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## Yields of the Field Experiments 1989

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### 89/R/EX/4 Exhaustion Land - S. Barley

#### Rothamsted Research

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89/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 134th year, s. barley.

For previous years see 'Details' 1967, 1973 and 74-88/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 P
  - P2 87 kg P
  - P3 131 kg P

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. **N89** 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.

89/R/EX/4

**Basal applications:** Weedkillers: Glyphosate at 1.4 kg in 200 l.  
Mecoprop at 1.6 kg with ioxynil at 0.20 kg and bromoxynil at  
0.20 kg in 200 l. Fungicide: Propiconazole at 0.12 kg in 200 l.

**Seed:** Triumph, seed dressed flutriafol, ethirimol and thiabendazole,  
sown at 160 kg.

**Cultivations, etc.:-** Glyphosate applied: 19 Oct, 1988. P and K applied:  
10 Nov. Ploughed: 14 Dec. Rotary harrowed, seed sown: 8 Feb, 1989.  
N applied: 8 May. Remaining weedkillers applied: 18 May. Fungicide  
applied: 9 June. Combine harvested: 16 Aug.

**PHOSPHATE PLOTS**

**GRAIN TONNES/HECTARE**

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

	P	O	P1	P2	P3	Mean
<b>OLD RES</b>						
O		0.99	2.18	2.33	2.08	1.89
D		2.25	2.52	2.44	2.00	2.30
N		0.77	1.85	2.31	1.96	1.72
P		1.50	2.38	2.89	2.63	2.35
NPKNAMG		1.49	1.96	2.51	2.17	2.03
Mean		1.40	2.18	2.49	2.17	2.06

GRAIN MEAN DM% 83.8

**STRAW TONNES/HECTARE**

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

	P	O	P1	P2	P3	Mean
<b>OLD RES</b>						
O		0.58	0.87	0.95	0.79	0.80
D		0.96	1.09	1.06	0.72	0.96
N		0.45	0.86	1.04	0.73	0.77
P		0.66	1.00	1.21	1.17	1.01
NPKNAMG		0.65	0.79	1.07	0.92	0.86
Mean		0.66	0.92	1.07	0.87	0.88

STRAW MEAN DM% 89.7

PLOT AREA HARVESTED 0.00728

89/R/EX/4

NITROGEN PLOTS

GRAIN TONNES/HECTARE

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

N89	0	48	96	144	Mean
OLD RES					
O	0.68	0.83	1.20	1.08	0.95
D	1.12	1.74	1.03	1.64	1.38
N*	0.58	0.66	1.13	0.58	0.74
PK	0.60	1.47	1.43	1.25	1.19
N*PK	0.63	1.19	1.02	1.20	1.01
Mean	0.72	1.18	1.16	1.15	1.05

GRAIN MEAN DM% 83.5

STRAW TONNES/HECTARE

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

N89	0	48	96	144	Mean
OLD RES					
O	0.37	0.44	0.44	0.37	0.41
D	0.43	0.65	0.44	0.65	0.54
N*	0.22	0.29	0.44	0.22	0.29
PK	0.43	0.48	0.45	0.51	0.47
N*PK	0.29	0.43	0.44	0.51	0.42
Mean	0.35	0.46	0.44	0.45	0.43

STRAW MEAN DM% 88.9

PLOT AREA HARVESTED 0.00728