



Yields of the Field Experiments 1987

[Full Table of Content](#)



87/W/CS/34 Nematicides in Crop Sequence - Potatoes, W. Wheat, S. Barley

Rothamsted Research

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87/W/CS/34

NEMATOCIDES IN CROP SEQUENCE

Object: To study the effects of a range of nematocides on the incidence of *Globodera rostochiensis* and the 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 19th year, potatoes, w. wheat, s. barley.

For previous years see 71/W/CS/34(t), 72/W/CS/34(t) and 73-86/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	86	87
Series I	P	P*	SB	B	P	P*	W	B	P	P*	B	B	P	P*	W	B	P	P
Series II	P	P	P*	SB	B	P	P*	W	B	P	P*	W	B	P	P*	B	B	P
Series III	B	P	P	P*	SB	B	P	P*	W	B	P	P*	W	B	P	P*	W	B
Series IV	B	P	P	P	P*	SB	B	P	P*	W	B	P	P*	W	B	P	P*	W

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

* Treatments applied to potatoes, subsequent crops test residual effects. In 1987 planned new treatments were not applied to Series I and yields were not taken.

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

1. NEMACIDE[84] Residues of nematocides applied 1984:

ALDICARB
SDS38697
SDS46995

2. RATE Rates of nematocide (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

87/W/CS/34

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

1. NEMACIDE[85] Residues of nematicides applied 1985:

OXAMYL	Oxamyl
SDS46995	'SDS 46995'
THIODICA	Thiodicarb
2. RATE Rates of nematicide (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 w. wheat (Series IV):

1. NEMACIDE[86] Residues of nematicides and rates (a.i.) applied 1986:

AL 3.3	Aldicarb at 3.3 kg
AL 6.6	Aldicarb at 6.6 kg
AL S 3.3	Aldicarb, slow release formulation at 3.3 kg
AL S 6.6	Aldicarb, slow release formulation at 6.6 kg
ETH 7.5	Ethoprophos at 7.5 kg
MB 5.0	'MB 41380' at 5.0 kg
MB 7.5	'MB 41380' at 7.5 kg
MB 10.0	'MB 41380' at 10.0 kg
OX 5.0	Oxamyl at 5.0 kg
NONE	None

Standard applications:

- Potatoes (Series I and II): Manures: (10:10:15+4.5 Mg) at 2300 kg. Weedkillers: Glyphosate at 1.4 kg in 200 l to Series II only. Linuron at 1.6 kg in 200 l. Fungicides: Mancozeb at 1.4 kg on four occasions in 200 l, applied with the pirimicarb on the second. Fentin hydroxide at 0.28 kg on two occasions in 200 l. Nematicide: Oxamyl at 5.6 kg to Series I only. Insecticide: Pirimicarb at 0.14 kg. Desiccant: Diquat at 0.80 kg ion in 200 l.
- W. wheat (Series IV): Manures: N at 210 kg as 'Nitram'. Weedkillers: Clopyralid at 0.05 kg, bromoxynil at 0.24 kg with mecoprop at 2.5 kg applied with the tridemorph in 200 l. Fungicides: Tridemorph at 0.52 kg. Triadimenol at 0.062 kg with tridemorph at 0.38 kg in 200 l.
- S. barley (Series III): Manures: (20:10:10) at 630 kg. Weedkillers: Glyphosate at 1.4 kg in 200 l. Clopyralid at 0.05 kg, bromoxynil at 0.24 kg with mecoprop at 2.5 kg applied with the tridemorph in 200 l. Fungicides: Tridemorph at 0.52 kg. Triadimenol at 0.062 kg with tridemorph at 0.38 kg in 200 l.

87/W/CS/34

Seed: Potatoes: Pentland Crown.
W. wheat: Avalon, sown at 210 kg.
S. barley: Klaxon, sown at 160 kg.

Cultivations, etc.:-

- Potatoes (Series I and II): Glyphosate applied (Series II only): 19 Sept, 1986. Ploughed (Series II only): 21 Nov. Spring-tine cultivated: 18 Feb, 1987. NPK Mg applied: 21 Apr. Oxamyl applied (Series I only), rotary cultivated, potatoes planted: 27 Apr. Rotary ridged: 15 May. Linuron applied: 25 May. Mancozeb applied: 24 June, 8 July, 26 July, 5 Aug. Pirimicarb applied: 8 July. Fentin hydroxide applied: 18 Aug, 4 Sept. Desiccant applied: 18 Sept. Haulm mechanically destroyed: 1 Oct. Lifted; (Series I): 12 Oct, (Series II): 13 Oct.
- W. wheat (Series IV): Spring-tine cultivated, rotary harrowed with crumbler attached, seed sown, harrowed: 4 Dec, 1986. N applied: 5 May, 1987. Weedkillers and tridemorph applied: 29 May. Triadimenol and tridemorph applied: 4 July. Combine harvested: 15 Sept.
- S. barley (Series III): Glyphosate applied: 19 Sept, 1986. Ploughed: 21 Nov. Spring-tine cultivated: 18 Feb, 1987. NPK applied, spike harrowed with crumbler attached, seed sown: 19 Mar. Clopyralid, bromoxynil, mecoprop and tridemorph applied: 29 May. Triadimenol and tridemorph applied: 4 July. Combine harvested: 21 Aug.

87/W/CS/34

POTATOES SERIES II

TOTAL TUBERS TONNES/HECTARE

***** Tables of means *****

RATE NEMACIDE[84]	SINGLE	DOUBLE	QUAD	Mean
ALDICARB	38.4	37.7	40.7	38.9
SDS38697	29.1	38.2	38.8	35.3
SDS46995	36.1	35.2	34.8	35.4
Mean	34.5	37.0	38.1	36.5

RATE NONE 30.6

Grand mean 35.9

*** Standard errors of differences of means ***

Table	NEMACIDE[84]	RATE NEMACIDE[84] RATE & RATE NONE
s.e.d.	1.22	1.22 2.11

***** Stratum standard errors and coefficients of variation *****

Stratum	d.f.	s.e.	cv%
BLOCK.WP	18	2.58	7.2

PERCENTAGE WARE 3.81 CM (1.5 INCH) RIDDLE

***** Tables of means *****

RATE NEMACIDE[84]	SINGLE	DOUBLE	QUAD	Mean
ALDICARB	86.3	83.8	86.0	85.4
SDS38697	85.9	85.1	84.7	85.2
SDS46995	86.6	86.0	83.8	85.5
Mean	86.2	84.9	84.8	85.3

RATE NONE 83.7

Grand mean 85.2

PLOT AREA HARVESTED 0.00130

87/W/CS/34

W. WHEAT SERIES IV

GRAIN TONNES/HECTARE

***** Tables of means *****

NEMACIDE[86]	
AL 3.3	4.39
AL 6.6	4.67
AL S 3.3	4.19
AL S 6.6	5.36
ETH 7.5	4.45
MB 5.0	4.39
MB 7.5	4.94
MB 10.0	5.39
OX 5.0	4.60
NONE	4.21
Mean	4.66

*** Standard errors of differences of means ***

Table	NEMACIDE[86]
s.e.d.	0.498

***** Stratum standard errors and coefficients of variation *****

Stratum	d.f.	s.e.	cv%
BLOCK.WP	18	0.610	13.1
GRAIN MEAN DM%	81.3		
PLOT AREA HARVESTED	0.00251		

87/W/CS/34

S. BARLEY SERIES III

GRAIN TONNES/HECTARE

***** Tables of means *****

RATE	SINGLE	DOUBLE	QUAD	Mean
NEMACIDE[85]				
OXAMYL	5.10	4.79	4.86	4.92
SDS46995	5.16	4.96	4.88	5.00
THIODICA	4.98	4.92	5.23	5.04
Mean	5.08	4.89	4.99	4.99

RATE NONE 4.22

Grand mean 4.91

*** Standard errors of differences of means ***

Table	NEMACIDE[85]	RATE NEMACIDE[85]	RATE & RATE NONE
s.e.d.	0.237	0.237	0.411

***** Stratum standard errors and coefficients of variation *****

Stratum	d.f.	s.e.	cv%
BLOCK.WP	18	0.504	10.3

GRAIN MEAN DM% 88.1

PLOT AREA HARVESTED 0.00251