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Yields of the Field Experiments 1976

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76/W/CS/35 Nematicide Dosage - Potatoes, Barley

Rothamsted Research

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76/W/CS/35

NEMATICIDES DO SAGE

Object: To study the effects of rates and methods of applying nematicides on *Globodera* (formerly *Heterodera*) *rostochiensis* and yield of potatoes, residual effects are also studied - Woburn Stackyard All.

Sponsor: A.G. Whitehead.

The fifth year, potatoes, barley.

For previous years see 72/W/CS/35(t) and 73-75/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
Series I	P	P*	SB	B	P*	P
Series II	P	P	P*	SB	B	P*
Series III	P	P	P	P*	SB	B

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 only (Potatoes-Pentland Crown 1976):

	1972	1975
(PC)PC	Pentland Crown	Pentland Crown
(MPP)PC	Maris Piper	Pentland Crown

VARIETY Series II only (Potatoes-Pentland Crown 1976):

	1973
(PC)PC	Pentland Crown
(MP)PC	Maris Piper

RES VAR Series III only (Barley 1976):

	1974
(PC)	Pentland Crown
(MP)	Maris Piper

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2. Nematicides (kg) and nematicide residues (applied to Series I 1975, Series II 1976, Series III 1974):

NEM RES(75) Series I
NEMACIDE Series II
NEM RES(74) 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 a.i. in spring

Standard applications:-

Potatoes: Series I only: Magnesian limestone at 2.9 tonnes. Series I and II: Manures: (13:13:20) at 1850 kg. Weedkiller: Linuron at 1.3 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.
Barley: Series III: Manures:(20:14:14) at 450 kg, combine drilled. Weedkiller: Ioxynil at 0.53 kg with mecoprop at 1.6 kg in 280 l.

Seed: Potatoes: Pentland Crown.

Barley: Julia, dressed with ethirimol, sown at 160 kg.

Cultivations, etc.:-

Potatoes: Series I: Deep-tine cultivated: 24 Oct, 1975. Magnesian limestone applied, deep-tine cultivated: 28 Oct. NPK applied: 22 Mar, 1976. Spring-tine cultivated: 23 Mar. Rotary cultivated, potatoes planted: 6 Apr. Weedkiller applied: 6 May. Pirimicarb applied: 18 June. Fungicide with demeton-s-methyl applied: 30 June. Fungicide applied: 30 July. Haulm desiccant applied: 6 Oct. Haulm mechanically destroyed: 12 Oct. Lifted: 2 Nov.
Potatoes, Test crop: Series II: Subsoiled, tines 140 cm apart and 56 cm deep: 3 Sept, 1975. Deep-tine cultivated: 9 Sept. Ploughed, spring-tine cultivated: 24 Sept. Dazomet applied and these plots only rotary cultivated, 'Telone' injected, all plots spring-tine cultivated: 13 Oct. NPK applied: 22 Mar, 1976. Spring-tine cultivated: 23 Mar. Oxamyl applied, rotary cultivated, potatoes planted: 6 Apr. Weedkiller applied: 6 May. Pirimicarb applied: 18 June. Fungicide with insecticide applied: 30 June. Fungicide applied: 30 July. Haulm desiccant applied: 6 Oct. Haulm mechanically destroyed: 12 Oct. Lifted: 21 Oct.
Barley: Series III: Ploughed: 24 Nov, 1975. Spring-tine cultivated: 2 Mar, 1976. Spring-tine cultivated with crumbler, seed sown: 8 Mar. Rolled: 9 Mar. Weedkiller applied: 3 May. Combine harvested: 26 July.

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

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POTATOES SERIES I

TOTAL TUBERS TONNES/HECTARE

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

VARIETY (PCPC)PC	(MPPC)PC	MEAN
NEM RES(75)		
NONE	10.5	12.4
DAZ2	19.1	29.1
DAZ3	28.5	29.6
DAZ4	30.5	33.0
DAZ6	30.6	30.9
DAZ2+TE2	25.2	29.0
TE4	15.3	24.9
OX	25.1	28.1
TE2+OX	32.0	31.6
MEAN	24.1	27.6

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

TABLE	NEM RES(75)	VARIETY NEM RES(75)	VARIETY
SED	2.49	1.15	3.52

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

STRATUM	DF	SE	CV%
BLOCK.WP	47	4.89	18.9

PERCENTAGE WARE 3.81CM (1.5 INCH) RIDDLE

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

VARIETY (PCPC)PC	(MPPC)PC	MEAN
NEM RES(75)		
NONE	80.6	83.4
DAZ2	89.9	92.4
DAZ3	93.1	90.1
DAZ4	93.9	92.9
DAZ6	92.7	92.2
DAZ2+TE2	91.6	92.9
TE4	88.3	91.5
OX	91.7	92.0
TE2+OX	92.3	91.4
MEAN	90.5	91.0

PLOT AREA HARVESTED 0.00087

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POTATOES SERIES II

TUBERS TONNES/HECTARE

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

VARIETY	(PC)PC	(MP)PC	MEAN
NEMACIDE			
NONE	20.5	26.1	23.3
DAZ2	39.9	40.6	40.2
DAZ3	41.7	41.5	41.6
DAZ4	39.4	41.2	40.3
DAZ6	45.3	44.0	44.7
DAZ2+TE2	43.0	40.3	41.7
TE4	35.7	41.7	38.7
OX	41.3	43.2	42.3
TE2+OX	43.6	45.2	44.4
MEAN	38.9	40.4	39.7

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

TABLE	NEMACIDE	VARIETY	NEMACIDE VARIETY
SED	1.52	0.68	2.14

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

STRATUM	DF	SE	CV%
BLOCK.WP	47	2.89	7.3

PERCENTAGE WARE 3.81CM (1.5 INCH) RIDDLE

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

VARIETY	(PC)PC	(MP)PC	MEAN
NEMACIDE			
NONE	87.7	86.7	87.2
DAZ2	92.9	91.5	92.2
DAZ3	93.7	91.1	92.4
DAZ4	90.4	93.5	92.0
DAZ6	92.2	92.0	92.1
DAZ2+TE2	91.2	92.2	91.7
TE4	90.3	92.9	91.6
OX	92.2	92.5	92.3
TE2+OX	92.5	93.3	92.9
MEAN	91.5	91.7	91.6

PLOT AREA HARVESTED 0.00087

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BARLEY

GRAIN TONNES/HECTARE

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

RES VAR NEM RES(74)	(PC)	(MP)	MEAN
NONE	3.63	3.27	3.45
DAZ2	3.54	3.01	3.28
DAZ3	3.38	3.23	3.30
DAZ4	3.38	3.37	3.37
DAZ6	2.85	3.15	3.00
DAZ2+TE2	3.51	3.10	3.31
TE4	3.23	3.19	3.21
OX	3.37	2.95	3.16
TE2+OX	3.77	3.56	3.67
MEAN	3.40	3.20	3.30

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

TABLE	NEM RES(74)	RES VAR NEM RES(74) RES VAR
SED	0.231	0.103 0.325

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

STRATUM	DF	SE	CV%
BLOCK.WP	47	0.437	13.2

GRAIN MEAN DM% 88.1

STRAW TONNES/HECTARE

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

RES VAR NEM RES(74)	(PC)	(MP)	MEAN
NONE	2.33	1.97	2.15
DAZ2	2.33	2.15	2.24
DAZ3	2.01	2.33	2.17
DAZ4	2.21	2.36	2.28
DAZ6	2.11	1.90	2.01
DAZ2+TE2	2.47	2.30	2.38
TE4	2.05	1.94	1.99
OX	2.21	1.79	2.00
TE2+OX	2.49	2.47	2.48
MEAN	2.24	2.13	2.19

STRAW MEAN DM% 89.8

PLOT AREA HARVESTED 0.00173