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85/R/CS/10 and 85/W/CS/10 Long-term Liming - S. Barley

Rothamsted Research

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85/R/CS/10 and 85/W/CS/10

LONG TERM LIMING

Object: To study the effects of different amounts of lime and phosphate on the yields and compositions of a sequence of crops. Rothamsted (R) Sawyers I and Woburn (W) Stackyard C.

Sponsor: S.P. McGrath.

The 24th year, s. barley.

For previous years see 'Details' 1967, 1973 and 74-84/R&W/CS/10.

Design: 2 randomised blocks of 16 plots.

Whole plot dimensions: 6.40 x 18.3.

Treatments: All combinations of:-

1. CHALK Residual effects of ground chalk (tonnes CaCO₃) (total applied 1962-83):

		Rothamsted total		Woburn total	
R	W	1962-78	1982-83	1962-78	1982-83
0	0	0	0	0	0
14	8	7	7	6	2
23	24	15	8	14	10
50	43	30	20	23	20

2. P Residual effects of P fertilizer applied:

	Until 1978		1981	1982	1983	
	R	W	R & W	R & W	R	W
0	0	0	0	0	0	0
P1	0		P1	P1	0	P2
P2	P		P1	0	P2	P2
P3	P		P3	P1	P2	P4

Rates 1981-83 P1, P2, P3, P4 = 25, 50, 75, 100 kg P as superphosphate

NOTES: Until 1978 test P was applied cumulatively, rates varied with crop, K was also applied cumulatively, to P1 and P3 plots. Since 1981 K has been applied basally.

Basal applications:-

Sawyers I (R): Manures: (25:0:16) at 450 kg. Weedkillers: Mecoprop at 1.6 kg with bromoxynil at 0.20 kg and ioxynil at 0.20 kg with fungicide in 200 l. Fungicide: Tridemorph at 0.52 kg.

Stackyard C (W): Manures: (25:0:16) at 490 kg. Weedkillers: Mecoprop at 1.2 kg with bromoxynil at 0.26 kg and ioxynil at 0.26 kg in 250 l.

Seed: Sawyers I (R): Klaxon, sown at 160 kg.
Stackyard C (W): Klaxon, sown at 150 kg.

85/R/CS/10 and 85/W/CS/10

Cultivations, etc.:-

Sawyers I (R): Ploughed: 3 Jan, 1985. NK applied, spring-tine cultivated, rotary harrowed, seed sown: 18 Mar. Weedkillers with fungicide applied: 16 May. Combine harvested: 23 Aug.

Stackyard C (W): Ploughed: 13 Mar. Spring-tine cultivated, NK applied, harrowed, seed sown: 18 Mar. Weedkillers applied: 16 May. Combine harvested: 28 Aug.

NOTE: On Sawyers I (R) plots with treatment CHALK 0 gave no measurable yield.

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

GRAIN TONNES/HECTARE

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

P	0	P1	P2	P3	MEAN
CHALK					
0	*	*	*	*	*
14	3.87	5.34	7.15	7.93	6.08
23	6.27	7.36	8.16	8.26	7.51
50	7.02	7.67	8.22	8.19	7.78
MEAN	5.72	6.79	7.84	8.13	7.12

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

TABLE	CHALK	P	CHALK P
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SED	0.416	0.480	0.831

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

STRATUM	DF	SE	CV%
BLOCK.WP	11	0.831	11.7

GRAIN MEAN DM% 76.7

PLOT AREA HARVESTED 0.00373

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

GRAIN TONNES/HECTARE

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

P	0	P1	P2	P3	MEAN
CHALK					
0	0.40	0.56	1.27	0.87	0.78
8	5.00	6.54	6.92	7.14	6.40
24	6.92	7.67	7.67	7.51	7.44
43	7.25	7.71	7.53	7.30	7.45
MEAN	4.89	5.62	5.85	5.70	5.52

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

TABLE	CHALK	P	CHALK P
-----	-----	-----	-----
SED	0.213	0.213	0.426

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

STRATUM	DF	SE	CV%
BLOCK.WP	15	0.426	7.7

GRAIN MEAN DM% 83.0

PLOT AREA HARVESTED 0.00503