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Yields of the Field Experiments 1974

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74/W/CS/35 Nematicides Dosage - Potatoes, Sugar Beet, Barley

74/W/CS/35 Nematicides Dosage - Potatoes, Sugar Beet, Barley , Rothamsted Research (1975) Yields Of The Field Experiments 1974, pp 187 - 196 - DOI: <https://doi.org/10.23637/ERADOC-1-119>

74/W/CS/35

NEMATOCIDES DOSAGE

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

Sponsor: A.G. Whitehead.

The third year, potatoes, sugar beet, barley.

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

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 - 0.00130, barley - 0.00173.

Treatments:-

The experiment has three series with the following cropping:-

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

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

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

Treatments to Series I (1972), Series II (1973) and Series III (1974):

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', all 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 and barley test residual effects of potato varieties - RESVAR(73), RESVAR(72) - and nematicide - RESNEM(73), RESNEM(72).

Standard applications:-

Potatoes: Manures: (13:13:20) at 1940 kg. Weedkiller: Linuron at 1.2 kg plus paraquat at 0.28 kg ion in 280 l. Fungicide with insecticide: Mancozeb at 1.3 kg plus demeton-s-methyl at 0.25 kg in 450 l. Fungicide: Mancozeb at 1.3 kg in 450 l.

Sugar beet: Manures: Magnesian limestone at 5 tonnes. N at 180 kg as 'Nitro-Chalk'. (0:14:28) at 650 kg. Boron at 6.7 kg 3203 (as 'Solubor') applied with insecticide. Insecticide: Demeton-s-methyl at 0.25 kg in 280 l and at 0.21 kg in 390 l when applied with 'Solubor'. Weedkiller: Phenmedipham at 1.1 kg in 340 l.

Barley: Manures: (20:15:15) at 450 kg. Weedkillers: Ioxynil at 0.52 kg plus mecoprop at 1.6 kg in 280 l.

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

Sugar beet: Klein E, sown at 8 kg.

Potatoes: Maris Piper and Pentland Crown.

Cultivations, etc.:-

Potatoes: Deep-tine cultivated: 30 Oct, 1973. Dazomet applied, all plots rotary cultivated: 31 Oct. Ploughed, dazomet and 'Telone' applied: 1 Nov. Spring-tine cultivated: 4 Apr, 1974. NPK applied, spring-tine cultivated: 8 Apr. 'DuPont 1410' applied: 10 Apr. Rotary cultivated, potatoes planted, inter-row rotary cultivated and ridged up: 11 Apr. Weedkiller applied: 15 May. Fungicide with insecticide applied: 18 July. Insecticide applied: 7 Aug. Haulm mechanically destroyed: 12 Sept. Sprayed with undiluted BCV at 170 l: 18 Sept. Lifted: 14 Oct.

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Sugar beet: Magnesian limestone applied: 29 Oct, 1973. Ploughed: 7 Dec.
Spring-tine cultivated: 30 Mar, 1974. N and PK applied: 1 Apr.
Power harrowed: 2 Apr. Seed sown: 3 Apr. Weedkiller applied:
26 May. Insecticide applied: 5 June. Singled: 6 June. Insecticide
with 'Solubor' applied: 24 June. Lifted: 22 Nov.
Barley: Ploughed: 7 Dec, 1973. Spring-tine cultivated: 27 Mar, 1974.
Spring-tine cultivated with crumbler: 28 Mar. Seed sown: 29 Mar.
Rolled: 2 Apr. Weedkiller applied: 14 May. Combine harvested:
22 Aug.

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

Standard errors per plot.

Potatoes, Total tubers: tonnes/hectare: 6.01 or 9.3% (47 d.f.)
Sugar beet, Roots (washed): tonnes/hectare: 2.82 or 11.1% (47 d.f.)
Total sugar: tonnes/hectare: 0.429 or 11.8% (47 d.f.)
Barley, Grain: tonnes/hectare: 0.319 or 4.9% (47 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 | | |
| Piper | 41.6 | 65.5 | 74.7 | 78.1 | 74.3 | 70.7 | 59.8 | 66.7 | 72.1 | | 67.1 |
| Crown | 38.9 | 63.0 | 67.7 | 65.5 | 75.8 | 61.9 | 53.5 | 65.6 | 69.9 | | 62.4 |
| Mean | 40.2 | 64.3 | 71.2 | 71.8 | 75.1 | 66.3 | 56.7 | 66.1 | 71.0 | | 64.7 |

STANDARD ERRORS OF DIFFERENCES

| VARIETY | NEMACIDE | VARIETY* |
|---------|----------|----------|
| | NEMACIDE | NEMACIDE |
| 1.42 | 3.17 | 4.47 |

* 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 | Iaz6 | Daz2/Te2 | Te4 | DuP | Te2/DuP | Mean | |
| Piper | 92.8 | 94.3 | 95.5 | 95.6 | 96.7 | 95.8 | 94.6 | 92.0 | 94.3 | 94.6 | 94.6 |
| Crown | 94.1 | 93.2 | 95.5 | 97.2 | 96.0 | 97.1 | 96.1 | 94.2 | 97.2 | 96.1 | 95.6 |
| Mean | 93.5 | 93.7 | 95.5 | 96.4 | 96.4 | 96.4 | 95.4 | 93.1 | 95.7 | 95.1 | 95.1 |

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SUGAR BEET

ROOTS (WASHED) : TONNES/HECTARE

| RESVAR(73) | None | Daz2 | Daz3 | Daz4 | RESNEM(73) | | | Te4 | DuP | Te2/DuP | Mean |
|------------|------|------|------|------|------------|----------|------|------|------|---------|------|
| | | | | | Daz6 | Daz2/Te2 | Te4 | | | | |
| Piper | 24.8 | 25.6 | 23.9 | 24.0 | 26.4 | 26.4 | 23.7 | 22.7 | 23.1 | 24.5 | |
| Crown | 22.9 | 26.5 | 28.2 | 25.0 | 28.7 | 26.5 | 25.8 | 27.0 | 25.2 | 26.2 | |
| Mean | 23.9 | 26.0 | 26.1 | 24.5 | 27.5 | 26.4 | 24.7 | 24.9 | 24.1 | 25.4 | |

STANDARD ERRORS OF DIFFERENCES

| RESVAR(73) | RESNEM(73) | RESVAR(73)* | RESNEM(73) |
|------------|------------|-------------|------------|
| 0.67 | 1.48 | 2.09 | |

* Within the same level of RESVAR(73) only

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SUGAR BEET

SUGAR PERCENTAGE

| | RESIEM(73) | | | | | | | | | | Mean | |
|------------|------------|------|------|------|------|----------|------|------|---------|------|------|--|
| | None | Daz2 | Daz3 | Daz4 | Daz6 | Daz2/Te2 | Te4 | DuP | Te2/DuP | | | |
| RESVAR(73) | | | | | | | | | | | | |
| Piper | 14.4 | 14.3 | 14.2 | 14.2 | 14.4 | 14.4 | 14.1 | 14.4 | 14.2 | 14.2 | 14.3 | |
| Crown | 14.3 | 14.5 | 14.6 | 14.2 | 14.3 | 14.5 | 14.3 | 14.6 | 14.2 | 14.2 | 14.4 | |
| Mean | 14.4 | 14.4 | 14.4 | 14.2 | 14.4 | 14.5 | 14.2 | 14.5 | 14.2 | 14.2 | 14.3 | |

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SUGAR BEET

TOTAL SUGAR TONS / HECTARE

| | No. re | Dez2 | Dez3 | Dez4 | RESSEM(73) | Dez6 | Dez2/Te2 | Te4 | D.P | De2/Du.F | Mean |
|------------|--------|------|------|------|------------|------|----------|------|------|----------|------|
| RESVAR(73) | | | | | | | | | | | |
| Piper | 3.58 | 3.67 | 3.40 | 3.41 | 3.79 | 3.80 | 3.35 | 3.26 | 3.26 | 3.26 | 3.50 |
| Crown | 3.29 | 3.83 | 4.10 | 3.54 | 4.12 | 3.86 | 3.67 | 3.59 | 3.95 | 3.59 | 3.77 |
| Mean | 3.44 | 3.75 | 3.75 | 3.48 | 3.96 | 3.83 | 3.51 | 3.60 | 3.60 | 3.43 | 3.64 |

STANDARD ERRORS OF DIFFERENCES

RESVAR(73) RESSEM(73) RESVAR(73)*
RESSEM(73)

0.101 0.225 0.318

* Within the same level of RESVAR(73) only

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BARLEY

GRAIN: TONNES/HECTARE

| | None | Daz2 | Daz3 | Daz4 | Daz6 | Daz2/Te2 | Te4 | DuP | Te2/DuP | Mean |
|------------|------|------|------|------|------------|----------|------|------|---------|------|
| RESVAR(72) | | | | | RESSEM(72) | | | | | |
| Piper | 6.16 | 6.68 | 6.75 | 6.94 | 6.30 | 6.09 | 6.48 | 6.40 | 6.40 | 6.47 |
| Crown | 6.37 | 6.22 | 6.70 | 6.63 | 6.66 | 6.55 | 6.71 | 6.18 | 6.49 | 6.51 |
| Mean | 6.26 | 6.45 | 6.72 | 6.79 | 6.48 | 6.37 | 6.59 | 6.29 | 6.44 | 6.49 |

STANDARD ERRORS OF DIFFERENCES

| RESVAR(72) | RESSEM(72) | RESVAR(72)* | RESSEM(72) |
|------------|------------|-------------|------------|
| 0.075 | 0.163 | 0.230 | |

* Within the same level of RESSEM(72) only

Mean D.M. % 87.1

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BARLEY

STRAW: TONNES/HECTARE

| | RESSEM(72) | | | | | | | | | | Mean | |
|------------|------------|------|------|------|------|----------|------|------|---------|------|------|--|
| | None | Daz2 | Daz3 | Daz4 | Daz6 | Daz2/Te2 | Te4 | DuP | Te2/DuP | Mean | | |
| RESVAR(72) | | | | | | | | | | | | |
| Piper | 3.88 | 4.17 | 4.23 | 4.64 | 3.99 | 3.91 | 4.34 | 3.78 | 4.07 | 4.11 | | |
| Crown | 4.21 | 4.03 | 4.35 | 4.31 | 4.37 | 4.29 | 4.22 | 3.82 | 4.05 | 4.18 | | |
| Mean | 4.05 | 4.10 | 4.29 | 4.48 | 4.18 | 4.10 | 4.28 | 3.80 | 4.06 | 4.15 | | |

Mean D.M. % 86.7