Details of the Classical and Long-term Experiments Up to 1967

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Long-term Liming - Rothamsted and Woburn

Rothamsted Research

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LONG-TERM LIMING EXPERIMENTS, ROTHAMSTED, SAWYERS I AND WOBURN, STACKYARD SERIES C, 1962 ONWARDS

These experiments were begun in 1962 on both farms and were designed to study the effects of lime on yield and composition of a range of crops and on the available P and K in the soils.

The crops were beans 1962–64 and spring barley 1965–67.

At each farm there are two blocks of 16 plots (each 0·0289 acre) testing all combinations of:

(1) 0 v. three levels of ground chalk (L, M, H: light, medium, heavy)
(2) 0 v. superphosphate annually (0·5 cwt P_2O_5 1962–67)
(3) 0 v. muriate of potash annually (1·0 cwt K_2O 1962–67).

Liming. Applications of lime in the period 1962–67 were:

(tons $CaCO_3$)

Date of application	Rothamsted —	L	M	H	Date of application	Woburn —	L	M	H
March 1962	0	2	4	6	March 1962	0	2	4	6
December 1962	0	0	0	2	October 1962	0	0	¾	1½
Total 1962–67	0	2	4	8		0	2	4¾	7½

The mean pHs achieved by liming were as follows:

Date of sampling	Rothamsted —	L	M	H	Date of sampling	Woburn —	L	M	H
November 1962	5·0	6·2	7·0	7·2	September 1962	5·8	7·0	7·2	7·3
November 1963	5·0	6·0	6·8	7·3	September 1963	5·7	6·7	7·3	7·7
December 1964	5·0	5·8	6·8	7·4	November 1964	5·6	6·7	7·3	7·6
November 1966	4·6	5·6	6·5	7·4	November 1966	5·3	6·4	7·1	7·4
September 1967	4·9	5·7	6·7	7·6	September 1967	5·0	6·3	7·2	7·5

Additional information on beans

Variety: 1962 and 1963 Tick 30B; 1964 Spring Tick
Seed-rate: 200 lb
Weedkiller: Simazine at 1 lb to each sowing
Aphicide: 1962 and 1963 demeton-methyl; 1964 none
Basal nitrogen: 1964 only, 0·25 cwt N as 'Nitro-Chalk 21' broadcast in seedbed.

Extra treatments. 1962 only—none v. inoculation with *Rhizobium leguminosarum*. 1964 only—plots receiving both P and K were subdivided for a comparison of broadcasting powder fertiliser (rates and materials as before) with placement drilling of 409 lb of compound fertiliser (0:14:28), i.e. 0·51 cwt P_2O_5; 1·02 cwt K_2O. At Woburn winter beans were sown in November 1963 with all fertilisers in the seedbed. Winter beans failed from bird damage and spring beans were sown in March without further fertiliser. Simazine was applied in November and April.

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LONG-TERM LIMING (ROTHAMSTED & WOBURN)

Additional information on barley 1965–67

Variety: Maris Badger at seed rates of 140–160 lb.

Weedkiller: Post-emergence selective to each crop. Also before 1967 barley, Woburn only, aminotriazole plus ammonium thiocyanate.

Basal nitrogen: cwt N/acre:

Year	Rothamsted	Woburn
1965	0·5*	0·5*
1966	0·5*	0·5† and 0·5*
1967	0·75*	1·0†

* As 'Nitro-Chalk 21'. † As sulphate of ammonia.

At Woburn in 1966 sulphate of ammonia was applied in seedbed and 'Nitro-Chalk 21' top-dressed in June. All other 'Nitro-Chalk 21' combine drilled; sulphate of ammonia broadcast.

Reference

For results and discussion for the period 1962–64 see *Rep. Rothamsted exp. Stn for 1966*, 240–247.

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