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Yields of the Field Experiments 2002

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Yields of the
Classical
and other
Long-term Experiments
2002

IACR - Rothamsted

02/R/EX/4 - Exhaustion Land

Rothamsted Research

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02/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 up to 1991, w. wheat since - Hoosfield.

The 147th year, w. wheat.

For previous years see 'Details' 1977, 1973 and 74-01/EX/4.

Treatments: All combinations of:-

Whole plots (P test)

1. **OLD RES** Residues of manures applied annually 1876-1901:
 - O None
 - D Farmyard manure at 35 t
 - 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** Maintenance P (20 kg P) applied annually from 2000 to maintain existing levels of available P in the soil. (P1) (P2) and (P3) are residues of P applied annually 1986-1992:

	2000-02	1986-92
O	None	None
P(P1)	20 kg P	44 kg P
P(P2)	20 kg P	87 kg P
P(P3)	20 kg P	131 kg P

NOTE: P treatments were applied at 61.5 kg P in error in 2000.

plus

Whole plots (K test, previously N test until 1991)

- | | |
|----------------|---|
| OLD RES | Residues of manures applied annually 1876-1901: |
| O | None |
| D | Farmyard manure at 35 t |
| 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 |

Experimental diary:

K test:

04-Oct-01 : T : P : P basal:(triple superphosphate at 98 kg), plots 2, 4, 6, 8 & 10.

P test:

04-Oct-01 : T : K : K basal/100 kg (muriate of potash at 250 kg), plots 1, 3, 5, 7 & 9.
: T : P : P test:(triple superphosphate at 98 kg), plots 011-013, 031-033, 051-053, 071-073, & 091-093.

All plots

04-Oct-01 : B : : Subsoiled.
: B : : Ploughed.
13-Oct-01 : B : : Combination drilled, Hereward, tr. Sibutol at 350 seeds/m².
11-Dec-01 : B : : tm)Hawk at 2.0 l in 200 l.

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: B : : tm)Tolkan liquid at 1.0 l in 200 l.
: B : : tm)Phase II at 1.0 l in 200 l.
04-Apr-02 : B : : tm)Opus at 0.4 l in 100 l.
: B : : tm)Twist at 0.6 l in 100 l.
: B : : tm)BASF 3C Chlormequat 720 at 1.25 l in 100 l.
: B : : tm)Moddus at 0.2 l in 100 l.
29-Apr-02 : B : : 33.5% N at 567 kg.
20-May-02 : P : : Rotavated down paths.
31-May-02 : B : : Starane 2 at 0.75 l in 200 l.
: B : : tm)Opus at 0.5 l in 200 l.
: B : : tm)Twist at 0.8 l in 200 l.
04-Jul-02 : B : : Rogued wild oats.
01-Aug-02 : B : : Roundup Biactive at 3.0 l in 100 l.
13-Aug-02 : T : : Combine harvested, plots for yield. Swathed straw.
: : : Sampled, baled and weighed straw.
24-Aug-02 : B : : Carted bales.
    
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NOTE: Samples of grain and straw were taken for chemical analysis.

P TEST

GRAIN TONNES/HECTARE

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

P RES	O	P1	P2	P3	Mean
OLD RES					
O	1.04	4.94	5.96	5.96	4.47
D	4.02	6.91	7.62	7.43	6.49
N	1.15	5.28	6.14	4.66	4.31
P	4.00	6.52	6.72	6.46	5.93
NPKNAMG	3.04	6.27	7.10	6.30	5.68
Mean	2.65	5.99	6.71	6.16	5.38

GRAIN MEAN DM% 82.6

STRAW TONNES/HECTARE

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

P RES	O	P1	P2	P3	Mean
OLD RES					
O	1.04	2.47	3.18	2.65	2.33
D	2.64	3.56	3.99	3.75	3.49
N	1.71	2.93	3.16	2.74	2.63
P	2.99	2.93	2.96	3.08	2.99
NPKNAMG	2.36	3.35	3.33	2.81	2.96
Mean	2.15	3.05	3.32	3.00	2.88

STRAW MEAN DM% 74.4

PLOT AREA HARVESTED 0.00538

02/R/EX/4

K TEST

GRAIN TONNES/HECTARE

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

OLD RES	
O	5.96
D	6.92
N*	6.05
PK	5.92
N*PK	6.28
Mean	6.23

Grain Mean Dm% 83.1

K TEST

STRAW TONNES/HECTARE

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

OLD RES	
O	2.85
D	3.60
N*	3.19
PK	3.43
N*PK	3.49
Mean	3.31

STRAW MEAN DM% 75.7

PLOT AREA HARVESTED 0.00538