

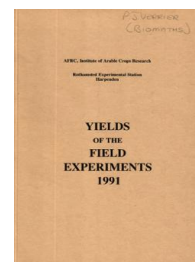
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# Yields of the Field Experiments 1991

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## Experiments - Classical

### Rothamsted Research

Rothamsted Research (1992) *Experiments - Classical* ; Yields Of The Field Experiments 1991, pp 9 - 32 - DOI: <https://doi.org/10.23637/ERADOC-1-46>

91/R/BK/1

# BROADBALK

**Object:** To study the effects of organic and inorganic manures on continuous w. wheat. From 1968 two three-year rotations were included: potatoes, beans, w. wheat and fallow, w. wheat, w. wheat. In 1979 the first rotation was changed to fallow, potatoes, w. wheat. In 1980 the second rotation reverted to continuous w. wheat. Since 1985 part of the second rotation has been added to the first to extend the rotation to fallow, potatoes, w. wheat, w. wheat, w. wheat.

The 148th year, w. wheat, fallow, potatoes.

For previous years see 'Details' 1967 and 1973, Station Report for 1966, pp. 229-231, Station Report for 1968, Part 2, and 74-90/R/BK/1.

## Areas harvested:

|           |               |         |
|-----------|---------------|---------|
| Wheat:    | Section       |         |
|           | 0             | 0.00311 |
|           | 1             | 0.00572 |
|           | 2, 4, 6 and 7 | 0.00473 |
|           | 8 and 9       | 0.00497 |
| Potatoes: | 5             | 0.00348 |

## Treatments:

Whole plots

## PLOT

Fertilizers and organic manures:-

|          | Plot | Treatments until 1967 | Treatments from 1968 | Treatments from 1985 |
|----------|------|-----------------------|----------------------|----------------------|
| 01DN4PK  | 01   | -                     | D N2 P K             | D N4 P K             |
| 21DN2    | 21   | D                     | D N2                 | D N2                 |
| 22D      | 22   | D                     | D                    | D                    |
| 030      | 03   | None                  | None                 | None                 |
| 05F      | 05   | P K Na Mg             | P K (Na) Mg          | PK Mg                |
| 06N1F    | 06   | N1 P K Na Mg          | N1 P K (Na) Mg       | N1 P K Mg            |
| 07N2F    | 07   | N2 P K Na Mg          | N2 P K (Na) Mg       | N2 P K Mg            |
| 08N3F    | 08   | N3 P K Na Mg          | N3 P K (Na) Mg       | N3 P K Mg            |
| 09N4F    | 09   | N*1 P K Na Mg         | N4 P K (Na) Mg       | N4 P K Mg            |
| 10N2     | 10   | N2                    | N2                   | N2                   |
| 11N2P    | 11   | N2 P                  | N2 P                 | N2 P                 |
| 12N2PNA  | 12   | N2 P Na               | N2 P Na              | N2 P Na              |
| 13N2PK   | 13   | N2 P K                | N2 P K               | N2 P K               |
| 14N2PKMG | 14   | N2 P Mg               | N2 P K Mg            | N2 P K Mg            |
| 15N5F    | 15   | N2 P K Na Mg          | N3 P K (Na) Mg       | N5 P K Mg            |
| 16N6F    | 16   | N*2 P K Na Mg         | N2 P K (Na) Mg       | N6 P K Mg            |
| 17N0+3FH | 17   | N2 (A)                | N2 1/2 (P K (Na) Mg) | N0+3 1/2 (PK Mg)+    |
| 18N1+3FH | 18   | P K Na Mg (A)         | N2 1/2 (P K (Na) Mg) | N1+3 1/2 (PK Mg)+    |
| 19C      | 19   | C                     | C                    | C                    |
| 20NKMG   | 20   | N2 K Na Mg            | N2 K (Na) Mg         | N2 K Mg              |

(A) Alternating





91/R/BK/1

**Standard applications:**

- W. wheat: Manure: Chalk at 2.9 t (to sections 7 and 9 only).  
Weedkillers: Glyphosate at 1.4 kg in 200 l (except to sections 4 and 8). Diflufenican at 0.12 kg and isoproturon at 2.2 kg in 200 l (except to section 8). Glyphosate at 2.2 kg with a wetting agent, 'MAFF Adjuvant no. 0004' at 2.9 l, at 150 l (except to section 8).  
Fungicides (except to section 6): Prochloraz at 0.40 kg with the growth regulator in 200 l. Propiconazole at 0.12 kg with chlorothalonil at 0.50 kg in 200 l. Fenpropimorph at 0.75 kg in 200 l. Growth regulator (except to section 6): Chlormequat chloride at 1.6 kg.  
Potatoes: Weedkillers: Glyphosate at 1.4 kg in 200 l. Linuron at 1.6 kg in 200 l. Fungicides: Maneb at 0.96 kg and zinc oxide at 22 g in 200 l on three occasions, the first and third with a wetting agent, 'Bond' at 0.20 l, and the second occasion with pirimicarb. Mancozeb at 1.4 kg with a wetting agent, 'Bond' at 0.20 l, in 200 l. Fentin hydroxide at 0.27 kg with a wetting agent, 'Nu-film P' at 0.18 l, in 200 l. Insecticide: Pirimicarb at 0.14 kg.  
Fallow: Weedkiller: Glyphosate at 2.2 kg with a wetting agent, 'MAFF Adjuvant no. 0004' at 2.9 l, in 150 l.

**Seed:** W. wheat: Apollo, dressed fonofos, sown at 180 kg.  
Potatoes: Pentland Crown.

**Cultivations, etc.:-**

**All Sections:**

K, Na and Mg applied: 1 Oct, 1990. P applied: 2 Oct. FYM applied, ploughed and furrow pressed: 9 Oct. Rotary harrowed: 15 Oct.

**Cropped Sections:**

- W. wheat: Straw chopped (section 0): 14 Aug, 1990. Glyphosate alone applied (except to sections 4 and 8): 23 Aug. Chalk applied (sections 7 and 9): 27 Sept. Autumn N treatments applied: 2 Oct. Rotary harrowed, seed sown: 16 Oct. Diflufenican with isoproturon applied (except to section 8): 21 Nov. Spring N treatments applied: 9 Apr, 1991. Prochloraz with the growth regulator applied (except to section 6): 24 Apr. Propiconazole with chlorothalonil applied (except to section 6): 20 June. Fenpropimorph applied (except to section 6): 2 July. Glyphosate with the wetting agent applied (except to section 8): 12 Aug. Combine harvested: 25 Aug.  
Potatoes: Glyphosate applied: 11 Sept, 1990. Deep-tine cultivated: 14 Dec. N treatments applied: 9 Apr, 1991. Heavy spring-tine cultivated: 16 Apr. Rotary harrowed, potatoes planted: 17 Apr. Rotary ridged: 9 May. Linuron applied: 21 May. Maneb and zinc oxide with the wetting agent applied: 1 July and 22 July. Maneb and zinc oxide with the insecticide applied: 10 July. Mancozeb with the wetting agent applied: 1 Aug. Fentin hydroxide with the wetting agent applied: 12 Aug. Haulm mechanically destroyed: 28 Aug. Lifted: 24 Sept.  
Fallow: Deep-tine cultivated: 14 Dec, 1990. Heavy spring-tine cultivated: 25 Apr, 1991. Cultivated by rotary grubber: 21 June. Heavy spring-tine cultivated: 8 July. Glyphosate with wetting agent applied: 12 July.

91/R/BK/1 W.WHEAT

GRAIN TONNES/HECTARE

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

| SECTION<br>PLOT | 4/W1 | 7/W2 | 2/W3 | 8/W3 | 6/W14 | 1/W25 | 9/W33 | 0/W40 |
|-----------------|------|------|------|------|-------|-------|-------|-------|
| 01DN4PK         | 8.84 | 8.60 | 9.14 | *    | 5.80  | *     | *     | *     |
| 21DN2           | 9.38 | 8.65 | 8.84 | 3.31 | 7.18  | 8.98  | 9.10  | 8.74  |
| 22D             | 7.80 | 5.69 | 6.17 | 3.60 | 5.38  | 5.98  | 6.87  | 5.50  |
| 030             | 1.62 | 0.67 | 0.79 | 1.75 | 1.12  | 1.25  | 0.96  | 1.00  |
| 05F             | 1.50 | 0.52 | 0.85 | 2.10 | 1.17  | 1.29  | 1.09  | 1.51  |
| 06N1F           | 4.84 | 3.14 | 2.92 | 2.54 | 3.32  | 3.39  | 3.78  | 3.37  |
| 07N2F           | 6.92 | 5.42 | 5.07 | 3.27 | 5.75  | 6.29  | 6.19  | 5.82  |
| 08N3F           | 7.96 | 7.96 | 6.88 | 5.00 | 7.09  | 7.80  | 7.76  | 7.21  |
| 09N4F           | 8.35 | 8.43 | 7.39 | 5.63 | 6.95  | 7.65  | 8.21  | 7.34  |
| 10N2            | 5.63 | 4.85 | 3.29 | 1.76 | 3.54  | 3.14  | 4.00  | 3.11  |
| 11N2P           | 4.60 | 5.40 | 4.31 | 2.11 | 3.25  | 4.36  | 1.85  | 3.67  |
| 12N2PNA         | 5.32 | 5.67 | 3.92 | 2.32 | 4.31  | 2.85  | 2.22  | 4.51  |
| 13N2PK          | 6.74 | 4.95 | 4.56 | 3.28 | 5.15  | 5.42  | 6.09  | 5.34  |
| 14N2PKMG        | 6.72 | 5.27 | 4.69 | 2.86 | 5.14  | 5.77  | 6.20  | 5.67  |
| 15N5F           | 8.51 | 8.96 | 7.85 | 3.89 | 6.97  | 8.66  | 8.84  | 7.89  |
| 16N6F           | 8.26 | 8.50 | 8.21 | 3.77 | 6.28  | 8.16  | 8.22  | 7.32  |
| 17N0+3FH        | 8.27 | 7.40 | 6.39 | 3.28 | 6.36  | 7.22  | 7.30  | 6.91  |
| 18N1+3FH        | 8.38 | 7.81 | 7.25 | 4.33 | 6.62  | 7.28  | 7.38  | 7.42  |
| 19C             | 3.19 | 0.84 | 1.04 | 2.51 | 1.64  | 2.02  | 1.76  | 1.90  |
| 20NKMG          | *    | *    | *    | *    | *     | 3.23  | *     | 3.03  |

GRAIN MEAN DM% 82.7

STRAW TONNES/HECTARE

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

| SECTION<br>PLOT | 4/W1 | 1/W25 |
|-----------------|------|-------|
| 01DN4PK         | 9.02 | *     |
| 21DN2           | 9.11 | 8.67  |
| 22D             | 7.24 | 4.58  |
| 030             | 1.11 | 1.06  |
| 05F             | 0.90 | 0.92  |
| 06N1F           | 3.27 | 3.01  |
| 07N2F           | 5.54 | 4.75  |
| 08N3F           | 6.56 | 5.56  |
| 09N4F           | 6.60 | 5.90  |
| 10N2            | 3.04 | 3.78  |
| 11N2P           | 2.96 | 2.93  |
| 12N2PNA         | 3.37 | 1.68  |
| 13N2PK          | 5.57 | 4.38  |
| 14N2PKMG        | 5.86 | 3.98  |
| 15N5F           | 7.54 | 6.78  |
| 16N6F           | 7.05 | 6.34  |
| 17N0+3FH        | 6.68 | 5.95  |
| 18N1+3FH        | 6.83 | 6.46  |
| 19C             | 1.48 | 1.52  |
| 20NKMG          | *    | 3.44  |

STRAW MEAN DM% 89.8

91/R/BK/1

POTATOES

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

| PLOT     | TOTAL TUBERS       | % WARE                       |
|----------|--------------------|------------------------------|
|          | TONNES/<br>HECTARE | 3.81 CM (1.5<br>INCH) RIDDLE |
| 01DN4PK  | 41.9               | 93.4                         |
| 21DN2    | 45.7               | 95.6                         |
| 22D      | 34.2               | 93.0                         |
| 030      | 5.5                | 62.6                         |
| 05F      | 10.6               | 78.0                         |
| 06N1F    | 23.3               | 88.8                         |
| 07N2F    | 29.2               | 88.8                         |
| 08N3F    | 32.8               | 91.3                         |
| 09N4F    | 29.7               | 91.4                         |
| 10N2     | 8.7                | 78.2                         |
| 11N2P    | 10.0               | 77.8                         |
| 12N2PNA  | 9.8                | 73.2                         |
| 13N2PK   | 18.3               | 75.9                         |
| 14N2PKMG | 31.1               | 90.6                         |
| 15N5F    | 37.9               | 90.7                         |
| 16N6F    | 35.3               | 93.2                         |
| 17N3FH   | 22.1               | 89.5                         |
| 18N3FH   | 27.1               | 92.5                         |
| 19C      | 16.0               | 88.9                         |

91/R/HB/2

# HOOS BARLEY

**Object:** To study the effects of organic and inorganic manures on continuous s. barley. From 1968 to 1978 a rotation of potatoes, beans and s. barley was practised. The rotation was discontinued in 1979 and the experiment reverted to continuous s. barley.

The 140th year, s. barley.

For previous years see 'Details' 1967 and 1973, Station Report for 1966 and 74-90/R/HB/2.

**Treatments:** All combinations of:-

## 1. MANURE Fertilizers and organic manures:

|       | Form of N<br>1852-1966 | Additional<br>treatments<br>1852-1979 | Changes<br>since<br>1980 |
|-------|------------------------|---------------------------------------|--------------------------|
| ---   | None                   | -                                     | -                        |
| -P-   | None                   | P                                     | -                        |
| --K   | None                   | K (Na) Mg                             | -                        |
| -PK   | None                   | PK (Na) Mg                            | -                        |
| A--   | A                      | -                                     | -                        |
| AP-   | A                      | P                                     | -                        |
| A-K   | A                      | K (Na) Mg                             | -                        |
| APK   | A                      | PK (Na) Mg                            | -                        |
| N---- | N                      | -                                     | -                        |
| NP--- | N                      | P                                     | -                        |
| N-K-- | N                      | K (Na) Mg                             | -                        |
| NPK-- | N                      | PK (Na) Mg                            | -                        |
| N--S- | N                      | Si                                    | Si omitted               |
| NP-S- | N                      | P Si                                  | "                        |
| N-KS- | N                      | K (Na) MgSi                           | "                        |
| NPKS- | N                      | PK (Na) MgSi                          | "                        |
| N---S | N                      | -                                     | Si added                 |
| NP--S | N                      | P                                     | "                        |
| N-K-S | N                      | K (Na) Mg                             | "                        |
| NPK-S | N                      | PK (Na) Mg                            | "                        |
| N--SS | N                      | Si                                    | -                        |
| NP-SS | N                      | P Si                                  | -                        |
| N-KSS | N                      | K (Na) MgSi                           | -                        |
| NPKSS | N                      | PK (Na) MgSi                          | -                        |
| C(--) | C                      | -                                     | PKMg omitted             |
| C(P-) | C                      | P                                     | "                        |
| C(-K) | C                      | K (Na) Mg                             | "                        |
| C(PK) | C                      | PK (Na) Mg                            | "                        |
| D     | None                   | D                                     | -                        |
| (D)   | (D)                    | -                                     | -                        |
| (A)   | (Ashes)                | -                                     | -                        |
| -     | None                   | -                                     | -                        |



## 91/R/HB/2

Form of N: A, sulphate of ammonia: N, nitrate of soda - each to supply 48 kg N: C, castor meal to supply 96 kg N  
 P: 35 kg P as triple superphosphate (triple superphosphate in 1974, 1988 and 1989, single superphosphate in other years)  
 K: 90 kg K as sulphate of potash  
 (Na): 16 kg Na as sulphate of soda until 1973  
 Mg: 35 kg Mg, as kieserite every third year since 1974 (sulphate of magnesia annually until 1973)  
 Si: Silicate of soda at 450 kg  
 D: Farmyard manure at 35 tonnes. (D): until 1871 only  
 (Ashes): Weed ash 1852-1916, furnace ash 1917-1932, none since

2. **N** Nitrogen fertilizer (kg N), as 'Nitro-Chalk', since 1968 (cumulative N applications until 1973, on a cyclic system since 1974):

0  
 48  
 96  
 144

Plus extra plots testing all combinations of:-

1. **MANURE** Fertilizers other than magnesium:

|          |                |
|----------|----------------|
| 551AN2PK | Plot 551 AN2PK |
| 561--PK  | Plot 561 --PK  |
| 571NN2-- | Plot 571 NN2   |
| 581NN2-- | Plot 581 NN2   |

N2: 96 kg N as 'Nitro-Chalk' since 1968. Other symbols as above.

2. **MAGNESIUM** Magnesium fertilizer (kg Mg) as kieserite every third year since 1974:

0  
 35

**NOTE:** For a fuller record see 'Details' etc.

**Basal applications:** Weedkillers: Glyphosate at 1.4 kg in 200 l. Mecoprop at 1.1 kg, ioxynil at 0.20 kg, bromoxynil at 0.20 kg and linuron at 0.04 kg in 200 l. Fungicide: Tridemorph at 0.52 kg in 200 l. Insecticide: Pirimicarb at 0.14 kg in 200 l.

**Seed:** Triumph, dressed triadimenol and fuberidazole, sown at 130 kg.

**Cultivations, etc.:-** Glyphosate applied: 7 Nov, 1990. P applied: 21 Nov. K and silicate of soda applied: 28 Nov. FYM applied, ploughed: 3 Dec. Spring-tine cultivated, rotary harrowed, seed sown: 14 Mar, 1991. N applied: 12 Apr. Remaining weedkillers applied: 24 May. Fungicide applied: 4 June. Insecticide applied: 11 July. Combine harvested: 19 Aug.



91/R/HB/2

# MAIN PLOTS

## GRAIN TONNES/HECTARE

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

| N             | 0    | 48   | 96   | 144  | Mean |
|---------------|------|------|------|------|------|
| <b>MANURE</b> |      |      |      |      |      |
| ---           | 0.98 | 2.26 | 2.98 | 1.67 | 1.98 |
| -P-           | 2.85 | 4.10 | 3.48 | 4.78 | 3.80 |
| --K           | 2.52 | 4.02 | 4.62 | 4.14 | 3.82 |
| -PK           | 2.66 | 4.58 | 5.74 | 6.21 | 4.80 |
| A--           | 1.79 | 2.20 | 2.62 | 2.54 | 2.29 |
| AP-           | 2.68 | 3.56 | 3.06 | 2.98 | 3.07 |
| A-K           | 2.26 | 3.42 | 3.47 | 3.57 | 3.18 |
| APK           | 2.67 | 4.43 | 5.39 | 5.82 | 4.57 |
| N----         | 2.69 | 2.88 | 3.52 | 3.39 | 3.12 |
| NP---         | 3.20 | 4.37 | 4.83 | 4.15 | 4.14 |
| N-K--         | 2.69 | 3.82 | 3.83 | 3.56 | 3.48 |
| NPK--         | 2.67 | 4.54 | 5.53 | 6.55 | 4.82 |
| N--S-         | 2.67 | 4.63 | 3.50 | 3.49 | 3.57 |
| NP-S-         | 3.33 | 4.45 | 4.59 | 5.48 | 4.46 |
| N-KS-         | 2.85 | 4.17 | 4.94 | 5.13 | 4.27 |
| NPKS-         | 2.99 | 4.80 | 5.64 | 6.50 | 4.98 |
| N---S         | 2.83 | 3.23 | 3.76 | 4.32 | 3.54 |
| NP--S         | 3.15 | 4.71 | 5.49 | 4.24 | 4.40 |
| N-K-S         | 2.80 | 3.77 | 4.70 | 4.09 | 3.84 |
| NPK-S         | 2.93 | 4.77 | 5.93 | 6.07 | 4.92 |
| N--SS         | 2.62 | 3.22 | 4.09 | 4.22 | 3.54 |
| NP-SS         | 3.21 | 4.45 | 4.42 | 5.02 | 4.27 |
| N-KSS         | 2.99 | 4.23 | 4.93 | 4.56 | 4.18 |
| NPKSS         | 1.93 | 5.62 | 6.07 | 6.20 | 4.96 |
| C(--)         | 2.94 | 4.54 | 4.42 | 5.10 | 4.25 |
| C(P-)         | 3.19 | 4.69 | 5.15 | 5.69 | 4.68 |
| C(-K)         | 2.83 | 4.84 | 5.87 | 5.95 | 4.87 |
| C(PK)         | 2.81 | 4.53 | 5.32 | 5.73 | 4.60 |
| D             | 6.35 | 6.22 | 6.16 | 5.93 | 6.16 |
| (D)           | 3.61 | 5.71 | 5.46 | 5.18 | 4.99 |
| (A)           | 3.48 | 4.11 | 4.03 | 4.17 | 3.95 |
| -             | 2.49 | 4.03 | 3.73 | 4.08 | 3.58 |
| Mean          | 2.86 | 4.22 | 4.60 | 4.70 | 4.10 |

GRAIN MEAN DM% 87.8

91/R/HB/2

**STRAW TONNES/HECTARE**

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

| N             | 0    | 48   | 96   | 144  | Mean |
|---------------|------|------|------|------|------|
| <b>MANURE</b> |      |      |      |      |      |
| ---           | 0.42 | 0.91 | 1.34 | 0.70 | 0.84 |
| -P-           | 1.14 | 1.91 | 1.73 | 2.53 | 1.83 |
| --K           | 1.06 | 1.51 | 2.66 | 2.12 | 1.84 |
| -PK           | 0.89 | 2.03 | 2.79 | 3.14 | 2.21 |
| A--           | 0.55 | 0.75 | 1.30 | 1.20 | 0.95 |
| AP-           | 0.93 | 1.70 | 1.91 | 1.74 | 1.57 |
| A-K           | 0.87 | 1.58 | 1.75 | 1.59 | 1.45 |
| APK           | 0.90 | 2.11 | 2.58 | 2.85 | 2.11 |
| D             | 3.90 | 4.26 | 4.71 | 4.43 | 4.32 |
| (D)           | 1.50 | 2.51 | 2.75 | 2.53 | 2.32 |
| (A)           | 1.38 | 1.70 | 2.01 | 2.03 | 1.78 |
| -             | 1.22 | 1.70 | 1.72 | 2.00 | 1.66 |
| Mean          | 1.23 | 1.89 | 2.27 | 2.24 | 1.91 |

STRAW MEAN DM% 85.9

PLOT AREA HARVESTED 0.00154

**EXTRA PLOTS**

**GRAIN TONNES/HECTARE**

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

| MANURE           | 551AN2PK | 561--PK | 571NN2-- | 581NN2-- | Mean |
|------------------|----------|---------|----------|----------|------|
| <b>MAGNESIUM</b> |          |         |          |          |      |
| 0                | 5.11     | 1.64    | 5.24     | 3.24     | 3.81 |
| 35               | 5.50     | 1.53    | 5.11     | 3.26     | 3.85 |
| Mean             | 5.31     | 1.59    | 5.18     | 3.25     | 3.83 |

GRAIN MEAN DM% 86.9

PLOT AREA HARVESTED 0.00329

91/R/WF/3

# WHEAT AND FALLOW

**Object:** To study the effects of fallowing on unmanured w. wheat - Hoosfield.

The 136th year, w. wheat.

For previous years see 'Details' 1967, 1973 and 74-90/R/WF/3.

**Whole plot dimensions:** 9.0 x 211.

## **Treatments:**

Each year there are two plots, one is sown to w. wheat, one is fallow; they alternate in successive years.

**Seed:** Apollo, dressed fonofos, sown at 180 kg.

## **Cultivations, etc.:-**

Wheat plot: Rotary harrowed twice, seed sown: 17 Oct, 1990. Combine harvested: 25 Aug, 1991.

Fallow plot: Deep tine cultivated with vibrating tines 60 cm apart, 45 cm deep: 24 Sept, 1990. Ploughed, furrow pressed: 4 Oct. Heavy spring-tine cultivated: 25 Apr, 1991. Spring-tine cultivated: 14 June. Heavy spring-tine cultivated: 8 July.

## **GRAIN AND STRAW TONNES/HECTARE**

|                     |         |       |
|---------------------|---------|-------|
|                     | GRAIN   | STRAW |
| YIELD               | 1.50    | 1.49  |
| MEAN DM%            | 82.5    | 91.8  |
| PLOT AREA HARVESTED | 0.04309 |       |

## 91/R/EX/4

### EXHAUSTION LAND

Object: To study the residual effects of manures applied 1876-1901, and of additional phosphate applied since 1986, on the yield of continuous s. barley - Hoosfield.

The 136th year, s. barley.

For previous years see 'Details' 1967, 1973 and 74-90/R/EX/4.

**Treatments:** All combinations of:-

Whole plots

1. **OLD RES** Residues of manures applied annually 1876-1901:  

|         |  |
|---------|--|
| O       | None   |
| D       | Farmyard manure at 35 tonnes   |
| N       | 96 kg N as ammonium salts  |
| P       | 34 kg P as superphosphate  |
| NPKNAMG | N and P as above plus 137 kg K as sulphate of potash,<br>16 kg Na as sulphate of soda, 11 kg Mg as sulphate<br>of magnesia |
2. **P** Phosphate applied annually from 1986 as  
superphosphate until 1987, triple superphosphate  
since:  

|    |          |
|----|----------|
| O  | None     |
| P1 | 44 kg P  |
| P2 | 87 kg P  |
| P3 | 131 kg P |

plus all combinations of:-

1. **OLD RES** Residues of manures applied annually 1876-1901:  

|      |  |
|------|--|
| O    | None   |
| D    | Farmyard manure at 35 tonnes                                 |
| N*   | 96 kg N as nitrate of soda                                   |
| PK   | 34 kg P as superphosphate, 137 kg K as sulphate of<br>potash |
| N*PK | N, P and K as above  |
2. **N91** Nitrogen fertilizer (kg N) as 'Nitro-Chalk' until  
1985, as 'Nitram' since 1986 (basal until 1975, on  
a cyclic system since 1976):  

|     |
|-----|
| 0   |
| 48  |
| 96  |
| 144 |

**NOTE:** All plots of the combination **OLD RES**, **P** were given N at 144 kg as 'Nitram' and K at 83 kg as muriate of potash.



91/R/EX/4

**Basal applications:** Weedkiller: Fluroxypyr at 0.15 kg with the fungicide in 200 l. Fungicide: Fenpropimorph at 0.38 kg.

**Seed:** Triumph, seed dressed triadimenol and fuberidazole, sown at 130 kg.

**Cultivations, etc.:-** P and K applied: 20 Nov, 1990. Ploughed: 23 Nov. Spring-tine cultivated: 25 Mar, 1991. Rotary harrowed, seed sown: 26 Mar. N applied: 18 Apr. Weedkiller with fungicide applied: 16 June. Combine harvested: 29 Aug.

#### PHOSPHATE PLOTS

#### GRAIN TONNES/HECTARE

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

|                | P | O    | P1   | P2   | P3   | Mean |
|----------------|---|------|------|------|------|------|
| <b>OLD RES</b> |   |      |      |      |      |      |
| O              |   | 2.54 | 4.96 | 5.42 | 5.72 | 4.66 |
| D              |   | 4.31 | 5.22 | 5.50 | 5.49 | 5.13 |
| N              |   | 2.35 | 5.10 | 5.50 | 5.86 | 4.70 |
| P              |   | 3.76 | 5.18 | 5.24 | 5.50 | 4.92 |
| NPKNAMG        |   | 3.69 | 5.14 | 5.42 | 5.53 | 4.94 |
| Mean           |   | 3.33 | 5.12 | 5.42 | 5.62 | 4.87 |

GRAIN MEAN DM% 85.1

#### STRAW TONNES/HECTARE

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

|                | P | O    | P1   | P2   | P3   | Mean |
|----------------|---|------|------|------|------|------|
| <b>OLD RES</b> |   |      |      |      |      |      |
| O              |   | 1.82 | 3.69 | 4.14 | 3.81 | 3.36 |
| D              |   | 3.05 | 3.72 | 3.71 | 3.53 | 3.50 |
| N              |   | 1.73 | 3.59 | 3.70 | 3.79 | 3.20 |
| P              |   | 2.40 | 3.60 | 3.61 | 3.62 | 3.31 |
| NPKNAMG        |   | 2.50 | 3.45 | 3.74 | 3.70 | 3.35 |
| Mean           |   | 2.30 | 3.61 | 3.78 | 3.69 | 3.34 |

STRAW MEAN DM% 92.4

PLOT AREA HARVESTED 0.00588

91/R/EX/4

# NITROGEN PLOTS

## GRAIN TONNES/HECTARE

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

|         | N91 | 0    | 48   | 96   | 144  | Mean |
|---------|-----|------|------|------|------|------|
| OLD RES |     |      |      |      |      |      |
| O       |     | 0.73 | 1.75 | 0.74 | 0.91 | 1.03 |
| D       |     | 2.09 | 3.41 | 3.46 | 3.37 | 3.08 |
| N*      |     | 0.96 | 2.13 | 1.15 | 1.14 | 1.34 |
| PK      |     | 1.74 | 3.47 | 3.18 | 3.64 | 3.01 |
| N*PK    |     | 1.71 | 3.41 | 2.99 | 2.88 | 2.75 |
| Mean    |     | 1.44 | 2.83 | 2.30 | 2.39 | 2.24 |

GRAIN MEAN DM% 82.5

## STRAW TONNES/HECTARE

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

|         | N91 | 0    | 48   | 96   | 144  | Mean |
|---------|-----|------|------|------|------|------|
| OLD RES |     |      |      |      |      |      |
| O       |     | 1.44 | 1.54 | 1.80 | 1.98 | 1.69 |
| D       |     | 1.34 | 1.93 | 2.00 | 2.13 | 1.85 |
| N*      |     | 0.89 | 1.28 | 1.44 | 1.39 | 1.25 |
| PK      |     | 1.14 | 1.92 | 1.82 | 2.20 | 1.77 |
| N*PK    |     | 0.81 | 1.66 | 1.76 | 1.64 | 1.47 |
| Mean    |     | 1.12 | 1.67 | 1.76 | 1.87 | 1.60 |

STRAW MEAN DM% 90.2

PLOT AREA HARVESTED 0.00588

91/R/PG/5

# PARK GRASS

**Object:** To study the effects of organic and inorganic manures and lime on old grass (for hay).

The 136th year, hay.

For previous years see 'Details' 1967 and 1973 and 74-90/R/PG/5.

**Treatments:** Combinations of:-

Whole plots

## 1. MANURE Fertilizers and organic manures:

|             |  |                            |
|-------------|--|----------------------------|
| N1          | Plot 1   | N1                         |
| O(D)        | Plot 2   | None (D until 1863)        |
| O/PLOT3     | Plot 3   | None                       |
| P           | Plot 4/1   | P                          |
| N2P         | Plot 4/2   | N2 P                       |
| N1MN        | Plot 6   | N1 P K Na Mg               |
| MN          | Plot 7   | P K Na Mg                  |
| PNAMG       | Plot 8   | P Na Mg                    |
| MN(N2)      | Plot 9/1   | P K Na Mg (N2 until 1989)  |
| N2MN        | Plot 9/2   | N2 P K Na Mg               |
| N2PNAMG     | Plot 10  | N2 P Na Mg                 |
| N3MN        | Plot 11/1  | N3 P K Na Mg               |
| N3MNSI      | Plot 11/2  | N3 P K Na Mg Si            |
| O/PLOT12    | Plot 12  | None                       |
| D/F         | Plot 13  | D/F                        |
| MN(N2*14)   | Plot 14/1  | P K Na Mg (N2* until 1989) |
| N2*MN       | Plot 14/2  | N2* P K Na Mg              |
| MN(N2*15)   | Plot 15  | P K Na Mg (N2* until 1875) |
| N1*MN       | Plot 16  | N1* P K Na Mg              |
| N1*         | Plot 17  | N1*                        |
| N2KNAMG     | Plot 18  | N2 K Na Mg                 |
| D           | Plot 19  | D                          |
| D/N*PK      | Plot 20  | D/N*P K                    |
| N1, N2, N3: | 48, 96, 144 kg N as sulphate of ammonia  |                            |
| N1*, N2*:   | 48, 96 kg N as nitrate of soda (30 kg N to Plot 20, only in years with no farmyard manure)   |                            |
| P:          | 35 kg P (15 kg P to Plot 20, only in years with no farmyard manure) as single superphosphate until 1986, triple superphosphate in 1974, and since 1987 |                            |
| K:          | 225 kg K (45 kg K to Plot 20, only in years with no farmyard manure) as sulphate of potash   |                            |
| Na:         | 15 kg Na as sulphate of soda   |                            |
| Mg:         | 10 kg Mg as sulphate of magnesia   |                            |
| Si:         | Silicate of soda at 450 kg   |                            |
| D:          | Farmyard manure at 35 tonnes every fourth year   |                            |
| F:          | Fish meal every fourth year to supply 63 kg N  |                            |
| MN:         | P K Na Mg  |                            |

91/R/PG/5

Sub plots

2. **LIME**                      Liming:

- |   |   |  |
|---|---|--|
| A | a | Ground chalk applied as necessary to achieve pH7 |
| B | b | Ground chalk applied as necessary to achieve pH6 |
| C | c | Ground chalk applied as necessary to achieve pH5 |
| D | d | None   |

**NOTE:** Lime was applied regularly, and at the same rate, to all 'a' and 'b' sub plots of Plots 1 to 17 (except 12) from 1924. Differential liming started in 1965 on certain 'b' and 'c' sub plots (except on Plot 12) and in 1976 on certain 'a' sub plots (including Plot 12) and 12b. Liming ceased on plots 9/1 and 14/1 after 1989. Lime last applied in 1990.

Additional sub plots (Plots 18, 19 and 20 only) (tonnes CaCO<sub>3</sub> applied every fourth year 1920-1964):

|          |      |      |
|----------|------|------|
| N2KNAMG0 | 18-1 | None |
| N2KNAMG2 | 18-2 | 13.5 |
| N2KNAMG1 | 18-3 | 7.9  |
| DO       | 19-1 | None |
| D2       | 19-2 | 6.3  |
| D1       | 19-3 | 1.1  |
| D/N*PK0  | 20-1 | None |
| D/N*PK2  | 20-2 | 5.6  |
| D/N*PK1  | 20-3 | 1.1  |

Since 1965 Plot 18-1 has been split into two for treatments 'c' and 'd' above and Plot 18-3 split into two for treatments 'a' and 'b'. Plots 19 and 20 received no further chalk after 1968; plot 18/2 no further chalk after 1972.

**NOTE:** For a fuller record of treatments see 'Details' etc.

**Cultivations, etc.:-** P applied: 21 Nov, 1990. Fish meal applied: 28 Nov. K, Na, Mg and Si applied: 30 Nov. N applied: 10 Apr, 1991. Cut: 9 July, 6 Nov.



91/R/PG/5

1ST CUT (9/7/91) DRY MATTER TONNES/HECTARE

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

| LIME<br>MANURE | A    | B    | C    | D    | MEAN |
|----------------|------|------|------|------|------|
| N1             | 2.08 | 4.49 | 2.64 | 1.12 | 2.58 |
| O(D)           | 3.31 | 4.27 | 2.51 | 2.82 | 3.23 |
| O/PLOT3        | 3.48 | 3.78 | 2.53 | 2.74 | 3.13 |
| P              | 4.30 | 4.20 | 4.00 | 4.05 | 4.14 |
| N2P            | 4.65 | 4.09 | 7.37 | 4.00 | 5.03 |
| N1MN           | 6.01 | 6.07 |      |      | 6.04 |
| MN             | 5.56 | 5.40 | 4.93 | 5.09 | 5.25 |
| PNAMG          | 3.25 | 3.83 | 4.79 | 4.79 | 4.17 |
| MN(N2)         | 3.41 | 2.82 | 1.83 | 1.97 | 2.51 |
| N2MN           | 5.93 | 6.05 | 6.09 | 6.26 | 6.08 |
| N2PNAMG        | 4.42 | 4.37 | 4.58 | 3.56 | 4.23 |
| N3MN           | 6.54 | 6.85 | 5.69 | 6.84 | 6.48 |
| N3MNSI         | 6.80 | 6.35 | 6.28 | 6.43 | 6.47 |
| O/PLOT12       | 2.48 | 3.12 | 2.46 | 2.90 | 2.74 |
| D/F            | 5.60 | 5.58 | 5.59 | 4.96 | 5.43 |
| MN(N2*14)      | 4.37 | 4.70 | 3.61 | 4.40 | 4.27 |
| N2*MN          | 5.78 | 7.16 | 5.65 | 5.04 | 5.91 |
| MN(N2*15)      | 6.19 | 5.32 | 4.42 | 4.19 | 5.03 |
| N1*MN          | 5.99 | 5.26 | 4.82 | 4.70 | 5.19 |
| N1*            | 4.06 | 4.07 | 4.41 | 4.07 | 4.15 |
| N2KNAMG0       |      |      | 3.20 | 1.19 | 2.19 |
| N2KNAMG2       | 4.52 |      |      |      | 4.52 |
| N2KNAMG1       | 4.37 | 4.45 |      |      | 4.41 |
| D0             | 5.22 |      |      |      | 5.22 |
| D2             | 4.97 |      |      |      | 4.97 |
| D1             | 5.46 |      |      |      | 5.46 |
| D/N*PK0        | 5.40 |      |      |      | 5.40 |
| D/N*PK2        | 5.45 |      |      |      | 5.45 |
| D/N*PK1        | 5.40 |      |      |      | 5.40 |

1ST CUT MEAN DM% 25.5

91/R/PG/5

2ND CUT (6/11/91) DRY MATTER TONNES/HECTARE

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

| LIME<br>MANURE | A    | B    | C    | D    | MEAN |
|----------------|------|------|------|------|------|
| N1             | 2.15 | 2.41 | 1.26 | 0.65 | 1.62 |
| O(D)           | 1.82 | 2.18 | 1.37 | 1.77 | 1.78 |
| O/PLOT3        | 1.56 | 2.04 | 1.90 | 2.22 | 1.93 |
| P              | 1.81 | 1.99 | 2.30 | 2.31 | 2.10 |
| N2P            | 2.00 | 1.41 | 1.13 | 0.75 | 1.32 |
| N1MN           | 2.61 | 2.81 |      |      | 2.71 |
| MN             | 2.99 | 3.14 | 2.04 | 1.92 | 2.52 |
| PNAMG          | 1.53 | 1.81 | 2.35 | 2.25 | 1.99 |
| MN(N2)         | 1.53 | 1.11 | 0.57 | 0.82 | 1.01 |
| N2MN           | 2.00 | 2.25 | 0.77 | 0.80 | 1.46 |
| N2PNAMG        | 1.28 | 1.13 | 0.87 | 0.88 | 1.04 |
| N3MN           | 2.77 | 1.66 | 0.87 | 2.91 | 2.05 |
| N3MNSI         | 2.65 | 2.33 | 1.65 | 2.69 | 2.33 |
| O/PLOT12       | 0.92 | 1.39 | 1.26 | 1.60 | 1.29 |
| D/F            | 2.76 | 2.89 | 2.64 | 2.81 | 2.77 |
| MN(N2*14)      | 2.25 | 1.93 | 1.53 | 1.75 | 1.87 |
| N2*MN          | 2.44 | 2.40 | 2.21 | 1.96 | 2.25 |
| MN(N2*15)      | 2.51 | 2.54 | 2.65 | 2.13 | 2.46 |
| N1*MN          | 2.58 | 2.50 | 2.40 | 1.99 | 2.37 |
| N1*            | 2.37 | 2.33 | 2.32 | 2.12 | 2.29 |
| N2KNAMG0       |      |      | 1.58 | 0.43 | 1.00 |
| N2KNAMG2       | 2.69 |      |      |      | 2.69 |
| N2KNAMG1       | 3.18 | 2.57 |      |      | 2.87 |
| D0             | 3.34 |      |      |      | 3.34 |
| D2             | 3.34 |      |      |      | 3.34 |
| D1             | 3.04 |      |      |      | 3.04 |
| D/N*PK0        | 3.06 |      |      |      | 3.06 |
| D/N*PK2        | 2.83 |      |      |      | 2.83 |
| D/N*PK1        | 3.73 |      |      |      | 3.73 |

2ND CUT MEAN DM% 25.2

91/R/PG/5

**TOTAL OF 2 CUTS DRY MATTER TONNES/HECTARE**

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

| LIME<br>MANURE | A    | B    | C    | D    | MEAN |
|----------------|------|------|------|------|------|
| N1             | 4.24 | 6.90 | 3.90 | 1.76 | 4.20 |
| O(D)           | 5.13 | 6.45 | 3.88 | 4.59 | 5.01 |
| O/PLOT3        | 5.04 | 5.83 | 4.44 | 4.95 | 5.06 |
| P              | 6.11 | 6.19 | 6.30 | 6.36 | 6.24 |
| N2P            | 6.65 | 5.51 | 8.49 | 4.75 | 6.35 |
| N1MN           | 8.62 | 8.88 |      |      | 8.75 |
| MN             | 8.56 | 8.54 | 6.97 | 7.01 | 7.77 |
| PNAMG          | 4.78 | 5.64 | 7.14 | 7.05 | 6.15 |
| MN(N2)         | 4.94 | 3.93 | 2.40 | 2.79 | 3.52 |
| N2MN           | 7.93 | 8.30 | 6.86 | 7.06 | 7.54 |
| N2PNAMG        | 5.70 | 5.50 | 5.45 | 4.44 | 5.27 |
| N3MN           | 9.31 | 8.52 | 6.57 | 9.74 | 8.54 |
| N3MNSI         | 9.44 | 8.68 | 7.93 | 9.12 | 8.80 |
| O/PLOT12       | 3.39 | 4.51 | 3.72 | 4.50 | 4.03 |
| D/F            | 8.36 | 8.47 | 8.23 | 7.77 | 8.21 |
| MN(N2*14)      | 6.62 | 6.63 | 5.14 | 6.15 | 6.14 |
| N2*MN          | 8.22 | 9.56 | 7.86 | 7.00 | 8.16 |
| MN(N2*15)      | 8.70 | 7.86 | 7.07 | 6.32 | 7.49 |
| N1*MN          | 8.56 | 7.75 | 7.22 | 6.69 | 7.56 |
| N1*            | 6.43 | 6.40 | 6.73 | 6.19 | 6.44 |
| N2KNAMG0       |      |      | 4.78 | 1.62 | 3.20 |
| N2KNAMG2       | 7.21 |      |      |      | 7.21 |
| N2KNAMG1       | 7.55 | 7.02 |      |      | 7.28 |
| D0             | 8.56 |      |      |      | 8.56 |
| D2             | 8.31 |      |      |      | 8.31 |
| D1             | 8.50 |      |      |      | 8.50 |
| D/N*PK0        | 8.46 |      |      |      | 8.46 |
| D/N*PK2        | 8.28 |      |      |      | 8.28 |
| D/N*PK1        | 9.14 |      |      |      | 9.14 |

TOTAL OF 2 CUTS MEAN DM% 25.4

PLOT AREA HARVESTED 0.00002

91/R/BN/7

# **BARNFIELD**

**Object:** The experiment was designed to study the effects of organic and inorganic manures on continuous root crops. It was progressively modified to study effects on other crops.

Sections 1 and 2 the eighth year of grass/clover. The 17th year of grass on the rest of the experiment.

For previous years see 'Details' 1967 and 1973 and 74-90/R/BN/7.

**Plot dimensions:** 10.7 x 55.9.

**Treatments to grass:** All combinations of:-

Whole plots

## 1. **MANURE**                      Fertilizers and organic manures:

|      |             |
|------|-------------|
| D    | D           |
| DPK  | D P K       |
| PKMG | P K (Na) Mg |
| P    | P           |
| PK   | P K         |
| PMG  | P (Na) Mg   |
| 0    | 0           |

- P: 35 kg P as single superphosphate until 1987, triple superphosphate since and in 1974  
K: 225 kg K as sulphate of potash  
(Na): 90 kg Na as sodium chloride until 1973  
Mg: 90 kg Mg as kieserite every fourth year since 1974 (sulphate of magnesia until 1973)  
D: Farmyard manure at 35 tonnes (until 1975).

Quarter plots

## 2. **N PERCUT**                      Nitrogen fertilizer in 1991 (kg N per cut) as 'Nitram', cumulative to previous dressings, and residues of forms of N previously each supplying 96 kg N per annum:

|     |  |
|-----|--|
| 75  | 75, previously nitrate of soda, section 3                    |
| 100 | 100, previously sulphate of ammonia, section 4               |
| 125 | 125, previously sulphate of ammonia + castor meal, section 5 |
| 150 | 150, previously castor meal, section 6                       |

Castor meal last applied 1961, nitrate of soda and sulphate of ammonia until 1959.

Plus one plot **MANURE** KMG 100



91/R/BN/7

Treatments to grass/clover, sections 1 and 2 (not given nitrogen fertilizer):

**MANURE** Fertilizers and organic manures as for grass above, excluding KMG.

**NOTES:** (1) P, K and D treatments were applied to Sections 1 and 2 until 1980. None were applied subsequently until the resumption of P and K treatments, only, from 1985.  
(2) Yields were not taken from section 2.

**Cultivations, etc.:-**

All sections: P applied: 21 Nov, 1990. K applied: 28 Nov. Cut: 30 May, 1991 and 11 Nov.

Grass (Sections 3, 4, 5 and 6) only: N applied: 8 Mar, 1991 and 10 June.

**GRASS**

**1ST CUT (30/5/91) DRY MATTER TONNES/HECTARE**

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

| N PERCUT<br>MANURE | 75   | 100  | 125  | 150  | Mean |
|--------------------|------|------|------|------|------|
| D                  | 4.90 | 4.58 | 4.63 | 4.72 | 4.71 |
| DPK                | 4.63 | 4.65 | 5.07 | 4.98 | 4.83 |
| PKMG               | 4.47 | 4.64 | 4.50 | 4.72 | 4.58 |
| P                  | 2.25 | 1.81 | 1.65 | 1.69 | 1.85 |
| PK                 | 4.72 | 4.15 | 4.57 | 4.62 | 4.51 |
| PMG                | 2.50 | 1.96 | 1.75 | 1.80 | 2.00 |
| 0                  | 2.55 | 2.36 | 1.94 | 2.06 | 2.22 |
| Mean               | 3.72 | 3.45 | 3.45 | 3.51 | 3.53 |

**MANURE KMG 100** 3.73

Grand mean 3.54

1ST CUT MEAN DM% 21.6

91/R/BN/7

GRASS

2ND CUT (11/11/91) DRY MATTER TONNES/HECTARE

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

| N PERCUT<br>MANURE | 75   | 100  | 125  | 150  | Mean |
|--------------------|------|------|------|------|------|
| D                  | 5.15 | 5.88 | 4.78 | 5.60 | 5.35 |
| DPK                | 6.12 | 5.80 | 5.66 | 5.39 | 5.74 |
| PKMG               | 5.24 | 4.04 | 4.73 | 4.85 | 4.72 |
| P                  | 2.94 | 1.52 | 1.76 | 1.81 | 2.01 |
| PK                 | 4.91 | 5.12 | 5.03 | 5.07 | 5.03 |
| PMG                | 2.65 | 1.53 | 1.17 | 1.49 | 1.71 |
| 0                  | 2.56 | 2.51 | 2.41 | 2.48 | 2.49 |
| Mean               | 4.22 | 3.77 | 3.65 | 3.81 | 3.86 |

MANURE KMG 100 4.63

Grand mean 3.89

2ND CUT MEAN DM% 27.2

TOTAL OF 2 CUTS DRY MATTER TONNES/HECTARE

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

| N PERCUT<br>MANURE | 75    | 100   | 125   | 150   | Mean  |
|--------------------|-------|-------|-------|-------|-------|
| D                  | 10.05 | 10.46 | 9.42  | 10.33 | 10.06 |
| DPK                | 10.75 | 10.45 | 10.73 | 10.37 | 10.57 |
| PKMG               | 9.71  | 8.68  | 9.23  | 9.56  | 9.30  |
| P                  | 5.19  | 3.32  | 3.41  | 3.50  | 3.86  |
| PK                 | 9.63  | 9.28  | 9.60  | 9.68  | 9.55  |
| PMG                | 5.15  | 3.50  | 2.93  | 3.29  | 3.72  |
| 0                  | 5.11  | 4.86  | 4.34  | 4.53  | 4.71  |
| Mean               | 7.94  | 7.22  | 7.09  | 7.33  | 7.39  |

MANURE KMG 100 8.36

Grand mean 7.43

TOTAL OF 2 CUTS MEAN DM% 24.4

PLOT AREA HARVESTED 0.00568

91/R/BN/7

GRASS/CLOVER

1ST CUT (30/5/91) DRY MATTER TONNES/HECTARE

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

| MANURE | D    | DPK  | PKMG | P    | PK   | PMG  | 0    | Mean |
|--------|------|------|------|------|------|------|------|------|
|        | 1.18 | 1.21 | 0.57 | 0.25 | 0.34 | 0.28 | 0.29 | 0.59 |

1ST CUT MEAN DM% 30.3

2ND CUT (11/11/91) DRY MATTER TONNES/HECTARE

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

| MANURE | D    | DPK  | PKMG | P    | PK   | PMG  | 0    | Mean |
|--------|------|------|------|------|------|------|------|------|
|        | 1.59 | 1.62 | 1.91 | 1.03 | 2.21 | 1.70 | 1.47 | 1.65 |

2ND CUT MEAN DM% 22.7

TOTAL OF 2 CUTS DRY MATTER TONNES/HECTARE

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

| MANURE | D    | DPK  | PKMG | P    | PK   | PMG  | 0    | Mean |
|--------|------|------|------|------|------|------|------|------|
|        | 2.77 | 2.83 | 2.48 | 1.28 | 2.55 | 1.99 | 1.76 | 2.24 |

TOTAL OF 2 CUTS MEAN DM% 26.5

PLOT AREA HARVESTED 0.00568

91/R/GC/8

# GARDEN CLOVER

**Object:** To study yields and pathogens of red clover grown continuously - Manor Garden.

The 138th year, red clover.

For previous years see 'Details' 1967 and 1973, and 74-90/R/GC/8.

**Design:** 2 blocks of 2 plots.

**Whole plot dimensions:** 1.00 x 1.40.

## Treatments:

**FUNG RES**                      Residual effects of fungicide to control *Sclerotinia trifoliorum*:

NONE                              None

**BENOMYL**                      Benomyl sprays during previous winters, last applied November 1989.

**Basal applications:** Manures: Chalk at 1.25 t. (0:18:36) at 420 kg.  
Mg at 50 kg, as Epsom Salts.

**NOTE:** Additional K was applied to replace that removed by the crop in 1990. **FUNG RES** NONE required 157 and 129 kg K2O to the first and second blocks respectively, **FUNG RES BENOMYL** 136 and 124 kg K2O. This was applied as muriate of potash, one third in spring 1991 and one third after the first and second cuts.

**Seed:** Hungaropoly, sown at 30 kg in 1990.

**Cultivations, etc.:-** Chalk, P, K and Mg applied: 23 Oct, 1990. Hand weeded: 13 Mar, 1991. K applied: 11 Apr. Cut, weeded and K applied: 5 June, 25 July. Cut and weeded: 20 Sept.



91/R/GC/8

1ST CUT (5/6/91) DRY MATTER TONNES/HECTARE

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

| FUNG RES | NONE | BENOMYL | Mean |
|----------|------|---------|------|
|          | 8.31 | 7.86    | 8.09 |

1ST CUT MEAN DM% 14.5

2ND CUT (25/7/91) DRY MATTER TONNES/HECTARE

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

| FUNG RES | NONE | BENOMYL | Mean |
|----------|------|---------|------|
|          | 6.98 | 6.12    | 6.55 |

2ND CUT MEAN DM% 13.5

3RD CUT (20/9/91) DRY MATTER TONNES/HECTARE

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

| FUNG RES | NONE | BENOMYL | Mean |
|----------|------|---------|------|
|          | 5.06 | 4.11    | 4.58 |

3RD CUT MEAN DM% 18.7

TOTAL OF 3 CUTS DRY MATTER TONNES/HECTARE

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

| FUNG RES | NONE  | BENOMYL | Mean  |
|----------|-------|---------|-------|
|          | 20.35 | 18.09   | 19.22 |

TOTAL OF 3 CUTS MEAN DM% 15.6

PLOT AREA HARVESTED 0.00010