

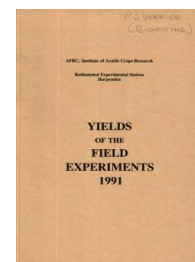
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## Yields of the Field Experiments 1991

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### 91/W/P/1 Autumn and Spring Nematicides - Potatoes

#### Rothamsted Research

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91/W/P/1

POTATOES

**AUTUMN AND SPRING NEMATICIDES**

**Object:** To study the effects of combinations of fumigant and non-fumigant nematicides on the control of *Globodera pallida* and on the yield of potatoes - Woburn, Far Field II.

**Sponsors:** A.G. Whitehead, A.J.F. Nichols.

**Design:** 2 whole plots each containing 2 replicates of 2 sub plots each containing 7 sub sub plots.

**Whole plot dimensions:** 15.0 x 54.0.

**Treatments:** All combinations of:-

Whole plots

1. **OXAMYL[90]** Oxamyl (kg) applied in April 1990:

0.0  
5.6

Sub plots

2. **DICHLO[90]** 1, 3-dichloropropene (kg) applied 2 Nov, 1990:

0 None (duplicated)  
300 300 (duplicated)

Sub sub plots

3. **OXAMYL[91]** Oxamyl (kg) applied 3 April, 1991:

0.0 (duplicated for **VARIETY** DESIREE only)  
5.6

4. **VARIETY** Varieties:

DESIREE  
RECORD  
ROMANO

**Basal applications:** Manures: (12:20:20) at 1.3 t. Weedkillers : Linuron at 1.5 kg with paraquat at 0.40 kg ion in 210 l. Fungicides: Maneb at 1.2 kg and zinc oxide at 28 g applied with a wetting agent, 'Bond' at 200 ml, in 200 l. Maneb at 0.96 kg and zinc oxide at 22 g with insecticide and wetting agent, 'Bond' at 200 ml, in 300 l. Maneb at 0.96 kg and zinc oxide at 22 g and wetting agent, 'Bond' at 200 ml, in 300 l. Mancozeb at 0.82 kg with insecticide and wetting agent, 'Bond' at 200 ml, in 300 l. Fentin hydroxide at 0.27 kg in 300 l. Insecticide: Pirimicarb at 0.14 kg applied on two occasions. Desiccant: Glufosinate-ammonium at 0.45 kg in 300 l.

91/W/P/1

**Cultivations, etc.:-** Deep tine cultivated, fumigant treatment applied, rolled: 2 Nov, 1990. Rolled: 8 Nov. Heavy spring-tine cultivated: 12 Mar, 1991. Manures applied, spring-tine cultivated, nematicide treatments applied, rotary cultivated, tubers planted: 3 Apr. Rotary ridged, weedkiller applied: 26 Apr. Maneb, zinc oxide and wetting agent applied: 4 July. Maneb, zinc oxide, insecticide and wetting agent applied: 20 July. Maneb, zinc oxide and wetting agent applied: 31 July. Mancozeb, insecticide and wetting agent applied: 12 Aug. Fentin hydroxide applied: 27 Aug. Desiccant applied: 12 Sept. Potatoes lifted: 23 Sept. Previous crops: Navy beans 1989, potatoes 1990.

**NOTE:** Soil samples were taken before planting, after fumigation and after harvest for nematode counts and assessment of egg viability.

**TOTAL TUBERS TONNES/HECTARE**

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

|            |         |        |        |      |
|------------|---------|--------|--------|------|
| DICHLO[90] | 0       | 300    | Mean   |      |
| OXAMYL[90] |         |        |        |      |
|            | 0.0     | 22.1   | 41.3   | 31.7 |
|            | 5.6     | 31.1   | 43.8   | 37.5 |
| Mean       | 26.6    | 42.6   | 34.6   |      |
| OXAMYL[91] | 0.0     | 5.6    | Mean   |      |
| OXAMYL[90] |         |        |        |      |
|            | 0.0     | 28.4   | 36.1   | 31.7 |
|            | 5.6     | 32.4   | 44.2   | 37.5 |
| Mean       | 30.4    | 40.1   | 34.6   |      |
| OXAMYL[91] | 0.0     | 5.6    | Mean   |      |
| DICHLO[90] |         |        |        |      |
|            | 0       | 20.5   | 34.7   | 26.6 |
|            | 300     | 40.3   | 45.6   | 42.6 |
| Mean       | 30.4    | 40.1   | 34.6   |      |
| VARIETY    | DESIREE | RECORD | ROMANO | Mean |
| OXAMYL[90] |         |        |        |      |
|            | 0.0     | 30.9   | 32.2   | 32.3 |
|            | 5.6     | 35.9   | 36.8   | 40.6 |
| Mean       | 33.4    | 34.5   | 36.4   | 34.6 |
| VARIETY    | DESIREE | RECORD | ROMANO | Mean |
| DICHLO[90] |         |        |        |      |
|            | 0       | 25.9   | 27.5   | 26.6 |
|            | 300     | 40.8   | 41.5   | 46.2 |
| Mean       | 33.4    | 34.5   | 36.4   | 34.6 |

91/W/P/1

**TOTAL TUBERS TONNES/HECTARE**

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

| VARIETY           | DESIREE | RECORD | ROMANO | Mean |
|-------------------|---------|--------|--------|------|
| <b>OXAMYL[91]</b> |         |        |        |      |
| 0.0               | 30.7    | 31.1   | 29.2   | 30.4 |
| 5.6               | 38.8    | 38.0   | 43.6   | 40.1 |
| Mean              | 33.4    | 34.5   | 36.4   | 34.6 |

|                   |                   |      |      |  |
|-------------------|-------------------|------|------|--|
|                   | <b>OXAMYL[91]</b> | 0.0  | 5.6  |  |
| <b>OXAMYL[90]</b> | <b>DICHLO[90]</b> |      |      |  |
| 0.0               | 0                 | 16.7 | 29.2 |  |
|                   | 300               | 40.1 | 42.9 |  |
| 5.6               | 0                 | 24.4 | 40.1 |  |
|                   | 300               | 40.5 | 48.3 |  |

| VARIETY           | DESIREE | RECORD | ROMANO |      |
|-------------------|---------|--------|--------|------|
| <b>OXAMYL[90]</b> |         |        |        |      |
| <b>DICHLO[90]</b> |         |        |        |      |
| 0.0               | 0       | 22.0   | 23.9   | 20.3 |
|                   | 300     | 39.8   | 40.6   | 44.3 |
| 5.6               | 0       | 29.9   | 31.2   | 33.0 |
|                   | 300     | 41.9   | 42.5   | 48.1 |

| VARIETY           | DESIREE | RECORD | ROMANO |      |
|-------------------|---------|--------|--------|------|
| <b>OXAMYL[90]</b> |         |        |        |      |
| <b>OXAMYL[91]</b> |         |        |        |      |
| 0.0               | 0.0     | 27.9   | 30.1   | 27.6 |
|                   | 5.6     | 36.8   | 34.4   | 37.0 |
| 5.6               | 0.0     | 33.4   | 32.1   | 30.9 |
|                   | 5.6     | 40.7   | 41.6   | 50.2 |

| VARIETY           | DESIREE | RECORD | ROMANO |      |
|-------------------|---------|--------|--------|------|
| <b>DICHLO[90]</b> |         |        |        |      |
| <b>OXAMYL[91]</b> |         |        |        |      |
| 0                 | 0.0     | 21.3   | 21.5   | 18.0 |
|                   | 5.6     | 35.1   | 33.6   | 35.3 |
| 300               | 0.0     | 40.0   | 40.6   | 40.5 |
|                   | 5.6     | 42.5   | 42.4   | 51.9 |

| VARIETY           | DESIREE | RECORD | ROMANO |      |      |
|-------------------|---------|--------|--------|------|------|
| <b>OXAMYL[90]</b> |         |        |        |      |      |
| <b>DICHLO[90]</b> |         |        |        |      |      |
| <b>OXAMYL[91]</b> |         |        |        |      |      |
| 0.0               | 0       | 0.0    | 17.1   | 18.4 | 14.3 |
|                   |         | 5.6    | 31.9   | 29.4 | 26.3 |
|                   | 300     | 0.0    | 38.7   | 41.8 | 40.9 |
|                   |         | 5.6    | 41.8   | 39.3 | 47.7 |
| 5.6               | 0       | 0.0    | 25.6   | 24.7 | 21.6 |
|                   |         | 5.6    | 38.3   | 37.7 | 44.3 |
|                   | 300     | 0.0    | 41.2   | 39.4 | 40.1 |
|                   |         | 5.6    | 43.2   | 45.5 | 56.2 |



91/W/P/1

**TOTAL TUBERS TONNES/HECTARE**

\*\*\* Standard errors of differences of means \*\*\*

|  |                    |                    |                   |                    |         |
|--|--------------------|--------------------|-------------------|--------------------|---------|
|  | <b>DICHLO[90]</b>  | <b>OXAMYL[91]</b>  | <b>VARIETY</b>    | <b>OXAMYL[90]*</b> |         |
|  |                    |                    |                   | <b>DICHLO[90]</b>  |         |
|  |                    |                    | 1.41              |                    | min.rep |
|  | 2.35               | 1.08               | 1.29              | 3.33               | max-min |
|  | <b>OXAMYL[90]*</b> | <b>OXAMYL[90]*</b> | <b>DICHLO[90]</b> | <b>DICHLO[90]</b>  |         |
|  | <b>OXAMYL[91]</b>  | <b>VARIETY</b>     | <b>OXAMYL[91]</b> | <b>VARIETY</b>     |         |
|  |                    | 2.00               | 2.65              | 2.89               | min.rep |
|  | 1.53               | 1.82               | 2.59              | 2.78               | max-min |
|  |                    |                    | 2.53              | 2.65               | max.rep |

Except when comparing means with the same level(s) of **DICHLO[90]**

|  |      |         |
|--|------|---------|
|  | 2.00 | min.rep |
|  | 1.53 | 1.82    |
|  |      | max-min |

|  |                   |                    |                    |                   |         |
|--|-------------------|--------------------|--------------------|-------------------|---------|
|  | <b>OXAMYL[91]</b> | <b>OXAMYL[90]*</b> | <b>OXAMYL[90]*</b> | <b>DICHLO[90]</b> |         |
|  | <b>VARIETY</b>    | <b>DICHLO[90]</b>  | <b>DICHLO[90]</b>  | <b>OXAMYL[91]</b> |         |
|  |                   | <b>OXAMYL[91]</b>  | <b>VARIETY</b>     | <b>VARIETY</b>    |         |
|  | 2.00              | 3.75               | 4.09               | 3.52              | min.rep |
|  | 1.73              | 3.66               | 3.93               | 3.22              | max-min |
|  |                   | 3.57               | 3.75               | 2.89              | max.rep |

Except when comparing means with the same level(s) of **DICHLO[90]**

|  |      |         |
|--|------|---------|
|  | 2.82 | min.rep |
|  | 2.45 | max-min |

|                              |      |      |         |
|------------------------------|------|------|---------|
| <b>OXAMYL[90].DICHLO[90]</b> | 2.31 | 2.82 | min.rep |
|                              | 2.16 | 2.58 | max-min |
|                              | 2.00 | 2.31 | max.rep |

|  |                    |                    |                |
|--|--------------------|--------------------|----------------|
|  | <b>OXAMYL[90]*</b> | <b>OXAMYL[90]*</b> |                |
|  | <b>OXAMYL[91]</b>  | <b>DICHLO[90]</b>  |                |
|  | <b>VARIETY</b>     | <b>OXAMYL[91]</b>  | <b>VARIETY</b> |
|  | 2.82               | 4.97               | min.rep        |
|  | 2.45               | 4.55               | max-min        |
|  |                    | 4.09               | max.rep        |

Except when comparing means with the same level(s) of **OXAMYL[90].DICHLO[90]**

|  |      |         |
|--|------|---------|
|  | 3.99 | min.rep |
|  | 3.46 | max-min |
|  | 2.82 | max.rep |

\* Within the same level of **OXAMYL[90]** or **DICHLO[90]**

max.rep **OXAMYL[91]** 0.0 and **VARIETY** DESIREE  
 min.rep all treatments except **OXAMYL[91]** 0.0 and **VARIETY** DESIREE  
 max-min **OXAMYL[91]** 0.0 and **VARIETY** DESIREE v all other combinations

\*\*\*\*\* Stratum standard errors and coefficients of variation \*\*\*\*\*

|           |      |      |      |
|-----------|------|------|------|
| Stratum   | d.f. | s.e. | cv%  |
| WP.SP     | 4    | 3.33 | 9.6  |
| WP.SP.SSP | 28   | 3.99 | 11.6 |

91/W/P/1

PERCENTAGE WARE 3.8CM (1.5 INCH) RIDDLE

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

|            |            |        |        |      |
|------------|------------|--------|--------|------|
| DICHLO[90] | 0          | 300    | Mean   |      |
| OXAMYL[90] |            |        |        |      |
|            | 0.0        | 63.3   | 83.2   | 73.3 |
|            | 5.6        | 75.9   | 84.1   | 80.0 |
| Mean       | 69.6       | 83.7   | 76.6   |      |
| OXAMYL[91] | 0.0        | 5.6    | Mean   |      |
| OXAMYL[90] |            |        |        |      |
|            | 0.0        | 69.8   | 77.9   | 73.3 |
|            | 5.6        | 77.6   | 83.2   | 80.0 |
| Mean       | 73.7       | 80.5   | 76.6   |      |
| OXAMYL[91] | 0.0        | 5.6    | Mean   |      |
| DICHLO[90] |            |        |        |      |
|            | 0          | 63.9   | 77.2   | 69.6 |
|            | 300        | 83.5   | 83.9   | 83.7 |
| Mean       | 73.7       | 80.5   | 76.6   |      |
| VARIETY    | DESIREE    | RECORD | ROMANO | Mean |
| OXAMYL[90] |            |        |        |      |
|            | 0.0        | 71.0   | 71.5   | 78.5 |
|            | 5.6        | 77.9   | 81.0   | 80.0 |
| Mean       | 74.4       | 76.2   | 80.3   | 76.6 |
| VARIETY    | DESIREE    | RECORD | ROMANO | Mean |
| DICHLO[90] |            |        |        |      |
|            | 0          | 65.9   | 71.6   | 73.1 |
|            | 300        | 82.9   | 80.8   | 87.6 |
| Mean       | 74.4       | 76.2   | 80.3   | 76.6 |
| VARIETY    | DESIREE    | RECORD | ROMANO | Mean |
| OXAMYL[91] |            |        |        |      |
|            | 0.0        | 72.8   | 74.1   | 75.1 |
|            | 5.6        | 77.7   | 78.4   | 85.6 |
| Mean       | 74.4       | 76.2   | 80.3   | 76.6 |
| OXAMYL[90] | OXAMYL[91] | 0.0    | 5.6    |      |
|            | DICHLO[90] |        |        |      |
|            | 0.0        | 0      | 56.3   | 72.7 |
|            | 5.6        | 300    | 83.3   | 83.2 |
|            |            | 0      | 71.5   | 81.7 |
|            |            | 300    | 83.7   | 84.6 |

91/W/P/1

PERCENTAGE WARE 3.8CM (1.5 INCH) RIDDLE

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

|             | VARIETY     | DESIREE | RECORD | ROMANO |
|-------------|-------------|---------|--------|--------|
| OXAMYL [90] | DICHLO [90] |         |        |        |
|             | 0           | 58.6    | 64.9   | 68.8   |
| 5.6         | 300         | 83.4    | 78.1   | 88.1   |
|             | 0           | 73.3    | 78.3   | 77.4   |
|             | 300         | 82.5    | 83.6   | 87.0   |

|             | VARIETY     | DESIREE | RECORD | ROMANO |
|-------------|-------------|---------|--------|--------|
| OXAMYL [90] | OXAMYL [91] |         |        |        |
|             | 0.0         | 68.8    | 69.2   | 72.4   |
| 5.6         | 5.6         | 75.4    | 73.9   | 84.5   |
|             | 0.0         | 76.8    | 79.0   | 77.7   |
|             | 5.6         | 80.0    | 82.9   | 86.6   |

|             | VARIETY     | DESIREE | RECORD | ROMANO |
|-------------|-------------|---------|--------|--------|
| DICHLO [90] | OXAMYL [91] |         |        |        |
|             | 0           | 61.4    | 67.7   | 65.1   |
| 300         | 5.6         | 74.9    | 75.6   | 81.1   |
|             | 0.0         | 84.2    | 80.5   | 85.1   |
|             | 5.6         | 80.5    | 81.2   | 90.0   |

|             | VARIETY     | DESIREE | RECORD | ROMANO |
|-------------|-------------|---------|--------|--------|
| OXAMYL [90] | DICHLO [90] |         |        |        |
|             | 0.0         | 0.0     | 53.3   | 60.8   |
| 5.6         | 300         | 5.6     | 69.0   | 69.1   |
|             |             | 0.0     | 84.2   | 77.5   |
|             |             | 5.6     | 81.8   | 78.6   |
|             |             | 0.0     | 69.5   | 74.6   |
|             | 0           | 5.6     | 80.8   | 82.1   |
|             |             | 0.0     | 84.2   | 83.5   |
|             |             | 5.6     | 79.2   | 83.7   |
|             |             | 0.0     | 57.6   | 80.0   |

SUB PLOT AREA HARVESTED 0.00090