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77/W/CS/35 Nematicides Dosage - Potatoes

Rothamsted Research

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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 sixth year, potatoes.

For previous years see 72/W/CS/35(t) and 73-76/W/CS/35.

Design: 3 series of 4 replicates of 2 x 9.

Whole plot dimensions: 4.27 x 6.10.

Treatments:-

The experiment has three series with the following cropping:-

	1968-71	1972	1973	1974	1975	1976	1977
Series I	P	P*	SB	B	P*	P	P
Series II	P	P	P*	SB	B	P*	P
Series III	P	P	P	P*	SB	B	P*

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

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

Treatments: All combinations of:-

1. Varieties and residual effects of varieties:

VARIETY	Series I	
	1972	1975-77
(PC)PC3	Pentland Crown	Pentland Crown
(MP)PC3	Maris Piper	Pentland Crown
VARIETY	Series II	
	1973	1976-77
(PC)PC2	Pentland Crown	Pentland Crown
(MP)PC2	Maris Piper	Pentland Crown
VARIETY	Series III	
	1974	1977
(PC)PC	Pentland Crown	Pentland Crown
(MP)PC	Maris Piper	Pentland Crown

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2. Nematicides (kg) and nematicide residues (applied to Series I 1975, Series II 1976, Series III 1977):

NEM RES(75)	Series I
NEM RES(76)	Series II
NEMACIDE(77)	Series III
NONE	None
	Dazomet (half before, half after autumn ploughing)
DAZ2	220
DAZ3	330
DAZ4	440
DAZ6	660
DAZ2+TE2	Dazomet, 220, 'Telone', 220, all after autumn ploughing
TE4	'Telone' 450 all after autumn ploughing
OX	Oxamyl 5.6 in spring
TE2+OX	'Telone' 220, after autumn ploughing, oxamyl 5.6 in spring

NOTE: Because of the wet autumn all nematicides were applied in the spring for Series III 1977.

Standard applications: Manures: Magnesian limestone at a total of 5 tonnes, in two equal applications, to Series II only. All series: (13:13:20) at 1860 kg
Weedkiller: Linuron at 1.3 kg plus paraquat at 0.42 kg ion in 420 l.
Fungicide: Mancozeb at 1.3 kg on four occasions, the last three with insecticide, in 420 l, 390 l and twice in 370 l successively. Insecticide: Pirimicarb at 0.14 kg on three occasions with fungicide.

Seed: Pentland Crown.

Cultivations, etc.:-

All Series: NPK applied: 6 Apr, 1977. Heavy-tine cultivated: 14 Apr.
Weedkiller applied: 25 May. Fungicide applied: 23 June. Fungicide with insecticide applied: 8 July, 21 July, 12 Aug.
Series I: Heavy-tine cultivated three times: 22 Nov, 1976 and twice: 8 Mar, 1977. Rotary cultivated: 18 Apr. Potatoes planted: 19 Apr. Grubbed and earthed up: 25 May. Haulm mechanically destroyed: 26 Sept. Lifted: 5 Oct.
Series II: Heavy-tine cultivated: 22 Nov, 1976. Magnesian limestone applied: 26 Nov, 17 Jan, 1977. Heavy-tine cultivated twice: 8 Mar. Rotary cultivated: 18 Apr. Potatoes planted: 19 Apr. Grubbed and earthed up: 25 May. Haulm mechanically destroyed: 26 Sept. Lifted: 5 Oct.
Series III, Test Crop: Subsoiled, tines 140 cm apart and 50 cm deep: 7 Sept, 1976. Ploughed: 9 Nov. Spring-tine cultivated: 7 Mar, 1977. Dazomet applied and these plots only rotary cultivated, 'Telone' injected and all plots spring-tine cultivated: 14 Mar. Oxamyl applied and these plots only rotary cultivated, potatoes planted: 2 May. Haulm mechanically destroyed: 21 Oct. Lifted: 24 Oct.

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

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POTATOES SERIES I

TOTAL TUBERS TONNES/HECTARE

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

VARIETY NEM RES(75)	(PC)PC3	(MP)PC3	MEAN
NONE	11.7	6.4	9.0
DAZ2	6.7	13.8	10.3
DAZ3	13.4	15.6	14.5
DAZ4	15.7	18.2	17.0
DAZ6	13.7	14.9	14.3
DAZ2+TE2	13.0	11.7	12.4
TE4	9.0	10.6	9.8
OX	10.1	16.4	13.2
TE2+OX	18.1	14.3	16.2
MEAN	12.4	13.5	13.0

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

TABLE	VARIETY NEM RES(75)	VARIETY NEM RES(75)
SED	0.95	2.07
		2.92

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

STRATUM	DF	SE	CV%
BLOCK.WP	47	4.05	31.2

PERCENTAGE WARE 3.81CM (1.5 INCH) RIDDLE

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

VARIETY NEM RES(75)	(PC)PC3	(MP)PC3	MEAN
NONE	70.4	61.4	65.9
DAZ2	56.0	69.4	62.7
DAZ3	76.0	75.1	75.6
DAZ4	78.4	76.7	77.6
DAZ6	74.4	73.5	73.9
DAZ2+TE2	77.7	71.1	74.4
TE4	66.9	66.9	66.9
OX	64.0	73.3	68.7
TE2+OX	76.2	72.9	74.5
MEAN	71.1	71.2	71.1

PLOT AREA HARVESTED 0.00087

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POTATOES SERIES II

TOTAL TUBERS TONNES/HECTARE

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

VARIETY NEM RES(76)	(PC)PC2	(MP)PC2	MEAN
NONE	12.6	12.3	12.5
DAZ2	23.3	24.9	24.1
DAZ3	25.8	30.5	28.1
DAZ4	26.4	27.7	27.1
DAZ6	29.1	30.0	29.6
DAZ2+TE2	28.2	26.5	27.4
TE4	15.5	23.8	19.6
OX	24.1	26.9	25.5
TE2+OX	28.4	32.7	30.5
MEAN	23.7	26.1	24.9

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

TABLE	VARIETY NEM RES(76)	VARIETY NEM RES(76)
SED	0.98	2.19
		3.09

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

STRATUM	DF	SE	CV%
BLOCK.WP	47	4.18	16.8

PERCENTAGE WARE 3.81CM (1.5 INCH) RIDDLE

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

VARIETY NEM RES(76)	(PC)PC2	(MP)PC2	MEAN
NONE	65.0	66.7	65.8
DAZ2	84.5	86.6	85.6
DAZ3	86.9	84.8	85.8
DAZ4	88.4	86.1	87.2
DAZ6	87.0	87.9	87.4
DAZ2+TE2	87.0	86.4	86.7
TE4	74.9	83.5	79.2
OX	80.5	83.9	82.2
TE2+OX	88.1	88.5	88.3
MEAN	82.5	83.8	83.2

PLOT AREA HARVESTED 0.00087

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POTATOES SERIES III

TOTAL TUBERS TONNES/HECTARE

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

VARIETY NEMACIDE(77)	(PC)PC	(MP)PC	MEAN
NONE	30.2	34.9	32.5
DAZ2	46.6	47.7	47.2
DAZ3	50.7	51.8	51.3
DAZ4	49.9	55.9	52.9
DAZ6	53.0	56.5	54.8
DAZ2+TE2	53.5	55.5	54.5
TE4	41.4	47.0	44.2
OX	47.2	45.6	46.4
TE2+OX	50.4	50.9	50.7
MEAN	47.0	49.5	48.3

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

TABLE	VARIETY NEMACIDE(77)	VARIETY NEMACIDE(77)
SED	0.86	1.92
		2.70

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

STRATUM	DF	SE	CV%
BLOCK.WP	46	3.63	7.5

PERCENTAGE WARE 3.81CM (1.5 INCH) RIDDLE

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

VARIETY NEMACIDE(77)	(PC)PC	(MP)PC	MEAN
NONE	84.7	88.0	86.3
DAZ2	92.6	89.8	91.2
DAZ3	89.7	91.7	90.7
DAZ4	92.5	91.0	91.7
DAZ6	90.6	90.3	90.4
DAZ2+TE2	90.9	92.3	91.6
TE4	90.2	89.9	90.1
OX	91.0	88.8	89.9
TE2+OX	93.4	92.0	92.7
MEAN	90.6	90.4	90.5

PLOT AREA HARVESTED 0.00087