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# Yields of the Field Experiments 1976

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## 76/W/CS/35 Nematicide Dosage - Potatoes, Barley

### Rothamsted Research

Rothamsted Research (1977) *76/W/CS/35 Nematicide Dosage - Potatoes, Barley* ; Yields Of The Field Experiments 1976, pp 160 - 164 - DOI: <https://doi.org/10.23637/ERADOC-1-15>

76/W/CS/35

# NEMATOCIDES DO SAGE

Object: To study the effects of rates and methods of applying nematocides on Globodera (formerly Heterodera) rostochiensis and yield of potatoes, residual effects are also studied - Woburn Stackyard All.

Sponsor: A.G. Whitehead.

The fifth year, potatoes, barley.

For previous years see 72/W/CS/35(t) and 73-75/W/CS/35.

Design: 3 series of 4 replicates of 2 x 9.

Whole plot dimensions: 4.27 x 6.10.

## Treatments:-

The experiment has three series with the following cropping:-

|            | 1968-71 | 1972 | 1973 | 1974 | 1975 | 1976 |
|------------|---------|------|------|------|------|------|
| Series I   | P       | P*   | SB   | B    | P*   | P    |
| Series II  | P       | P    | P*   | SB   | B    | P*   |
| Series III | P       | P    | P    | P*   | SB   | B    |

P = Potatoes, SB = Sugar beet, B = Barley

\* Treatments applied to potatoes, following two crops test residual effects.

Treatments: All combinations of:-

## 1. Varieties and residual effects of varieties:

VARIETY Series I only (Potatoes-Pentland Crown 1976):

|          | 1972           | 1975           |
|----------|----------------|----------------|
| (PC)PC   | Pentland Crown | Pentland Crown |
| (MPPC)PC | Maris Piper    | Pentland Crown |

VARIETY Series II only (Potatoes-Pentland Crown 1976):

|        | 1973           |
|--------|----------------|
| (PC)PC | Pentland Crown |
| (MP)PC | Maris Piper    |

RES VAR Series III only (Barley 1976):

|      | 1974           |
|------|----------------|
| (PC) | Pentland Crown |
| (MP) | Maris Piper    |

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2. Nematicides (kg) and nematicide residues (applied to Series I 1975, Series II 1976, Series III 1974):

NEM RES(75) Series I  
NEMACIDE Series II  
NEM RES(74) Series III

|          |                                                                 |
|----------|-----------------------------------------------------------------|
| NONE     | None                                                            |
|          | Dazomet (half before, half after autumn ploughing)              |
| DAZ2     | 220                                                             |
| DAZ3     | 330                                                             |
| DAZ4     | 440                                                             |
| DAZ6     | 660                                                             |
| DAZ2+TE2 | Dazomet, 220, 'Telone', 220, all after autumn ploughing         |
| TE4      | 'Telone' 450 all after autumn ploughing                         |
| OX       | Oxamyl 5.6 in spring                                            |
| TE2+OX   | 'Telone' 220, after autumn ploughing, oxamyl 5.6 a.i. in spring |

Standard applications:-

Potatoes: Series I only: Magnesian limestone at 2.9 tonnes. Series I and II: Manures: (13:13:20) at 1850 kg. Weedkiller: Linuron at 1.3 kg plus paraquat at 0.42 kg ion in 280 l. Insecticide: Pirimicarb at 0.14 kg in 450 l. Fungicide with insecticide: Mancozeb at 1.3 kg with demeton-s-methyl at 0.25 kg in 450 l. Fungicide: Mancozeb at 1.3 kg in 450 l. Haulm desiccant: Diquat at 0.59 kg ion in 280 l.  
Barley: Series III: Manures: (20:14:14) at 450 kg, combine drilled. Weedkiller: Ioxynil at 0.53 kg with mecoprop at 1.6 kg in 280 l.

Seed: Potatoes: Pentland Crown.

Barley: Julia, dressed with ethirimol, sown at 160 kg.

Cultivations, etc.:-

Potatoes: Series I: Deep-tine cultivated: 24 Oct, 1975. Magnesian limestone applied, deep-tine cultivated: 28 Oct. NPK applied: 22 Mar, 1976. Spring-tine cultivated: 23 Mar. Rotary cultivated, potatoes planted: 6 Apr. Weedkiller applied: 6 May. Pirimicarb applied: 18 June. Fungicide with demeton-s-methyl applied: 30 June. Fungicide applied: 30 July. Haulm desiccant applied: 6 Oct. Haulm mechanically destroyed: 12 Oct. Lifted: 2 Nov.  
Potatoes, Test crop: Series II: Subsoiled, tines 140 cm apart and 56 cm deep: 3 Sept, 1975. Deep-tine cultivated: 9 Sept. Ploughed, spring-tine cultivated: 24 Sept. Dazomet applied and these plots only rotary cultivated, 'Telone' injected, all plots spring-tine cultivated: 13 Oct. NPK applied: 22 Mar, 1976. Spring-tine cultivated: 23 Mar. Oxamyl applied, rotary cultivated, potatoes planted: 6 Apr. Weedkiller applied: 6 May. Pirimicarb applied: 18 June. Fungicide with insecticide applied: 30 June. Fungicide applied: 30 July. Haulm desiccant applied: 6 Oct. Haulm mechanically destroyed: 12 Oct. Lifted: 21 Oct.  
Barley: Series III: Ploughed: 24 Nov, 1975. Spring-tine cultivated: 2 Mar, 1976. Spring-tine cultivated with crumbler, seed sown: 8 Mar. Rolled: 9 Mar. Weedkiller applied: 3 May. Combine harvested: 26 July.

NOTE: Soil samples were taken before treatments were applied and after harvest for cyst and egg counts of *Globodera* (formerly *Heterodera*) *rostochiensis*.

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POTATOES SERIES I

TOTAL TUBERS TONNES/HECTARE

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

| VARIETY     | (PCPC)PC | (MPPC)PC | MEAN |
|-------------|----------|----------|------|
| NEM RES(75) |          |          |      |
| NONE        | 10.5     | 12.4     | 11.4 |
| DAZ2        | 19.1     | 29.1     | 24.1 |
| DAZ3        | 28.5     | 29.6     | 29.1 |
| DAZ4        | 30.5     | 33.0     | 31.7 |
| DAZ6        | 30.6     | 30.9     | 30.7 |
| DAZ2+TE2    | 25.2     | 29.0     | 27.1 |
| TE4         | 15.3     | 24.9     | 20.1 |
| OX          | 25.1     | 28.1     | 26.6 |
| TE2+OX      | 32.0     | 31.6     | 31.8 |
| MEAN        | 24.1     | 27.6     | 25.8 |

\*\*\*\*\* STANDARD ERRORS OF DIFFERENCES OF MEANS \*\*\*\*\*

| TABLE | NEM RES(75) | VARIETY NEM RES(75) | VARIETY |
|-------|-------------|---------------------|---------|
| SED   | 2.49        | 1.15                | 3.52    |

\*\*\*\*\* STRATUM STANDARD ERRORS AND COEFFICIENTS OF VARIATION \*\*\*\*\*

| STRATUM  | DF | SE   | CV%  |
|----------|----|------|------|
| BLOCK.WP | 47 | 4.89 | 18.9 |

PERCENTAGE WARE 3.81CM (1.5 INCH) RIDDLE

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

| VARIETY     | (PCPC)PC | (MPPC)PC | MEAN |
|-------------|----------|----------|------|
| NEM RES(75) |          |          |      |
| NONE        | 80.6     | 83.4     | 82.0 |
| DAZ2        | 89.9     | 92.4     | 91.2 |
| DAZ3        | 93.1     | 90.1     | 91.6 |
| DAZ4        | 93.9     | 92.9     | 93.4 |
| DAZ6        | 92.7     | 92.2     | 92.5 |
| DAZ2+TE2    | 91.6     | 92.9     | 92.2 |
| TE4         | 88.3     | 91.5     | 89.9 |
| OX          | 91.7     | 92.0     | 91.9 |
| TE2+OX      | 92.3     | 91.4     | 91.9 |
| MEAN        | 90.5     | 91.0     | 90.7 |

PLOT AREA HARVESTED 0.00087

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POTATOES SERIES II

TUBERS TONNES/HECTARE

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

| VARIETY  | (PC)PC | (MP)PC | MEAN |
|----------|--------|--------|------|
| NEMACIDE |        |        |      |
| NONE     | 20.5   | 26.1   | 23.3 |
| DAZ2     | 39.9   | 40.6   | 40.2 |
| DAZ3     | 41.7   | 41.5   | 41.6 |
| DAZ4     | 39.4   | 41.2   | 40.3 |
| DAZ6     | 45.3   | 44.0   | 44.7 |
| DAZ2+TE2 | 43.0   | 40.3   | 41.7 |
| TE4      | 35.7   | 41.7   | 38.7 |
| OX       | 41.3   | 43.2   | 42.3 |
| TE2+OX   | 43.6   | 45.2   | 44.4 |
| MEAN     | 38.9   | 40.4   | 39.7 |

\*\*\*\*\* STANDARD ERRORS OF DIFFERENCES OF MEANS \*\*\*\*\*

| TABLE | NEMACIDE | VARIETY | NEMACIDE<br>VARIETY |
|-------|----------|---------|---------------------|
| SED   | 1.52     | 0.68    | 2.14                |

\*\*\*\*\* STRATUM STANDARD ERRORS AND COEFFICIENTS OF VARIATION \*\*\*\*\*

| STRATUM  | DF | SE   | CV% |
|----------|----|------|-----|
| BLOCK.WP | 47 | 2.89 | 7.3 |

PERCENTAGE WARE 3.81CM (1.5 INCH) RIDDLE

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

| VARIETY  | (PC)PC | (MP)PC | MEAN |
|----------|--------|--------|------|
| NEMACIDE |        |        |      |
| NONE     | 87.7   | 86.7   | 87.2 |
| DAZ2     | 92.9   | 91.5   | 92.2 |
| DAZ3     | 93.7   | 91.1   | 92.4 |
| DAZ4     | 90.4   | 93.5   | 92.0 |
| DAZ6     | 92.2   | 92.0   | 92.1 |
| DAZ2+TE2 | 91.2   | 92.2   | 91.7 |
| TE4      | 90.3   | 92.9   | 91.6 |
| OX       | 92.2   | 92.5   | 92.3 |
| TE2+OX   | 92.5   | 93.3   | 92.9 |
| MEAN     | 91.5   | 91.7   | 91.6 |

PLOT AREA HARVESTED 0.00087

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BARLEY

GRAIN TONNES/HECTARE

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

| RES VAR     | (PC) | (MP) | MEAN |
|-------------|------|------|------|
| NEM RES(74) |      |      |      |
| NONE        | 3.63 | 3.27 | 3.45 |
| DAZ2        | 3.54 | 3.01 | 3.28 |
| DAZ3        | 3.38 | 3.23 | 3.30 |
| DAZ4        | 3.38 | 3.37 | 3.37 |
| DAZ6        | 2.85 | 3.15 | 3.00 |
| DAZ2+TE2    | 3.51 | 3.10 | 3.31 |
| TE4         | 3.23 | 3.19 | 3.21 |
| OX          | 3.37 | 2.95 | 3.16 |
| TE2+OX      | 3.77 | 3.56 | 3.67 |
| MEAN        | 3.40 | 3.20 | 3.30 |

## \*\*\*\*\* STANDARD ERRORS OF DIFFERENCES OF MEANS \*\*\*\*\*

| TABLE | NEM RES(74) | RES VAR NEM RES(74) | RES VAR |
|-------|-------------|---------------------|---------|
| SED   | 0.231       | 0.103               | 0.325   |

## \*\*\*\*\* STRATUM STANDARD ERRORS AND COEFFICIENTS OF VARIATION \*\*\*\*\*

| STRATUM  | DF | SE    | CV%  |
|----------|----|-------|------|
| BLOCK.WP | 47 | 0.437 | 13.2 |

GRAIN MEAN DM% 88.1

STRAW TONNES/HECTARE

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

| RES VAR     | (PC) | (MP) | MEAN |
|-------------|------|------|------|
| NEM RES(74) |      |      |      |
| NONE        | 2.33 | 1.97 | 2.15 |
| DAZ2        | 2.33 | 2.15 | 2.24 |
| DAZ3        | 2.01 | 2.33 | 2.17 |
| DAZ4        | 2.21 | 2.36 | 2.28 |
| DAZ6        | 2.11 | 1.90 | 2.01 |
| DAZ2+TE2    | 2.47 | 2.30 | 2.38 |
| TE4         | 2.05 | 1.94 | 1.99 |
| OX          | 2.21 | 1.79 | 2.00 |
| TE2+OX      | 2.49 | 2.47 | 2.48 |
| MEAN        | 2.24 | 2.13 | 2.19 |

STRAW MEAN DM% 89.8

PLOT AREA HARVESTED 0.00173