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# Yields of the Field Experiments 1982

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## 82/W/RN/12 Organic Manuring - W. Beans, W. Wheat, Ley

### Rothamsted Research

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82/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: A.E. Johnston.

The 18th year, w. beans, w. wheat, ley.

For previous years see 'Details' 1973 and 74-81/W/RN/12.

Design for w. beans and w. wheat: 2 blocks of 4 plots  
1st, 2nd, 3rd and 4th year leys: 2 blocks of 2 plots.

Whole plot dimensions: 8.53 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. In addition to leys the first pair included w. wheat in 1982 and the second pair w. beans.

W. beans and w. wheat tested:

|          |                                                                                                                             |
|----------|-----------------------------------------------------------------------------------------------------------------------------|
| MANURE   | Organic manures and fertilizers in 1982, cumulative to 1981 (w. wheat only) and to those applied in the preliminary period: |
| FYM      | Farmyard manure at 50 tonnes                                                                                                |
| STRAW    | Straw at 7.5 tonnes plus P <sub>2</sub> O <sub>5</sub> at 140 kg, K <sub>2</sub> O at 140 kg, MgO at 50 kg                  |
| FERT-FYM | P <sub>2</sub> O <sub>5</sub> at 280 kg, K <sub>2</sub> O at 560 kg, MgO at 100 kg                                          |
| FERT-STR | P <sub>2</sub> O <sub>5</sub> at 140 kg, K <sub>2</sub> O at 280 kg, MgO at 50 kg                                           |

All leys are clover/grass (LC) without N except to seedbed in first year. 1st and 2nd year leys tested:

|          |                                        |
|----------|----------------------------------------|
| PREV LEY | Previous ley:                          |
| LC(LC)   | Clover/grass ley in preliminary period |
| LC(LN)   | Grass ley with N in preliminary period |

3rd and 4th year leys tested:

|          |                                     |
|----------|-------------------------------------|
| PREV MAN | Previous manure:                    |
| LC(GM)   | Green manures in preliminary period |
| LC(PT)   | Peat in preliminary period          |

Standard applications:

W. wheat: Manures: N at 150 kg as 'Nitro-Chalk'. Weedkillers: Glyphosate at 1.5 kg in 280 l, isoproturon at 2.1 kg in 280 l.  
W. beans: Weedkillers: Glyphosate at 1.5 kg in 280 l. Propyzamide at 0.84 kg in 280 l.

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Clover/grass leys, 1st, 2nd, 3rd and 4th years: Manures: P<sub>2</sub>O<sub>5</sub> at 140 kg, K<sub>2</sub>O at 280 kg as (0:14:28), MgO at 50 kg as kieserite. N at 50 kg as 'Nitro-Chalk' to 1st year ley only. Weedkiller: Glyphosate at 1.5 kg in 280 l for 1st year ley only.

Seed: W. wheat: Avalon, sown at 190 kg.  
W. beans: Throws MS, sown at 250 kg.  
Clover/grass ley: Climax timothy at 13.4 kg, S215 Meadow fescue at 11.2 kg, Huia white clover at 3.4 kg. Mixture sown at 28 kg.

Cultivations, etc.:-

W. wheat: Glyphosate applied: 16 Sept, 1981. PK and Mg applied to FERT-FYM plots only, FYM applied to FYM plots only: 8 Oct. PK and straw applied to STRAW plots only, ploughed: 6 Nov. PK applied to FERT-FYM and FERT-STR plots only. Mg applied to FERT-FYM, FERT-STR and STRAW plots only, spring-tine cultivated with crumbler attached: 9 Nov. Seed sown: 10 Nov. N applied: 14 Apr, 1982. Isoproturon applied: 15 Apr. Combine harvested: 16 Aug.

W. beans: Glyphosate applied: 1 Oct, 1981. PK and Mg applied to FERT-FYM plots only, FYM applied to FYM plots only: 8 Oct. PK and straw applied to STRAW plots only, ploughed: 6 Nov. PK applied to FERT-FYM and FERT-STR plots only, Mg applied to FERT-FYM, FERT-STR and STRAW plots only: 9 Nov. Spring-tine cultivated with crumbler attached, seed sown: 10 Nov. Propyzamide applied: 13 Nov. Combine harvested: 13 Aug, 1982.

1st year clover/grass ley: Glyphosate applied: 1 Oct, 1981. Ploughed: 6 Nov. PK and Mg applied: 9 Nov. Spring-tine cultivated with crumbler attached: 10 Nov, 15 Apr, 1982, 19 Apr. N applied: 15 Apr, 23 June. Seed sown: 29 Apr. Topped: 16 June, 29 June, 26 July.

2nd, 3rd and 4th year clover/grass ley: PK and Mg applied: 9 Nov, 1981. Cut: 7 July, 1982.

#### WINTER BEANS

GRAIN TONNES/HECTARE

\*\*\*\*\* TABLES OF MEANS \*\*\*\*\*

| MANURE | FYM  | STRAW | FERT-FYM | FERT-STR | MEAN |
|--------|------|-------|----------|----------|------|
|        | 4.77 | 5.05  | 4.41     | 4.67     | 4.73 |

GRAIN MEAN DM% 84.2

PLOT AREA HARVESTED 0.02471

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WHEAT

GRAIN TONNES/HECTARE

\*\*\*\*\* TABLES OF MEANS \*\*\*\*\*

|        |      |       |          |          |      |
|--------|------|-------|----------|----------|------|
| MANURE | FYM  | STRAW | FERT-FYM | FERT-STR | MEAN |
|        | 5.26 | 4.12  | 2.59     | 3.01     | 3.74 |

GRAIN MEAN DM% 80.7

STRAW TONNES/HECTARE

|        |      |       |          |          |      |
|--------|------|-------|----------|----------|------|
| MANURE | FYM  | STRAW | FERT-FYM | FERT-STR | MEAN |
|        | 2.32 | 1.80  | 1.51     | 1.41     | 1.76 |

STRAW MEAN DM% 75.3

PLOT AREA HARVESTED 0.00796

2ND YEAR LEY

1ST CUT (7/7/82) DRY MATTER TONNES/HECTARE

\*\*\*\*\* TABLES OF MEANS \*\*\*\*\*

|          |        |        |      |
|----------|--------|--------|------|
| PREV LEY | LC(LC) | LC(LN) | MEAN |
|          | 6.34   | 7.02   | 6.68 |

1ST CUT MEAN DM% 33.6

3RD YEAR LEY

1ST CUT (7/7/82) DRY MATTER TONNES/HECTARE

\*\*\*\*\* TABLES OF MEANS \*\*\*\*\*

|          |        |        |      |
|----------|--------|--------|------|
| PREV MAN | LC(GM) | LC(PT) | MEAN |
|          | 5.21   | 5.87   | 5.54 |

1ST CUT MEAN DM% 30.6

4TH YEAR LEY

1ST CUT (7/7/82) DRY MATTER TONNES/HECTARE

\*\*\*\*\* TABLES OF MEANS \*\*\*\*\*

|          |        |        |      |
|----------|--------|--------|------|
| PREV MAN | LC(GM) | LC(PT) | MEAN |
|          | 6.40   | 5.00   | 5.70 |

1ST CUT MEAN DM% 36.6

PLOT AREA HARVESTED 0.00265