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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 nematicides 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	Mean	
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	RESNEM
	0.466

* Within the same level of RESVAR only