ROTHAMSTED RESEARCH

Yields of the Field Experiments 1988

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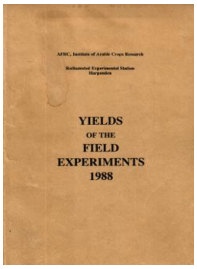

88/R/EX/4 Exhaustion Land - S. Barley

Rothamsted Research

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88/R/EX/4

EXHAUSTION LAND

Object: To study the residual effects of manures applied 1876-1901, and of additional phosphate applied since 1986, on the yield of continuous s. barley - Hoosfield.

The 133rd year, s. barley.

For previous years see 'Details' 1967, 1973 and 74-87/R/EX/4.

Treatments: All combinations of:-

Whole plots

1. **OLD RES** — Residues of manures applied annually 1876-1901:

O	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 as superphosphate until 1987, triple superphosphate since:

O	None
P1	44 kg
P2	87 kg
P3	131 kg

plus all combinations of:-

1. **OLD RES** — Residues of manures applied annually 1876-1901:

O	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. **N88** — 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 of the combination OLD RES, P were given N at 144 kg as 'Nitram' and K at 83 kg as muriate of potash.

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Basal applications: Weedkillers: Glyphosate at 1.4 kg in 200 l. Mecoprop at 2.4 kg with clopyralid at 0.05 kg and bromoxynil at 0.24 kg in 200 l. Fungicides: Propiconazole at 0.12 kg and tridemorph at 0.25 kg in 200 l on two occasions.

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

Cultivations, etc.:- Glyphosate applied: 17 Nov, 1987. P and K applied: 11 Dec. Ploughed: 14 Dec. Heavy spring-tine cultivated twice: 22 Feb, 1988, 23 Feb. Rotary harrowed, seed sown: 7 Mar. N applied: 13 Apr. Remaining weedkillers applied: 11 May. Fungicides applied: 17 May, 17 June. Combine harvested: 15 Aug.

PHOSPHATE PLOTS

GRAIN TONNES/HECTARE

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

P	0	P1	P2	P3	Mean
OLD RES					
0	3.04	6.01	6.68	6.77	5.63
D	5.48	6.99	7.16	7.17	6.70
N	2.34	6.33	6.93	7.15	5.69
P	5.05	6.93	7.12	7.16	6.57
NPKNAMG	4.69	6.79	7.22	7.21	6.48
Mean	4.12	6.61	7.02	7.09	6.21

GRAIN MEAN DM% 84.2

STRAW TONNES/HECTARE

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

P	0	P1	P2	P3	Mean
OLD RES					
0	1.47	3.23	3.04	3.56	2.83
D	2.68	3.74	3.75	3.26	3.36
N	1.27	3.34	3.94	3.25	2.95
P	2.78	4.00	4.45	3.91	3.78
NPKNAMG	2.23	3.28	3.19	3.50	3.05
Mean	2.09	3.52	3.67	3.50	3.19

STRAW MEAN DM% 87.4

PLOT AREA HARVESTED 0.00728

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NITROGEN PLOTS

GRAIN TONNES/HECTARE

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

N88 / OLD RES	0	48	96	144	Mean
O	1.06	1.41	2.03	1.71	1.55
D	2.09	3.71	4.83	4.96	3.90
N*	1.13	1.35	1.80	2.33	1.65
PK	1.48	2.95	4.30	4.55	3.32
N*PK	1.80	2.36	3.64	4.43	3.06
Mean	1.51	2.36	3.32	3.59	2.70

GRAIN MEAN DM% 81.8

NITROGEN PLOTS

STRAW TONNES/HECTARE

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

N88 / OLD RES	0	48	96	144	Mean
O	0.29	0.58	0.72	0.71	0.58
D	0.63	1.61	2.19	2.04	1.62
N*	0.36	0.56	0.72	1.07	0.68
PK	0.64	1.48	2.04	2.41	1.64
N*PK	0.65	0.85	1.35	2.07	1.23
Mean	0.52	1.02	1.40	1.66	1.15

STRAW MEAN DM% 88.0

PLOT AREA HARVESTED 0.00728

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