

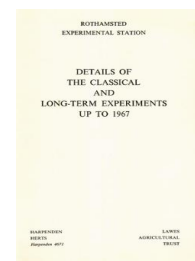
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Details of the Classical and Long-term Experiments Up to 1967

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Saxmundham - Rotation II

Rothamsted Research

Rothamsted Research (1970) *Saxmundham - Rotation II* ; Details Of The Classical And Long-Term Experiments Up To 1967, pp 56 - 58 - DOI: <https://doi.org/10.23637/ERADOC-1-192>

SAXMUNDHAM ROTATION II

First period, 1899–1964

The experiment was designed by Sir William Somerville (first Drapers Professor of Agriculture at Cambridge), who gave its object: 'To determine how farmyard manure and artificials might best be distributed over the crops of a rotation.' In fact only N and P were tested. The crops on the four blocks of the experiment which started in 1899 were the same as in Rotation I, but the manures to each plot depended on the crop being grown:

	Treatment number									
Wheat	1	2	3	4	5	6	7	8	9	10
Roots*	—	D	D	NP	N	DN	D	D	DN	N
Barley	—	—	NP	D	D	P	P	NP	NP	NP
Legume†	—	—	—	—	—	—	N	$\frac{1}{2}$ P	N	N
	—	—	—	—	P	—	—	$\frac{1}{2}$ P	—	D

D. 10 tons FYM. N. Nitrate of soda at 1.0 cwt (0.15 cwt N) till 1920; $1\frac{1}{2}$ cwt (0.23 cwt N) from 1921. P. Superphosphate at 5 cwt (1.0 cwt P_2O_5) till 1920; $7\frac{1}{2}$ cwt (1.5 cwt P_2O_5) from 1921.

* Roots initially swedes, but mangolds were grown from 1906 onwards.

† Legume was usually beans, but clover was sometimes grown and there were several pea crops towards the end of the experiment.

As in Rotation I, the treatments were laid down in the same order in each block, treatment 1 at the eastern end.

After 1952 the experiment was abandoned except for treatments 1–7 in two of the four blocks which were retained with unchanged manuring and cropping until 1964 as a site suitable for investigating the residual value of P fertiliser.

Second period, 1965 onward

The experiment was modified in 1965–67 to measure residues of phosphate applied between 1899 and 1964. Fresh dressings of phosphate (as triple superphosphate) and FYM were applied to some plots (Table 22).

TABLE 22
Total dressing per four years 1899–1964

Treatment	Total dressing* 1899–1964 (per 4 years)	Phosphate applied annually 1965–67 (cwt P_2O_5)	FYM annually in 1966 and 1967 (tons)
1	None	None	—
2	10 tons FYM	None	—
3		None	—
4	10 tons FYM plus 5 cwt superphosphate (to 1920) or $7\frac{1}{2}$ cwt since 1921	None	20
5		1.50	20
6		1.50	—
7		3.00	—
8	Manuring stopped in 1952. Until then 10 tons FYM plus 10 cwt superphosphate (to 1920) or 15 cwt superphos- phate (since 1921)	None	—

* Omitting N.

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Barley, variety Proctor, was sown in 1965 with 0·8 cwt N, 1·0 cwt K basal. Potatoes, Pentland Dell, were grown in 1966 with 1·2 cwt N, 2·0 cwt K₂O basal.

White turnips and sugar beet were sown on strips running across the plots in 1967 with 1·2 cwt N, 1·2 cwt K₂O basal.

References

The results of the experiment until 1940 were described by:

Oldershaw, A. W. (1941) Experiments on arable crops at Saxmundham. *Jl R. agric. Soc.* **102**, 136–155.

Results until 1952 were described by:

Boyd, D. A. & Trist, P. J. O. (1966) The Saxmundham rotation experiments: Rotation II, 1899–1952. *J. agric. Sci.* **66**, 337–339.

Results to 1968 were described by:

Mattingly, G. E. G. *et al.* (1970) The residual value of farmyard manure and superphosphate in the Saxmundham Rotation II experiment, 1899–1968. *Rep. Rothamsted exp. Stn for 1969*, Part 2, 91–112.

For yields see Table 23 on page 58.

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TABLE 23
Saxmundham, Rotation II

Treatment number	Mean yields, 1899-1952 (and annual treatment)										General mean
	1	2	3	4	5	6	7	8	9	10	
Wheat grain, cwt	11.7 (—)	15.9 (D)	17.7 (D)	19.5 (NP)	19.6 (N)	21.0 (DN)	18.3 (D)	18.8 (D)	21.3 (DN)	19.5 (N)	18.4
Mangolds roots, tons	4.7 (—)	11.3 (—)	19.3 (NP)	18.4 (D)	18.8 (D)	17.6 (P)	17.7 (P)	21.7 (NP)	21.2 (NP)	19.7 (NP)	17.0
Barley grain, cwt	9.2 (—)	11.8 (—)	13.4 (—)	14.0 (—)	14.2 (—)	14.2 (—)	18.4 (N)	15.4 (½P)	18.4 (N)	17.3 (N)	14.6
Beans grain, cwt	12.5 (—)	16.6 (—)	20.6 (—)	22.1 (—)	22.6 (P)	21.6 (—)	21.9 (—)	22.8 (½P)	21.6 (—)	24.4 (D)	20.7