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93/R/M/5 Weed Seed Production in Spring Crops - Mixed Crops

Rothamsted Research

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93/R/M/5

MIXED 5

WEED SEED PRODUCTION IN SPRING CROPS

Object: To investigate the effects of competition of three different crops on the seed production of three contrasting weed species at two densities and the effects of these weeds on each crop - Great Knott II.

Sponsor: P.J.W. Lutman.

S. wheat, S. beans and linseed.

Design: 3 blocks of 3 plots split into 7 sub plots.

Whole plot dimensions: 5.0 x 21.0.

Treatments:

Whole plots

1. CROP Crops:

S WHEAT	Spring Wheat
S BEANS	Spring Beans
LINSEED	Linseed

Sub plots

2. WEED DEN Density of weed species:

CHAR L	Charlock (<i>Sinapsis arvensis</i>), low density
CHAR H	Charlock, high density
CHICK L	Chickweed (<i>Stellaria media</i>), low density
CHICK H	Chickweed, high density
MAYWEED	Mayweed (<i>Matricaria perforata</i>)
ORACHE	Orache (<i>Atriplex patula</i>)
NONE	None

- NOTES:** (1) Weeds were broadcast at drilling or shortly afterwards.
(2) Planned low density mayweed failed to establish and was replaced by naturally occurring orache.
(3) Density of sown weeds established (plants per square metre):

	CHAR L	CHAR H	CHICK L	CHICK H	MAYWEED
S WHEAT	11	553	5	54	19
S BEANS	12	647	3	41	3
LINSEED	12	708	2	46	27

Experimental Diary:

- 25-Jan-93 : B : Ploughed.
29-Mar-93 : B : Rotary harrowed, twice.
: T : CROP LINSEED: Rotary harrowed, Antares, dressed
Prelude 20LF, drilled at 700 seeds per square metre.
: T : CROP S BEANS: Rotary harrowed, Alfred drilled at 60
seeds per square metre.

93/R/M/5

Experimental Diary:

30-Mar-93 : T : CROP S WHEAT: Rotary harrowed, Canon, dressed Cerevax,
drilled at 400 seeds per square metre.
07-May-93 : T : CROP LINSEED: 34.5% N at 217 kg.
: T : CROP S WHEAT: 34.5% N at 290 kg.
20-May-93 : T : CROP LINSEED: Decis at 0.30 l in 200 l.
27-Aug-93 : B : Harvested by hand (started).
02-Sep-93 : B : Harvested by hand (finished).

Previous crops: W. oats 1991, w. wheat 1992.

- NOTES:** (1) Emergence counts were made. Height and dry weight measurements and crop and weed numbers were noted throughout the season. Samples were taken in July and August to count numbers of ears, beans and bolls on the respective crops.
- (2) Seed production by mayweed, chickweed and charlock was estimated from selected plants in each of the three crops.
- (3) One whole plot of linseed was lost due to poor establishment. Means were estimated from the other two plots.

93/R/M/5

SPRING WHEAT

GRAIN TONNES/HECTARE

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

WEED DEN	
CHAR L	3.23
CHAR H	0.19
CHICK L	5.11
CHICK H	4.57
MAYWEED	4.58
ORACHE	5.47
NONE	4.71
Mean	3.98

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

WEED DEN
0.623

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

Stratum	d.f.	s.e.	cv%
BLOCK.WP.SP	12	0.76	19.2
GRAIN MEAN DM%	85.5		

93/R/M/5

SPRING BEANS

GRAIN TONNES/HECTARE

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

WEED DEN	
CHAR L	3.76
CHAR H	4.26
CHICK L	4.12
CHICK H	4.62
MAYWEED	4.70
ORACHE	4.69
NONE	4.46
Mean	4.37

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

WEED DEN
0.529

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

Stratum	d.f.	s.e.	cv%
BLOCK.WP.SP	12	0.65	14.8
GRAIN MEAN DM%	85.1		

93/R/M/5

LINSEED

GRAIN (AT 90% DRY MATTER) TONNES/HECTARE

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

WEED DEN

CHAR L	0.37
CHAR H	0.06
CHICK L	1.34
CHICK H	0.68
MAYWEED	0.85
ORACHE	1.12
NONE	1.33
Mean	0.82

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

WEED DEN

0.145

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

Stratum	d.f.	s.e.	cv%
BLOCK.WP.WP	6	0.178	21.6
GRAIN MEAN DM%	86.0		
PLOT AREA HARVESTED	0.00010		