ROTHAMSTED RESEARCH

Yields of the Field Experiments 1981

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81/R/PG/5 Park Grass - Hay

Rothamsted Research

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81/R/PG/5

PARK GRASS

Object: To study the effects of organic and inorganic manures and lime on old grass (for hay).

The 126th year, hay.

For previous years see 'Details' 1967 and 1973 and 74-80/R/PG/5.

Treatments:

Whole plots

MANURE	Fertilisers and organic manures:-	
N1	Plot 1	N1
O(D)	Plot 2	None (D until 1863)
O/PLOT3	Plot 3	None
P	Plot 4-1	P
N2P	Plot 4-2	N2 P
N1MIN	Plot 6	N1 P K Na Mg
MIN	Plot 7	P K Na Mg
PNAMG	Plot 8	P Na Mg
N2MIN	Plot 9	N2 P K Na Mg
N2PNAMG	Plot 10	N2 P Na Mg
N3MIN	Plot 11-1	N3 P K Na Mg
N3MINSI	Plot 11-2	N3 P K Na Mg Si
O/PLOT12	Plot 12	None
D/F	Plot 13	D/F
N2*MIN	Plot 14	N2* P K Na Mg
MIN(N2*)	Plot 15	P K Na Mg (N2* until 1875)
N1*MIN	Plot 16	N1* P K Na Mg
N1*	Plot 17	N1*
N2KNAMG	Plot 18	N2 K Na Mg
D	Plot 19	D
D/N*PK	Plot 20	D/N*P K

N1, N2, N3:	48, 96, 144 kg N as sulphate of ammonia
N1*, N2*:	48, 96 kg N as nitrate of soda (30 kg N to Plot 20, only in years with no farmyard manure)
P:	35 kg P (15 kg P to Plot 20, only in years with no farmyard manure) as single superphosphate (triple superphosphate in 1974)
K:	225 kg K (45 kg K to Plot 20, only in years with no farmyard manure) as sulphate of potash
Na:	15 kg Na as sulphate of soda
Mg:	10 kg Mg as sulphate of magnesia
Si:	Silicate of soda at 450 kg
D:	Farmyard manure at 35 tonnes every fourth year
F:	Fish meal every fourth year to supply 63 kg N
MIN:	P K Na Mg

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81/R/PG/5

Sub plots

LIME	Liming:-
A	a Ground chalk applied as necessary to achieve pH7
B	b Ground chalk applied as necessary to achieve pH6
C	c Ground chalk applied as necessary to achieve pH5
D	d None

NOTE: Lime was applied regularly, and at the same rate, to all a and b sub plots of Plots 1 to 17 (except 12) from 1924. Differential liming started in 1965 on certain b and c sub plots (except on Plot 12) and in 1976 on certain a sub plots (including Plot 12) and 12b.

Additional sub plots (Plots 18, 19 and 20 only) (tonnes CaCO3 applied every fourth year 1920-1964):-

N2KNAMG0	18-1	None
N2KNAMG2	18-2	13.5
N2KNAMG1	18-3	7.9
D0	19-1	None
D2	19-2	6.3
D1	19-3	1.1
D/N*PK0	20-1	None
D/N*PK2	20-2	5.6
D/N*PK1	20-3	1.1

Since 1965 Plot 18-1 has been split into two for treatments 'c' and 'd' above and Plot 18-3 split into two for treatments 'a' and 'b'. The remaining sub-plots of Plots 18, 19 and 20 are treated as 'a'.

NOTE: For a fuller record of treatments see 'Details' etc.

Cultivations, etc.:- Superphosphate applied: 12 Nov, 1980. FYM applied: 4 Dec. Remaining mineral fertilisers applied: 18 Dec. Sulphate of ammonia applied: 5 May, 1981. Nitrate of soda applied: 7 May. Cut: 10 June, 12 Nov.

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81/R/PG/5

1ST CUT (10/6/81) DRY MATTER TONNES/HECTARE

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

LIME / MANURE	A	B	C	D	MEAN
N1	2.44	2.51	2.12	1.46	2.13
O(D)	2.54	2.70	2.48	1.75	2.37
O/PLOT3	1.95	2.55	1.37	1.47	1.83
P	2.59	3.20	2.47	2.42	2.67
N2P	3.41	3.78	3.80	3.34	3.58
N1MIN	5.70	5.73			5.71
MIN	5.03	5.14	2.93	2.27	3.85
PNAMG	2.63	2.66	2.66	2.59	2.64
N2MIN	5.68	5.48	4.68	4.37	5.05
N2PNAMG	3.48	3.32	3.62	3.05	3.37
N3MIN	5.02	4.64	5.09	3.75	4.63
N3MINSI	4.79	4.47	4.57	3.93	4.44
O/PLOT12	3.27	2.94	1.82	1.95	2.50
D/F	5.11	5.49	5.12	4.15	4.97
N2*MIN	4.86	5.04	5.29	5.14	5.09
MIN(N2*)	4.57	5.00	2.58	2.59	3.69
N1*MIN	5.16	4.90	4.27	3.97	4.57
N1*	2.91	3.12	3.06	1.70	2.70
N2KNAMG0			1.10	1.35	1.22
N2KNAMG2	2.36				2.36
N2KNAMG1	2.88	2.62			2.75
D0	4.75				4.75
D2	5.29				5.29
D1	4.73				4.73
D/N*PK0	4.36				4.36
D/N*PK2	5.07				5.07
D/N*PK1	4.92				4.92

1ST CUT MEAN DM% 20.7

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2ND CUT (12/11/81) DRY MATTER TONNES/HECTARE

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

LIME / MANURE	A	B	C	D	MEAN
N1	1.75	2.44	0.72	1.10	1.50
O(D)	2.08	2.55	1.95	1.85	2.11
O/PLOT3	1.83	2.34	1.13	1.50	1.70
P	2.39	2.56	1.86	1.73	2.13
N2P	1.73	1.97	1.37	1.71	1.69
N1MIN	2.99	2.80			2.89
MIN	3.08	3.31	2.09	1.56	2.51
PNAMG	1.82	1.85	1.95	1.86	1.87
N2MIN	2.82	3.25	1.71	1.57	2.34
N2PNAMG	1.83	1.90	1.41	1.24	1.59
N3MIN	3.05	2.55	2.23	2.66	2.62
N3MINSI	3.38	3.40	2.90	3.70	3.34
O/PLOT12	1.91	1.65	1.72	1.78	1.76
D/F	3.85	3.83	2.79	2.42	3.22
N2*MIN	2.21	2.95	2.94	2.70	2.70
MIN(N2*)	2.99	3.28	1.71	1.99	2.49
N1*MIN	2.73	2.94	2.85	2.40	2.73
N1*	2.15	2.42	3.11	2.20	2.47
N2KNAMG0			0.66	0.21	0.43
N2KNAMG2	2.34				2.34
N2KNAMG1	2.19	2.77			2.48
D0	3.28				3.28
D2	3.65				3.65
D1	3.23				3.23
D/N*PK0	3.15				3.15
D/N*PK2	3.32				3.32
D/N*PK1	2.92				2.92

2ND CUT MEAN DM% 31.7

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AGDELL

Object: To study, by crop yields and soil analyses, the residual values of phosphate and potash applied in the period 1848-1951 and further dressings since 1964.

The 12th year of revised scheme, w. beans, w. wheat.

For previous years see 'Details' 1967 and 1973, and 74-80/R/AG/6.

Treatments: All combinations of:-

Whole plots

1. OLDRESD — Fertilisers and organic manures applied to roots every fourth year, in the period 1848-1948:

NONE	None
PKNAMG	P K Na Mg
NPKNAMGC	N P K Na Mg C

N:	48 kg N as sulphate of ammonia
P:	41 kg P as superphosphate
K:	224 kg K as sulphate of potash
Na:	16 kg Na as sulphate of soda
Mg:	11 kg Mg as sulphate of magnesia
C:	Castor meal at 2240 kg supplying about 112 kg N

2. RN CROP — Rotation 1848-1951 and crop in 1981:

F/BEANS	With fallow: Roots (turnips or swedes), s. barley, fallow, w. wheat 1848-1951. W. beans (after w. wheat 1980)
L/WHEAT	With legume: Roots, s. barley, legume (clover or beans), w. wheat 1848-1951. W. wheat (after s. beans 1980)

Half plots

3. 1964RESD — Residues of 1964 treatments:

P
K

Quarter plots

4. PREVCROP — Previous cropping 1958-69 on P-test half plots, 1958-70 on K-test half plots:

ARABLE	Arable or fallow
GRASS	Grass

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