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

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84/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 third year, s. barley, potatoes.

For previous years see 82-83/W/CS/273.

Design: In the third year: 2 randomised blocks of 5 plots split into 8

Whole plot dimensions: 9.00 x 24.7.

Treatments: All combinations of:-

Whole plots	Crop sequences and potato varieties:		
1. CROP SEQ	1982	1983	1984
PD B PP	Potatoes, Desiree	S. barley	Potatoes, Maris Piper
B B PD	S. barley	S. barley	Potatoes, Desiree (triplicated)
PD B PD	Potatoes, Desiree	S. barley	Potatoes, Desiree
Sub plots			
2. SD TREAT	Seed treatment:		
NONE	None		
TOL+IMAZ	Tolclofos methyl at 250 g and imazalil at 10 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 26 July, 1984, 8 Aug, 22 Aug, 5 Sept.		

NOTES: (1) Additional plots were sown to s. barley for cropping sequences with differing frequencies of potatoes. Barley yields were not taken.

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(2) Irrigation was applied to the potatoes as follows (mm water):

10-11 May	12.5	11-12 July	25
18 May	12.5	13 July	12.5
15 June	12.5	23-24 July	25
18 June	12.5	30 July-2 Aug	25
4-5 July	25	3 Aug	<u>12.5</u>
		Total	175

Standard applications:

Potatoes: Manures: (0:18:36) at 410 kg, (10:10:15+4.5 Mg) at 3000 kg.

Weedkillers: Glyphosate at 1.4 kg in 250 l. Linuron at 1.3 l in 250 l. Fungicides: Maneb at 0.36 kg with zineb at 0.04 kg in 250 l with the insecticide. Fentin hydroxide at 0.28 kg in 250 l on six occasions, with the insecticide on the second and third occasions. Insecticide: Pirimicarb at 0.14 kg on three occasions.

S. barley: Manures: (20:10:10) at 640 kg. Weedkillers: Glyphosate at 1.4 kg in 250 l. Mecoprop with bromoxynil and ioxynil (as 'Brittox' at 2.5 l) in 250 l with the fungicide. Fungicide: Tridemorph at 0.3 kg.

Seed: S. barley: Triumph, dressed ethirimol, sown at 160 kg.

Cultivations, etc.:-

Potatoes: Glyphosate applied: 7 Sept, 1983. PK applied: 16 Nov.

Ploughed: 13 Dec. NPK with Mg applied, spring-tine cultivated: 5 Apr, 1984. Oxamyl applied, rotary cultivated, potatoes planted: 13 Apr. Linuron applied: 3 May. Maneb, zineb with pirimicarb applied: 19 June. Fentin hydroxide with pirimicarb applied: 18 July, 20 July. Fentin hydroxide applied: 3 July, 1 Aug, 28 Aug, 12 Sept. Lifted: 1 Oct.

S. barley: Glyphosate applied to plots after barley: 7 Sept, 1983. Ploughed after barley: 13 Dec. Deep-tine cultivated after potatoes: 16 Jan, 1984. NPK applied: 15 Mar. Spring-tine cultivated: 16 Mar. Spring-tine cultivated with crumbler attached, seed sown: 19 Mar. 'Brittox' with fungicide applied: 15 May. Combine harvested: 18 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	
CROP SEQ				
PD B PP	36.5	37.7	37.1	
B B PD	51.3	48.5	49.9	
PD B PD	31.0	26.5	28.8	
MEAN	44.3	42.0	43.1	
NEMACIDE	NONE	OXAMYL	MEAN	
CROP SEQ				
PD B PP	23.9	50.3	37.1	
B B PD	43.1	56.8	49.9	
PD B PD	15.7	41.9	28.8	
MEAN	33.8	52.5	43.1	
NEMACIDE	NONE	OXAMYL	MEAN	
SD TREAT				
NONE	34.3	54.3	44.3	
TOL+IMAZ	33.2	50.7	42.0	
MEAN	33.8	52.5	43.1	
MOLLICIDE	NONE	METHIOCA	MEAN	
CROP SEQ				
PD B PP	40.8	33.4	37.1	
B B PD	51.6	48.3	49.9	
PD B PD	31.4	26.1	28.8	
MEAN	45.4	40.9	43.1	
MOLLICIDE	NONE	METHIOCA	MEAN	
SD TREAT				
NONE	45.9	42.7	44.3	
TOL+IMAZ	44.9	39.0	42.0	
MEAN	45.4	40.9	43.1	
MOLLICIDE	NONE	METHIOCA	MEAN	
NEMACIDE				
NONE	36.0	31.5	33.8	
OXAMYL	54.7	50.2	52.5	
MEAN	45.4	40.9	43.1	
SD TREAT	NONE		TOL+IMAZ	
NEMACIDE	NONE	OXAMYL	NONE	OXAMYL
CROP SEQ				
PD B PP	22.8	50.2	25.1	50.4
B B PD	44.1	58.6	42.1	54.9
PD B PD	16.6	45.4	14.7	38.3

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TOTAL TUBERS TONNES/HECTARE

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

SD TREAT	NONE	METHIOCA	TOL+IMAZ	NONE	METHIOCA
MOLLICIDE	NONE	METHIOCA	NONE	METHIOCA	
CROP SEQ					
PD B PP	39.3	33.6	42.3	33.2	
B B PD	52.6	50.1	50.6	46.5	
PD B PD	32.2	29.8	30.7	22.3	

NEMACIDE	NONE	METHIOCA	OXAMYL	NONE	METHIOCA
MOLLICIDE	NONE	METHIOCA	NONE	METHIOCA	
CROP SEQ					
PD B PP	27.9	20.0	53.7	46.8	
B B PD	44.5	41.7	58.7	54.9	
PD B PD	19.0	12.3	43.9	39.8	

NEMACIDE	NONE	METHIOCA	OXAMYL	NONE	METHIOCA
MOLLICIDE	NONE	METHIOCA	NONE	METHIOCA	
SD TREAT					
NONE	36.7	32.0	55.0	53.5	
TOL+IMAZ	35.4	31.1	54.5	47.0	

CROP SEQ	SD TREAT	NEMACIDE	NONE	METHIOCA	OXAMYL	NONE	METHIOCA
PD B PP	NONE	30.0	15.6	48.6	51.7		
	TOL+IMAZ	25.7	24.5	58.8	41.9		
B B PD	NONE	44.8	43.3	60.4	56.8		
	TOL+IMAZ	44.2	40.1	57.0	52.9		
PD B PD	NONE	19.1	14.2	45.3	45.5		
	TOL+IMAZ	18.9	10.5	42.4	34.2		

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

TABLE	CROP SEQ	SD TREAT	NEMACIDE	MOLLICIDE	
SED	6.92				MIN REP
	5.65	1.86	1.86	1.86	MAX-MIN

TABLE	CROP SEQ	CROP SEQ	SD TREAT	CROP SEQ	
	SD TREAT	NEMACIDE	NEMACIDE	MOLLICIDE	
SED	7.53	7.53		7.53	MIN REP
	6.14	6.14	2.64	6.14	MAX-MIN
	4.34	4.34		4.34	MAX REP
EXCEPT WHEN COMPARING MEANS WITH SAME LEVEL(S) OF:					
CROP SEQ	4.17	4.17		4.17	MIN REP
	3.40	3.40		3.40	MAX-MIN
	2.41	2.41		2.41	MAX REP

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TOTAL TUBERS TONNES/HECTARE

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

TABLE	SD TREAT MOLLICIDE	NEMACIDE MOLLICIDE	CROP SEQ SD TREAT NEMACIDE	CROP SEQ SD TREAT MOLLICIDE	
SED			8.60	8.60	MIN REP
	2.64	2.64	7.02	7.02	MAX-MIN
			4.97	4.97	MAX REP
EXCEPT WHEN COMPARING MEANS WITH SAME LEVEL(S) OF:					
CROP SEQ			5.89	5.89	MIN REP
			4.81	4.81	MAX-MIN
			3.40	3.40	MAX REP

TABLE	CROP SEQ NEMACIDE MOLLICIDE	SD TREAT NEMACIDE MOLLICIDE	CROP SEQ SD TREAT NEMACIDE MOLLICIDE	
SED	8.60		10.43	MIN REP
	7.02	3.73	8.51	MAX-MIN
	4.97		6.02	MAX REP
EXCEPT WHEN COMPARING MEANS WITH SAME LEVEL(S) OF:				
CROP SEQ	5.89		8.34	MIN REP
	4.81		6.81	MAX-MIN
	3.40		4.81	MAX REP

CROP SEQ
 MAX REP B B PD ONLY
 MAX-MIN B B PD V ANY OF REMAINDER
 MIN REP ANY OF REMAINDER

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

STRATUM	DF	SE	CV%
BLOCK.WP	6	6.92	16.1
BLOCK.WP.SP	49	8.34	19.3

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PERCENTAGE WARE 4.44 CM (1.75 INCH) RIDDLE

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

SD TREAT	NONE	TOL+IMAZ	MEAN	
CROP SEQ				
PD B PP	60.6	64.5	67.6	
B B PD	70.1	73.1	71.6	
PD B PD	53.8	61.7	57.7	
MEAN	64.9	69.1	67.0	
NEMACIDE	NONE	OXAMYL	MEAN	
CROP SEQ				
PD B PP	60.6	64.5	62.6	
B B PD	66.4	76.8	71.6	
PD B PD	45.2	70.3	57.7	
MEAN	61.0	73.0	67.0	
NEMACIDE	NONE	OXAMYL	MEAN	
SD TREAT				
NONE	59.2	70.7	64.9	
TOL+IMAZ	62.9	75.3	69.1	
MEAN	61.0	73.0	67.0	
MOLLCIDE	NONE	METHIOCA	MEAN	
CROP SEQ				
PD B PP	61.0	64.2	62.6	
B B PD	73.1	70.1	71.6	
PD B PD	59.2	56.2	57.7	
MEAN	67.9	66.1	67.0	
MOLLCIDE	NONE	METHIOCA	MEAN	
SD TREAT				
NONE	65.0	64.8	64.9	
TOL+IMAZ	70.8	67.5	69.1	
MEAN	67.9	66.1	67.0	
MOLLCIDE	NONE	METHIOCA	MEAN	
NEMACIDE				
NONE	63.4	58.7	61.0	
OXAMYL	72.4	73.6	73.0	
MEAN	67.9	66.1	67.0	
SD TREAT	NONE		TOL+IMAZ	
NEMACIDE	NONE	OXAMYL	NONE	OXAMYL
CROP SEQ				
PD B PP	58.5	62.7	62.8	66.3
B B PD	64.9	75.3	68.0	78.2
PD B PD	42.8	64.8	47.6	75.8

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PERCENTAGE WARE 4.44 CM (1.75 INCH) RIDDLE

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

SD TREAT	NONE	METHIOCA	TOL+IMAZ	
MOLLCIDE	NONE	METHIOCA	NONE	METHIOCA
CROP SEQ				
PD B PP	57.1	64.0	64.8	64.3
B B PD	71.2	69.0	75.0	71.2
PD B PD	54.4	53.1	64.0	59.3

NEMACIDE	NONE	METHIOCA	OXAMYL	
MOLLCIDE	NONE	METHIOCA	NONE	METHIOCA
CROP SEQ				
PD B PP	62.6	58.6	59.3	69.7
B B PD	68.4	64.5	77.8	75.7
PD B PD	49.1	41.2	69.3	71.3

NEMACIDE	NONE	METHIOCA	OXAMYL	
MOLLCIDE	NONE	METHIOCA	NONE	METHIOCA
SD TREAT				
NONE	60.6	57.8	69.5	71.9
TOL+IMAZ	66.2	59.6	75.3	75.3

CROP SEQ	SD TREAT	NEMACIDE	NONE	METHIOCA	OXAMYL	METHIOCA
		MOLLCIDE	NONE	METHIOCA	NONE	METHIOCA
PD B PP	NONE	NONE	60.9	56.0	53.4	72.0
	TOL+IMAZ	NONE	64.4	61.2	65.2	67.4
B B PD	NONE	NONE	65.4	64.4	77.0	73.7
	TOL+IMAZ	NONE	71.3	64.6	78.6	77.8
PD B PD	NONE	NONE	45.8	39.7	63.0	66.5
	TOL+IMAZ	NONE	52.4	42.7	75.6	76.0

SUB PLOT AREA HARVESTED 0.00075