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

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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	25.5	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	FESEM(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	3.50
Crown	3.29	3.83	4.10	3.54	4.12	3.86	3.67	3.95	3.59	3.77
Mean	3.44	3.75	3.75	3.48	3.96	3.83	3.51	3.60	3.43	3.64

STANDARD ERRORS OF DIFFERENCES

RESVAR(73) FESEM(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)					RESNEM(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)	RESNEM(72)	RESVAR(72)*	RESNEM(72)
0.075	0.163	0.230	

* Within the same level of RESNEM(72) only

Mean D.M. % 87.1

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BARLEY

STRAW: TONNES/HECTARE

	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