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86/W/CS/273 Intensive Potatoes - S. Barley, Potatoes

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86/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.

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The fourth year, s. barley, potatoes.

For previous years see 82-85/W/CS/273.

Design: In the fifth year: 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, 1984 and 1986, all s. barley in 1983 and 1985:

	1982	1984	1986
D P D	Desiree	Maris Piper	Desiree
O D P	None (s. barley)	Desiree	Maris Piper
D D D	Desiree	Desiree	Desiree
O D D	None (s. barley)	Desiree	Desiree
D O D	Desiree	None (s. barley)	Desiree
O O D	None (s. barley)	None (s. barley)	Desiree

Sub plots

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 |
4. MOLLCIDE Molluscicide:
- | | |
|----------|----------------------------------------------------------------------------------|
| NONE | None |
| METHIOCA | Methiocarb at 0.23 kg applied as pellets on 7 July, 1986, 4 Aug, 26 Aug, 8 Sept. |

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- 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):

18 June	6	1 July	12	21 July	6
19 June	6	4 July	12	25 July	6
24 June	12	18 July	6	28 July	6
				1 Aug	6

Total 78

Standard applications:

Potatoes: Manures: (0:18:36) at 410 kg, (10:10:15+4.5 Mg) at 2990 kg. Weedkillers: Glyphosate at 1.4 kg in 250 l. Paraquat at 0.40 kg ion with linuron at 0.80 kg in 250 l. Fungicides: Mancozeb at 1.4 kg on two occasions in 240 l and applied with the insecticide on two further occasions in 200 l. Fentin hydroxide 0.28 kg applied with the insecticide in 200 l. Insecticide: Pirimicarb at 0.14 kg on three occasions. Desiccant: Diquat at 0.56 kg ion in 200 l.

S. barley: Manures: (20:10:10) at 580 kg. Weedkillers: Glyphosate at 1.4 kg in 250 l. Clopyralid at 0.05 kg with bromoxynil octanoate at 0.24 kg and mecoprop at 1.8 kg applied with the fungicide in 250 l. Fungicide: Tridemorph at 0.52 kg.

Seed: Potatoes: Desiree, phorate applied to ridges at planting.

S. barley: Triumph, dressed with triadimenol and fuberidazole, sown at 160 kg.

Cultivations, etc.:-

Potatoes: Glyphosate applied: 6 Nov, 1985. PK applied: 14 Jan, 1986. NPK Mg applied: 2 May. Subsoiled with 25 cm wide wings on tines 38 cm deep and 66 cm apart: 6 May. Oxamyl treatments applied, spring-tine cultivated: 14 May. Rotary cultivated, phorate applied, potatoes planted: 15-16 May. Rotary ridged, paraquat and linuron applied: 29 May. Mancozeb applied: 1 July, 14 July. Mancozeb applied with insecticide: 29 July, 13 Aug. Fentin hydroxide applied with insecticide: 30 Aug. Desiccant applied: 9 Oct. Lifted: 24 Oct.

S. barley: Glyphosate applied: 6 Nov, 1985. Deep-tine cultivated: 13 Jan, 1986. NPK applied: 2 May. Subsoiled with 25 cm wide wings on tines 38 cm deep and 66 cm apart, spike harrowed with crumbler attached, seed sown: 6 May. Weedkillers and fungicide applied: 30 May. Combine harvested: 29 Aug.

- NOTES: (1) Plant samples were taken in August for tuber disease assessments.
(2) Potato cyst nematode numbers were assessed before planting and after harvest.
(3) Slug damage assessments were made on the lifted crop.

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TOTAL TUBERS TONNES/HECTARE

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

SD TREAT	NONE	TOL+IMAZ	MEAN
VAR SEQ			
D P D	37.8	42.1	40.0
O D P	59.8	50.7	55.3
D D D	39.5	38.1	38.8
O D D	44.9	50.1	47.5
D O D	48.4	46.6	47.5
O O D	57.2	56.0	56.6
MEAN	47.9	47.3	47.6
NEMACIDE	NONE	OXAMYL	MEAN
VAR SEQ			
D P D	31.0	48.9	40.0
O D P	50.1	60.5	55.3
D D D	27.2	50.4	38.8
O D D	38.5	56.5	47.5
D O D	37.1	57.9	47.5
O O D	56.0	57.2	56.6
MEAN	40.0	55.2	47.6
NEMACIDE	NONE	OXAMYL	MEAN
SD TREAT			
NONE	40.1	55.8	47.9
TOL+IMAZ	39.8	54.7	47.3
MEAN	40.0	55.2	47.6
MOLLCIDE	NONE	METHIOCA	MEAN
VAR SEQ			
D P D	43.4	36.5	40.0
O D P	55.8	54.7	55.3
D D D	40.0	37.6	38.8
O D D	47.5	47.5	47.5
D O D	49.0	46.0	47.5
O O D	56.3	57.0	56.6
MEAN	48.7	46.5	47.6
MOLLCIDE	NONE	METHIOCA	MEAN
SD TREAT			
NONE	49.4	46.5	47.9
TOL+IMAZ	47.9	46.6	47.3
MEAN	48.7	46.5	47.6
MOLLCIDE	NONE	METHIOCA	MEAN
NEMACIDE			
NONE	41.6	38.3	40.0
OXAMYL	55.7	54.8	55.2
MEAN	48.7	46.5	47.6

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TOTAL TUBERS TONNES/HECTARE

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

SD TREAT	NONE	OXAMYL	TOL+IMAZ	OXAMYL
NEMACIDE	NONE		NONE	
VAR SEQ				
D P D	25.7	49.9	36.3	47.9
O D P	55.6	64.1	44.6	56.9
D D D	28.8	50.2	25.6	50.7
O D D	36.1	53.8	40.9	59.3
D O D	37.3	59.5	36.8	56.3
O O D	57.3	57.1	54.7	57.4

SD TREAT	NONE	METHIOCA	TOL+IMAZ	METHIOCA
MOLLICIDE	NONE		NONE	
VAR SEQ				
D P D	42.4	33.2	44.5	39.7
O D P	62.2	57.5	49.5	51.9
D D D	41.1	37.9	38.9	37.4
O D D	43.5	46.3	51.4	48.7
D O D	49.4	47.4	48.5	44.6
O O D	57.8	56.6	54.7	57.4

NEMACIDE	NONE	METHIOCA	OXAMYL	METHIOCA
MOLLICIDE	NONE		NONE	
VAR SEQ				
D P D	35.0	27.0	51.9	45.9
O D P	49.5	50.6	62.1	58.8
D D D	30.5	23.9	49.5	51.4
O D D	39.3	37.6	55.6	57.4
D O D	40.4	33.7	57.5	58.3
O O D	54.8	57.1	57.7	56.8

NEMACIDE	NONE	METHIOCA	OXAMYL	METHIOCA
MOLLICIDE	NONE		NONE	
SD TREAT				
NONE	41.0	39.2	57.8	53.7
TOL+IMAZ	42.2	37.4	53.7	55.8

VAR SEQ	NEMACIDE	NONE	METHIOCA	OXAMYL	METHIOCA
SD TREAT	MOLLICIDE	NONE		NONE	
D P D	NONE	29.0	22.4	55.9	44.0
	TOL+IMAZ	41.0	31.5	47.9	47.9
O D P	NONE	53.0	58.1	71.3	56.9
	TOL+IMAZ	46.1	43.1	53.0	60.8
D D D	NONE	32.0	25.5	50.2	50.2
	TOL+IMAZ	29.0	22.3	48.8	52.5
O D D	NONE	34.3	37.8	52.8	54.7
	TOL+IMAZ	44.3	37.4	58.5	60.0
D O D	NONE	38.4	36.1	60.4	58.6
	TOL+IMAZ	42.4	31.3	54.7	57.9
O O D	NONE	59.4	55.1	56.3	58.0
	TOL+IMAZ	50.3	59.1	59.1	55.7

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TOTAL TUBERS TONNES/HECTARE

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

TABLE	VAR SEQ	SD TREAT	NEMACIDE	MOLLCIDE
SED	5.03	1.36	1.36	1.36

TABLE	VAR SEQ SD TREAT	VAR SEQ NEMACIDE	SD TREAT NEMACIDE	VAR SEQ MOLLCIDE
SED	5.55	5.55	1.92	5.55
EXCEPT WHEN COMPARING MEANS WITH SAME LEVEL(S) OF: VAR SEQ	3.33	3.33		3.33

TABLE	SD TREAT MOLLCIDE	NEMACIDE MOLLCIDE	VAR SEQ SD TREAT NEMACIDE	VAR SEQ SD TREAT MOLLCIDE
SED	1.92	1.92	6.47	6.47
EXCEPT WHEN COMPARING MEANS WITH SAME LEVEL(S) OF: VAR SEQ			4.70	4.70

TABLE	VAR SEQ NEMACIDE MOLLCIDE	SD TREAT NEMACIDE MOLLCIDE	VAR SEQ SD TREAT NEMACIDE MOLLCIDE
SED	6.47	2.72	8.00
EXCEPT WHEN COMPARING MEANS WITH SAME LEVEL(S) OF: VAR SEQ	4.70		6.65

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

STRATUM	DF	SE	CV%
BLOCK.WP	5	5.03	10.6
BLOCK.WP.SP	42	6.65	14.0

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PERCENTAGE WARE 4.44CM (1.75 INCH) RIDDLE

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

SD TREAT VAR SEQ	NONE	TOL+IMAZ	MEAN
D P D	75.5	82.6	79.1
O D P	83.7	83.3	83.5
D D D	76.4	73.3	74.8
O D D	76.8	75.3	76.1
D O D	78.0	77.6	77.8
O O D	79.8	80.3	80.1

MEAN 78.4 78.7 78.6

NEMACIDE VAR SEQ	NONE	OXAMYL	MEAN
D P D	73.6	84.6	79.1
O D P	83.8	83.3	83.5
D D D	66.5	83.2	74.8
O D D	71.2	80.9	76.1
D O D	72.1	83.5	77.8
O O D	80.3	79.9	80.1

MEAN 74.6 82.6 78.6

NEMACIDE SD TREAT	NONE	OXAMYL	MEAN
NONE	74.4	82.3	78.4
TOL+IMAZ	74.7	82.8	78.7

MEAN 74.6 82.6 78.6

MOLLCIDE VAR SEQ	NONE	METHIOCA	MEAN
D P D	79.2	79.0	79.1
O D P	83.7	83.4	83.5
D D D	77.9	71.8	74.8
O D D	77.7	74.4	76.1
D O D	79.2	76.4	77.8
O O D	80.0	80.2	80.1

MEAN 79.6 77.5 78.6

MOLLCIDE SD TREAT	NONE	METHIOCA	MEAN
NONE	79.5	77.3	78.4
TOL+IMAZ	79.7	77.8	78.7

MEAN 79.6 77.5 78.6

MOLLCIDE NEMACIDE	NONE	METHIOCA	MEAN
NONE	76.9	72.2	74.6
OXAMYL	82.3	82.8	82.6

MEAN 79.6 77.5 78.6

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PERCENTAGE WARE 4.44CM (1.75 INCH) RIDDLE

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

SD TREAT	NONE	OXAMYL	TOL+IMAZ	OXAMYL
NEMACIDE	NONE	OXAMYL	NONE	OXAMYL
VAR SEQ				
D P D	67.5	83.6	79.7	85.6
O D P	85.2	82.3	82.4	84.2
D D D	69.6	83.1	63.3	83.2
O D D	72.4	81.2	70.0	80.7
D O D	72.3	83.7	72.0	83.2
O O D	79.7	80.0	80.8	79.8

SD TREAT	NONE	METHIOCA	TOL+IMAZ	METHIOCA
MOLLCIDE	NONE	METHIOCA	NONE	METHIOCA
VAR SEQ				
D P D	75.2	75.9	83.1	82.2
O D P	84.7	82.8	82.6	83.9
D D D	79.9	72.9	75.9	70.6
O D D	78.4	75.1	76.9	73.8
D O D	79.1	76.9	79.3	75.8
O O D	79.6	80.1	80.4	80.3

NEMACIDE	NONE	METHIOCA	OXAMYL	METHIOCA
MOLLCIDE	NONE	METHIOCA	NONE	METHIOCA
VAR SEQ				
D P D	75.0	72.1	83.3	85.9
O D P	83.2	84.4	84.2	82.3
D D D	73.8	59.2	82.0	84.3
O D D	74.8	67.5	80.5	81.4
D O D	75.0	69.2	83.4	83.5
O O D	79.6	80.9	80.4	79.5

NEMACIDE	NONE	METHIOCA	OXAMYL	METHIOCA
MOLLCIDE	NONE	METHIOCA	NONE	METHIOCA
SD TREAT				
NONE	77.0	71.9	82.0	82.7
TOL+IMAZ	76.8	72.6	82.6	83.0

VAR SEQ	SD TREAT	NEMACIDE	METHIOCA	OXAMYL	METHIOCA
		NONE	METHIOCA	NONE	METHIOCA
D P D	NONE	67.6	67.3	82.8	84.4
	TOL+IMAZ	82.4	77.0	83.8	87.3
O D P	NONE	86.2	84.1	83.2	81.4
	TOL+IMAZ	80.1	84.6	85.1	83.3
D D D	NONE	78.1	61.1	81.7	84.6
	TOL+IMAZ	69.4	57.2	82.3	84.1
O D D	NONE	76.1	68.6	80.7	81.7
	TOL+IMAZ	73.6	66.4	80.3	81.1
D O D	NONE	75.1	69.4	83.1	84.4
	TOL+IMAZ	75.0	69.0	83.7	82.6
O O D	NONE	78.7	80.6	80.5	79.5
	TOL+IMAZ	80.5	81.1	80.2	79.4

SUB PLOT AREA HARVESTED 0.00075