

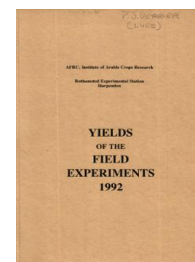
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Yields of the Field Experiments 1992

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Beans

Rothamsted Research

Rothamsted Research (1993) *Beans* ; Yields Of The Field Experiments 1992, pp 138 - 145 - DOI: <https://doi.org/10.23637/ERADOC-1-47>

92/R/BEW/2

WINTER BEANS

WINTER BEANS AND WEED DENSITIES

Object: To investigate the effects of two weed species on the growth and yield of w. beans - Dell Piece.

Sponsor: P.J.W. Lutman.

Design: 4 randomised blocks of 12 plots. Treatments balanced for blocks in two directions.

Whole plot dimensions: 3.0 x 14.0.

Treatments: All combinations of:-

1. **SPECIES** Weed species:

OATS Cultivated oats (*Avena sativa*)
CLEAVERS Cleavers (*Galium aparine*)

2. **DENSITY** Weed density (number of plants per square metre):

	OATS	CLEAVERS
D0	0	0
D1	5	8
D2	17	9
D3	80	21
D4	137	76
D5	263	195

NOTES: (1) Autumn-sown chickweed (*Stellaria media*) and cleavers (*G. aparine*) failed to establish. Plots were resown with cultivated oats (*A. sativa*) and cleavers (*G. aparine*) in spring.

(2) Target weed densities (number of plants per square metre):

	D1	D2	D3	D4	D5
Oats	10	40	120	240	480
Cleavers	4	8	16	32	64

Experimental diary:

21-Aug-91 : B : Straw chopped.
22-Aug-91 : B : Dolomite at 5.0 t.
16-Oct-91 : B : Disced.
17-Oct-91 : B : Rolled.
23-Oct-91 : B : Punch, undressed, broadcast at 160 kg.
: B : Ploughed and furrow pressed.
14-Jan-92 : B : Laser at 1.25 l with Actipron at 1.8 l in 200 l.
04-Mar-92 : **T** : **SPECIES** OATS, CLEAVERS: Oats (cv. Dula) and cleavers broadcast by hand, harrowed.
21-May-92 : B : Tripart Defensor FL at 0.50 l and Chiltern Olé at 1.5 l with Farmon Blue at 0.80 l in 200 l.
15-Jun-92 : B : Tripart Defensor FL at 0.50 l and Chiltern Chlorothalonil 500 at 1.5 l in 200 l.
10-Sep-92 : B : Combine harvested.

92/R/BEW/2

Previous crops: W. wheat 1990 and 1991.

NOTE: Estimation of crop growth and observations and counts of weeds were made during the growing season.

GRAIN TONNES/HECTARE

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

DENSITY SPECIES	D0	D1	D2	D3	D4	D5	Mean
OATS	4.88	5.34	5.25	4.61	5.01	5.01	5.02
CLEAVERS	4.84	5.82	4.97	4.97	4.13	4.51	4.87
Mean	4.86	5.58	5.11	4.79	4.57	4.76	4.94

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

SPECIES	DENSITY	SPECIES	DENSITY
	0.155		0.268
			0.379

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

Stratum	d.f.	s.e.	cv%
BLOCK.WP	33	0.536	10.8

GRAIN MEAN DM% 75.7

PLOT AREA HARVESTED 0.00230

92/R/BES/3

SPRING BEANS

EFFECTS OF SEMIOCHEMICALS

Object: To study the effects of a fungal pathogen, attractant and anti-feedant compounds on Sitona sp. - Delafield.

Sponsors: L.E. Smart, M.M. Blight, B.J. Pye.

Design: 6 x 6 quasi-complete latin square.

Whole plot dimensions: 6.0 x 6.0.

Treatments:

CHEMICAL	Type of chemical or agent applied:
NONE	None
FUNGPATH	Fungal pathogen (Beauveria sp.)
ATTRACTN	Attractant (pheromone) lures
ATTRDELTA	Attractant (pheromone) lures plus deltamethrin
ANTIFEED	Anti-feedant (neem oil 50% a.i.)
DELTAMETH	Deltamethrin

Experimental diary:

- 06-Dec-91 : B : Sting CT at 2.0 l in 200 l.
- 03-Jan-92 : B : Ploughed.
- 24-Feb-92 : B : PK as (0:20:32) at 1050 kg.
- 27-Feb-92 : B : Spring-tine cultivated.
- 27-Feb-92 : B : Rotary harrowed, Alfred drilled at 310 kg.
- 05-Mar-92 : B : Rolled.
- 09-Mar-92 : B : Opogard at 2.3 l in 200 l.
- 08-Apr-92 : T : **CHEMICAL** ATTRACTN and ATTRDELTA: Attractant lures installed.
- 10-Apr-92 : T : **CHEMICAL** ANTIFEED: Anti-feedant at 8.0 kg in 25 l.
- 22-Apr-92 : T : **CHEMICAL** ATTRDELTA: Decis at 0.40 l in 25 l.
ANTIFEED: Anti-feedant at 8.0 kg in 25 l.
DELTAMETH: Decis at 0.40 l in 25 l.
- 05-May-92 : T : **CHEMICAL** ANTIFEED: Anti-feedant at 8.0 kg in 25 l.
- 13-May-92 : T : **CHEMICAL** ATTRDELTA: Decis at 0.40 l in 25 l.
ANTIFEED: Anti-feedant at 8.0 kg in 25 l.
DELTAMETH: Decis at 0.40 l in 25 l.
- 03-Jun-92 : T : **CHEMICAL** FUNGPATH: Fungal pathogen applied as suspension of spores in water.
- 09-Sep-92 : B : Combine harvested.

Previous crops: W. wheat 1990 and 1991.

NOTE: Assessment of adult and larval Sitona lineatus population size and feeding damage were made between April and June.

92/R/BES/3

GRAIN TONNES/HECTARE

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

CHEMICAL

NONE	4.39
FUNGPATH	4.34
ATTRACTN	4.26
ATTRDELT	4.81
ANTIFEED	4.27
DELT METH	4.50

Mean 4.43

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

CHEMICAL

0.193

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

Stratum	d.f.	s.e.	cv%
ROW.COL	20	0.335	7.6

GRAIN MEAN DM% 82.9

PLOT AREA HARVESTED 0.00138

92/R/BES/4

SPRING BEANS

METHODS OF APPLYING ANTI-FEEDANTS

Object: To assess the efficiency of different spraying methods for applying anti-feedants to field beans - Delafield.

Sponsors: L.E. Smart, B.J. Pye.

Design: 5 x 5 quasi-complete Latin square.

Whole plot dimensions: 3.0 x 5.0.

Treatments:

CHEMAPPL	Type of chemical and method of application:
NONE	None
DELT JUM	Deltamethrin applied with Jumbo electrostatic sprayer
ANT HYDR	Anti-feedant applied with hydraulic sprayer
ANT APE	Anti-feedant applied with Ape electrostatic sprayer
ANT JUM	Anti-feedant applied with Jumbo electrostatic sprayer

NOTE: Anti-feedant applied was neem oil (100% a.i.).

Experimental diary:

- 28-Aug-91 : B : Straw chopped.
- 06-Dec-91 : B : Sting CT at 2.0 l in 200 l.
- 03-Jan-92 : B : Ploughed.
- 24-Feb-92 : B : PK as (0:20:32) at 1050 kg.
- 27-Feb-92 : B : Spring-tine cultivated, rotary harrowed, Alfred, undressed, drilled at 310 kg.
- 05-Mar-92 : B : Rolled.
- 09-Mar-92 : B : Opogard 500 FW at 2.3 l in 200 l.
- 22-Apr-92 : T : **CHEMAPPL** DELT JUM: Delamethrin at 10 g in 10 l.
ANT HYDR: Neem oil at 4 kg in 400 l.
ANT APE: Neem oil at 4 kg in 10 l.
ANT JUM: Neem oil at 4 kg in 10 l.
- 05-May-92 : T : **CHEMAPPL**: All applications as 22-Apr-92.
- 13-May-92 : T : **CHEMAPPL**: All applications as 22-Apr-92.
- 24-Jun-92 : B : Chiltern Chlorothalonil at 1.5 l and Tripart Defensor FL at 0.5 l in 200 l.
- 09-Sep-92 : B : Combine harvested.

Previous crops: W. wheat 1991 and 1992.

NOTE: Estimates of crop damage by adult pea and bean weevil (*Sitona lineatus*) were made in spring.

92/R/BES/4

GRAIN TONNES/HECTARE

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

CHEMAPPL

NONE	5.39
DELT JUM	5.20
ANT HYDR	5.35
ANT APE	5.09
ANT JUM	5.13

Mean 5.23

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

CHEMAPPL

0.231

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

Stratum	d.f.	s.e.	cv%
ROW.COL	12	0.366	7.0

GRAIN MEAN DM% 82.5

PLOT AREA HARVESTED 0.00115

92/R/BES/5

SPRING BEANS

WEED COMPETITION AND SPRING BEANS

Object: To study the competitive effects of cultivated oats (*Avena sativa*) and wild oats (*Avena fatua*) on the growth and yield of s. beans - Great Harpenden I.

Sponsor: P.J.W. Lutman.

Design: 3 randomised blocks of 16 plots.

Whole plot dimensions: 3.0 x 10.0.

Treatments: All combinations of:-

1. **SOWDATE** Time of drilling cultivated oats (*A. sativa*):

PREBEAN Seven days before drilling s. beans
AS BEAN Same day as drilling s. beans
POSTBEAN Seven to ten days after drilling s. beans

2. **DENSITY** Density of cultivated oats (number of plants established square metre):

	PREBEAN	AS BEAN	POSTBEAN
D0	0	0	0
D1	17	25	12
D2	58	83	23
D3	112	142	46
D4	161	310	48

plus one extra plot

WILD OAT Wild oats (*A. fatua*) sown on same day as s. beans.
Number of plants established: 172 per square metre:

NOTES: (1) Target sowing densities (number of seeds sown per square metre) were: **DENSITY** D1 40, D2 120, D3 240, D4 480 and **WILD OAT** 240.
(2) Cultivated oats were sown in the central 2 m of the plot.

Experimental diary:

06-Nov-91 : B : Straw mechanically destroyed.
07-Nov-91 : B : Ploughed.
16-Jan-92 : B : Deep tine cultivated.
04-Mar-92 : B : Spring-tine cultivated.
04-Mar-92 : T : **SOWDATE** PREBEAN: Dula drilled.
04-Mar-92 : B : Harrowed.
17-Mar-92 : T : **SOWDATE** AS BEAN: Dula drilled.
 : T : **WILD OAT**: Hand broadcast wild oats.
17-Mar-92 : B : Rotary harrowed. Alfred, undressed, drilled at 310 kg,
 harrowed, rolled.
02-Apr-92 : T : **SOWDATE** POSTBEAN: Dula drilled, harrowed.

92/R/BES/5

Experimental diary:

19-May-92 : B : Basagran at 3.0 l in 300 l.
 15-Jun-92 : B : Chiltern Chlorothalonil at 1.5 l, Tripart Defensor FL at
 0.50 l and Metasystox 55 at 0.42 l in 200 l.
 20-Aug-92 : B : Hand harvested.

Previous crops: W. barley 1990, sunflowers 1991.

NOTE: At intervals during the growing season crop and weed counts were made and samples taken for the assessment of leaf area and dry weight.

GRAIN TONNES/HECTARE

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

DENSITY	D0	D1	D2	D3	D4	Mean
SOW DATE						
PREBEAN	4.72	3.10	2.42	2.12	2.14	2.90
AS BEAN	4.84	3.04	2.15	1.96	1.63	2.72
POSTBEAN	4.53	4.04	4.43	3.35	3.50	3.97
Mean	4.70	3.39	3.00	2.48	2.42	3.20

WILD OAT 1.00

GRAND MEAN 3.06

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

SOW DATE	DENSITY	SOW DATE DENSITY & WILD OAT
0.210	0.271	0.470

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

Stratum	d.f.	s.e.	cv%
BLOCK.WP	30	0.576	18.8

MEAN DM% *

PLOT AREA HARVESTED 0.0002