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92/R/RAS/1 Weed Competition and Spring Rape - S. Oilseed Rape

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92/R/RAS/1

SPRING OILSEED RAPE

WEED COMPETITION AND SPRING RAPE

Object: To study the relative competitive effects of two weed species and oats at different fertilizer nitrogen levels on the growth and yield of s. oilseed rape - Sawyers I E.

Sponsor: P.J.W. Lutman.

Design: 3 randomised blocks of 20 plots.

Whole plot dimensions: 3.0 x 10.0.

Treatments: All combinations of:-

1. **SPECIES** Weed species:

| | |
|----------|--------------------------------------|
| CHICKWD | Chickweed (<i>Stellaria media</i>) |
| CHARLOCK | Charlock (<i>Sinapis arvensis</i>) |

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

| | CHICKWEED | CHARLOCK |
|----|-----------|----------|
| D0 | 0 | 0 |
| D1 | 128 | 8 |
| D2 | 235 | 18 |
| D3 | 672 | 24 |
| D4 | 1220 | 62 |

plus all combinations of:

1. **DENSITYN** Density of chickweed (plants per square metre):

| | |
|-----|------|
| ND1 | 0 |
| ND2 | 1194 |

2. **N** Nitrogen fertilizer (kg N):

50
100
150
200

plus 2 extra plots

OAT RATE Density of cultivated oats (*Avena sativa*) (plants per square metre):

| | |
|-----|-----|
| OT1 | 79 |
| OT2 | 240 |

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- NOTES:** (1) Target weed densities (number of plants per square metre):
 SPECIES CHICKWD: 0, 150, 300, 600 and 1200.
 SPECIES CHARLOCK: 0, 30, 60, 120 and 240.
 DENSITYN: 0 and 600.
- (2) Target weed sowing densities (number of seeds sown per square metre):
 OAT RATE: 120 and 480.

Experimental diary:

- 06-Sep-91 : B : Straw chopped.
31-Oct-91 : B : Ploughed (start).
26-Nov-91 : B : Ploughed (finish).
21-Feb-92 : B : PK as (0:18:36) at 940 kg.
09-Apr-92 : T : N 50: 34.5% N at 145 kg.
 : T : N 100: 34.5% N at 290 kg.
 : T : N 150: 34.5% N at 435 kg.
 : T : N 200: 34.5% N at 580 kg.
09-Apr-92 : B : Spring-tine cultivated twice.
10-Apr-92 : B : Rotary harrowed, Puma, dressed Lindex-Plus FS, drilled
 at 6.2 kg.
10-Apr-92 : T : **OAT RATE** 120: Dula, broadcast at 120 seeds per square
 metre.
10-Apr-92 : T : **OAT RATE** 480: Dula, broadcast at 480 seeds per square
 metre.
26-Jun-92 : B : Ripcord at 0.30 l in 260 l.
25-Aug-92 : T : Hand harvested (start).
29-Aug-92 : T : Hand harvested (finish).

Previous crops: W. wheat 1990, s. beans 1991.

NOTE: Crop and weed counts were made and dry weight samples were taken at intervals during the growing season.

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GRAIN (AT 90% DRY MATTER) TONNES/HECTARE

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

| DENSITY SPECIES | D0 | D1 | D2 | D3 | D4 | Mean |
|-----------------|------|------|------|------|------|------|
| CHICKWD | 3.02 | 3.04 | 3.15 | 2.99 | 3.21 | 3.08 |
| CHARLOCK | 3.26 | 3.04 | 2.77 | 2.52 | 2.10 | 2.74 |
| Mean | 3.14 | 3.04 | 2.96 | 2.75 | 2.65 | 2.91 |
| N | 50 | 100 | 150 | 200 | Mean | |
| DENSITYN | | | | | | |
| ND1 | 2.92 | 2.89 | 3.21 | 3.32 | 3.09 | |
| ND2 | 2.75 | 3.12 | 3.01 | 3.13 | 3.00 | |
| Mean | 2.84 | 3.00 | 3.11 | 3.23 | 3.05 | |
| OAT RATE | | | | | | |
| OT1 | 1.31 | | | | | |
| OT2 | 0.38 | | | | | |
| Mean | 0.84 | | | | | |

GRAND MEAN 2.76

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

| SPECIES | DENSITY | DENSITN | N |
|----------|---------|---------|-------|
| 0.080 | 0.127 | 0.090 | 0.127 |
| OAT RATE | SPECIES | DENSITN | N |
| 0.179 | 0.179 | 0.179 | |

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

| Stratum | d.f. | s.e. | cv% |
|----------|------|-------|-----|
| BLOCK.WP | 38 | 0.219 | 8.0 |

GRAIN MEAN DM% *

PLOT AREA HARVESTED 0.00020