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76/W/CS/159 Methods of Incorporating Nematicides - Potatoes

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Rothamsted Research (1977) *76/W/CS/159 Methods of Incorporating Nematicides - Potatoes ; Yields Of The Field Experiments 1976*, pp 195 - 198 - DOI: <https://doi.org/10.23637/ERADOC-1-15>

76/W/CS/159

METHODS OF INCORPORATING NEMATICIDES

Object: To study the effects of several methods of incorporating three rates of aldicarb and oxamyl into the soil on the incidence of *Globodera* (formerly *Heterodera*) *rostochiensis* and yield of potatoes - Woburn Butt Close 1.

Sponsors: A.G. Whitehead, R.H. Bromilow.

The third year, potatoes.

For previous years see 74/W/P/3 and 75/W/CS/159.

Design: 2 randomised blocks of 2 plots split into 16.

Whole plot dimensions: 2.84 x 9.14.

Treatments (cumulative in 1974 and 1975): All combinations of:-

Whole plots

1. NEMACIDE Nematicide (all aldicarb 1974 and 1975):

ALDICARB	Aldicarb
OXAMYL	Oxamyl

Sub plots

2. NEM RATE Rates of nematicide (kg):

2.25	2.25
4.50	4.50
9.00	9.00

3. METHOD Methods of incorporating nematicide (all applied just before planting):

S/RR	Applied to surface and then cultivated by 'Roterra' (a rotary cultivator with blades revolving around a vertical axis) to 20 cm depth
SM/RR	Half applied to surface and half to 5 cm depth*, then cultivated by 'Roterra' to 20 cm depth
SMD/RR	One third applied to surface, one third to 5 cm depth*, one third to 10 cm depth* then cultivated by 'Roterra' to 20 cm depth
RR/S/RV1	Soil cultivated by 'Roterra' to 20 cm depth, then all nematicide applied to surface, then rotary cultivated to 15 cm depth
RR/SD/H	Soil cultivated by 'Roterra' to 20 cm depth, then half nematicide applied to surface and half to 10 cm depth*, then spring-tine harrowed

NEMACIDE plus one sub plot not treated with nematicide cultivated by 'Roterra' to 20 cm depth

*Applied with a specially made applicator.

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Basal applications: (13:13:20) at 1850 kg. Weedkiller: Linuron at 1.2 kg plus paraquat at 0.42 kg ion in 280 l. Insecticide: Pirimicarb at 0.14 kg in 450 l. Fungicide with insecticide: Mancozeb at 1.3 kg with demeton-s-methyl at 0.25 kg in 450 l. Fungicide: Mancozeb at 1.3 kg in 450 l. Haulm desiccant: Diquat at 0.59 kg ion in 280 l.

Seed: Pentland Crown.

Cultivations, etc.:— Subsoiled, tines 140 cm apart and 56 cm deep, deep-tine cultivated: 6 Nov, 1975. Spring-tine cultivated: 23 Mar. 1976. NPK applied, spring-tine cultivated: 24 Mar. Treatments applied: 22 Apr. Potatoes planted: 23 Apr. Weedkiller applied: 5 May. Pirimicarb applied: 15 June. Fungicide with insecticide applied: 30 June. Fungicide applied: 30 July. Haulm desiccant applied: 6 Oct. Haulm mechanically destroyed: 11 Oct. Lifted: 21 Oct.

NOTE: Soil samples were taken in spring before treatments were applied and after harvest, for cyst and egg counts of *Globodera* (formerly *Heterodera*) *rostochiensis*.

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TUBERS TONNES/HECTARE

***** TABLES OF MEANS *****

METHOD	S/RR	SM/RR	SMD/RR	RR/S/RV1	RR/SD/H	MEAN
NEMACIDE						
ALDICARB	32.0	26.7	32.8	34.0	35.0	32.1
OXAMYL	29.0	31.2	29.6	30.9	29.3	30.0
MEAN	30.5	28.9	31.2	32.4	32.2	31.0

METHOD	S/RR	SM/RR	SMD/RR	RR/S/RV1	RR/SD/H	MEAN
NEM RATE						
2.25	32.5	23.5	27.6	28.5	28.3	28.1
4.50	31.4	30.7	31.7	34.3	34.3	32.5
9.00	27.5	32.6	34.2	34.4	34.0	32.5
MEAN	30.5	28.9	31.2	32.4	32.2	31.0

NEM RATE	2.25	4.50	9.00	MEAN	
NEMACIDE					
ALDICARB	29.4	35.1	31.7	32.1	
OXAMYL	26.7	29.8	33.4	30.0	
MEAN	28.1	32.5	32.5	31.0	

	NEM RATE	2.25	4.50	9.00
METHOD	NEMACIDE			
S/RR	ALDICARB	32.4	34.9	28.8
	OXAMYL	32.6	28.0	26.3
SM/RR	ALDICARB	25.4	25.7	28.9
	OXAMYL	21.6	35.7	36.4
SMD/RR	ALDICARB	28.8	38.6	30.9
	OXAMYL	26.4	24.9	37.4
RR/S/RV1	ALDICARB	30.6	36.7	34.6
	OXAMYL	26.4	31.9	34.2
RR/SD/H	ALDICARB	29.9	39.9	35.2
	OXAMYL	26.6	28.7	32.7

NEMACIDE 0.00 10.9

GRAND MEAN 29.8

***** STANDARD ERRORS OF DIFFERENCES OF MEANS *****

TABLE	NEM RATE	METHOD	NEMACIDE* NEM RATE	NEMACIDE* METHOD
SED	1.80	2.32	2.54	3.28

TABLE	NEM RATE METHOD	NEMACIDE* NEM RATE METHOD
SED	4.02	5.69

* WITHIN THE SAME LEVEL OF NEMACIDE ONLY

***** STRATUM STANDARD ERRORS AND COEFFICIENTS OF VARIATION *****

STRATUM	DF	SE	CV%
BLOCK.WP.SP	30	5.69	19.1
		197	

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PERCENTAGE WARE 3.81CM(1.5 INCH) RIDDLE

***** TABLES OF MEANS *****

METHOD	S/RR	SM/RR	SMD/RR	RR/S/RV1	RR/SD/H	MEAN
NEMACIDE						
ALDICARB	85.3	81.0	86.6	88.5	88.8	86.1
OXAMYL	82.9	82.8	78.9	85.3	80.8	82.1
MEAN	84.1	81.9	82.8	86.9	84.8	84.1

METHOD	S/RR	SM/RR	SMD/RR	RR/S/RV1	RR/SD/H	MEAN
NEM RATE						
2.25	87.7	76.0	80.5	84.1	81.1	81.9
4.50	84.6	85.4	79.5	88.5	85.9	84.8
9.00	80.1	84.3	88.3	88.1	87.5	85.6
MEAN	84.1	81.9	82.8	86.9	84.8	84.1

NEM RATE	2.25	4.50	9.00	MEAN	
NEMACIDE					
ALDICARB	83.6	89.3	85.3	86.1	
OXAMYL	80.2	80.3	86.0	82.1	
MEAN	81.9	84.8	85.6	84.1	

	NEM RATE	2.25	4.50	9.00	
METHOD	NEMACIDE				
S/RR	ALDICARB	86.5	90.0	79.5	
	OXAMYL	88.9	79.3	80.6	
SM/RR	ALDICARB	76.5	83.6	82.9	
	OXAMYL	75.4	87.3	85.7	
SMD/RR	ALDICARB	84.9	89.5	85.5	
	OXAMYL	76.2	69.5	91.0	
RR/S/RV1	ALDICARB	83.3	92.5	89.6	
	OXAMYL	84.9	84.4	86.6	
RR/SD/H	ALDICARB	86.8	90.7	88.9	
	OXAMYL	75.4	81.0	86.0	

NEMACIDE 0.00 66.3

GRAND MEAN 83.0

SUB PLOT AREA HARVESTED 0.00130