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## Yields of the Field Experiments 1996

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### 96/R/BES/6 Weed Competition and Spring Beans - Spring Beans

#### Rothamsted Research

Rothamsted Research (1997) *96/R/BES/6 Weed Competition and Spring Beans - Spring Beans ; Yields Of The Field Experiments 1996*, pp 134 - 135 - DOI:

<https://doi.org/10.23637/ERADOC-1-51>

96/R/BES/6

SPRING BEANS

WEED COMPETITION AND SPRING BEANS

**Object:** To study the effects of two weed species on the growth and yield of spring beans - Great Knott I.

**Sponsor:** P.J.W. Lutman.

**Design:** 3 randomised blocks of (3 x 5) + 1 plots.

**Whole plot dimensions:** 3.0 x 10.0.

**Treatments:** All combinations of:-

1. **WEED** Weed and time of sowing:
- |    |  |
|----|--|
| CE | Charlock ( <i>Sinapis arvensis</i> ), sown early |
| CL | Charlock sown late                               |
| CW | Chickweed ( <i>Stellaria media</i> ), sown early |
2. **RATE** Average number of established plants per m<sup>2</sup>:
- |   | CL    | CW    |
|---|-------|-------|
| 0 | -     | -     |
| 1 | 31.8  | 16.3  |
| 2 | 61.2  | 31.5  |
| 3 | 159.2 | 75.0  |
| 4 | 219.0 | 138.3 |

Plus extra treatment

**CULT OAT** Cultivated oats (*Avena sativa*), sown early, approximately 170.5 plants were established per m<sup>2</sup>

- NOTES:** (1) Each weed was sown on the same day as the beans and the charlock was also sown 24 days later. All the early-sown charlock (CE) failed and has been omitted from the analysis.  
(2) Oats were cultivar Dula, dressed Cerevax Extra, sown at 240 seeds per m<sup>2</sup>.  
(3) Target weed densities, plants per m<sup>2</sup>:

	Charlock	Chickweed
1	50	100
2	100	200
3	200	400
4	400	800

**Experimental diary:**

- 17-Nov-95 : B : Ploughed.  
14-Mar-96 : B : Heavy spring-tine cultivated.  
18-Mar-96 : B : Heavy spring-tine cultivated, rotary harrowed.  
: T : **WEED** CE, CW **CULT OAT:** Charlock, chickweed and oats broadcast.

96/R/BES/6

**Experimental diary:**

- 18-Mar-96 : B : Rotary harrowed, Alfred, recleaned, drilled at 50 seeds per m<sup>2</sup>.
- 11-Apr-96 : T : WEED CL: Charlock broadcast.
- 25-Apr-96 : B : Decis at 0.3 l in 200 l.
- 13-May-96 : B : Cyperkill 10 at 250 ml in 200 l.
- 05-Jun-96 : B : Cyperkill 10 at 250 ml in 200 l.
- 20-Jun-96 : B : Bravo 500 at 2.0 l in 200 l.
- 15-Aug-96 : B : Hand harvested.

Previous crops: S. wheat 1994, set-aside 1995.

**NOTES:** (1) Bean and weed populations were assessed in April and May. Crop and oat leaf area and dry matter was measured in May. Crop and weed height, dry matter and number of stems were assessed in June and July, pod numbers were also counted in July.

(2) Weeds failed to establish on two plots, with treatment combinations:-

WEED	CL	CL
RATE	3	1

Estimated values were used in the analysis.

**GRAIN TONNES/HECTARE**

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

RATE	0	1	2	3	4	Mean
<b>WEED</b>						
CL	3.84	3.29	2.77	2.79	2.26	2.99
CW	3.88	3.77	3.72	3.99	3.50	3.77
Mean	3.86	3.53	3.25	3.39	2.88	3.38

**CULT OAT**

0.41

Grand mean 3.11

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

<b>WEED</b>	<b>RATE</b>	<b>RATE</b>
		<b>WEED</b>
		<b>&amp; CULT OAT</b>
0.147	0.233	0.330

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

Stratum	d.f.	s.e.	cv%
BLOCK.WP	18	0.404	13.0

GRAIN MEAN DM% not measured

PLOT AREA HARVESTED 0.00020