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## Yields of the Field Experiments 1988

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### 88/W/CS/273 Intensive Potatoes - Potatoes, S. Barley

#### Rothamsted Research

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88/W/CS/273

INTENSIVE POTATOES

**Object:** To study the effects of a range of frequencies of cropping on the occurrence of pests and diseases and on the yield of potatoes - Woburn Lansome III.

**Sponsors:** A.G. Whitehead, T.M. Addiscott, I.F. Henderson, G.A. Hide.

The seventh year, s. barley, potatoes.

For previous years see 82-87/W/CS/273.

**Design:** 2 randomised blocks of 6 plots split into 8.

**Whole plot dimensions:** 9.00 x 24.7.

**Treatments:** All combinations of:-

Whole plots

1. **VAR SEQ** Sequence of potato varieties in 1982-88, all s. barley when potatoes not grown:

	1982	1984	1986	1988
D P D P	Desiree	Maris Piper	Desiree	Maris Piper
O D P D	None	Desiree	Maris Piper	Desiree
D D D D	Desiree	Desiree	Desiree	Desiree
O D D D	None	Desiree	Desiree	Desiree
O D O D	None	Desiree	None	Desiree
O O O D	None	None	None	Desiree

Sub plots, two replicates of:-

2. **SD TREAT** Seed treatment:

NONE	None
TOL+PRO	Tolclofos methyl at 250 g and prochloraz at 35 g per tonne of tubers

3. **NEMACIDE** Nematicide:

NONE	None
OXAMYL	Oxamyl at 5.0 kg, worked in to seedbed, 5.5 kg in 1988

**NOTES:** (1) Additional plots were sown to s. barley for cropping sequences with differing frequencies of potatoes. Barley yields were not taken.  
(2) Irrigation was applied to the potatoes as follows (mm water):

20 June	12.5
24 June	12.5
5 Aug	12.5
16 Aug	12.5

Total 50

88/W/CS/273

**Standard applications:**

Potatoes: Manures: (0:18:36) at 420 kg. (10:10:15+4.5 Mg) at 3000 kg.  
 Weedkiller: Linuron at 1.5 kg in 220 l. Fungicides: Mancozeb at 1.4 kg in 220 l on five occasions, with the pirimicarb on the first, second and fifth occasions. Fentin hydroxide at 0.28 kg in 220 l. Insecticide: Pirimicarb at 0.14 kg. Desiccant: Diquat at 0.80 kg ion in 400 l.  
 S. barley: Manure: 'Nitram' at 340 kg. Weedkillers: Bromoxynil at 0.24 kg, clopyralid at 0.05 kg with mecoprop at 1.8 kg in 220 l. Fungicide: Tridemorph at 0.52 kg in 220 l.

**Seed:** Potatoes: Desiree and Maris Piper, phorate applied at planting.  
 S. barley: Klaxon sown at 150 kg.

**Cultivations, etc.:-**

Potatoes: PK applied: 9 Feb, 1988. Ploughed: 10 Feb. NPK Mg applied: 6 Apr. Subsoiled with 25 cm wide wings on tines 38 cm deep and 66 cm apart: 14 Apr. Oxamyl treatment applied and rotary cultivated: 18 Apr. Rotary cultivated, potatoes planted, phorate applied to ridges: 19 Apr. Rotary ridged: 11 May. Weedkiller applied: 13 May. Mancozeb applied: 15 July, 1 Aug. Mancozeb with pirimicarb applied: 14 June, 5 July and 15 Aug. Fentin hydroxide applied: 30 Aug. Desiccant applied: 6 Sept. Haulm mechanically destroyed: 16 Sept. Lifted: 7 Oct.  
 S. barley: Ploughed: 10 Feb, 1988. Subsoiled with 25 cm wide wings on tines 38 cm deep and 66 cm apart: 14 Apr. Spike harrowed with crumbler attached, seed sown: 22 Apr. N applied: 11 May. Weedkillers applied: 20 May. Fungicide applied: 27 May. Combine harvested: 23 Aug.

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

**TOTAL TUBERS TONNES/HECTARE**

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

SD TREAT VAR SEQ	NONE	TOL+PRO	Mean
D P D P	38.4	38.9	38.6
O D P D	46.6	40.9	43.8
D D D D	31.2	33.2	32.2
O D D D	32.3	37.1	34.7
O D O D	39.2	40.3	39.7
O O O D	53.8	52.7	53.2
Mean	40.3	40.5	40.4

88/W/CS/273

TOTAL TUBERS TONNES/HECTARE

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

NEMACIDE VAR SEQ	NONE	OXAMYL	Mean
D P D P	34.0	43.3	38.6
O D P D	41.6	45.9	43.8
D D D D	21.6	42.8	32.2
O D D D	25.2	44.3	34.7
O D O D	32.5	46.9	39.7
O O O D	51.5	55.0	53.2

Mean 34.4 46.4 40.4

NEMACIDE SD TREAT	NONE	OXAMYL	Mean
NONE	34.5	46.0	40.3
TOL+PRO	34.3	46.8	40.5

Mean 34.4 46.4 40.4

SD TREAT NEMACIDE VAR SEQ	NONE	OXAMYL	TOL+PRO NONE	OXAMYL
D P D P	33.0	43.7	35.0	42.8
O D P D	46.4	46.9	36.8	45.0
D D D D	19.9	42.6	23.2	43.1
O D D D	22.8	41.9	27.6	46.7
O D O D	33.2	45.1	31.8	48.8
O O O D	51.8	55.7	51.2	54.2

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

VAR SEQ	SD TREAT	NEMACIDE	VAR SEQ SD TREAT
2.92	1.28	1.28	3.67
Except when comparing means with the same level(s) of VAR SEQ			
			3.14

VAR SEQ NEMACIDE	SD TREAT NEMACIDE	VAR SEQ SD TREAT NEMACIDE
3.67	1.81	4.83
Except when comparing means with the same level(s) of VAR SEQ		
3.14		4.44

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

Stratum	d.f.	s.e.	cv%
BLOCK.WP	5	2.92	7.2
BLOCK.WP.SP	66	6.27	15.5

88/W/CS/273

PERCENTAGE WARE 4.44 CM (1.75 INCH) RIDDLE

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

SD TREAT VAR SEQ	NONE	TOL+PRO	Mean
D P D P	64.2	63.6	63.9
O D P D	71.2	65.9	68.6
D D D D	60.2	60.3	60.3
O D D D	63.6	66.6	65.1
O D O D	64.4	66.7	65.6
O O O D	75.8	75.3	75.5
Mean	66.5	66.4	66.5

NEMACIDE VAR SEQ	NONE	OXAMYL	Mean
D P D P	66.5	61.3	63.9
O D P D	67.9	69.3	68.6
D D D D	52.9	67.6	60.3
O D D D	56.4	73.8	65.1
O D O D	58.9	72.2	65.6
O O O D	76.4	74.7	75.5
Mean	63.2	69.8	66.5

NEMACIDE SD TREAT	NONE	OXAMYL	Mean
NONE	63.2	69.9	66.5
TOL+PRO	63.1	69.7	66.4
Mean	63.2	69.8	66.5

SD TREAT NEMACIDE VAR SEQ	NONE	OXAMYL	TOL+PRO NONE	OXAMYL
D P D P	64.9	63.4	68.2	59.1
O D P D	71.5	71.0	64.3	67.6
D D D D	53.5	66.9	52.4	68.3
O D D D	55.6	71.5	57.1	76.2
O D O D	58.2	70.5	59.6	73.9
O O O D	75.5	76.0	77.3	73.3

SUB PLOT AREA HARVESTED 0.00075