

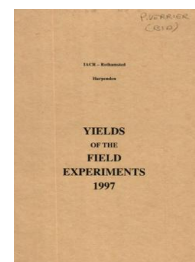
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97/W/RN/12 Organic Manuring - W. Wheat

Rothamsted Research

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97/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 33rd year, w. wheat.

For previous years see 'Details' 1973 and 74-96/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	Crop sequence:
RYE A	Rye, after w. wheat 1988, potatoes 1989, w. wheat 1990, w. beans 1991, w. wheat 1992-6
RYE B	Rye, after w. wheat 1987, potatoes 1988, w. wheat 1989, w. beans 1990, w. wheat 1991-6

Whole plots

2. TREATMNT	Previous treatments:
LC 8 GM	Eight-year clover/grass ley until 1987 (RYE A) or 1986 (RYE B), 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 (RYE A) or 1986 (RYE B), 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 (RYE A) or 1985 (RYE B) 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)

97/W/RN/12

Sub-plots

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

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

NOTE: In 1995 and 1996, 100 kg N was applied to all plots. None was applied in 1997.

Experimental diary:

27-Sep-96 : B : Ploughed.
28-Sep-96 : B : Rolled.
30-Sep-96 : B : PK as (0:20:32) at 500 kg.
01-Oct-96 : B : Rotary harrowed, Amando, dressed Baytan Flowable,
 drilled at 400 seeds per m².
11-Dec-96 : B : Stomp 400 SC at 3.3 l in 200 l.
04-Jun-97 : B : Mistral at 1.0 l in 300 l.
12-Aug-97 : B : Combine harvested.

NOTE: Samples of grain were taken for chemical analysis.

97/W/RN/12

GRAIN TONNES/HECTARE

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

CROPSEQ	RYE A	RYE B	Mean
TREATMNT			
LC 8 GM	2.44	2.25	2.34
LC 8 PT	2.38	2.05	2.22
LC 6 LC	2.39	2.20	2.30
LC 6 LN	2.64	2.31	2.47
FYM	2.31	2.16	2.24
STRAW	2.06	1.91	1.99
FERT-FYM	1.76	1.65	1.70
FERT-STR	1.83	1.66	1.74
Mean	2.23	2.02	2.13

N	(0)	(50)	(100)	(150)	(200)	(250)	Mean
TREATMNT							
LC 8 GM	2.19	2.19	2.38	2.37	2.34	2.59	2.34
LC 8 PT	2.01	2.23	2.18	2.23	2.34	2.31	2.22
LC 6 LC	2.06	2.37	2.39	2.41	2.05	2.49	2.30
LC 6 LN	2.29	2.51	2.55	2.63	2.43	2.41	2.47
FYM	2.23	2.14	2.33	2.20	2.25	2.28	2.24
STRAW	1.68	1.85	1.92	2.07	2.07	2.33	1.99
FERT-FYM	1.47	1.52	1.86	1.71	1.90	1.77	1.70
FERT-STR	1.54	1.72	1.75	1.82	1.89	1.74	1.74
Mean	1.93	2.07	2.17	2.18	2.16	2.24	2.13

N	(0)	(50)	(100)	(150)	(200)	(250)	Mean
CROPSEQ							
RYE A	2.06	2.16	2.26	2.28	2.29	2.31	2.23
RYE B	1.81	1.98	2.08	2.08	2.03	2.17	2.02
Mean	1.93	2.07	2.17	2.18	2.16	2.24	2.13

97/W/RN/12

GRAIN TONNES/HECTARE

TREATMNT	CROPSEQ	N	(0)	(50)	(100)	(150)	(200)	(250)
LC 8 GM	RYE A		2.37	2.28	2.54	2.38	2.44	2.61
	RYE B		2.01	2.11	2.22	2.37	2.25	2.56
LC 8 PT	RYE A		2.22	2.34	2.34	2.39	2.48	2.51
	RYE B		1.79	2.12	2.02	2.07	2.21	2.11
LC 6 LC	RYE A		2.14	2.42	2.59	2.37	2.32	2.49
	RYE B		1.97	2.32	2.20	2.44	1.79	2.49
LC 6 LN	RYE A		2.52	2.71	2.74	2.90	2.58	2.37
	RYE B		2.06	2.32	2.35	2.36	2.29	2.45
FYM	RYE A		2.27	2.29	2.32	2.37	2.34	2.31
	RYE B		2.19	1.99	2.33	2.04	2.16	2.26
STRAW	RYE A		1.79	1.82	1.95	2.10	2.29	2.43
	RYE B		1.57	1.88	1.89	2.04	1.86	2.24
FERT-FYM	RYE A		1.47	1.46	1.88	1.92	1.94	1.91
	RYE B		1.47	1.58	1.84	1.50	1.86	1.63
FERT-STR	RYE A		1.70	1.94	1.74	1.78	1.93	1.89
	RYE B		1.39	1.50	1.75	1.85	1.86	1.60

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

TREATMNT	N	CROPSEQ*	CROPSEQ*
		TREATMNT	N
0.105	0.052	0.149	0.073
TREATMNT*	CROPSEQ*		
N	TREATMNT		
	N		
0.147	0.241		

* Within the same level of CROPSEQ only

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

Stratum	d.f.	s.e.	cv%
BLOCK.WP	14	0.149	7.0
BLOCK.WP.SP	80	0.208	9.8

GRAIN MEAN DM% 86.2

97/W/RN/12

STRAW TONNES/HECTARE

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

TREATMNT	FYM	FERT-FYM	Mean				
CROPSEQ							
RYE A	2.29	1.87	2.08				
RYE B	1.89	1.64	1.77				
Mean	2.09	1.76	1.92				
N	(0)	(50)	(100)	(150)	(200)	(250)	Mean
CROPSEQ							
RYE A	1.94	1.93	2.09	2.06	2.19	2.27	2.08
RYE B	1.59	1.72	1.89	1.69	1.86	1.85	1.77
Mean	1.77	1.83	1.99	1.87	2.03	2.06	1.92
N	(0)	(50)	(100)	(150)	(200)	(250)	Mean
TREATMNT							
FYM	1.91	2.09	2.17	2.10	2.14	2.13	2.09
FERT-FYM	1.62	1.56	1.81	1.65	1.91	1.98	1.76
Mean	1.77	1.83	1.99	1.87	2.03	2.06	1.92
N	(0)	(50)	(100)	(150)	(200)	(250)	
CROPSEQ	TREATMNT						
RYE A	FYM	2.15	2.41	2.19	2.35	2.42	2.19
	FERT-FYM	1.74	1.45	1.99	1.77	1.96	2.34
RYE B	FYM	1.67	1.77	2.15	1.84	1.86	2.07
	FERT-FYM	1.51	1.68	1.63	1.53	1.87	1.62

STRAW MEAN DM% 93.3

SUB PLOT AREA HARVESTED 0.00183