug. Previous crops: S. barley 1981, w. wheat 1982.

NOTE: Plant counts were made after establishment and components of yield were measured at maturity. Total above ground dry matter and N content were measured in August. Migratory nematodes, root and foliar fungi, aphids, weevils and viruses were counted at intervals during the season. N content of grain was measured.

# GRAIN TONNES/HECTARE

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

| PATHCONT<br>IRRIGATN | STANDARD | ENHANCED | FULL | MEAN |
|----------------------|----------|----------|------|------|
| NONE                 | 3.21     | 3.51     | 3.90 | 3.54 |
| FULL                 | 4.83     | 5.14     | 5.42 | 5.13 |
| MEAN                 | 4.02     | 4.33     | 4.66 | 4.34 |

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

| TABLE | PATHCONT | IRRIGATN*<br>PATHCONT |
|-------|----------|-----------------------|
| SED   | 0.072    | 0.102                 |

\* WITHIN THE SAME LEVEL OF IRRIGATN ONLY

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

| STRATUM                 | DF      | SE    | CV% |
|-------------------------|---------|-------|-----|
| BLOCK.WP.SP             | 12      | 0.144 | 3.3 |
| GRAIN MEAN DM%          | 85.0    |       |     |
| SUB PLOT AREA HARVESTED | 0.00293 |       |     |