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

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92/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 28th year, w. wheat.

For previous years see 'Details' 1973 and 74-91/W/RN/12.

Design: 4 blocks of 8 plots split into 6.

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. On the first pair leys were ploughed for 1st test crop in 1987, on the second pair for 1st test crop in 1988.

Whole blocks

1. CROPSEQ

WHEAT 1	1st wheat, after w. wheat 1988, potatoes 1989, w. wheat 1990, w. beans 1991
WHEAT 2	2nd 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 1) or 1986 (WHEAT 2), 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 1) or 1986 (WHEAT 2), 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 1) or 1985 (WHEAT 2) 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 Nitrogen fertilizer (kg N):

0
50
100
150
200
250

Experimental diary:

18-Sep-91 : T : CROPSEQ WHEAT 1: Bean straw baled and carted.
 25-Sep-91 : B : Ploughed.
 02-Oct-91 : B : Rolled.
 03-Oct-91 : B : PK as (0:16:36) at 560 kg. Rotary harrowed, Mercia drilled at 140 kg.
 30-Oct-91 : B : Stomp 400 at 2.5 l, Arelon WDG at 0.75 kg and Decis at 0.20 l in 200 l.
 18-Mar-92 : B : Vytel Liquid Chelated Manganese (Chelated Mn as Mn EDTA in solution equivalent to 6.4% w/v Mn) at 2.5 l in 200 l.
 01-Apr-92 : B : Duplosan New System CMPP at 1.5 l in 200 l.
 09-Apr-92 : T : N 50, 100, 150, 200 and 250: Applied as 27% N.
 03-May-92 : B : Dorin at 1.0 l in 300 l.
 09-Jun-92 : B : Impact Excel at 2.0 l in 200 l.
 01-Aug-92 : T : CROPSEQ WHEAT 2: Combine harvested.
 01-Sep-92 : T : CROPSEQ WHEAT 1: Combine harvested.

NOTES: (1) Straw weights were only recorded for CROPSEQ WHEAT 2.
 (2) Grain and straw were chemically analysed.

CROPSEQ WHEAT 1

GRAIN TONNES/HECTARE

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

N	0	50	100	150	200	250	Mean
TREATMNT							
LC 8 GM	3.15	4.98	6.27	5.94	6.28	6.72	5.56
LC 8 PT	4.83	5.45	6.60	7.74	7.20	7.51	6.55
LC 6 LC	5.07	5.46	7.24	7.27	8.17	7.20	6.74
LC 6 LN	5.33	7.53	7.60	7.39	7.36	6.82	7.01
FYM	5.05	4.52	7.11	7.00	7.99	5.80	6.25
STRAW	4.34	5.11	7.59	7.77	7.74	7.86	6.73
FERT-FYM	1.95	3.34	5.34	5.63	4.98	5.09	4.39
FERT-STR	4.37	5.40	6.60	6.74	7.34	6.93	6.23
Mean	4.26	5.22	6.79	6.93	7.13	6.74	6.18

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CROPSEQ WHEAT 1

GRAIN TONNES/HECTARE

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

TREATMNT	N	TREATMNT
		N
1.199	0.362	1.520
Except when comparing means with the same level(s) of		
TREATMNT		1.023

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

Stratum	d.f.	s.e.	cv%
BLOCK.WP	7	1.199	19.4
BLOCK.WP.SP	40	1.023	16.6

GRAIN MEAN DM% 83.7

CROPSEQ WHEAT 2

GRAIN TONNES/HECTARE

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

N	0	50	100	150	200	250	Mean
TREATMNT							
LC 8 GM	1.28	2.10	4.42	5.15	5.49	4.93	3.90
LC 8 PT	1.03	3.02	4.49	4.27	4.87	5.22	3.82
LC 6 LC	0.71	3.18	5.02	5.84	5.54	5.54	4.30
LC 6 LN	1.32	3.94	4.94	5.67	6.64	6.40	4.82
FYM	1.94	4.21	6.37	5.95	6.02	6.27	5.13
STRAW	1.85	3.64	5.46	6.48	5.93	5.92	4.88
FERT-FYM	1.52	3.88	5.85	5.33	6.07	5.71	4.73
FERT-STR	1.28	3.25	5.03	4.97	4.88	5.76	4.20
Mean	1.37	3.40	5.20	5.46	5.68	5.72	4.47

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

TREATMNT	N	TREATMNT
		N
0.793	0.293	1.097
Except when comparing means with the same level(s) of		
TREATMNT		0.829

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

Stratum	d.f.	s.e.	cv%
BLOCK.WP	7	0.793	17.7
BLOCK.WP.SP	40	0.829	18.5

GRAIN MEAN DM% 87.7

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CROPSEQ WHEAT 2

STRAW TONNES/HECTARE

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

	N	0	50	100	150	200	250	Mean
TREATMNT								
LC 8 GM		1.22	1.94	2.90	3.20	3.29	3.41	2.66
LC 8 PT		1.41	2.47	2.33	2.20	2.39	2.87	2.28
LC 6 LC		1.08	2.02	3.34	3.27	3.06	3.37	2.69
LC 6 LN		0.84	3.34	3.88	3.75	4.43	4.04	3.38
FYM		1.12	2.03	2.87	2.38	3.06	3.02	2.41
STRAW		1.09	1.43	2.13	3.22	2.76	2.91	2.26
FERT-FYM		0.80	1.38	2.48	1.92	2.27	1.80	1.77
FERT-STR		0.60	1.52	2.17	1.63	2.02	2.41	1.72
Mean		1.02	2.02	2.76	2.70	2.91	2.98	2.40

STRAW MEAN DM% 88.3

SUB PLOT AREA HARVESTED 0.00183