Results of the Classical and Other Long-term Experiments 2004

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04/R/EX/4 - Exhaustion Land

Rothamsted Research

Rothamsted Research (2005) *04/R/EX/4 - Exhaustion Land ;* Results Of The Classical And Other Long-Term Experiments 2004, pp 18 - 20 **- DOI: https://doi.org/10.23637/ERADOC-1-261**

04/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 149th year, w. wheat.

For previous years see 'Details' 1977, 1973 and 74-03/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:

	2000-04	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

Whole plots
Nitrogen: 50 kg N as ammonium sulphate (to supply sufficient S) during first two weeks in March, 200kg N as ammonium nitrate at GS31/mid-April (whichever comes first) and 50 kg N as ammonium nitrate at GS37 (not later than mid-May)

Experimental diary:

K test:

26-Sep-03	**T**	P	P basal:(triple superphosphate at 98 kg), plots 2, 4, 6, 8 & 10.

P test:

26-Sep-03	**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

26-Sep-03	B		Ploughed 30 cm wide furrows.
27-Sep-03	B		Cultipress.

10-Oct-03	: B :	:	Combination drilled, Xi 19, tr. Sibutol Secur at 380 seeds/m^2.
	: B :	:	Rolled.
16-Dec-03	: B :	:	tm)Arelon 500 at 4.0 l in 200 l.
	: B :	:	tm)Stomp 400 SC at 2.5 l in 200 l.
30-Mar-04	: B :	:	Ammonium sulphate (21% N) at 238 kg
14-Apr-04	: B :	:	tm)Ally at 30 g in 200 l.
	B :	:	tm)Oxytril CM at 0.5 l in 200 l.
29-Apr-04	: B :	:	34.5% N at 580 kg.
13-May-03	: B :	:	tm)Opus at 0.75 l in 200 l.
	: B :	:	tm)Moddus at 0.15 l in 200 l.
24-May-04	:		Rotavate down paths.
25-May-04	: B :	:	34.5% N at 145 kg.
07-Jun-04	: B :	:	tm)Opus at 0.75 l in 200 l.
	: B :	:	tm)Twist at 0.75 l in 200 l.
14-Jun-04	: B :	:	Dursban 4 at 0.45 l in 200 l.
02-Sep-04	: B :	:	Combine harvested, plots for yield.
03-Sep-04	: B :	:	Straw sampled and weighed.
07-Sep-04	: B :	:	Combine harvested discards, Swathed and baled straw.

NOTE: Samples of grain and straw were taken for chemical analysis.

P TEST

GRAIN TONNES/HECTARE

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

P	O	P(P1)	P(P2)	P(P3)	Mean
OLD_RES					
O	1.35	6.18	7.38	6.80	5.43
D	2.89	7.31	7.70	7.92	6.46
N	0.88	6.99	7.98	7.07	5.73
P	3.14	7.51	8.32	7.92	6.72
NPKNAMG	2.82	7.54	7.76	8.59	6.68
Mean	2.22	7.11	7.82	7.66	6.20

GRAIN MEAN DM% 87.6

STRAW TONNES/HECTARE

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

P	O	P(P1)	P(P2)	P(P3)	Mean
OLD_RES					
O	0.50	3.04	4.15	3.74	2.86
D	1.22	3.73	3.79	4.24	3.25
N	0.16	3.50	3.80	3.66	2.78
P	1.25	3.79	3.90	3.85	3.20
NPKNAMG	0.92	3.85	3.31	4.07	3.04
Mean	0.81	3.58	3.79	3.91	3.02

STRAW MEAN DM% 92.8

PLOT AREA HARVESTED 0.00538

04/R/EX/4

K TEST

GRAIN TONNES/HECTARE

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

OLD_RES	
O	5.77
D	6.87
N*	5.93
PK	6.92
N*PK	6.70
Mean	6.44

GRAIN MEAN DM% 87.7

STRAW TONNES/HECTARE

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

OLD_RES	
O	3.42
D	3.72
N*	3.55
PK	4.03
N*PK	3.62
Mean	3.67

STRAW MEAN DM% 92.9

PLOT AREA HARVESTED 0.00538