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Yields of the Field Experiments 1982

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82/R/CS/10 and 82/W/CS/10 Long Term Liming - S. Oats

Rothamsted Research

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82/R/CS/10 and 82/W/CS/10

LONG TERM LIMING

Object: To study the effects of different amounts of lime on the yields of a sequence of crops. The effects of P are also studied - Rothamsted (R) Sawyers I and Woburn (W) Stackyard C.

Sponsors: S. McGrath, D.P. Stribley.

The 21st year, s. oats.

For previous years see 'Details' 1967, 1973 and 74-81/R&W/CS/10.

Design: 2 randomised blocks of 16 plots.

Whole dimensions: 6.40 x 18.3.

Treatments: All combinations of:-

1. CHALK Ground chalk (tonnes CaCO₃) (total applied 1962-82):

| R | W | Rothamsted | | Woburn | |
|----|----|---------------|------|---------------|------|
| | | Total 1962-78 | 1982 | Total 1962-78 | 1982 |
| 0 | 0 | 0 | 0 | 0 | 0 |
| 9 | 8 | 7 | 2 | 6 | 2 |
| 20 | 19 | 15 | 5 | 14 | 5 |
| 40 | 33 | 30 | 10 | 23 | 10 |

2. P P fertilizer applied:

| | Until 1978 | 1981 | 1982 |
|----|------------|---------|---------|
| 0 | None | None | None |
| P1 | K | 25 kg P | 50 kg P |
| P2 | P | 25 kg P | None |
| P3 | P & K | 75 kg P | 50 kg P |

- NOTES: (1) Until 1978 test P & K were applied cumulatively, rates varied with crop. None was applied in 1979 & 1980 (fallow).
 (2) A basal dressing of 120 kg K has been applied since 1981.
 (3) A sub plot test of Mg applied in earlier years has been ignored, but a basal dressing of 100 kg Mg was applied in 1981 and 40 kg Mg in 1982.

Basal applications:

Sawyers I (R): Manures: N at 30 kg as 'Nitro-Chalk' combine drilled, K at 120 kg as muriate of potash, Mg at 40 kg as kieserite.
 Weedkillers: Dicamba, mecoprop and MCPA (as 'Banlene Plus' at 5.0 l) in 250 l.
 Stackyard C (W): Manures: N at 30 kg as 'Nitro-Chalk', K at 120 kg as muriate of potash, Mg at 40 kg as kieserite. Weedkillers: Dicamba, mecoprop and MCPA (as 'Herrisol' at 4.9 l) in 280 l.

Seed: Peniarth, sown at 190 kg (R), 200 kg (W).

Cultivations, etc.:-

Sawyers I (R): Ground chalk, applied: 3-7 Dec, 1981. Ploughed: 3 Feb, 1982. Spring-tine cultivated: 5 Apr. P, K and Mg applied, seed sown: 14 Apr. Weedkillers applied: 26 May. Combine harvested: 26-27 Aug.

82/R/CS/10 and 82/W/CS/10

Stackyard C (W): Ground chalk applied: 25 Nov, 1981. Ploughed: 26 Feb, 1982. P, and K applied: 24 Mar. Mg and N applied, heavy spring-tine cultivated: 25 Mar. Spring-tine cultivated with crumbler attached, seed sown: 29 Mar. Weedkillers applied: 26 May. Combine harvested: 20 Aug.

82/R/CS/10 SAWYERS I (R)

GRAIN TONNES/HECTARE

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

| P | 0 | P1 | P2 | P3 | MEAN |
|-------|------|------|------|------|------|
| CHALK | | | | | |
| 0 | 1.21 | 1.20 | 1.52 | 1.74 | 1.42 |
| 9 | 1.15 | 1.92 | 1.47 | 1.38 | 1.48 |
| 20 | 1.18 | 1.22 | 1.37 | 1.47 | 1.31 |
| 40 | 1.13 | 1.43 | 1.32 | 1.65 | 1.38 |
| MEAN | 1.17 | 1.44 | 1.42 | 1.56 | 1.40 |

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

| TABLE | CHALK | P | CHALK P |
|-------|-------|-------|------------|
| ----- | ----- | ----- | ----- |
| SED | 0.090 | 0.090 | 0.180 |

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

| STRATUM | DF | SE | CV% |
|----------|----|-------|------|
| BLOCK.WP | 15 | 0.180 | 12.9 |

GRAIN MEAN DM% 65.8

PLOT AREA HARVESTED 0.00520

82/W/CS/10 STACKYARD C (W)

GRAIN TONNES/HECTARE

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

| P | 0 | P1 | P2 | P3 | MEAN |
|-------|------|------|------|------|------|
| CHALK | | | | | |
| 0 | 1.32 | 1.79 | 1.59 | 1.86 | 1.64 |
| 8 | 1.58 | 1.99 | 1.75 | 2.08 | 1.85 |
| 19 | 1.62 | 1.68 | 1.86 | 2.17 | 1.83 |
| 33 | 1.64 | 1.77 | 2.00 | 1.94 | 1.84 |
| MEAN | 1.54 | 1.81 | 1.80 | 2.01 | 1.79 |

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

| TABLE | CHALK | P | CHALK P |
|-------|-------|-------|------------|
| ----- | | | |
| SED | 0.096 | 0.096 | 0.191 |

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

| STRATUM | DF | SE | CV% |
|----------|----|-------|------|
| BLOCK.WP | 15 | 0.191 | 10.7 |

GRAIN MEAN DM% 80.1

PLOT AREA HARVESTED 0.00503