

Thank you for using eradoc, a platform to publish electronic copies of the Rothamsted Documents. Your requested document has been scanned from original documents. If you find this document is not readable, or you suspect there are some problems, please let us know and we will correct that.



ROTHAMSTED  
RESEARCH

## Yields of the Field Experiments 1972

[Full Table of Content](#)



### 72/W/RN/3 Ley/ARABLE - Leys, Potatoes, Barley, Wheat

#### Rothamsted Research

Rothamsted Research (1973) 72/W/RN/3 Ley/ARABLE - Leys, Potatoes, Barley, Wheat ; Yields Of The Field Experiments 1972, pp 66 - 73 - DOI: <https://doi.org/10.23637/ERADOC-1-62>

72/W/RN/3

LEY/ARABLE

Object: To compare the effects on soil fertility of rotations with or without three-year leys. The effects of the cropping system on soil-borne pathogens are also studied - Woburn Stackyard D.

Sponsors: D.A. Boyd, J.M. Hirst, A.E. Johnston, F.G.W. Jones.

The 35th year, leys, potatoes, barley, wheat.

For previous years see 'Details' 1967, 68/B/2(t), 69/W/RN/3(t), 70/W/RN/3(t) and 71/W/RN/3(t).

Corrective K dressings (in kg K<sub>2</sub>O) as muriate of potash applied to first test crop, potatoes.

|                                                     | No FYM<br>half plots | FYM<br>half plots |
|-----------------------------------------------------|----------------------|-------------------|
| Continuous rotations                                |                      |                   |
| Ley                                                 | 251                  | 251               |
| Clover                                              | 0                    | 0                 |
| Arable with hay                                     | 314                  | 251               |
| Arable                                              | 314                  | 314               |
| Alternating rotations (last two rotations in order) |                      |                   |
| Arable/ley                                          | 439                  | 376               |
| Arable with hay/clover                              | 126                  | 126               |
| Ley/arable with hay                                 | 251                  | 251               |
| Clover/arable                                       | 376                  | 376               |

Treatments to first test crop, potatoes:-

1. Residues of fumigant applied to potatoes 1969 (Arable and Arable with hay only) on quarter plots: None (O), 448 kg chloropicrin (C).
2. Fresh fumigant (Arable and Arable with hay) on eighth plots, and (Ley and Sainfoin) on quarter plots: None (O), 448 kg chloropicrin plus 5.6 kg aldicarb (F).

Treatments to second test crop, winter wheat:-

1. Residues of fumigant applied to potatoes 1971 on eighth plots: None (O), 448 kg chloropicrin plus 11.2 kg aldicarb (F).
2. Nitrogen on eighth plots: 0, 63, 126, 189 kg N as 'Nitro-Chalk'.

Treatments to first treatment crop, potatoes:-

1. Fresh fumigant (Arable and Arable with hay only) on quarter plots: None (O), 448 kg chloropicrin plus 5.6 kg aldicarb (F).

72/W/RN/3

NOTE: Winter wheat replaced barley as second test crop. Barley replaced rye as second treatment crop (Arable and Arable with hay) and also carrots as third treatment crop (Arable).

Basal manuring: Winter wheat: 290 kg (0:20:20), barley 415 kg (15:15:15), first year clover: 63 kg N as 'Nitro-Chalk', 189 kg P<sub>2</sub>O<sub>5</sub> as superphosphate, 126 kg K<sub>2</sub>O as muriate of potash. Second and third year clover: 63 kg N as 'Nitro-Chalk', 189 kg K<sub>2</sub>O as muriate of potash.

Varieties: Potatoes, first test crop and first treatment crop: Maris Piper.  
Winter wheat: Cappelle sown at 180 kg.  
Barley: Julia (dressed with ethirimol), sown at 150 kg.  
Red Clover: SL23 sown at 45 kg.  
Ley: Perennial ryegrass S23, Cocksfoot SL43, Late flowering red clover, White clover SL00: sown at 50 kg.  
Hay: Perennial ryegrass S24, Late flowering red clover, Alsike clover: sown at 30 kg.

Cultivations, etc.:-

Treatment crops.

Ley 1st year: Paraquat applied at 0.56 kg ion in 280 l:  
9 Sept, 1971. Ploughed: 14 Oct. Deep-tine cultivated:  
4 Nov. Ploughed: 29 Feb, 1972. N, P and K applied:  
19 Apr. Rotary cultivated: 21 Apr. Rolled, seeds sown: 26 Apr.  
NK applied: 3 July. Cut once: 16 Aug. NK applied: 18 Aug.

Ley 2nd and 3rd years: NK applied: 9 Mar, 1972, 16 June, 18 Aug.  
Cut twice: 7 June, 16 Aug.

Clover 1st year: Paraquat applied at 0.56 kg ion in 280 l:  
9 Sept, 1971. Ploughed: 14 Oct. Deep-tine cultivated:  
4 Nov. Ploughed: 29 Feb, 1972. N, P and K applied: 19 Apr.  
Rotary cultivated: 21 Apr. Rolled, seed sown: 26 Apr. Cut  
once: 16 Aug.

Clover 2nd and 3rd years: N and K applied: 9 Mar, 1972. Cut  
twice: 7 June, 16 Aug.

Potatoes: Paraquat applied at 0.56 kg ion in 280 l: 9 Sept, 1971.  
Ploughed: 14 Oct. Deep-tine cultivated: 4 Nov. Chloropicrin  
applied: 15 Dec. Ploughed: 29 Feb, 1972. NPK applied: 24 Mar.  
Aldicarb applied, all plots rotary cultivated twice, potatoes  
planted: 29 Mar. Sprayed with linuron at 1.1 kg plus paraquat  
at 0.42 kg ion in 370 l: 6 May. Sprayed with mancozeb at 1.3 kg

72/W/RN/3

in 430 1: 5 July. Sprayed with mancozeb at 1.3 kg plus demeton-s-methyl at 0.25 kg in 430 1: 27 July. Haulm mechanically destroyed: 14 Sept. Lifted: 20 Sept.

Barley 2nd treatment crop: Deep-tine cultivated twice: 15 Sept, 1971, 3 Nov. Seed combine drilled: 15 Mar, 1972. Seeds hay undersown (AH plots): 26 Apr. Sprayed with bromoxynil, ioxynil, dichlorprop and MCPA ('Tetroxone' at 5.6 l in 280 l): 8 May. Combine harvested: 18 Aug.

Barley 3rd treatment crop: Ploughed: 30 Sept, 1971. Seed combine drilled: 15 Mar, 1972. Sprayed with ioxynil at 0.52 kg plus mecoprop at 1.6 kg in 280 l: 1 June. Combine harvested: 18 Aug. Seeds hay: Seeds undersown in rye: 22 Apr, 1971. N, P and K applied: 9 Mar, 1972. Cut twice: 7 June, 16 Aug. NK applied: 19 June.

#### Test crops.

Potatoes 1st test crop: First half corrective K applied: 3 Nov, 1971. Ploughed: 4 Nov. Second half corrective K applied: 29 Nov. Chloropicrin applied: 15 Dec. Ploughed: 29 Feb, 1972. NPK applied: 24 Mar. Aldicarb applied, all plots rotary cultivated, potatoes planted: 29 Mar. Sprayed with linuron at 1.1 kg plus paraquat at 0.42 kg ion in 370 l: 6 May. Sprayed with mancozeb at 1.3 kg in 430 1: 5 July. Sprayed with mancozeb at 1.3 kg plus demeton-s-methyl at 0.25 kg in 430 1: 27 July. Haulm mechanically destroyed: 14 - 16 Sept. Lifted: 20 Sept.

Wheat 2nd test crop: Magnesian limestone applied at 5 tonnes, deep-tine cultivated: 6 Oct, 1971. Deep-tine cultivated: 11 Oct. Seed combine drilled: 22 Oct. N applied: 18 Apr, 1972. Sprayed with 2,4-D at 0.7 kg plus dichlorprop at 2.8 kg in 280 l: 27 Apr. Combine harvested: 30 Aug.

NOTE: Soil samples were taken from the potato plots monthly throughout the growing season for counts of nematodes.

72/W/RN/3

TABLES OF MEANS

POTATOES: 1ST TREATMENT CROP

ROTATION

|                                            | LE   | SA   | AH   | AR   | Mean |
|--------------------------------------------|------|------|------|------|------|
| TOTAL TUBERS: TONNES/HECTARE               |      |      |      |      |      |
| DUNG*                                      |      |      |      |      |      |
| O                                          | 41.7 | 45.3 | 43.4 | 36.2 | 41.6 |
| D                                          | 46.4 | 43.6 | 38.0 | 34.1 | 40.5 |
| FUMIGANTS 1972                             |      |      |      |      |      |
| O                                          | 39.5 | 38.8 | 34.9 | 27.0 | 35.1 |
| F                                          | 48.5 | 50.2 | 46.5 | 43.3 | 47.1 |
| Mean                                       | 44.0 | 44.5 | 40.7 | 35.2 | 41.1 |
| PERCENTAGE WARE: 3.81 CM (1.5 INCH) RIDDLE |      |      |      |      |      |
| DUNG*                                      |      |      |      |      |      |
| O                                          | 83.6 | 90.1 | 89.3 | 83.3 | 86.6 |
| D                                          | 93.2 | 92.0 | 88.6 | 76.6 | 87.6 |
| FUMIGANTS 1972                             |      |      |      |      |      |
| O                                          | 87.1 | 89.3 | 86.9 | 76.8 | 85.0 |
| F                                          | 89.6 | 92.7 | 91.0 | 83.2 | 89.1 |
| Mean                                       | 88.4 | 91.0 | 89.0 | 80.0 | 87.1 |

\* Last applied to test crop sugar beet 1965

72/W/RN/3

POTATOES 1ST TEST CROP

TOTAL TUBERS: TONNES/HECTARE

|               | ROTATION |      |      | ROTATION |      |      |
|---------------|----------|------|------|----------|------|------|
|               | LE       | SA   | Mean | AH       | AR   | Mean |
| DUNG*         |          |      |      |          |      |      |
| O             | 51.3     | 52.3 | 51.8 | 51.8     | 45.9 | 48.8 |
| D             | 54.4     | 52.6 | 53.5 | 49.3     | 47.8 | 48.5 |
| FUMIGANT 1972 |          |      |      |          |      |      |
| O             | 50.1     | 50.3 | 50.2 | 47.2     | 43.7 | 45.4 |
| F             | 55.6     | 54.7 | 55.1 | 53.9     | 50.0 | 52.0 |
| FUMIGANT 1969 |          |      |      |          |      |      |
| O             |          |      |      | 50.1     | 47.0 | 48.5 |
| C             |          |      |      | 51.0     | 46.7 | 48.9 |
| Mean          | 52.8     | 52.5 | 52.7 | 50.5     | 46.8 | 48.7 |

\* Last applied to test crop sugar beet 1967

72/W/RN/3

POTATOES 1ST TEST CROP

PERCENTAGE WARE: 3.81 CM (1.5 INCH) RIDDLE

|               | ROTATION |      |      | ROTATION |      |      |
|---------------|----------|------|------|----------|------|------|
|               | LE       | SA   | Mean | AH       | AR   | Mean |
| DUNG*         |          |      |      |          |      |      |
| O             | 96.3     | 95.7 | 96.0 | 95.5     | 95.2 | 95.3 |
| D             | 95.8     | 95.6 | 95.7 | 95.3     | 95.0 | 95.2 |
| FUMIGANT 1972 |          |      |      |          |      |      |
| O             | 95.7     | 95.7 | 95.7 | 95.3     | 94.8 | 95.1 |
| F             | 96.4     | 95.6 | 96.0 | 95.5     | 95.3 | 95.4 |
| FUMIGANT 1969 |          |      |      |          |      |      |
| O             |          |      |      | 95.6     | 95.1 | 95.3 |
| C             |          |      |      | 95.2     | 95.1 | 95.2 |
| Mean          | 96.1     | 95.6 | 95.8 | 95.4     | 95.1 | 95.2 |

\* Last applied to test crop sugar beet 1967

72/W/RN/3

WHEAT 2ND TEST CROP

GRAIN: TONNES/HECTARE

|               | ROTATION |      |      | ROTATION |      |      |
|---------------|----------|------|------|----------|------|------|
|               | LE       | SA   | Mean | AH       | AR   | Mean |
| N: KG/HA 1972 |          |      |      |          |      |      |
| 0             | 3.29     | 3.24 | 3.26 | 2.21     | 2.59 | 2.40 |
| 63            | 5.16     | 5.12 | 5.14 | 4.72     | 5.07 | 4.89 |
| 126           | 4.91     | 5.10 | 5.00 | 4.86     | 4.90 | 4.88 |
| 183           | 3.87     | 4.07 | 3.97 | 4.49     | 4.56 | 4.53 |
| DUNG*         |          |      |      |          |      |      |
| 0             | 4.19     | 4.22 | 4.21 | 4.09     | 3.92 | 4.01 |
| D             | 4.43     | 4.54 | 4.48 | 4.04     | 4.64 | 4.34 |
| FUMIGANT 1971 |          |      |      |          |      |      |
| 0             | 4.05     | 4.06 | 4.05 | 4.00     | 3.98 | 3.99 |
| F             | 4.57     | 4.71 | 4.64 | 4.13     | 4.58 | 4.36 |
| FUMIGANT 1968 |          |      |      |          |      |      |
| 0             |          |      |      | 4.04     | 4.34 | 4.19 |
| C             |          |      |      | 4.10     | 4.22 | 4.16 |
| Mean          | 4.31     | 4.38 | 4.34 | 4.07     | 4.28 | 4.17 |

\* Last applied to test crop sugar beet 1966

Mean D.M. %: 83.0

72/W/RN/3

WHEAT 2ND TEST CROP

STRAW: TONNES/HECTARE

|               | ROTATION |      |      | ROTATION |      |      |
|---------------|----------|------|------|----------|------|------|
|               | LE       | SA   | Mean | AH       | AR   | Mean |
| N: KG/HA 1972 |          |      |      |          |      |      |
| 0             | 2.67     | 3.04 | 2.85 | 1.90     | 2.12 | 2.01 |
| 63            | 5.13     | 5.30 | 5.21 | 4.51     | 4.73 | 4.62 |
| 126           | 6.21     | 6.21 | 6.21 | 5.53     | 5.40 | 5.46 |
| 183           | 6.18     | 5.98 | 6.08 | 6.02     | 5.88 | 5.95 |
| DUNG*         |          |      |      |          |      |      |
| 0             | 4.96     | 4.92 | 4.94 | 4.64     | 4.28 | 4.46 |
| D             | 5.13     | 5.35 | 5.24 | 4.34     | 4.79 | 4.56 |
| FUMIGANT 1971 |          |      |      |          |      |      |
| 0             | 4.58     | 4.86 | 4.72 | 4.26     | 4.29 | 4.27 |
| F             | 5.51     | 5.41 | 5.46 | 4.72     | 4.77 | 4.75 |
| FUMIGANT 1968 |          |      |      |          |      |      |
| 0             |          |      |      | 4.40     | 4.52 | 4.46 |
| C             |          |      |      | 4.58     | 4.55 | 4.56 |
| Mean          | 5.05     | 5.13 | 5.09 | 4.49     | 4.53 | 4.51 |

\* Last applied to test crop sugar beet 1966

Mean D.M. %: 84.7