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Yields of the Field Experiments 1999

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99/R/RN/22 Crop Rotations - W. Oats, W. Wheat, W. Rape, W. Linseed, W. Beans, Lupins

Rothamsted Research

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99/W/RN/12

2. **TREATMNT** Previous treatments: (continued)

FERT-FYM Fertilizers only in both periods, rates of P, K & Mg equivalent to amounts in FYM

FERT-STR Fertilizers only in both periods, rates of P, K & Mg equivalent to amounts in straw (+P)

Experimental diary:

27-Aug-98 : B : : Ploughed.

29-Aug-98 : B : : Cambridge rolled.

19-Sep-98 : B : : PK as (0:24:24) at 217 kg. Muriate of potash at 52 kg.

12-Oct-98 : B : : Rotary harrowed. Drilled, Hereward, tr. Sibutol, at 380 seeds/m² with the Accord drill.

25-Feb-99 : B : : Platform S at 1.0 kg with Isoguard at 2.0 l in 200 l.

03-Apr-99 : B : : 34.5% N at 278 kg.

25-Apr-99 : B : : Tripart Brevis at 2.0 l with Folicur at 0.5 l in 200 l.

27-May-99 : B : : Folicur at 0.75 l with Sipcam UK Rover 500 at 1.0 l in 200 l.

22-Aug-99 : B : : Combine harvested.

NOTE: Samples of grain were taken for chemical analysis.

GRAIN TONNES/HECTARE

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

| CROPSEQ | WHEAT A | WHEAT B | Mean |
|-----------------|---------|---------|------|
| TREATMNT | | | |
| LC 8 GM | 5.63 | 5.54 | 5.58 |
| LC 8 PT | 5.67 | 5.17 | 5.42 |
| LC 6 LC | 5.84 | 5.05 | 5.44 |
| LC 6 LN | 5.93 | 5.66 | 5.79 |
| FYM | 5.90 | 5.62 | 5.76 |
| STRAW | 6.06 | 4.84 | 5.45 |
| FERT-FYM | 4.63 | 4.54 | 4.59 |
| FERT-STR | 5.25 | 3.97 | 4.61 |
| Mean | 5.61 | 5.05 | 5.33 |

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

| TREATMNT | CROPSEQ* |
|-----------------|-----------------|
| 0.378 | 0.535 |

* Within the same level of **CROPSEQ** only

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

| Stratum | d.f. | s.e. | cv% |
|--------------------------|---------|-------|------|
| BLOCK.WP | 14 | 0.535 | 10.0 |
| GRAIN MEAN DM% | 86.6 | | |
| MEAN PLOT AREA HARVESTED | 0.01169 | | |

99/R/RN/22

CROP ROTATIONS

Object: To test combinable break crops and their effect on following wheat crops. New crop species and winter sown variants of established species are tested to determine optimal break crop selection for rotations that maximise first wheat yields and minimise inputs - Great Field I/II.

Sponsor: I.F. Shield, M.V. Hewitt, R.W. Payne.

The second year, w. oats, w. wheat, w. rape, w. linseed, w. beans, lupins.

Design: 2 blocks of 42 plots split into 4 sub-plots.

Whole plot dimensions: 9.0 x 23.0.

Sub-plot dimensions: 4.5 x 10.0.

Treatments:

Whole plots:

| ROTATION | | Cropping and years: | | | | | | |
|------------------------------------|-------|---------------------|------|------|------|------|------|------|
| Rotation no. and cropping sequence | Phase | 1998 | 1999 | 2000 | 2001 | 2002 | 2003 | 2004 |
| 1 RA, W, W | A | O | RA | W | W | RA | W | W |
| | B | O | O | RA | W | W | RA | W |
| | C | O | RA | O | RA | W | W | RA |
| 2 LN, W, W | A | O | LN | W | W | LN | W | W |
| | B | O | O | LN | W | W | LN | W |
| | C | O | RA | O | LN | W | W | LN |
| 3 LP, W, W | A | O | LP | W | W | LP | W | W |
| | B | O | O | LP | W | W | LP | W |
| | C | O | RA | O | LP | W | W | LP |
| 4 BE, W, W | A | O | BE | W | W | BE | W | W |
| | B | O | O | BE | W | W | BE | W |
| | C | O | RA | O | BE | W | W | BE |
| 5 PE, W, W | A | O | PE | W | W | PE | W | W |
| | B | O | O | PE | W | W | PE | W |
| | C | O | RA | O | PE | W | W | PE |
| 6 W, W, W | A | O | W | W | W | W | W | W |
| | B | O | O | W | W | W | W | W |
| | C | O | RA | O | W | W | W | W |
| 7 BE, W, LP, W, PE, W | A | O | BE | W | LP | W | PE | W |
| | B | O | O | BE | W | LP | W | PE |
| | C | O | RA | O | BE | W | LP | W |
| | D | O | O | RA | O | BE | W | LP |
| | E | O | RA | O | RA | O | BE | W |
| | F | O | O | RA | O | RA | O | BE |
| 8 RA, W, LN, W | A | O | RA | W | LN | W | RA | W |
| | B | O | O | RA | W | LN | W | RA |
| | C | O | RA | O | RA | W | LN | W |
| | D | O | O | RA | O | RA | W | LN |
| 9 RA, W, BE, W | A | O | RA | W | BE | W | RA | W |
| | B | O | O | RA | W | BE | W | RA |
| | C | O | RA | O | RA | W | BE | W |
| | D | O | O | RA | O | RA | W | BE |
| 10 O, W, W | A | O | O | W | W | O | W | W |
| | B | O | RA | O | W | W | O | W |
| | C | O | O | RA | O | W | W | O |

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ROTATION

Cropping and years: (continued)

| Rotation no. and cropping sequence | Phase | 1998 | 1999 | 2000 | 2001 | 2002 | 2003 | 2004 |
|--|-------|------|------|------|------|------|------|------|
| 11 | | O | W | W | W | W | W | W |
| 12 | | O | W | W | W | W | W | W |
| 13 | | O | W | W | W | W | W | W |
| 14 | | O | W | W | W | W | W | W |
| 15 | | O | W | W | W | W | W | W |
| 16 | | O | W | W | W | W | W | W |
| 17 | | O | W | W | W | W | W | W |

W = w. wheat, O = w. oats, RA = w. rape, LN = w. linseed,
BE = w. beans, PE = w. peas, LP = lupins.

NOTE: The diary entries are done by crop not by treatment.

Experimental diary:

All crops:

24-Aug-98 : B : Ploughed and pressed.

21-Oct-98 : B : Hardy at 7.5 kg.

W. wheat:

18-Sep-98 : T : Combination drilled Hereward, tr. Beret Gold, at 380 seeds/m² with the Accord drill.

19-Sep-98 : T : Rolled. Hardy at 7.5 kg.

29-Sep-98 : T : Combination redrilled Hereward, tr. Beret Gold, at 380 seeds/m² with the Accord drill, part of one plot with **ROTATION 17**.

15-Feb-99 : T : tm)Isogard at 1.0 l in 220 l.

: T : tm)Unite A at 0.125 l in 200 l.

: T : tm)Unite B at 1.0 l in 200 l.

: T : tm)Cropoil at 1.0 l in 200 l.

11-Mar-99 : T : 34.5% N at 145 kg.

14-Apr-99 : T : 34.5% N at 435 kg.

01-May-99 : T : Opus at 0.7 l in 200 l.

19-May-99 : T : tm)Sypex at 1.5 l in 200 l.

: T : tm)Enhance at 80 ml in 200 l.

29-May-99 : T : tm)Folicur at 1.0 l in 100 l

: T : tm)Sipcam UK Rover 500 at 1.0 l in 100 l.

18-Jun-99 : T : Folicur at 0.25 l in 100 l.

31-Jul-99 : T : Combine harvested and chopped straw **ROTATION 6A** and 11.

02-Aug-99 : T : Combine harvested and chopped straw, all remaining wheat.

W. oats:

28-Sep-98 : T : tm)PDQ at 3.0 l in 200 l.

: T : tm)Parable at 200 ml in 200 l.

16-Oct-98 : T : Combination drilled, Gerald, tr. Sibutol, at 350 seeds/m² with the Accord drill.

09-Apr-99 : T : 34.5% N at 145 kg.

27-Apr-99 : T : 34.5% N at 145 kg.

14-May-99 : T : Ally at 30 g in 200 l.

21-May-99 : T : tm)BASF 3C Chlormequat 720 at 2.25 l in 200 l.

: T : tm)Enhance at 50 ml in 200 l.

01-Jun-99 : T : Folicur at 0.75 l in 200 l.

31-Jul-99 : T : Combine harvested.

W. rape:

26-Aug-98 : T : Combination drilled, Pronto, tr. Lindex-Plus FS Seed Treatment, at 75 seeds/m² with the Accord drill.

29-Aug-98 : T : Rolled. Hardy at 7.5 kg.

05-Sep-98 : T : Hardy at 7.5 kg.

15-Sep-98 : T : Cyperkill 10 at 0.25 l in 200 l.

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Experimental diary:

W. rape:

17-Sep-98 : T : tm)Katamaran at 2.0 l in 200 l.
: T : tm)Decis at 250 ml in 200 l.
18-Sep-98 : T : Hardy at 7.5 kg.
25-Sep-98 : T : 34.5% N at 120 kg.
09-Oct-98 : T : Laser at 0.5 l in 200 l.
: T : tm)Cropoil at 2.0 l in 200 l.
04-Dec-98 : T : tm)Punch C at 0.4 l in 200 l.
: T : tm)Stefes Cypermethrin 2 at 250 ml in 200 l.
07-Dec-98 : T : tm)Laser at 0.5 l in 200 l area missed on 09-Oct-98.
: T : tm)Cropoil at 2.0 l in 200 l area missed on 09-Oct-98.
08-Feb-99 : T : 34.5% N at 300 kg.
25-Feb-99 : T : Punch C at 0.4 l in 200 l.
11-Mar-99 : T : 34.5% N at 300 kg.
17-Mar-99 : T : tm)Laser at 2.25 l in 220 l to an area of **ROTATION 8C**.
: T : tm)Cropoil at 2.0 l in 220 l to an area of **ROTATION 8C**.
29-Apr-99 : T : tm)Bavistin DF at 1.0 kg in 200 l.
: T : tm)Ronilan FL at 0.5 l in 200 l.
: T : tm)Hallmark at 100 ml in 200 l.
07-Jul-99 : T : tm)Reglone at 3.0 l in 400 l.
: T : tm)Enhance at 400 ml in 400 l.
16-Jul-99 : T : Combine harvested and chopped straw.

W. linseed:

28-Sep-98 : T : tm)PDQ at 3.0 l in 200 l.
: T : tm)Parable at 200 ml in 200 l.
12-Oct-98 : T : Combination drilled Oliver, tr. Prelude 20 LF, at 950 seeds/m² with
the Nordsten drill.
26-Mar-99 : T : 34.5% N at 348 kg.
30-Apr-99 : T : Eagle at 40 g in 220 l.
14-May-99 : T : tm)Laser at 1.5 l in 220 l.
: T : tm)Cropoil at 2.0 l in 220 l.
09-Jul-99 : T : tm)Reglone at 3.0 l in 400 l.
: T : tm)Enhance at 400 ml in 400 l.
24-Jul-99 : T : Combine harvested and chopped straw.

W. beans:

28-Sep-98 : T : tm)PDQ at 3.0 l in 200 l.
: T : tm)Parable at 200 ml in 200 l.
09-Oct-98 : T : Drilled Clipper, recleaned, at 25 seeds/m² with the Carrier drill
19-Oct-98 : T : tm)Gesatop 500 SC at 2.0 l in 220 l.
: T : tm)Kerb 50 W at 1.7 kg in 220 l.
20-May-99 : T : tm)Bavistin DF at 1.0 kg in 200 l.
: T : tm)Sipcam UK Rover 500 at 2.0 l in 200 l.
09-Jun-99 : T : tm)Bavistin DF at 1.0 kg in 200 l.
: T : tm)Sipcam UK Rover 500 at 2.0 l in 200 l.
12-Aug-99 : T : Combine harvested and chopped straw.

W. peas:

28-Sep-98 : T : tm)PDQ at 3.0 l in 200 l.
: T : tm)Parable at 200 ml in 200 l.
09-Oct-98 : T : Drilled Victor, tr. Hy-TL and Rhodoman, at 100 seeds/m² with the
Carrier drill.
19-Oct-98 : T : Opogard 500 SC at 3.4 l in 220 l.
30-Apr-99 : T : Compass at 3.0 l in 220 l.
19-May-99 : T : Hallmark at 150 ml in 200 l.
10-Jun-99 : T : tm)Aphox at 100 g in 220 l.
: T : tm)Hallmark at 150 ml in 220 l.
25-Jun-99 : T : Compass at 3.0 l in 220 l.

W. lupins:

07-Sep-98 : T : Combination drilled, DTN 20, untreated, at 50 seeds/m² with the
Accord drill. Rolled. Spannitt at 1.5 l in 220 l.
11-Sep-98 : T : Hardy at 7.5 kg.
18-Sep-98 : T : Hardy at 7.5 kg.