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ROTHAMSTED RESEARCH

Yields of the Field Experiments 1987

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87/R/EX/4 Exhaustion Land - S. Barley

Rothamsted Research

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87/R/EX/4

EXHAUSTION LAND

Object: To study the residual effects of manures applied 1856-1901, and of additional phosphate applied since 1986, on the yield of continuous s. barley - Hoosfield.

The 132nd year, s. barley.

For previous years see 'Details' 1967, 1973 and 74-86/R/EX/4.

Treatments: All combinations of:-

Whole plots

1. OLD RES		Residues of manures applied annually 1876-1901:
	0	None
	D	Farmyard manure at 35 tonnes
	N	96 kg N as ammonium salts
	P	34 kg P as superphosphate
	NPKNAMG	N and P as above plus 137 kg K as sulphate of potash, 16 kg Na as sulphate of soda, 11 kg Mg as sulphate of magnesia
2. P		Phosphate applied annually from 1986:
	0	None
	P1	44 kg P as superphosphate
	P2	87 kg P as superphosphate
	P3	131 kg P as superphosphate

plus all combinations of:-

1. OLD RES		Residues of manures applied annually 1876-1901:
	0	None
	D	Farmyard manure at 35 tonnes
	N*	96 kg N as nitrate of soda
	PK	34 kg P as superphosphate, 137 kg K as sulphate of potash
	N*PK	N, P and K as above
2. N87		Nitrogen fertilizer (kg N) as 'Nitro-Chalk' until 1985, as 'Nitram' since 1986 (basal until 1975, on a cyclic system since 1976):
	0	
	48	
	96	
	144	

NOTE: All plots in the combination OLD RES, P were given N at 144 kg as 'Nitram' and K at 83 kg as muriate of potash.

Basal applications: Weedkillers: Clopyralid at 0.07 kg and bromoxynil at 0.34 kg with mecoprop at 2.5 kg in 200 l. Fungicide: Tridemorph at 0.52 kg in 200 l.

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87/R/EX/4

Seed: Triumph, seed dressed triadimenol and fuberidazole, sown at 160 kg.

Cultivations, etc.:- P and K applied: 10 Oct, 1986. Ploughed: 6 Nov. Spring-tine cultivated, seed sown: 19 Mar, 1987. N applied: 23 Apr. Weedkillers applied: 28 May. Fungicide applied: 24 June. Combine harvested: 21 Aug.

PHOSPHATE PLOTS

GRAIN TONNES/HECTARE

***** Tables of means *****

P	0	P1	P2	P3	Mean
OLD RES					
0	2.80	4.31	4.52	4.57	4.05
D	3.79	4.72	4.82	5.05	4.60
N	2.57	4.17	4.70	4.33	3.94
P	4.07	4.43	4.69	4.37	4.39
NPKNAMG	3.75	4.47	4.77	4.98	4.49
Mean	3.39	4.42	4.70	4.66	4.29

GRAIN MEAN DM% 87.4

STRAW TONNES/HECTARE

***** Tables of means *****

P	0	P1	P2	P3	Mean
OLD RES					
0	1.17	2.63	2.88	2.48	2.29
D	2.35	3.15	3.24	3.39	3.03
N	1.13	2.32	3.05	2.74	2.31
P	2.26	3.14	2.90	2.88	2.79
NPKNAMG	2.19	2.87	2.94	3.00	2.75
Mean	1.82	2.82	3.00	2.90	2.63

STRAW MEAN DM% 76.5

PLOT AREA HARVESTED 0.00728

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87/R/EX/4

NITROGEN PLOTS

GRAIN TONNES/HECTARE

***** Tables of means *****

N87 / OLD RES	0	48	96	144	Mean
0	0.66	1.71	1.32	1.58	1.32
D	2.17	4.54	3.28	3.45	3.36
N*	1.11	1.77	1.25	1.51	1.41
PK	1.36	2.60	2.03	2.45	2.11
N*PK	1.47	3.82	2.38	2.35	2.51
Mean	1.35	2.89	2.05	2.27	2.14

GRAIN MEAN DM% 86.6

STRAW TONNES/HECTARE

***** Tables of means *****

N87 / OLD RES	0	48	96	144	Mean
0	0.41	0.75	0.77	0.88	0.70
D	1.06	1.96	1.64	2.06	1.68
N*	0.63	0.89	0.64	0.94	0.77
PK	0.95	1.67	1.67	1.99	1.57
N*PK	1.09	1.59	1.22	1.45	1.34
Mean	0.83	1.37	1.19	1.46	1.21

STRAW MEAN DM% 72.9

PLOT AREA HARVESTED 0.00728

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