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80/W/CS/35 Nematicides Dosage

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80/W/CS/35

NEMATICIDES DOSAGE

Object: To study the effects of rates and methods of applying nematicides on *Globodera rostochiensis* and yield of potatoes; residual effects are also studied - Woburn Stackyard AII.

Sponsor: A.G. Whitehead.

The ninth year, potatoes, w. wheat, s. barley.

For previous years see 72/W/CS/35(t) and 73-79/W/CS/35.

Design: 3 series each 4 randomised blocks of 18 plots.

Whole plot dimensions: 4.27 x 6.10.

Treatments:-

The experiment has three series with the following cropping:-

	1968-71	72	73	74	75	76	77	78	79	80
Series I	P	P*	SB	B	P*	P	P	P*	W	B
Series II	P	P	P*	SB	B	P*	P	P	P*	W
Series III	P	P	P	P*	SB	B	P*	P	P	P*

P = Potatoes, SB = Sugar beet, B = S. barley, W = W. wheat

*Treatments applied to potatoes, following two crops test residual effects.

Treatments:

On Series I, s. barley 1980, new sets of treatments were applied for potatoes in 1978 which ignored those applied in earlier years. All combinations of:-

1. A NEM(78) Residual effects of nematicide applied autumn 1977:

NONE None
TELONE 'Telone' at 224 kg

2. S NEM(78) Residual effects of nematicide applied spring 1978:

ALDICARB
OXAMYL

3. SNEMRATE Rates of spring nematicides (kg):

2.5
5.0
7.5
10.0

plus two untreated plots per block

RATE

NONE

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On Series II, w. wheat 1980, the same sets of treatments were applied for potatoes in 1979, ignoring those applied in earlier years. All combinations of:-

1. A NEM(79) Residual effects of nematicide applied autumn 1978:

NONE None
TELONE 'Telone' at 224 kg

2. S NEM(79) Residual effects of nematicide applied spring 1979:

ALDICARB
OXAMYL

3. SNEMRATE Rates of spring nematicides (kg):

2.5
5.0
7.5
10.0

plus two untreated plots per block

RATE

NONE

On Series III, potatoes 1980, a planned test of 'Telone' was omitted, other treatments tested on Series I and II were applied, ignoring those in earlier years. All combinations (duplicated) of:-

1. S NEM(80) Spring nematicides:

ALDICARB
OXAMYL

2. SNEMRATE Rates of spring nematicides (kg):

2.5
5.0
7.5
10.0

plus two untreated plots per block

RATE

NONE

Standard applications:

- S. barley (Series I): Manures: (20:10:10) at 450 kg, combine drilled. Weedkillers: Mecoprop with bromoxynil and ioxynil (as 'Brittox' at 3.5 l in 280 l) with fungicide. Fungicide: Tridemorph at 0.53 kg.
- W. wheat (Series II): Manures: Magnesian limestone at 5.0 t. (10:23:23) at 260 kg, combine drilled. 'Nitro-Chalk' at 490 kg. Weedkillers: Mecoprop with bromoxynil and ioxynil (as 'Brittox' at 3.5 l in 280 l).

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Potatoes (Series III): Manures: (13:13:20) at 1880 kg. Weedkiller: Linuron at 1.1 l in 280 l. Fungicide: Mancozeb at 1.3 kg in 300 l applied on five occasions, with insecticide on the first, third, fourth and fifth occasions. Insecticide: Pirimicarb at 0.14 kg. Haulm desiccant: Undiluted BOV at 170 l.

Seed: S. barley: Georgie, dressed with ethirimol, sown at 160 kg.
W. wheat: Flanders, sown at 190 kg.
Potatoes: Pentland Crown.

Cultivations, etc.:-

S. barley (Series I): Ploughed: 8 Nov, 1979. Heavy spring-tine cultivated: 29 Feb, 1980. Spring-tine cultivated with crumbler attached: 3 Mar. Seed sown: 4 Mar. Spring-tine cultivated, seed resown without fertiliser because of erosion damage: 14 Apr. Weedkillers and fungicide applied: 16 May. Combine harvested: 28 Aug.

W. wheat (Series II): Magnesian limestone applied: 31 Oct, 1979. Ploughed, spring-tine cultivated with crumbler attached. Seed sown: 13 Nov. N applied: 9 Apr, 1980. Weedkillers applied: 15 Apr. Combine harvested: 26 Aug.

Potatoes (Series III): Heavy spring-tine cultivated: 25 Oct, 1979; 18 Feb, 1980. NPK applied: 12 Apr. Heavy spring-tine cultivated: 14 Apr. Aldicarb and oxamyl applied, rotary cultivated: 29 Apr. Potatoes planted: 30 Apr. Weedkiller applied: 16 May. Grubbed: 11 June. Earthed up: 12 June. Fungicide applied: 18 June, 3 July, 22 July, 10 Aug, 22 Aug. Insecticide applied: 18 June, 22 July, 10 Aug, 22 Aug. Haulm mechanically destroyed: 22 Sept. Desiccant applied: 24 Sept. Lifted: 1 Oct.

- NOTES: (1) Soil samples were taken before treatments were applied and after harvest for cyst and egg counts of *Globodera rostochiensis*.
(2) Because of soil erosion damage the yields of s. barley (Series I) were not taken. For the same reason the yields of seven plots of wheat Series II were lost. Two of RATE NONE and those with treatment combinations:
- | | | | | | |
|-----------|----------|--------|----------|--------|--------|
| A NEM(79) | NONE | NONE | TELONE | TELONE | TELONE |
| S NEM(79) | ALDICARB | OXAMYL | ALDICARB | OXAMYL | OXAMYL |
| SNEMRATE | 2.5 | 2.5 | 2.5 | 2.5 | 7.5 |
- (3) Because of an error at weighing the yields of two plots of potatoes Series III were lost. Both were with the combination S NEM(80) ALDICARB and SNEMRATE 7.5. Estimated values were used in the analyses.

SERIES II WINTER WHEAT

GRAIN TONNES/HECTARE

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

S NEM(79)	ALDICARB	OXAMYL	MEAN
A NEM(79)			
NONE	6.94	7.01	6.98
TELONE	6.89	7.03	6.96
MEAN	6.91	7.02	6.97

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SERIES II WINTER WHEAT

GRAIN TONNES/HECTARE

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

	2.5	5.0	7.5	10.0	MEAN
SNEMRATE					
A NEM(79)					
NONE	6.97	6.97	6.95	7.02	6.98
TELONE	6.89	6.80	6.93	7.21	6.96
MEAN	6.93	6.88	6.94	7.11	6.97

	2.5	5.0	7.5	10.0	MEAN
SNEMRATE					
S NEM(79)					
ALDICARB	6.81	6.82	6.94	7.09	6.91
OXAMYL	7.05	6.95	6.94	7.14	7.02
MEAN	6.93	6.88	6.94	7.11	6.97

	SNEMRATE	2.5	5.0	7.5	10.0
A NEM(79)	S NEM(79)				
NONE	ALDICARB	6.89	6.91	6.89	7.09
	OXAMYL	7.05	7.03	7.01	6.95
TELONE	ALDICARB	6.73	6.73	7.00	7.09
	OXAMYL	7.06	6.87	6.87	7.32

RATE NONE 6.92

GRAND MEAN 6.96

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

TABLE	A NEM(79)	S NEM(79)	SNEMRATE	A NEM(79) S NEM(79)
SED	0.115	0.115	0.162	0.162

TABLE	A NEM(79) SNEMRATE	S NEM(79) SNEMRATE	A NEM(79) S NEM(79) SNEMRATE
SED	0.230	0.230	0.325

SED FOR RATE NONE V ANY MEAN IN
A NEM(79).S NEM(79).SNEMRATE TABLE IS 0.281

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

STRATUM	DF	SE	CV%
BLOCK.WP	50	0.459	6.6

GRAIN MEAN DM% 85.2

PLOT AREA HARVESTED 0.00173

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SERIES III POTATOES

TOTAL TUBERS TONNES/HECTARE

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

	2.5	5.0	7.5	10.0	MEAN
SNEMRATE					
S NEM(80)					
ALDICARB	45.2	41.4	29.4	35.5	37.9
OXAMYL	33.5	36.6	45.4	39.0	38.6
MEAN	39.3	39.0	37.4	37.3	38.2

RATE NONE 26.1

GRAND MEAN 36.9

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

TABLE	S NEM(80)	SNEMRATE	S NEM(80) SNEMRATE & RATE NONE
-----	-----	-----	-----
SED	2.60	3.67	5.19

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

STRATUM	DF	SE	CV%
BLOCK.WP	58	10.38	28.1

PERCENTAGE WARE 3.81 CM (1.5 INCH) RIDDLE

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

	2.5	5.0	7.5	10.0	MEAN
SNEMRATE					
S NEM(80)					
ALDICARB	93.2	93.0	92.5	93.2	93.0
OXAMYL	91.7	92.6	93.5	92.3	92.5
MEAN	92.4	92.8	93.0	92.8	92.7

RATE NONE 91.1

GRAND MEAN 92.6

PLOT AREA HARVESTED 0.00065