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# Yields of the Field Experiments 1985

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## 85/W/CS/34 Nematicides in Crop Sequence - Potatoes, S. Barley

### Rothamsted Research

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85/W/CS/34

NEMATICIDES IN CROP SEQUENCE

Object: To study the effects of a range of nematicides on incidence of *Globodera rostochiensis* and yield of potatoes. Residual effects of previous treatments are studied in wheat and barley - Woburn Great Hill II and III.

Sponsor: A.G. Whitehead.

The 17th year, potatoes, s. barley.

For previous years see 71/W/CS/34(t), 72/W/CS/34(t) and 73-84/W/CS/34.

Design: 4 series of 3 blocks of 10 plots.

Whole plot dimensions: 4.27 x 9.14.

Treatments: The experiment has four series with the following cropping:-

	1970	71	72	73	74	75	76	77	78	79	80	81	82	83	84	85
Series I	P	P*	SB	B	P	P*	W	B	P	P*	B	B	P	P*	W	B
Series II	P	P	P*	SB	B	P	P*	W	B	P	P*	W	B	P	P*	B
Series III	B	P	P	P*	SB	B	P	P*	W	B	P	P*	W	B	P	P*
Series IV	B	P	P	P	P*	SB	B	P	P*	W	B	P	P*	W	B	P

P = potatoes, SB = sugar beet, B = s. barley, W = w. wheat

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

Treatments to s. barley (Series I): All combinations of:-

1. NEMACIDE(83) Residues of nematicides applied 1983:

FMC65201  
FMC67825  
OXAMYL

2. RATE Rates of nematicide (kg a.i.):

2.8  
5.6  
11.2

plus one untreated plot per block

RATE

0.0

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Treatments to s. barley (Series II) replacing w. wheat which failed:  
All combinations of:-

1. NEMACIDE(84) Residues of nematicides applied 1984:  
ALDICARB  
SDS38697  
SDS46995
2. RATE Rates of nematicide (kg a.i.):  
SINGLE Single (2.8 kg of aldicarb, 1.4 kg of SDS materials)  
DOUBLE Double (5.6 kg of aldicarb, 2.8 kg of SDS materials)  
QUAD Quadruple (11.2 kg of aldicarb, 5.6 kg of SDS materials)

plus one untreated plot per block

RATE

NONE

Treatments to potatoes (Series III): All combinations of:-

1. NEMACIDE(85) Nematicides applied 1985:  
OXAMYL Oxamyl  
SDS46995 'SDS 46995'  
THIODICA Thiodicarb
2. RATE Rates of nematicide (kg a.i.):  
SINGLE Single (1.4 kg of 'SDS 46995', 2.8 kg of other materials)  
DOUBLE Double (2.8 kg of 'SDS 46995', 5.6 kg of other materials)  
QUAD Quadruple (5.6 kg of 'SDS 46995', 11.2 kg of other materials)

plus one untreated plot per block

RATE

NONE

Treatments to potatoes (Series IV): All combinations of:-

1. NEMACIDE(82) Residues of nematicides applied 1982:  
SDS46995  
SDS47187  
OXAMYL
2. RATE Rates of nematicide (kg a.i.):  
SINGLE Single (1.5 kg of SDS materials, 2.8 kg of oxamyl)  
DOUBLE Double (3.0 kg of SDS materials, 5.6 kg of oxamyl)  
QUAD Quadruple (6.0 kg of SDS materials, 11.2 kg of oxamyl)

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plus one untreated plot per block

RATE

NONE

Standard applications:

- S. barley (Series I): Manures: (20:10:10) at 620 kg. Weedkillers: Clopyralid at 0.07 kg with bromoxynil octanoate at 0.34 kg and mecoprop at 2.1 kg in 250 l applied with the fungicide. Fungicide: Tridemorph at 0.52 kg.
- W. wheat/s. barley (Series II): Manures: Magnesian limestone at 7.5 t. (5:14:30) at 340 kg. (20:10:10) at 620 kg. Weedkillers: Paraquat at 0.5 kg ion in 250 l. Clopyralid at 0.07 kg with bromoxynil octanoate at 0.34 kg and mecoprop at 2.1 kg in 250 l applied with the fungicide. Fungicide: Tridemorph at 0.52 kg.
- Potatoes (series III and IV): Manures: (10:10:15+4.5 Mg) at 2510 kg. Weedkillers: Linuron at 1.0 kg with paraquat at 0.40 kg ion in 250 l. Fungicide: Mancozeb at 1.4 kg in 250 l on six occasions, with the insecticide on the second occasion. Fentin acetate with maneb (as 'Brestan 60' at 0.50 kg) in 250 l. Insecticide: Pirimicarb at 0.14 kg.

NOTE: W. wheat (Series II) failed and was replaced by s. barley.

- Seed: W. wheat: Avalon, sown at 190 kg.
- S. barley: Triumph, dressed with flutriafol, thiabendazole and ethirimol, sown at 160 kg.
- Potatoes: Pentland Crown.

Cultivations, etc.:-

- S. barley (Series I): Discd: 18 Sept, 1984. Ploughed: 12 Dec. Power harrowed, NPK applied, rotary harrowed, seed sown: 21 Mar, 1985. Weedkillers and fungicide applied: 17 May. Combine harvested: 29 Aug.
- W. wheat/s. barley (Series II): Magnesian limestone applied: 23 Oct, 1984. (5:14:30) applied, power harrowed, wheat seed sown: 31 Oct. Paraquat applied, spring-tine cultivated with crumbler attached, (20:10:10) applied, barley seed sown: 21 Mar, 1985. Remaining weedkillers and fungicide applied: 17 May. Combine harvested: 29 Aug.
- Potatoes (Series III and IV): Discd (Series IV): 18 Sept, 1984. Harrowed off haulm (Series III): 31 Oct. Ploughed (Series IV): 12 Dec. NPK Mg applied: 9 Apr, 1985. Heavy spring-tine cultivated: 12 Apr. Treatments applied (Series III), rotary cultivated (both series). Potatoes planted (Series IV): 29 Apr. Potatoes planted (Series III): 30 Apr. Weedkillers applied: 20 May. Mancozeb applied: 20 June, 23 July, 6 Aug, 14 Aug, 7 Sept. Mancozeb applied with insecticide: 3 July. Fentin acetate with maneb applied: 21 Aug. Haulm mechanically destroyed: 27 Sept. Lifted: 8 Oct.



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POTATOES SERIES III

TOTAL TUBERS TONNES/HECTARE

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

RATE NEMACIDE (85)	SINGLE	DOUBLE	QUAD	MEAN
OXAMYL	30.1	27.8	28.8	28.9
SDS46995	21.2	26.9	26.2	24.7
THIODICA	6.3	7.0	11.4	8.2
MEAN	19.2	20.6	22.1	20.6
RATE NONE	7.8			
GRAND MEAN	19.3			

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

TABLE	NEMACIDE(85)	RATE NEMACIDE(85) RATE & RATE NONE
SED	2.29	3.97

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

STRATUM	DF	SE	CV%
BLOCK.WP	18	4.86	25.1

PERCENTAGE WARE 3.81 CM (1.5 INCH) RIDDLE

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

RATE NEMACIDE (85)	SINGLE	DOUBLE	QUAD	MEAN
OXAMYL	92.1	91.3	91.3	91.5
SDS46995	89.2	93.3	93.1	91.8
THIODICA	59.6	64.0	73.2	65.6
MEAN	80.3	82.9	85.9	83.0
RATE NONE	64.7			
GRAND MEAN	81.2			
PLOT AREA HARVESTED	0.00130			

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POTATOES SERIES IV

TOTAL TUBERS TONNES/HECTARE

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

RATE NEMACIDE(82)	SINGLE	DOUBLE	QUAD	MEAN
SDS46995	17.4	26.7	23.5	22.5
SDS47187	21.6	22.4	23.0	22.3
OXAMYL	25.1	29.9	31.9	29.0
MEAN	21.3	26.3	26.1	24.6
RATE NONE	15.8			
GRAND MEAN	23.7			

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

TABLE	NEMACIDE(82)	RATE NEMACIDE(82) RATE & RATE NONE
SED	1.70	1.70 2.95

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

STRATUM	DF	SE	CV%
BLOCK.WP	18	3.61	15.2

PERCENTAGE WARE 3.81 CM (1.5 INCH) RIDDLE

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

RATE NEMACIDE(82)	SINGLE	DOUBLE	QUAD	MEAN
SDS46995	89.9	93.1	91.8	91.6
SDS47187	90.3	93.3	92.8	92.2
OXAMYL	90.5	92.3	93.0	92.0
MEAN	90.3	92.9	92.6	91.9
RATE NONE	82.8			
GRAND MEAN	91.0			
PLOT AREA HARVESTED	0.00130			

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S. BARLEY SERIES I

GRAIN TONNES/HECTARE

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

	RATE	2.8	5.6	11.2	MEAN
NEMACIDE(83)					
FMC65201	7.62	7.34	7.62	7.53	
FMC67825	7.86	7.80	7.80	7.82	
OXAMYL	7.89	7.72	7.56	7.73	
MEAN	7.79	7.62	7.66	7.69	

RATE 0.0 7.72

GRAND MEAN 7.69

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

TABLE	NEMACIDE(83)	RATE NEMACIDE(83)	RATE & RATE 0.0
-----			
SED	0.108	0.108	0.187

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

STRATUM	DF	SE	CV%
BLOCK.WP	18	0.229	3.0

GRAIN MEAN DM% 86.2

PLOT AREA HARVESTED 0.00251

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S. BARLEY SERIES II

GRAIN TONNES/HECTARE

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

	RATE	SINGLE	DOUBLE	QUAD	MEAN
NEMACIDE(84)					
ALDICARB		6.65	6.57	6.52	6.58
SDS38697		6.42	6.47	6.50	6.46
SDS46995		6.49	6.03	6.36	6.29
MEAN		6.52	6.36	6.46	6.45
RATE NONE		6.41			
GRAND MEAN		6.44			

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

TABLE	NEMACIDE(84)	RATE NEMACIDE(84)	RATE & RATE NONE
-----			
SED	0.134	0.134	0.231

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

STRATUM	DF	SE	CV%
BLOCK.WP	18	0.283	4.4
GRAIN MEAN DM%	86.1		
PLOT AREA HARVESTED	0.00251		