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95/W/RN/12 Organic Manuring - W. Wheat

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95/W/RN/12

ORGANIC MANURING

Object: To study, from crop yields and soil analyses, the effects of a range of types of organic matter - Woburn, Stackyard B.

Sponsor: P.R. Poulton.

The 31st year, w. wheat.

For previous years see 'Details' 1973 and 74-94/W/RN/12.

Design: 4 blocks of 8 plots split into 6 sub-plots.

Whole plot dimensions: 8.0 x 30.5.

Treatments: From 1966 to 1971 the experiment had a preliminary period designed to build up organic matter, derived from different sources. An arable rotation was started on two blocks in 1972 and the remaining two blocks in 1973. After a period of testing the residues built up, a further period of accumulation was started; on two blocks (which included ley sown in 1979) in 1981 and on the other two (which included ley sown in 1980) in 1982. A second test phase began when leys on the first pair of blocks were ploughed for the 1st test crop in 1987 and on the second pair for the 1st test crop in 1988.

Whole blocks

1. CROPSEQ

WHEAT 4	4th wheat, after w. wheat 1988, potatoes 1989, w. wheat 1990, w. beans 1991
WHEAT 5	5th wheat, after w. wheat 1987, potatoes 1988, w. wheat 1989, w. beans 1990

Whole plots

2. TREATMNT

	Previous treatments:
LC 8 GM	Eight-year clover/grass ley until 1987 (WHEAT 4) or 1986 (WHEAT 5), green manure in the preliminary period
LC 8 PT	As above, peat in the preliminary period
LC 6 LC	Six-year clover/grass ley until 1987 (WHEAT 4) or 1986 (WHEAT 5), clover/grass ley in the preliminary period
LC 6 LN	As above, grass ley with N in the preliminary period
FYM	Farmyard manure annually 1981 to 1986 (WHEAT 4) or 1985 (WHEAT 5) and in the preliminary period
STRAW	Straw in both periods
FERT-FYM	Fertilizers only in both periods, rates of P, K & Mg equivalent to amounts in FYM
FERT-STR	Fertilizers only in both periods, rates of P, K & Mg equivalent to amounts in straw (+P)

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Sub-plots

3. N Residual effects of nitrogen fertilizer applied in 1994 (kg N) as 'Nitro-Chalk':

(0)
(50)
(100)
(150)
(200)
(250)

NOTE: In 1995 nitrogen was applied to all plots at 100 kg N.

Experimental diary:

09-Sep-94 : B : Dolomite at 7.5 t.
26-Sep-94 : B : Barclay Gallup at 4.0 l in 200 l.
03-Oct-94 : B : Ploughed.
07-Oct-94 : B : Rotary harrowed, Mercia, dressed Rappor, drilled at 300 seeds per m².
28-Nov-94 : B : Panther at 2.0 l with Decis at 0.20 l in 200 l.
21-Apr-95 : B : 34.5% N at 290 kg.
28-Apr-95 : B : Halo at 2.0 l in 200 l.
01-Jun-95 : B : Cyclone at 1.0 l with Mallard at 0.30 l in 200 l.
29-Jun-95 : B : Pirimicarb 50 DG at 280 g in 300 l.
03-Aug-95 : B : Combine harvested.

NOTE: Straw yields were recorded on the **CROPSEQ** WHEAT 5 plots. Grain and straw samples were taken for chemical analysis.

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CROPSEQ WHEAT 4

GRAIN TONNES/HECTARE

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

	N	(0)	(50)	(100)	(150)	(200)	(250)	Mean
TREATMNT								
LC 8 GM		4.35	3.98	3.84	2.98	3.63	3.29	3.68
LC 8 PT		5.02	4.15	4.20	4.09	3.93	3.56	4.16
LC 6 LC		5.20	3.73	4.00	4.37	3.71	4.27	4.21
LC 6 LN		4.51	4.85	4.75	4.60	3.83	3.45	4.33
FYM		4.19	3.18	3.46	3.88	3.55	3.13	3.56
STRAW		5.36	5.03	4.82	4.90	4.73	5.15	5.00
FERT-FYM		3.56	2.88	3.24	3.08	3.10	3.29	3.19
FERT-STR		4.89	4.48	3.85	3.49	3.59	3.72	4.00
Mean		4.63	4.04	4.02	3.92	3.76	3.73	4.02

*** Standard errors of differences of means ***

TREATMNT	N	TREATMNT
		N
	1.133	0.207
		1.253
Except when comparing means with the same level(s) of		
TREATMNT		0.586

***** Stratum standard errors and coefficients of variation *****

Stratum	d.f.	s.e.	cv%
BLOCK.WP	7	1.133	28.2
BLOCK.WP.SP	40	0.586	14.6

GRAIN MEAN DM% 91.6

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CROPSEQ WHEAT 5

GRAIN TONNES/HECTARE

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

	N	(0)	(50)	(100)	(150)	(200)	(250)	Mean
TREATMNT								
LC 8 GM		4.76	5.21	4.57	4.29	3.84	3.83	4.41
LC 8 PT		5.52	5.10	4.39	4.54	4.25	4.57	4.73
LC 6 LC		5.09	3.71	4.94	5.24	4.11	4.20	4.55
LC 6 LN		5.43	5.40	5.43	4.32	4.08	4.40	4.84
FYM		5.14	4.51	4.74	3.82	3.86	4.15	4.37
STRAW		3.30	3.19	2.73	2.55	3.09	2.84	2.95
FERT-FYM		4.61	4.01	4.24	3.18	3.65	3.00	3.78
FERT-STR		3.46	3.27	3.14	3.01	3.02	3.00	3.15
Mean		4.66	4.30	4.27	3.87	3.74	3.75	4.10

*** Standard errors of differences of means ***

TREATMNT	N	TREATMNT
		N
	0.346	0.167
		0.553
Except when comparing means with the same level(s) of		
TREATMNT		0.473

***** Stratum standard errors and coefficients of variation *****

Stratum	d.f.	s.e.	cv%
BLOCK.WP	7	0.346	8.5
BLOCK.WP.SP	40	0.473	11.5

GRAIN MEAN DM% 91.3

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CROPSEQ WHEAT 5

STRAW TONNES/HECTARE

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

N	(0)	(50)	(100)	(150)	(200)	(250)	Mean
TREATMNT							
LC 8 GM	3.05	3.20	2.95	3.14	2.94	2.82	3.02
LC 8 PT	3.50	2.93	2.57	2.77	2.77	2.91	2.91
LC 6 LC	3.41	2.40	2.95	2.94	2.43	2.68	2.80
LC 6 LN	3.88	3.53	3.47	2.87	3.14	3.26	3.36
FYM	3.06	2.83	3.05	2.66	2.44	2.77	2.80
STRAW	2.41	2.21	2.09	2.24	2.16	2.33	2.24
FERT-FYM	2.80	2.33	2.37	1.78	2.43	1.95	2.28
FERT-STR	2.49	2.19	2.18	1.93	2.04	2.15	2.16
Mean	3.07	2.70	2.70	2.54	2.54	2.61	2.70

STRAW MEAN DM% 93.9

SUB PLOT AREA HARVESTED 0.00202