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# Yields of the Field Experiments 1982

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## 82/R/AG/6 Agdell - W. Beans, W. Wheat

### Rothamsted Research

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AGDELL

Object: To study, by crop yields and soil analyses, the residual values of phosphate and potash applied in the period 1848-1951 and further dressings since 1964.

The 13th year of revised scheme, w. beans, w. wheat.

For previous years see 'Details' 1967 and 1973, and 74-81/R/AG/6.

Treatments: All combinations of:-

Whole plots

1. OLDRESD Fertilizers and organic manures applied to roots every fourth year, in the period 1848-1948:

|          |               |
|----------|---------------|
| NONE     | None          |
| PKNAMG   | P K Na Mg     |
| NPKNAMGC | N P K Na Mg C |

N: 48 kg N as sulphate of ammonia  
P: 41 kg P as superphosphate  
K: 224 kg K as sulphate of potash  
Na: 16 kg Na as sulphate of soda  
Mg: 11 kg Mg as sulphate of magnesia  
C: Castor meal at 2240 kg supplying about 112 kg N

2. RN CROP Rotation 1848-1951 and crop in 1982:

|         |                                                                                                              |
|---------|--------------------------------------------------------------------------------------------------------------|
| F/WHEAT | With fallow: Roots (turnips or swedes), s. barley, fallow, w. wheat 1848-1951. W. wheat (after w.beans 1981) |
| L/BEANS | With legume: Roots, s. barley, legume (clover or beans), w. wheat 1848-1951. W. beans (after w. wheat 1981)  |

Half plots

3. 1964RESD Residues of 1964 treatments:

P  
K

Quarter plots

4. PREVCROP Previous cropping 1958-69 on P-test half plots, 1958-70 on K-test half plots:

|        |                  |
|--------|------------------|
| ARABLE | Arable or fallow |
| GRASS  | Grass            |

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# Sixteenth plots

|                                     |                     |                                                                                                                                 |
|-------------------------------------|---------------------|---------------------------------------------------------------------------------------------------------------------------------|
| 5. P <sub>2</sub> O <sub>5</sub> 64 | K <sub>2</sub> O 64 | Rates of 1964 treatments (kg):<br>P <sub>2</sub> O <sub>5</sub> to P-test half plots      K <sub>2</sub> O to K-test half plots |
| 0                                   | 0                   |                                                                                                                                 |
| 500                                 | 315                 |                                                                                                                                 |
| 1000                                | 630                 |                                                                                                                                 |
| 2000                                | 1260                |                                                                                                                                 |

## Thirty second plots

|                                   |                                                                                                                                        |
|-----------------------------------|----------------------------------------------------------------------------------------------------------------------------------------|
| 6.                                | On P-test half plots:<br>To RN CROP F/WHEAT. Residues of P <sub>2</sub> O <sub>5</sub> applied 1970-72 (kg) and in 1979 and 1981 (kg): |
| P <sub>2</sub> O <sub>5</sub> 721 |                                                                                                                                        |
| (0)0                              | None                                                                                                                                   |
| (375)300                          | 375 total in 1970-72, 150 in 1979, 150 in 1981                                                                                         |
|                                   | To RN CROP L/BEANS. Residues of P <sub>2</sub> O <sub>5</sub> applied 1970-72 (kg) and fresh dressings in 1980 and 1982 (kg):          |
| P <sub>2</sub> O <sub>5</sub> 722 |                                                                                                                                        |
| (0)0                              | None                                                                                                                                   |
| (375)300                          | 375 total in 1970-72, 150 in 1980, 150 in 1982                                                                                         |
|                                   | On K-test half plots:<br>To RN CROP F/WHEAT. Residues of K <sub>2</sub> O applied 1973-76 (kg) and in 1979 and 1981 (kg):              |
| K <sub>2</sub> O 761              |                                                                                                                                        |
| (0)0                              | None                                                                                                                                   |
| (870)600                          | 870 total in 1973-76, 300 in 1979, 300 in 1981                                                                                         |
|                                   | To RN CROP L/BEANS. Residues of K <sub>2</sub> O applied 1973-76 (kg) and fresh dressings in 1980 and 1982 (kg):                       |
| K <sub>2</sub> O 762              |                                                                                                                                        |
| (0)0                              | None                                                                                                                                   |
| (870)600                          | 870 total in 1973-76, 300 in 1980, 300 in 1982                                                                                         |

## Standard applications:

Both crops: Weedkillers: Glyphosate at 1.4 kg in 250 l. Paraquat at 0.3 kg ion and diquat at 0.3 kg ion in 250 l.  
W. beans: Weedkillers: Propyzamide at 0.85 kg in 250 l. Diquat at 0.42 kg ion (applied with 'Agral', a wetting agent) in 250 l.  
Nematicide: Aldicarb at 10 kg.

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W. wheat: Manures: 'Nitro-Chalk' at 130 kg and 770 kg. Weedkillers: Chlortoluron at 5.6 l in 250 l. Mecoprop, bromoxynil and ioxynil (as 'Brittox' at 3.5 l) in 250 l. Glyphosate at 1.4 kg in 250 l. Fungicide: Propiconazole at 0.12 kg in 250 l and on a second occasion at 0.25 kg in 250 l with the insecticide. Insecticide: Pirimicarb at 0.14 kg.

Seed: W. beans: Throws MS, sown at 300 kg.  
W. wheat: Avalon, sown at 200 kg.

Cultivations, etc.:-

Both crops: Glyphosate applied: 16 Sept, 1981. Paraquat and diquat applied: 7 Oct.

W. beans: Aldicarb applied, seed direct drilled: 29 Oct, 1981. Propyzamide applied: 30 Oct. Diquat applied: 25 Aug, 1982. Combine harvested: 2 Sept.

W. wheat: Seed direct drilled: 13 Oct, 1981. Chlortoluron applied: 16 Oct. N applied: 25 Feb, 1982 and 23 Apr. Mecoprop, bromoxynil and ioxynil applied: 19 Apr. Propiconazole applied: 26 May. Propiconazole with insecticide applied: 15 June. Glyphosate applied: 4 Aug. Combine harvested: 21 Aug.

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WHEAT P PLOTS

GRAIN TONNES/HECTARE

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

|          | OLDRESO  | NONE |          | PKNAMG |          | NPKNAMGC |          |
|----------|----------|------|----------|--------|----------|----------|----------|
|          | P205 722 | (0)0 | (375)300 | (0)0   | (375)300 | (0)0     | (375)300 |
| PREVCROP | P205 64  |      |          |        |          |          |          |
| ARABLE   | 0        | 6.51 | 7.73     | 7.06   | 6.26     | 3.88     | 3.80     |
|          | 500      | 7.57 | 8.16     | 7.98   | 8.57     | 5.58     | 5.48     |
|          | 1000     | 7.97 | 7.79     | 6.04   | 7.07     | 5.97     | 4.31     |
|          | 2000     | 7.73 | 8.22     | 8.26   | 8.66     | 6.43     | 7.68     |
| GRASS    | 0        | 5.27 | 7.44     | 4.65   | 7.37     | 7.06     | 7.73     |
|          | 500      | 6.78 | 6.03     | 7.22   | 8.06     | 6.52     | 7.16     |
|          | 1000     | 6.93 | 8.32     | 7.66   | 7.37     | 5.37     | 6.90     |
|          | 2000     | 6.90 | 7.44     | 8.42   | 8.76     | 5.13     | 5.92     |

GRAIN MEAN DM% 83.6

WHEAT K PLOTS

GRAIN TONNES/HECTARE

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

|          | OLDRESO | NONE |          | PKNAMG |          | NPKNAMGC |          |
|----------|---------|------|----------|--------|----------|----------|----------|
|          | K20 762 | (0)0 | (870)600 | (0)0   | (870)600 | (0)0     | (870)600 |
| PREVCROP | K20 64  |      |          |        |          |          |          |
| ARABLE   | 0       | 7.35 | 8.36     | 8.41   | 8.08     | 7.55     | 7.89     |
|          | 315     | 7.28 | 7.95     | 8.68   | 8.75     | 8.16     | 8.20     |
|          | 630     | 7.99 | 8.56     | 6.40   | 7.16     | 7.87     | 7.68     |
|          | 1260    | 7.85 | 8.14     | 7.15   | 6.87     | 7.75     | 7.37     |
| GRASS    | 0       | 4.73 | 6.81     | 7.73   | 8.43     | 6.97     | 7.98     |
|          | 315     | 6.78 | 7.74     | 8.09   | 8.11     | 7.48     | 8.62     |
|          | 630     | 7.70 | 8.23     | 7.98   | 8.34     | 6.84     | 7.77     |
|          | 1260    | 7.50 | 8.34     | 8.24   | 8.54     | 6.68     | 7.33     |

GRAIN MEAN DM% 83.7

PLOT AREA HARVESTED (OLDRESO NONE) 0.00121

PLOT AREA HARVESTED (REMAINDER) 0.00136

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BEANS P PLOTS

GRAIN TONNES/HECTARE

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

|          | OLDRES   | NONE |          | PKNAMG |          | NPKNAMGC |          |
|----------|----------|------|----------|--------|----------|----------|----------|
|          | P205 721 | (0)0 | (375)300 | (0)0   | (375)300 | (0)0     | (375)300 |
| PREVCROP | P205 64  |      |          |        |          |          |          |
| ARABLE   | 0        | 0.92 | 2.73     | 1.78   | 0.76     | 1.53     | 1.83     |
|          | 500      | 1.98 | 2.93     | 2.37   | 1.95     | 0.47     | 0.54     |
|          | 1000     | 2.48 | 2.99     | 0.45   | 0.99     | 1.61     | 1.53     |
|          | 2000     | 1.40 | 3.57     | 1.60   | 2.57     | 0.85     | 1.00     |
| GRASS    | 0        | 2.36 | 1.36     | 0.69   | 0.61     | 1.89     | 2.63     |
|          | 500      | 1.87 | 0.85     | 0.11   | 0.53     | 1.88     | 1.29     |
|          | 1000     | 1.61 | 0.85     | 0.46   | 0.61     | 2.10     | 1.29     |
|          | 2000     | 2.62 | 1.11     | 0.76   | 0.39     | 2.82     | 2.94     |

GRAIN MEAN DM% 80.9

BEANS K PLOTS

GRAIN TONNES/HECTARE

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

|          | OLDRES  | NONE |          | PKNAMG |          | NPKNAMGC |          |
|----------|---------|------|----------|--------|----------|----------|----------|
|          | K20 761 | (0)0 | (870)600 | (0)0   | (870)600 | (0)0     | (870)600 |
| PREVCROP | K20 64  |      |          |        |          |          |          |
| ARABLE   | 0       | 2.01 | 3.07     | 2.50   | 2.52     | 1.22     | 1.37     |
|          | 315     | 3.36 | 3.69     | 2.56   | 3.11     | 0.70     | 0.46     |
|          | 630     | 2.76 | 2.90     | 2.29   | 2.17     | 1.91     | 1.59     |
|          | 1260    | 3.32 | 2.82     | 2.67   | 3.34     | 1.08     | 0.77     |
| GRASS    | 0       | 2.61 | 2.11     | 1.15   | 1.22     | 1.04     | 2.44     |
|          | 315     | 2.84 | 2.36     | 1.12   | 2.22     | 1.05     | 1.86     |
|          | 630     | 2.87 | 1.61     | 2.06   | 0.76     | 0.38     | 0.76     |
|          | 1260    | 2.60 | 1.18     | 2.41   | 2.57     | 0.38     | 1.13     |

GRAIN MEAN DM% 81.4

PLOT AREA HARVESTED (OLDRES NONE) 0.00144

PLOT AREA HARVESTED (REMAINDER) 0.00127