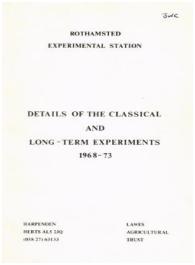
Details of the Classical and Long-term Experiments 1968-73



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S/RN/1 Rotation I - Wheat, Barley, Sugar Beet, Beans, Leys

Rothamsted Research

Rothamsted Research (1977) *S/RN/1 Rotation I - Wheat, Barley, Sugar Beet, Beans, Leys ;* Details Of The Classical And Long-Term Experiments 1968-73, pp 30 - 32 **- DOI: https://doi.org/10.23637/ERADOC-1-193**

SAXMUNDHAM

ROTATION I

(S/RN/1)

The four-course rotation of wheat, sugar beet, barley and beans was continued until the 1969 harvest. In 1970 the northern half of each plot was sown to lucerne and the southern (including the small plots of 5.5 m at the extreme southern end carrying the old treatments) to a timothy, meadow fescue mixture. The treatments first applied in 1966 *(Details 1967,* p.54) and the old treatments as modified in 1966 have been continued over the period 1968–73 with the exception of the rates of nitrogen.

NOTE: The following amendments should be made to the information given in *Details 1967,* p. 54. The P and K dressings should be regarded as an average of the period 1899-1965 rather than the original rates and the amount of P_2O_5 as 0.32 cwt rather than 0.3 cwt.

The second period started with the 1966 harvest and not 1965 as stated and the phosphate dressings were applied as triple superphosphate from that date.

Symbols, materials and rates of application

The treatments up to 1965 were based on a fixed weight of the fertiliser and did not allow for changes in composition over the years. (See reference 1 for an estimate of the average composition.) In 1966 in introducing the new treatments certain new fertilisers were substituted for those used previously and all applications were based on stated amounts of nutrients except for bone meal which was applied at the old rate.

Symbol	Material	Treatments to 1965	Old Treatments 1966 onwards	New Treatments 1966 onwards
D	Farmyard Manure	15 t	30 t	30 t
B	Bone meal	500 kg	500 kg	500 kg
N	Nitrate of soda	250 kg		
	'Nitro-Chalk'		38 kg N	
N1, N2	'Nitro-Chalk'			126 kg N
				189 kg N*
P	Superphosphate	250 kg		
	Triplesuperphosphate		22 kg P	
P1:P2	Triplesuperphosphate			22 kg P
				44 kg P
K	Muriate of potash	125 kg	63 kg K	
K+	Muriate of potash			104 kg K

* 1968 and 1969

For full details see Reference 2 Table 6

Treatments 1966 onwards

Plot	Old Treatments	New Treatments
1	D	D+N
2	B	B
3	N	N2P2

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4	P	N1P1
5	K	N1P2K$^+$
6	None	N1P2
7	PK	N1P1K$^+$
8	NK	N2P2K$^+$
9	NP	N2P1
10	NPK	N2P1K$^+$

NOTES :

(i) Crops other than beans in FYM plots also received 63 kg N from 1967 onwards.

(ii) Under the new treatments beans in plots 3, 8, 9 and 10 only received nitrogen and at N½ (63 kg).

(iii) In 1969 the sugar beet previously receiving N2P2 and N2P1K$^+$ (Plots 3 and 10) received a further top dressing of 63 kg N.

(iv) In 1970 FYM was applied at 60 t and no more will be applied until the grass or lucerne is ploughed up.

(v) Arable crops. As a result of the marked response by crops to nitrogen in 1967 the N1 rate (except beans and plots receiving FYM) was raised to 126 kg N in 1968 and 1969 and the N2 plots were given a top dressing of 63 kg N in addition to the N1 rate at a time decided on by periodical tissue analyses. Therefore the rates of N1 v. N2 became 1 v. 1½.

(vi) Grass and lucerne. No N has been applied to lucerne. In 1970-73 nitrogen was applied for each cut of grass; 100 kg N to all large plots and 38 kg to N-treated small plots except in 1970 when all small plots received a dressing of 38 kg N in the autumn to aid establishment. One cut of lucerne but none of the grass were taken in 1970. Subsequently there were three cuts in 1971 and two in 1972 and 1973 of both grass and lucerne.

Varieties

	1968	1969
Winter wheat	Cappelle	Cappelle
Barley	Zephyr	Sultan
Beans	Maris Bead	Maris Bead
Sugar beet	Klein E	Klein E
Grass	Timothy S 352 and Meadow Fescue S 215 sown in equal proportions by weight in 1970.	
Lucerne	Europe	

Weedkillers

1968 & 1969	Sugar beet	Pyrazone
	Barley	Mecoprop with 2,4-D
	Winter wheat	Mecoprop with 2,4-D
	Beans	Simazine
1970	Grass	2,4-D

Insecticides

Sugar beet	1968	DDT
	1969	Demeton-S-methyl
Beans	1969	Demeton-S-methyl

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Areas harvested

	Old Treatments	New Treatments
Wheat, barley, beans 1968-69	0.00057	0.00931 – 0.0104
Sugar beet 1968-69	0.00068	0.00291 – 0.00388
Lucerne 1970-73	–	0.00106 – 0.00139
Grass 1971-73	0.00050	0.000028–0.00145

Soil series. Beccles series (slope phase).

References

1. Cooke, G.W. and Williams, R.J.B. (1972)
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2. Williams, R.J.B. and Cooke, G.W. (1971)
Results of the Rotation I experiment at Saxmundham 1964-69.
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3. Williams, R.J.B. (1971)
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