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Yields of the Field Experiments 1977

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77/W/CS/99 Effects of Breaks on Take-all - Barley, Beans

Rothamsted Research

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77/W/CS/99

EFFECTS OF BREAKS ON TAKE-ALL

Object: To study the phenomenon of take-all (*Gaeumannomyces graminis*) decline in barley - Woburn Butt Furlong.

Sponsor: D. Hornby.

The sixth year, barley, spring beans.

For previous years see 72/W/CS/99(t) and 73-76/W/CS/99.

Design: 2 blocks of 9 plots.

Whole plot dimensions: 5.33 x 15.2.

Treatments: Previous crops:-

| PREVCROP | 1968-71 | 1972 | 1973 | 1974 | 1975 | 1976 | |
|----------|---------|------|------|------|------|------|-----------------|
| BBBBB | B | B | B | B | B | B | (2 plots/block) |
| FBBBB | B | F | B | B | B | B | |
| FBE BBB | B | F | BE | B | B | B | |
| BFBE BB | B | B | F | BE | B | B | |
| BBFBEB | B | B | B | F | BE | B | |
| BBBBFBE | B | B | B | B | F | BE | |

B = Barley, BE = Beans, F = Fallow

Standard applications:

Barley: Manures: (20:14:14) at 420 kg combine drilled. Weedkiller: Ioxynil at 0.53 kg plus mecoprop at 1.6 kg in 220 l.

Spring beans: Manures: (0:14:28) at 400 kg. Insecticide: Pirimicarb at 0.14 kg in 340 l.

Seed: Barley: Julia, dressed with ethirimol, sown at 160 kg.
Spring beans: Minden, sown at 220 kg.

Cultivations, etc.:-

All plots: Ploughed: 1 Nov, 1976. Spring-tine cultivated: 7 Mar, 1977.
Spring-tine cultivated with crumbler attached: 8 Mar.

Barley: Seed sown: 9 Mar, 1977. Weedkiller applied: 15 May. Combine harvested: 15 Aug.

Spring beans: Spring-tine cultivated: 17 Aug, 1976. PK applied: 30 Mar, 1977. Fine-tooth harrowed: 10 May. Tractor hoed: 30 May. Insecticide applied: 20 July. Combine harvested: 12 Sept.

Fallow: Rotary cultivated: 4 May, 1977. Spring-tine cultivated: 30 May. Rotary cultivated: 8 July.

- NOTES: (1) Soil samples were taken before sowing and after harvest and plant samples in July for incidence of take-all (*Gaeumannomyces graminis*).
- (2) Yields of spring beans were not taken.
- (3) An examination of the results showed a fertility trend coinciding with the contours of the field. The yields presented have been adjusted for this trend. The yields for the years 1972-76 have also been adjusted and the revised figures are presented.

77/W/CS/99

BARLEY

GRAIN TONNES/HECTARE

***** TABLES OF MEANS *****

| PREVCROP | BBBBB | FBBBB | FEBBBB | BFEBBB | BBFBEB | BBBBFBE | MEAN |
|----------|-------|-------|--------|--------|--------|---------|------|
| | 3.14 | 3.91 | 3.47 | 3.92 | 4.26 | 4.03 | 3.79 |

***** STANDARD ERRORS OF DIFFERENCES OF MEANS *****

| TABLE | PREVCROP |
|-------|--------------------------------|
| SED | 0.245 MIN REP 0.212 MAX-MIN |

PREVCROP
MAX-MIN BBBBB V ANY OF REMAINDER
MIN REP ANY OF REMAINDER

***** STRATUM STANDARD ERRORS AND COEFFICIENTS OF VARIATION *****

| STRATUM | DF | SE | CV% |
|---------------------|---------|-------|-----|
| BLOCK.WP | 6 | 0.229 | 6.2 |
| GRAIN MEAN DM% | 79.7 | | |
| PLOT AREA HARVESTED | 0.00434 | | |

76/W/CS/99

BARLEY

GRAIN TONNES/HECTARE

***** TABLES OF MEANS *****

| PREVCROP | B/B/B/B | F/B/B/B | F/BE/B/B | B/F/BE/B | B/B/F/BE | MEAN |
|----------|---------|---------|----------|----------|----------|------|
| | 1.71 | 2.03 | 1.93 | 2.13 | 2.61 | 1.98 |

***** STANDARD ERRORS OF DIFFERENCES OF MEANS *****

| TABLE | PREVCROP |
|-------|--------------------------------|
| SED | 0.311 MIN REP 0.254 MAX-MIN |

PREVCROP
MAX-MIN B/B/B/B V ANY OF REMAINDER
MIN REP ANY OF REMAINDER

***** STRATUM STANDARD ERRORS AND COEFFICIENTS OF VARIATION *****

| STRATUM | DF | SE | CV% |
|----------|----|-------|------|
| BLOCK.WP | 7 | 0.299 | 15.1 |

75/W/CS/99

BARLEY

GRAIN TONNES/HECTARE

***** TABLES OF MEANS *****

| PREVCROP | B/B/B/B | B/F/B/B | B/F/BE/B | B/B/F/BE | MEAN |
|----------|---------|---------|----------|----------|------|
| | 1.49 | 2.02 | 2.20 | 1.94 | 1.73 |

***** STANDARD ERRORS OF DIFFERENCES OF MEANS *****

| TABLE | PREVCROP | |
|-------|----------|---------|
| SED | 0.216 | MIN REP |
| | 0.170 | MAX-MIN |

PREVCROP
 MAX-MIN B/B/B/B V ANY OF REMAINDER
 MIN REP ANY OF REMAINDER

***** STRATUM STANDARD ERRORS AND COEFFICIENTS OF VARIATION *****

| STRATUM | DF | SE | CV% |
|----------|----|-------|------|
| BLOCK.WP | 8 | 0.207 | 12.0 |

74/W/CS/99

BARLEY

GRAIN TONNES/HECTARE

***** TABLES OF MEANS *****

| PREVCROP | B/B/B | B/F/B | B/F/BE | MEAN |
|----------|-------|-------|--------|------|
| | 4.00 | 4.26 | 4.18 | 4.06 |

***** STANDARD ERRORS OF DIFFERENCES OF MEANS *****

| TABLE | PREVCROP | |
|-------|----------|---------|
| SED | 0.287 | MIN REP |
| | 0.223 | MAX-MIN |

PREVCROP
 MAX-MIN B/B/B V ANY OF REMAINDER
 MIN REP ANY OF REMAINDER

***** STRATUM STANDARD ERRORS AND COEFFICIENTS OF VARIATION *****

| STRATUM | DF | SE | CV% |
|----------|----|-------|-----|
| BLOCK.WP | 9 | 0.284 | 7.0 |

73/W/CS/99

BARLEY

GRAIN TONNES/HECTARE

***** TABLES OF MEANS *****

| PREVCROP | B/B | B/F | MEAN |
|----------|------|------|------|
| | 3.86 | 4.49 | 3.95 |

***** STANDARD ERRORS OF DIFFERENCES OF MEANS *****

| TABLE | PREVCROP |
|-------|----------|
| ----- | ----- |
| SED | 0.202 |

***** STRATUM STANDARD ERRORS AND COEFFICIENTS OF VARIATION *****

| STRATUM | DF | SE | CV% |
|----------|----|-------|-----|
| BLOCK.WP | 10 | 0.263 | 6.7 |

72/W/CS/99

BARLEY

GRAIN TONNES/HECTARE

***** TABLES OF MEANS *****

| CS | 1 | 4 | 5 | 6 | 7 | 8 | 9 | MEAN |
|----|------|------|------|------|------|------|------|------|
| | 3.67 | 4.28 | 3.86 | 3.57 | 4.05 | 4.30 | 4.12 | 3.98 |

***** STANDARD ERRORS OF DIFFERENCES OF MEANS *****

| TABLE | CS |
|-------|-------|
| ----- | ----- |
| SED | 0.577 |

***** STRATUM STANDARD ERRORS AND COEFFICIENTS OF VARIATION *****

| STRATUM | DF | SE | CV% |
|----------|----|-------|------|
| BLOCK.WP | 5 | 0.492 | 12.4 |