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## Yields of the Field Experiments 1993

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### 93/W/RN/12 Organic Manuring - W. Wheat

#### Rothamsted Research

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93/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 29th year, w. wheat.

For previous years see 'Details' 1973 and 74-92/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. 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 2 | 2nd wheat, after w. wheat 1988, potatoes 1989, w. wheat 1990, w. beans 1991 |
| WHEAT 3 | 3rd 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 2) or 1986 (WHEAT 3), 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 2) or 1986 (WHEAT 3), 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 2) or 1985 (WHEAT 3) 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:**

11-Aug-92 : T : CROPSEQ WHEAT 3: Subsoiled to 45 cm with tines 1.5 m apart.  
05-Oct-92 : B : Ploughed.  
06-Oct-92 : B : PK as (0:18:36) at 560 kg.  
07-Oct-92 : B : Rotary harrowed, Mercia, dressed Cerevax, drilled at 380 seeds per square metre.  
13-Apr-93 : T : N 50, 100, 150, 200 and 250: Applied as 27% N.  
15-Apr-93 : B : Ally at 30 g and New 5C Cycocel at 2.5 l in 200 l.  
01-Jun-93 : B : Bayleton at 0.50 kg and Mistral at 0.50 l in 200 l.  
19-Aug-93 : B : Roundup at 5.3 l in 200 l.  
25-Aug-93 : B : Combine harvested.

**NOTES:** (1) Straw weights were recorded for CROPSEQ WHEAT 3.  
(2) Grain and straw samples were taken for chemical analysis.

CROPSEQ WHEAT 2

**GRAIN TONNES/HECTARE**

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

| N        | 0    | 50   | 100  | 150  | 200  | 250  | Mean |
|----------|------|------|------|------|------|------|------|
| TREATMNT |      |      |      |      |      |      |      |
| LC 8 GM  | 1.17 | 2.78 | 2.87 | 4.17 | 4.36 | 4.91 | 3.38 |
| LC 8 PT  | 0.83 | 2.36 | 4.01 | 4.37 | 4.95 | 4.80 | 3.55 |
| LC 6 LC  | 0.96 | 3.22 | 4.41 | 4.63 | 5.58 | 5.64 | 4.07 |
| LC 6 LN  | 0.78 | 2.87 | 4.32 | 3.73 | 4.68 | 3.96 | 3.39 |
| FYM      | 1.12 | 2.70 | 3.58 | 3.86 | 3.70 | 3.64 | 3.10 |
| STRAW    | 0.59 | 2.00 | 3.91 | 4.34 | 4.42 | 4.38 | 3.27 |
| FERT-FYM | 0.48 | 2.27 | 2.87 | 3.49 | 3.54 | 4.24 | 2.82 |
| FERT-STR | 0.40 | 2.25 | 3.05 | 4.09 | 4.81 | 3.62 | 3.04 |
| Mean     | 0.79 | 2.56 | 3.63 | 4.09 | 4.51 | 4.40 | 3.33 |

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CROPSEQ WHEAT 2

GRAIN TONNES/HECTARE

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

|          |       |          |
|----------|-------|----------|
| TREATMNT | N     | TREATMNT |
|          |       | N        |
| 0.683    | 0.267 | 0.971    |

Except when comparing means with the same level(s) of  
TREATMNT 0.755

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

|             |      |       |      |
|-------------|------|-------|------|
| Stratum     | d.f. | s.e.  | cv%  |
| BLOCK.WP    | 7    | 0.683 | 20.5 |
| BLOCK.WP.SP | 40   | 0.755 | 22.7 |

GRAIN MEAN DM% 83.5

CROPSEQ WHEAT 3

GRAIN TONNES/HECTARE

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

|          |      |      |      |      |      |      |      |
|----------|------|------|------|------|------|------|------|
| N        | 0    | 50   | 100  | 150  | 200  | 250  | Mean |
| TREATMNT |      |      |      |      |      |      |      |
| LC 8 GM  | 1.32 | 3.09 | 4.00 | 3.67 | 3.77 | 3.84 | 3.28 |
| LC 8 PT  | 1.95 | 3.25 | 3.26 | 4.33 | 4.29 | 4.22 | 3.55 |
| LC 6 LC  | 1.30 | 3.11 | 3.77 | 3.79 | 4.61 | 4.98 | 3.60 |
| LC 6 LN  | 1.77 | 2.91 | 3.65 | 4.48 | 4.13 | 4.05 | 3.50 |
| FYM      | 1.77 | 3.89 | 5.38 | 6.38 | 6.74 | 6.54 | 5.12 |
| STRAW    | 1.08 | 2.88 | 4.57 | 4.76 | 5.58 | 5.60 | 4.08 |
| FERT-FYM | 0.82 | 3.49 | 5.10 | 5.23 | 5.48 | 5.79 | 4.32 |
| FERT-STR | 1.00 | 3.22 | 4.51 | 5.08 | 5.50 | 5.53 | 4.14 |
| Mean     | 1.38 | 3.23 | 4.28 | 4.71 | 5.01 | 5.07 | 3.95 |

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

|          |       |          |
|----------|-------|----------|
| TREATMNT | N     | TREATMNT |
|          |       | N        |
| 0.350    | 0.201 | 0.626    |

Except when comparing means with the same level(s) of  
TREATMNT 0.569

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CROPSEQ WHEAT 3

GRAIN TONNES/HECTARE

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

| Stratum     | d.f. | s.e.  | cv%  |
|-------------|------|-------|------|
| BLOCK.WP    | 7    | 0.350 | 8.9  |
| BLOCK.WP.SP | 40   | 0.569 | 14.4 |

GRAIN MEAN DM% 82.9

CROPSEQ WHEAT 3

STRAW TONNES/HECTARE

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

|          | N    | 0    | 50   | 100  | 150  | 200  | 250  | Mean |
|----------|------|------|------|------|------|------|------|------|
| TREATMNT |      |      |      |      |      |      |      |      |
| LC 8 GM  | 1.16 | 3.98 | 4.15 | 3.86 | 4.70 | 4.53 | 3.73 |      |
| LC 8 PT  | 1.64 | 3.23 | 3.66 | 4.80 | 4.93 | 5.12 | 3.90 |      |
| LC 6 LC  | 1.36 | 3.88 | 4.48 | 4.31 | 4.19 | 5.02 | 3.87 |      |
| LC 6 LN  | 1.79 | 3.35 | 4.69 | 4.32 | 4.33 | 4.32 | 3.80 |      |
| FYM      | 1.24 | 3.05 | 4.27 | 4.60 | 4.49 | 4.10 | 3.62 |      |
| STRAW    | 0.76 | 3.17 | 3.74 | 3.99 | 5.07 | 3.85 | 3.43 |      |
| FERT-FYM | 0.81 | 2.68 | 3.13 | 3.39 | 3.56 | 3.30 | 2.81 |      |
| FERT-STR | 0.73 | 2.30 | 3.29 | 3.52 | 3.78 | 4.01 | 2.94 |      |
| Mean     | 1.19 | 3.21 | 3.93 | 4.10 | 4.38 | 4.28 | 3.51 |      |

STRAW MEAN DM% 82.5

SUB PLOT AREA HARVESTED 0.00183