

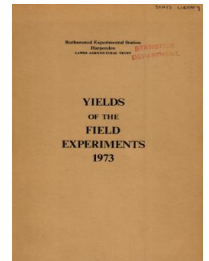
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## Yields of the Field Experiments 1973

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### 73/W/RN/6 - Arable Reference Plots - Oats, Sugar Beet, Barley, Ley, Potatoes, Old Grass

#### Rothamsted Research

Rothamsted Research (1974) 73/W/RN/6 - *Arable Reference Plots - Oats, Sugar Beet, Barley, Ley, Potatoes, Old Grass* ; Yields Of The Field Experiments 1973, pp 101 - 104 - DOI:  
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# ARABLE REFERENCE PLOTS

Object: To study the long term effects of FYM and N, P and K fertilisers on the yield and mineral content of crops - Woburn Stackyard C.

Sponsor: F.V. Widdowson.

The fourteenth year, oats, sugar beet, barley, ley, potatoes and old grass.

For previous years see 60/B/3(t), 61-65/B/2, 66/B/2(t), 67/B/2(t), 68/B/3(t), 69/W/RN/6, 70/W/RN/6(t) and 71-72/W/RN/6.

Design: 1 block of 12 plots for each crop.

Whole plot dimensions: 2.74 x 2.13.

Treatments: Fertilisers and farmyard manure:-

## MANURE

|         |       |
|---------|-------|
| None    | O     |
| N1      | N1    |
| P       | P     |
| N1 P    | N1P   |
| K       | K     |
| N1 K    | N1K   |
| PK      | PK    |
| N1 PK   | N1PK  |
| N2 PK   | N2PK  |
| D       | D     |
| N1 PK D | N1PKD |
| N2 PK D | N2PKD |

N1,2 (kg N): 31.5, 63 (ley): 63, 126 (barley and oats): 126, 252 (sugar beet and potatoes): 188, 376 (permanent grass) as ammonium nitrate.

P: P205 at 63 kg as triple superphosphate.

K: K2O at 252 kg as potassium bicarbonate.

D: Farmyard manure at 25 tonnes (permanent grass): 50 tonnes (sugar beet and potatoes): none to other crops.

## Standard applications:

Winter oats: First weedkiller: Dichlorprop and MCPA ('Mephetol Plus' at 5.6 l in 450 l). Second weedkiller: Ioxynil at 0.42 kg with mecoprop at 1.3 kg in 450 l.

Sugar beet: Manures: Boron at 7.3 kg B2O3 as 0.8% solution of borax.

Insecticide: Menazon at 0.28 kg in 340 l on three occasions.

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Barley: Weedkiller: Ioxynil at 0.42 kg with mecoprop at 1.3 kg in 340 l.  
Potatoes: Insecticide: Menazon at 0.28 kg in 340 l. Insecticide with fungicide: Menazon at 0.28 kg with mancozeb at 1.3 kg in 340 l on two occasions.

Old grass: Manures: Epsom salts at 500 kg.

Seed: Winter oats: Peniarth sown at 260 kg.

Sugar beet: Klein E sown at 5.6 kg.

Barley: Julia, dressed with ethirimol, sown at 180 kg.

Grass-clover ley: R.V.P Italian Ryegrass and Hungaropoly red clover.

Potatoes: Desiree.

Cultivations, etc.:-

Winter oats: Balancing Mg applied, plots dug by hand: 4 Sept, 1972. P and K applied, seed drilled: 17 Oct. First N applied: 6 Mar, 1973. First weedkiller applied: 6 Apr. Second N applied: 26 Apr.

Second weedkiller applied: 9 May. Harvested: 31 July.

Sugar beet: FYM applied, plots dug by hand: 23 Nov, 1972. P and K applied: 23 Feb, 1973. First N applied, rotary cultivated, Mg applied to half plots, seed drilled: 22 Mar. Boron applied: 26 Mar. Second N applied, singled: 17 May. Insecticide applied: 15 June, 4 July, 18 July. Lifted: 11 Oct.

Barley: Balancing Mg applied: 17 Oct, 1972. Plots dug by hand: 23 Nov. P and K applied, seed drilled: 23 Feb, 1973. Seed redrilled because of damage by mice and birds, first N applied: 16 Mar. Second N applied: 26 Apr. Weedkiller applied: 9 May. Harvested: 31 July.

Grass-clover ley: Seeds drilled in barley stubble: 16 Aug, 1972. P and K applied: 11 Dec. N applied: 6 Mar, 1973. Cut three times: 21 May, 20 July, 24 Sept.

Potatoes: FYM applied, plots dug by hand: 23 Nov, 1972. P and K applied: 23 Feb, 1973. First N applied, Mg applied to half plots, rotary cultivated, potatoes planted, earthed up: 6 Apr. Second N applied: 31 May. Insecticide applied: 15 June. Insecticide with fungicide applied: 4 July, 18 July. Lifted plots without K: 1 Aug. Remaining plots lifted: 5 Sept.

Old grass: P, K and Epsom salts applied: 11 Dec, 1972. FYM applied: 23 Feb, 1973. N applied: 6 Mar, 31 May, 20 July. Cut three times: 31 May, 20 July, 24 Sept.

- NOTES: (1) Samples were taken for determination of dry matter for each crop, and the percentage of N, P and K.  
(2) The percentage of Mg in sugar beet tops, potato tubers and leaves was determined.  
(3) The percentage of K in potato leaves was determined.

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TABLES OF MEANS

TONNES/HECTARE

|             | OATS  |       | SUGAR BEET |      | BARLEY |       |
|-------------|-------|-------|------------|------|--------|-------|
|             | GRAIN | STRAW | ROOTS      | TOPS | GRAIN  | STRAW |
| MANURE      |       |       |            |      |        |       |
| O           | 3.41  | 3.20  | 19.3       | 10.6 | 2.07   | 1.62  |
| N1          | 4.95  | 4.75  | 27.0       | 16.7 | 3.18   | 3.76  |
| P           | 2.45  | 2.49  | 17.4       | 10.8 | 2.00   | 1.81  |
| N1P         | 4.71  | 4.35  | 25.8       | 21.9 | 2.31   | 3.15  |
| K           | 2.20  | 2.42  | 23.6       | 10.8 | 2.21   | 1.86  |
| N1K         | 4.44  | 5.68  | 43.4       | 21.4 | 4.59   | 3.94  |
| PK          | 3.80  | 3.93  | 19.1       | 10.6 | 2.48   | 2.08  |
| N1PK        | 5.40  | 7.88  | 42.5       | 17.8 | 5.42   | 5.18  |
| N2PK        | 4.87  | 8.27  | 47.8       | 34.9 | 5.54   | 6.75  |
| D           | 3.78  | 3.86  | 40.5       | 25.3 | 3.78   | 3.12  |
| N1PKD       | 5.88  | 7.67  | 48.7       | 31.6 | 5.34   | 6.34  |
| N2PKD       | 4.28  | 9.79  | 57.8       | 43.6 | 4.28   | 7.94  |
| Mean D.M. % | 84.6  | 62.1  |            |      | 85.4   | 70.4  |

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TONNES/HECTARE

| MANURE      | LEY: DRY MATTER |            |            |                       | POTATOES<br>TOTAL<br>TUBERS | OLD GRASS:<br>DRY MATTER |            |            |                       |
|-------------|-----------------|------------|------------|-----------------------|-----------------------------|--------------------------|------------|------------|-----------------------|
|             | 1st<br>cut      | 2nd<br>cut | 3rd<br>cut | Total<br>of<br>3 cuts |                             | 1st<br>cut               | 2nd<br>cut | 3rd<br>cut | Total<br>of<br>3 cuts |
| O           | 1.15            | 1.38       | 1.11       | 3.64                  | 11.3                        | 1.62                     | 0.57       | 0.36       | 2.55                  |
| N1          | 2.99            | 0.82       | 0.60       | 4.41                  | 13.7                        | 3.60                     | 1.41       | 1.35       | 6.36                  |
| P           | 1.35            | 1.05       | 0.90       | 3.30                  | 12.8                        | 1.48                     | 0.48       | 0.27       | 2.23                  |
| N1P         | 3.73            | 0.84       | 0.43       | 5.00                  | 14.2                        | 3.50                     | 1.50       | 1.38       | 6.38                  |
| K           | 3.14            | 4.15       | 2.86       | 10.15                 | 12.6                        | 2.39                     | 1.03       | 0.64       | 4.06                  |
| N1K         | 4.72            | 3.03       | 2.60       | 10.35                 | 22.4                        | 4.97                     | 1.92       | 1.61       | 8.50                  |
| PK          | 3.93            | 4.71       | 2.47       | 11.11                 | 17.1                        | 2.89                     | 1.27       | 0.51       | 4.67                  |
| N1PK        | 5.73            | 4.20       | 2.85       | 12.78                 | 23.6                        | 5.11                     | 2.07       | 1.35       | 8.53                  |
| N2PK        | 6.77            | 2.88       | 2.26       | 11.91                 | 40.2                        | 6.11                     | 2.24       | 1.28       | 9.63                  |
| D           | 3.77            | 3.82       | 2.74       | 10.33                 | 27.5                        | 3.09                     | 0.91       | 0.50       | 4.50                  |
| N1PKD       | 6.08            | 4.42       | 3.16       | 13.66                 | 44.2                        | 5.61                     | 1.94       | 1.55       | 9.10                  |
| N2PKD       | 7.08            | 3.41       | 2.60       | 13.09                 | 55.2                        | 6.59                     | 2.63       | 1.30       | 10.52                 |
| Mean D.M. % | 21.4            | 17.8       | 21.6       | 20.3                  |                             | 22.8                     | 24.6       | 29.7       | 25.7                  |