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Yields of the Field Experiments 1984

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84/W/CS/35 Nematicides Dosage - Potatoes, W. Wheat

Rothamsted Research

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84/W/CS/35

NEMATOCIDES 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 17th year, potatoes, w. wheat.

For previous years see 72/W/CS/35(t) and 73-83/W/CS/35.

Design: 2 series each of 4 randomised blocks of 18 plots with S NEM YR on blocks

Whole plot dimensions: 4.27 x 6.10.

Treatments:-

The experiment has two series with the following cropping:-

1968-72 73 74 75 76 77 78 79 80 81 82 83 84

Series II	P	P*	SB	B	P*	P	P	P*	W	B	B	P*	W
Series III	P	P	P*	SB	B	P*	P	P	P*	W	B	B	P*

Series I was damaged by soil erosion and has been excluded from the experiment since 1980.

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

*Treatments applied to potatoes, subsequent crops test residual effects.

Treatments:

Series II, w. wheat 1984, tests the residual effects of treatments applied for potatoes in 1979 and 1983. All combinations of:-

Blocks

- | | |
|-------------|---------------------------------------|
| 1. S NEM YR | Years of applying spring nematicides: |
| 1979 | 1979 only |
| 1979+83 | 1979 repeated cumulatively in 1983 |

Whole plots

- | | |
|--------------|---|
| 2. A NEM(79) | Residual effects of nematicide applied autumn 1978: |
| NONE | None |
| TELONE | 'Telone' at 224 kg |
| 3. S NEM | Nematicides applied in spring 1979 and 1983: |
| ALDICARB | |
| OXAMYL | |

84/W/CS/35

4. SNEMRATE Rates of spring nematicides (kg):

2.5
5.0
7.5
10.0

plus two untreated plots per block

RATE

0.0

Series III, potatoes 1984, tests the residual and fresh effects of sets of treatments applied for potatoes in 1980 and 1984, ignoring those applied in earlier years. All combinations (duplicated) of:-

Blocks

1. S NEM YR Years of applying spring nematicides:

1980 1980 only
1980+84 1980 repeated cumulatively in 1984

Whole plots

2. S NEM Spring nematicides:

ALDICARB
OXAMYL

3. SNEMRATE Rates of spring nematicides (kg):

2.5
5.0
7.5
10.0

plus two untreated plots per block

RATE

0.0

Standard applications:

W. wheat (Series II): Manures: (5:14:30) at 340 kg. N at 170 kg as 'Nitro-Chalk'. Weedkiller: Chlortoluron at 3.5 kg in 250 l.

Potatoes (Series III): Manures: Magnesian limestone at 5.0 t. (10:10:15+4.5 Mg) at 2510 kg. Weedkillers: Linuron at 1.2 l with paraquat at 0.20 kg ion in 250 l. Fungicides: Fentin acetate with maneb (as 'Brestan 60' at 0.5 kg) in 250 l on one occasion with the insecticide. Fentin hydroxide at 0.28 kg in 250 l on five occasions, with the insecticide on the second occasion. Insecticide: Pirimicarb at 0.14 kg on two occasions. Haulm desiccant: Diquat at 0.8 kg ion in 250 l.

Seed: W. wheat: Avalon, sown at 200 kg.
Potatoes: Pentland Crown.

84/W/CS/35

Cultivations, etc.:-

W. wheat (Series II): Heavy spring-tine cultivated, NPK applied: 24 Oct, 1983. Spring-tine cultivated with crumbler attached, seed sown: 25 Oct. Weedkiller applied: 28 Oct. N applied: 3 Apr, 1984. Combine harvested: 21 Aug.

Potatoes (Series III): Magnesian limestone applied: 30 Sept, 1983. Ploughed: 16 Nov. NPK with Mg applied: 3 Apr, 1984. Heavy spring-tine cultivated: 5 Apr. Treatments applied, rotary cultivated, potatoes planted: 11-12 Apr. Weedkillers applied: 4 May. Fentin acetate with maneb and insecticide applied: 19 June. Fentin hydroxide applied: 3 July, 1 Aug, 28 Aug, 12 Sept. Fentin hydroxide applied with insecticide: 18 July. Haulm desiccant applied: 27 Sept. Haulm mechanically destroyed: 28 Sept. Lifted: 8 Oct.

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

84/W/CS/35

POTATOES SERIES III

TOTAL TUBERS TONNES/HECTARE

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

S NEM	ALDICARB	OXAMYL	MEAN		
S NEM YR					
1980	33.3	31.6	32.5		
1980+84	49.1	49.4	49.2		
MEAN	41.2	40.5	40.9		
SNEMRATE	2.5	5.0	7.5	10.0	MEAN
S NEM YR					
1980	29.9	30.7	36.6	32.6	32.5
1980+84	49.5	47.1	49.0	51.4	49.2
MEAN	39.7	38.9	42.8	42.0	40.9
SNEMRATE	2.5	5.0	7.5	10.0	MEAN
S NEM					
ALDICARB	39.4	39.2	45.3	41.0	41.2
OXAMYL	40.0	38.5	40.3	43.0	40.5
MEAN	39.7	38.9	42.8	42.0	40.9
	SNEMRATE	2.5	5.0	7.5	10.0
S NEM YR	S NEM				
1980	ALDICARB	29.6	30.8	38.9	34.0
	OXAMYL	30.2	30.6	34.3	31.3
1980+84	ALDICARB	49.1	47.6	51.7	48.0
	OXAMYL	49.9	46.5	46.4	54.8

RATE 0.0 28.6

GRAND MEAN 39.5

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

TABLE	S NEM	SNEMRATE	S NEM YR* S NEM	S NEM YR* SNEMRATE

SED	1.30	1.84	1.84	2.61

TABLE	S NEM SNEMRATE	S NEM YR* S NEM SNEMRATE & RATE 0.0

SED	2.61	3.69

* WITHIN THE SAME LEVEL OF S NEM YR ONLY

84/W/CS/35

POTATOES SERIES III

TOTAL TUBERS TONNES/HECTARE

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

STRATUM	DF	SE	CV%
BLOCK.WP	52	5.21	13.2

PERCENTAGE WARE 3.81 CM (1.5 INCH) RIDDLE

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

S NEM	ALDICARB	OXAMYL	MEAN		
S NEM YR					
1980	91.7	90.7	91.2		
1980+84	95.8	95.1	95.5		
MEAN	93.8	92.9	93.3		
SNEMRATE	2.5	5.0	7.5	10.0	MEAN
S NEM YR					
1980	89.7	90.6	92.8	91.8	91.2
1980+84	95.0	95.5	95.6	95.8	95.5
MEAN	92.3	93.0	94.2	93.8	93.3
SNEMRATE	2.5	5.0	7.5	10.0	MEAN
S NEM					
ALDICARB	92.5	93.1	95.8	93.6	93.8
OXAMYL	92.1	93.0	92.5	94.0	92.9
MEAN	92.3	93.0	94.2	93.8	93.3
S NEM YR	SNEMRATE	2.5	5.0	7.5	10.0
1980	S NEM				
	ALDICARB	89.8	90.2	94.9	91.9
	OXAMYL	89.5	90.9	90.6	91.7
1980+84	ALDICARB	95.2	96.0	96.7	95.3
	OXAMYL	94.7	95.0	94.4	96.3

RATE 0.0 90.1

GRAND MEAN 93.0

PLOT AREA HARVESTED 0.00087

84/W/CS/35

WINTER WHEAT SERIES II

GRAIN TONNES/HECTARE

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

A NEM(79)	NONE	TELONE	MEAN		
S NEM YR					
1979	7.42	7.49	7.46		
1979+83	7.54	7.71	7.62		
MEAN	7.48	7.60	7.54		
S NEM	ALDICARB	OXAMYL	MEAN		
S NEM YR					
1979	7.49	7.42	7.46		
1979+83	7.59	7.65	7.62		
MEAN	7.54	7.54	7.54		
S NEM	ALDICARB	OXAMYL	MEAN		
A NEM(79)					
NONE	7.38	7.57	7.48		
TELONE	7.71	7.50	7.60		
MEAN	7.54	7.54	7.54		
SNEMRATE	2.5	5.0	7.5	10.0	MEAN
S NEM YR					
1979	7.12	7.81	7.54	7.36	7.46
1979+83	7.84	8.01	7.14	7.51	7.62
MEAN	7.48	7.91	7.34	7.44	7.54
SNEMRATE	2.5	5.0	7.5	10.0	MEAN
A NEM(79)					
NONE	7.55	7.61	7.35	7.40	7.48
TELONE	7.41	8.21	7.33	7.47	7.60
MEAN	7.48	7.91	7.34	7.44	7.54
SNEMRATE	2.5	5.0	7.5	10.0	MEAN
S NEM					
ALDICARB	7.58	8.03	7.09	7.47	7.54
OXAMYL	7.38	7.78	7.58	7.40	7.54
MEAN	7.48	7.91	7.34	7.44	7.54
A NEM(79)	NONE	TELONE			
S NEM	ALDICARB	OXAMYL	ALDICARB	OXAMYL	
S NEM YR					
1979	7.18	7.66	7.81	7.18	
1979+83	7.58	7.49	7.60	7.82	

84/W/CS/35

WINTER WHEAT SERIES II

GRAIN TONNES/HECTARE

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

		SNEMRATE	2.5	5.0	7.5	10.0
S NEM YRA NEM(79)						
1979	NONE		7.04	7.65	7.65	7.33
	TELONE		7.20	7.96	7.43	7.39
1979+83	NONE		8.05	7.56	7.05	7.48
	TELONE		7.62	8.46	7.23	7.54

		SNEMRATE	2.5	5.0	7.5	10.0
S NEM YR S NEM						
1979	ALDICARB		7.62	7.86	7.17	7.33
	OXAMYL		6.61	7.76	7.90	7.39
1979+83	ALDICARB		7.54	8.21	7.02	7.61
	OXAMYL		8.14	7.81	7.26	7.41

		SNEMRATE	2.5	5.0	7.5	10.0
A NEM(79)	S NEM					
	NONE	ALDICARB	7.14	7.91	6.99	7.48
		OXAMYL	7.95	7.30	7.70	7.33
	TELONE	ALDICARB	8.02	8.16	7.19	7.46
		OXAMYL	6.80	8.26	7.46	7.47

		SNEMRATE	2.5	5.0	7.5	10.0
S NEM YRA NEM(79)	S NEM					
1979	NONE	ALDICARB	7.00	7.82	6.99	6.91
		OXAMYL	7.08	7.48	8.31	7.76
	TELONE	ALDICARB	8.25	7.89	7.35	7.75
		OXAMYL	6.15	8.03	7.50	7.03
1979+83	NONE	ALDICARB	7.29	7.99	7.00	8.05
		OXAMYL	8.82	7.13	7.10	6.90
	TELONE	ALDICARB	7.78	8.43	7.03	7.17
		OXAMYL	7.46	8.49	7.43	7.91

RATE 0.0 6.40

GRAND MEAN 7.41

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

TABLE	A NEM(79)	S NEM	SNEMRATE
SED	0.217	0.217	0.306

TABLE	S NEM YR* A NEM(79)	S NEM YR* S NEM	A NEM(79) S NEM	S NEM YR* SNEMRATE
SED	0.306	0.306	0.306	0.433

84/W/CS/35

WINTER WHEAT SERIES II

GRAIN TONNES/HECTARE

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

TABLE	A NEM(79) SNEMRATE	S NEM SNEMRATE	S NEM YR* A NEM(79) S NEM	S NEM YR* A NEM(79) SNEMRATE
SED	0.433	0.433	0.433	0.613

TABLE	S NEM YR* S NEM SNEMRATE	A NEM(79) S NEM SNEMRATE	S NEM YR* A NEM(79) S NEM SNEMRATE
SED	0.613	0.613	0.866

* WITHIN THE SAME LEVEL OF S NEM YR ONLY
 SED FOR COMPARING RATE 0.0 WITH ANY ITEM
 IN S NEM YR.A NEM(79).S NEM.SNEMRATE TABLE IS 0.685

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

STRATUM	DF	SE	CV%
BLOCK.WP	36	0.866	11.7

GRAIN MEAN DM% 89.3

PLOT AREA HARVESTED 0.00168