

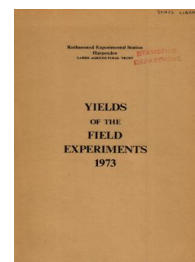
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Yields of the Field Experiments 1973

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73/W/CS/35 - Nematicides Dosage - Potatoes, Sugar Beet

Rothamsted Research

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73/W/CS/35

NEMATOCIDES DOSAGE

Object: To study the effects of rates and methods of applying nematocides on *Heterodera rostochiensis* and yield of potatoes and the residual effects on yield of sugar beet - Woburn Stackyard AII.

Sponsor: A.G. Whitehead.

The sixth year of continuous potatoes - second year of treatments. Sugar beet tests residues.

For previous year see 72/W/CS/35(t).

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

Whole plot dimensions: 4.27 x 6.10. Areas harvested: Potatoes - 0.00087, Sugar beet - 0.00146.

Treatments:-

The experiment has three series with the following cropping:-

| | 1968-71 | 1972 | 1973 |
|------------|---------|------|------|
| Series I | P | P* | SB |
| Series II | P | P | P* |
| Series III | P | P | P |

P = Potatoes, SB = Sugar beet

* Treatments applied to potatoes, later crops test residual effects.

Treatments to Series I (1972) and Series II (1973): All combinations of:-

| 1. Varieties | VARIETY |
|----------------|---------|
| Maris Piper | Piper |
| Pentland Crown | Crown |

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| 2. Nematicides (kg) | NEMACIDE |
|---|----------|
| None | None |
| Dazomet (half before, half after autumn ploughing) | |
| 220 | Daz2 |
| 330 | Daz3 |
| 440 | Daz4 |
| 660 | Daz6 |
| Dazomet, 220, 'Telone', 220, all after autumn ploughing | Daz2/Te2 |
| 'Telone' 450 after autumn ploughing | Te4 |
| 'DuPont 1410', 5.6 a.i. in spring | DuP |
| 'Telone' 220, after autumn ploughing, 'DuPont 1410' 5.6 a.i. in spring | Te2/DuP |

Sugar beet tests residual effects of potato varieties (RESVAR) and nematicides (RESNEM).

Basal applications:-

Potatoes: Test and preparatory crop: Manures: (13:13:20) at 1830 kg.
 Weedkiller: Linuron at 1.2 kg plus paraquat at 0.56 kg ion in 280 l.
 Fungicide with insecticide: Mancozeb at 1.3 kg plus demeton-s-methyl at 0.25 kg in 390 l. Fungicide: Mancozeb at 1.3 kg in 390 l on the first occasion and in 370 l on the second occasion.
 Sugar beet: Manures: Magnesian limestone at 5.0 tonnes. (0:14:28) at 730 kg. N at 190 kg as 'Nitro-Chalk'. Boron at 7.4 kg B2O3 (as 'Solubor') applied with insecticide. Insecticide: Demeton-s-methyl at 0.25 kg in 450 l. Weedkiller: Phenumedipham at 1.6 kg in 280 l.

Seed: Sugar beet: Klein E, sown at 8 kg.
 Potatoes: Series II: Maris Piper and Pentland Crown.
 Series III: Pentland Crown.

Cultivations, etc.:-

Potatoes: Test crop: Deep-tine cultivated: 18 Sept, 1972. Dazomet applied, all plots rotary cultivated and ploughed: 18 Oct. Dazomet applied, all plots rotary cultivated, 'Telone' applied, all plots harrowed: 19 Oct. NPK applied: 26 Mar, 1973. 'DuPont 1410' applied, rotary cultivated: 3 Apr. Potatoes planted: 5 Apr. Inter-row rotary cultivated and earthed up: 6 Apr. Weedkiller applied: 9 May. Fungicide with insecticide applied: 5 July. Fungicide applied: 26 July, 13 Aug. Haulm mechanically destroyed: 13 Sept. Lifted: 20 Sept.
 Potatoes: Preparatory crop: Deep-tine cultivated: 18 Sept, 1972. Ploughed: 20 Dec. NPK applied: 26 Mar, 1973. Rotary cultivated, potatoes planted: 5 Apr. Weedkiller applied: 9 May. Grubbed: 1 June. Rotary ridged: 4 June. Fungicide with insecticide applied: 5 July. Fungicide applied: 26 July. Haulm mechanically destroyed: 23 Aug. Lifted: 26 Oct.

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Sugar beet: Magnesian limestone applied: 12 Oct, 1972. Ploughed:
12 Nov. PK and N applied: 20 Mar, 1973. Power harrowed, seed
sown: 21 Mar. Weedkiller applied: 15 May. Singled: 24-25 May.
Boron and insecticide applied: 25 June. Lifted: 9 Nov.

NOTE: Soil samples were taken in November and further samples were
taken in April before treatment applied and after harvest for
cyst and egg counts of *Heterodera rostochiensis*.

Standard errors per plot.

| | |
|---|-------------------------|
| Potatoes, Total tubers: tonnes/hectare: | 4.23 or 10.4% (51 d.f.) |
| Sugar beet, Roots (washed): tonnes/hectare: | 3.70 or 8.5% (51 d.f.) |
| Total sugar: tonnes/hectare: | 0.659 or 8.8% (51 d.f.) |

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TABLES OF MEANS

POTATOES

TOTAL TUBERS: TONNES/HECTARE

| VARIETY | NEMACIDE | | | | | | | | | | Mean |
|---------|----------|------|------|------|------|----------|------|------|---------|------|------|
| | None | Daz2 | Daz3 | Daz4 | Daz6 | Daz2/Te2 | Te4 | DuP | Te2/DuP | Mean | |
| Piper | 25.5 | 41.2 | 45.7 | 46.2 | 48.0 | 42.0 | 42.0 | 37.3 | 46.0 | 41.6 | |
| Crown | 23.0 | 45.1 | 44.5 | 42.6 | 48.6 | 39.0 | 41.5 | 36.6 | 40.1 | 40.1 | |
| Mean | 24.2 | 43.2 | 45.1 | 44.4 | 48.3 | 41.7 | 40.5 | 36.9 | 43.1 | 40.8 | |

STANDARD ERRORS OF DIFFERENCES

| NEMACIDE | VARIETY* |
|----------|----------|
| 2.12 | 2.99 |

* Within the same level of VARIETY only

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POTATOES

PERCENTAGE WARE: 3.81 CM (1.5 INCH) RIDDLE

| VARIETY | NEMACIDE | | | | | | | | | | Mean |
|---------|----------|------|------|------|------|----------|------|------|---------|------|------|
| | None | Daz2 | Daz3 | Daz4 | Daz6 | Daz2/Te2 | Te4 | DuP | Te2/DuP | Mean | |
| Piper | 89.6 | 84.6 | 88.7 | 89.9 | 89.9 | 87.3 | 91.4 | 81.3 | 88.7 | 88.0 | |
| Crown | 82.4 | 94.5 | 95.3 | 95.1 | 96.0 | 93.5 | 93.8 | 88.8 | 92.8 | 92.5 | |
| Mean | 86.0 | 89.5 | 92.0 | 92.5 | 92.9 | 90.4 | 92.6 | 85.1 | 90.8 | 90.2 | |

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SUGAR BEET

ROOTS (WASHED) : TONNES/HECTARE

| RESVAR | RESNEM | | | | | | | | | | Mean |
|--------|--------|------|------|------|------|----------|------|------|---------|------|------|
| | None | Daz2 | Daz3 | Daz4 | Daz6 | Daz2/Te2 | Te4 | DuP | Te2/DuP | Mean | |
| Piper | 42.2 | 42.1 | 43.2 | 43.6 | 41.1 | 41.4 | 41.7 | 38.8 | 48.1 | 42.5 | |
| Crown | 45.4 | 44.9 | 44.9 | 46.8 | 44.8 | 42.3 | 45.7 | 45.1 | 44.0 | 44.9 | |
| Mean | 43.8 | 43.5 | 44.1 | 45.2 | 43.0 | 41.8 | 43.7 | 41.9 | 46.1 | 43.7 | |

STANDARD ERRORS OF DIFFERENCES

RESNEM RESVAR*
RESNEM

1.85 2.62

* Within the same level of RESVAR only

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SUGAR PERCENTAGE

| | None | Daz2 | Daz3 | Daz4 | RESNEM | | | DuP | Te2/DuP | Mean |
|--------|------|------|------|------|--------|----------|------|------|---------|------|
| | | | | | Daz6 | Daz2/Te2 | Te4 | | | |
| RESVAR | | | | | | | | | | |
| Piper | 16.9 | 17.3 | 17.1 | 17.0 | 16.9 | 16.9 | 17.2 | 17.2 | 17.0 | |
| Crown | 17.4 | 16.8 | 17.3 | 17.0 | 17.1 | 17.2 | 17.3 | 17.0 | 17.1 | |
| Mean | 17.2 | 17.1 | 17.2 | 17.0 | 17.0 | 17.0 | 17.2 | 17.1 | 17.1 | |

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TOTAL SUGAR: TONNES/HECTARE

| RESVAR | RESNEM | | | | | | | | | | Mean |
|--------|--------|------|------|------|------|----------|------|------|---------|--|------|
| | None | Daz2 | Daz3 | Daz4 | Daz6 | Daz2/Te2 | Te4 | DuP | Te2/DuP | | |
| Piper | 7.15 | 7.31 | 7.39 | 7.45 | 6.93 | 6.97 | 6.90 | 6.68 | 8.30 | | 7.23 |
| Crown | 7.89 | 7.54 | 7.74 | 7.97 | 7.65 | 7.28 | 7.89 | 7.78 | 7.47 | | 7.69 |
| Mean | 7.52 | 7.43 | 7.57 | 7.71 | 7.29 | 7.13 | 7.40 | 7.23 | 7.88 | | 7.46 |

STANDARD ERRORS OF DIFFERENCES

| | |
|--------|---------|
| RESNEM | RESVAR* |
| 0.329 | 0.466 |

* Within the same level of RESVAR only