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77/W/CS/183 Factors Affecting Yield and Pcn Control - Potatoes

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77/W/CS/183

FACTORS AFFECTING YIELD AND PCN CONTROL

Object: To study the effects of fertiliser, plant density and date of haulm destruction on yield and incidence of *Globodera rostochiensis* (PCN) and its control by oxamyl - Woburn Long Mead.

Sponsor: A.G. Whitehead.

The second year, potatoes.

For previous year see 76/W/CS/183.

Design: 2 randomised blocks of 32 plots.

Whole plot dimensions: 2.84 x 6.10.

Treatments: All combinations of:-

1. SPACING Spacing of setts within the ridge (ridges 71 cm (28 inches) apart):

 25 CM 25 cm (10 inches)
 50 CM 50 cm (20 inches)
2. FERTLSER Fertiliser:

 STANDARD Standard, (13:13:20) at 1860 kg to seedbed
 EXTRA Standard, (13:13:20) at 1860 kg to seedbed + 119 kg P205
 as superphosphate and 377 kg K20 as sulphate of potash
 in April + 125 kg N in June
3. OXAMYL(76) Oxamyl (kg) applied in 1976:

 0
 10
4. OXAMYL(77) Oxamyl (kg) applied in 1977:

 0
 10
5. HLM KILL Date of haulm destruction:

 STANDARD
 LATE

NOTE: Treatments other than OXAMYL(76) and (77) were applied cumulatively.

Basal applications: Weedkiller: Metribuzin ('Sencorex' at 1.4 kg) in 420 l.
Fungicide: Mancozeb at 1.3 kg on four occasions, the last three with insecticide, in 420 l, 390 l and twice in 370 l successively. Insecticide: Pirimicarb at 0.14 kg on three occasions.

Seed: Pentland Crown.

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Cultivations, etc.:— Ploughed: 7 Mar, 1977. Treatment P and K applied: 8 Apr. Heavy-tine cultivated: 14 Apr. NPK applied: 15 Apr. Oxamyl applied, all plots rotary cultivated, potatoes planted: 18 Apr. Grubbed: 2 May. Fine tooth harrowed, grubbed and earthed up: 25 May. Weedkiller applied: 27 May. N treatment applied: 17 June. Fungicide applied: 24 June, 8 July, 21 July, 12 Aug. Insecticide applied: 8 July, 21 July, 12 Aug. Haulm mechanically destroyed on HLM KILL STANDARD plots: 19 Sept. HLM KILL STANDARD lifted: 3 Oct. HLM KILL LATE lifted: 25 Oct.

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

TOTAL TUBERS TONNES/HECTARE

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

FERTLSER SPACING	STANDARD	EXTRA	MEAN
25 CM	32.8	30.3	31.6
50 CM	27.9	32.2	30.1
MEAN	30.4	31.2	30.8
OXAMYL(76) SPACING	0	10	MEAN
25 CM	28.6	34.5	31.6
50 CM	27.9	32.2	30.1
MEAN	28.3	33.3	30.8
OXAMYL(76) FERTLSER	0	10	MEAN
STANDARD	28.5	32.3	30.4
EXTRA	28.1	34.4	31.2
MEAN	28.3	33.3	30.8
OXAMYL(77) SPACING	0	10	MEAN
25 CM	23.4	39.7	31.6
50 CM	17.1	43.0	30.1
MEAN	20.2	41.4	30.8
OXAMYL(77) FERTLSER	0	10	MEAN
STANDARD	20.4	40.3	30.4
EXTRA	20.0	42.4	31.2
MEAN	20.2	41.4	30.8
OXAMYL(77) OXAMYL(76)	0	10	MEAN
0	19.2	37.4	28.3
10	21.3	45.4	33.3
MEAN	20.2	41.4	30.8

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TOTAL TUBERS TONNES/HECTARE

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

HLM KILL	STANDARD	LATE	MEAN	
SPACING				
25 CM	29.3	33.8	31.6	
50 CM	30.7	29.4	30.1	
MEAN	30.0	31.6	30.8	
HLM KILL	STANDARD	LATE	MEAN	
FERTLSER				
STANDARD	31.9	28.9	30.4	
EXTRA	28.1	34.3	31.2	
MEAN	30.0	31.6	30.8	
HLM KILL	STANDARD	LATE	MEAN	
OXAMYL(76)				
0	27.8	28.8	28.3	
10	32.2	34.5	33.3	
MEAN	30.0	31.6	30.8	
HLM KILL	STANDARD	LATE	MEAN	
OXAMYL(77)				
0	21.9	18.6	20.2	
10	38.1	44.6	41.4	
MEAN	30.0	31.6	30.8	
FERTLSER	STANDARD		EXTRA	
OXAMYL(76)	0	10	0	10
SPACING				
25 CM	31.7	33.9	25.5	35.1
50 CM	25.2	30.7	30.6	33.7
FERTLSER	STANDARD		EXTRA	
OXAMYL(77)	0	10	0	10
SPACING				
25 CM	24.0	41.6	22.7	37.9
50 CM	16.8	39.1	17.3	47.0
OXAMYL(76)	0		10	
OXAMYL(77)	0	10	0	10
SPACING				
25 CM	22.6	34.7	24.2	44.7
50 CM	15.8	40.1	18.4	46.0
OXAMYL(76)	0		10	
OXAMYL(77)	0	10	0	10
FERTLSER				
STANDARD	21.3	35.6	19.5	45.0
EXTRA	17.0	39.2	23.1	45.7
FERTLSER	STANDARD		EXTRA	
HLM KILL	STANDARD	LATE	STANDARD	LATE
SPACING				
25 CM	34.5	31.1	24.1	36.5
50 CM	29.2	26.7	32.2	32.2

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TOTAL TUBERS TONNES/HECTARE

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

OXAMYL(76)	0		10		
HLM KILL	STANDARD		LATE STANDARD		LATE
SPACING					
25 CM	27.4	29.9	31.2		37.7
50 CM	28.2	27.6	33.2		31.2
OXAMYL(76)	0		10		
HLM KILL	STANDARD		LATE STANDARD		LATE
FERTLSER					
STANDARD	29.3	27.6	34.4		30.1
EXTRA	26.3	29.9	30.0		38.8
OXAMYL(77)	0		10		
HLM KILL	STANDARD		LATE STANDARD		LATE
SPACING					
25 CM	23.1	23.7	35.6		43.9
50 CM	20.7	13.5	40.7		45.4
OXAMYL(77)	0		10		
HLM KILL	STANDARD		LATE STANDARD		LATE
FERTLSER					
STANDARD	23.2	17.6	40.5		40.1
EXTRA	20.5	19.5	35.8		49.1
OXAMYL(77)	0		10		
HLM KILL	STANDARD		LATE STANDARD		LATE
OXAMYL(76)					
0	21.2	17.1	34.4		40.4
10	22.5	20.1	41.9		48.8
OXAMYL(76)	0		10		
OXAMYL(77)	0	10	0		10
SPACING FERTLSER					
25 CM STANDARD	25.6	37.9	22.5		45.2
EXTRA	19.5	31.5	25.9		44.2
50 CM STANDARD	17.1	33.3	16.6		44.8
EXTRA	14.4	46.8	20.2		47.3
OXAMYL(76)	0		10		
HLM KILL	STANDARD		LATE STANDARD		LATE
SPACING FERTLSER					
25 CM STANDARD	33.4	30.1	35.7		32.1
EXTRA	21.5	29.6	26.8		43.3
50 CM STANDARD	25.2	25.2	33.2		28.2
EXTRA	31.2	30.1	33.2		34.3
OXAMYL(77)	0		10		
HLM KILL	STANDARD		LATE STANDARD		LATE
SPACING FERTLSER					
25 CM STANDARD	26.1	22.0	43.0		40.2
EXTRA	20.1	25.4	28.2		47.5
50 CM STANDARD	20.4	13.3	38.0		40.1
EXTRA	21.0	13.6	43.4		50.7

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TOTAL TUBERS TONNES/HECTARE

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

		OXAMYL(77)		0		10	
		HLM KILL		STANDARD		LATE STANDARD	
SPACING		OXAMYL(76)				LATE	
25 CM		0	23.4	21.7	31.5	38.0	
		10	22.8	25.7	39.7	49.7	
50 CM		0	19.1	12.5	37.3	42.8	
		10	22.3	14.5	44.1	48.0	

		OXAMYL(77)		0		10	
		HLM KILL		STANDARD		LATE STANDARD	
FERTLSER		OXAMYL(76)				LATE	
STANDARD		0	24.4	18.2	34.2	37.1	
		10	22.0	17.1	46.8	43.2	
EXTRA		0	18.0	16.0	34.6	43.8	
		10	23.0	23.1	36.9	54.5	

		OXAMYL(77)		0		10	
		HLM KILL		STANDARD		LATE STANDARD	
SPACING		FERTLSER		OXAMYL(76)		LATE	
25 CM	STANDARD	0	30.4	20.8	36.4	39.4	
		10	21.7	23.2	49.6	40.9	
EXTRA		0	16.4	22.7	26.5	36.6	
		10	23.8	28.1	29.8	58.5	
50 CM	STANDARD	0	18.5	15.7	31.9	34.7	
		10	22.3	10.9	44.1	45.5	
EXTRA		0	19.7	9.2	42.7	51.0	
		10	22.3	18.0	44.1	50.5	

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

TABLE	SPACING	FERTLSER	OXAMYL(76)	OXAMYL(77)
SED	2.23	2.23	2.23	2.23

TABLE	HLM KILL	SPACING FERTLSER	SPACING OXAMYL(76)	FERTLSER OXAMYL(76)
SED	2.23	3.15	3.15	3.15

TABLE	SPACING OXAMYL(77)	FERTLSER OXAMYL(77)	OXAMYL(76) OXAMYL(77)	SPACING HLM KILL
SED	3.15	3.15	3.15	3.15

TABLE	FERTLSER HLM KILL	OXAMYL(76) HLM KILL	OXAMYL(77) HLM KILL	SPACING FERTLSER OXAMYL(76)
SED	3.15	3.15	3.15	4.45

TABLE	SPACING FERTLSER OXAMYL(77)	SPACING OXAMYL(76) OXAMYL(77)	FERTLSER OXAMYL(76) OXAMYL(77)	SPACING FERTLSER HLM KILL
SED	4.45	4.45	4.45	4.45

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TOTAL TUBERS TONNES/HECTARE

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

TABLE	SPACING OXAMYL(76) HLM KILL	FERTLSER OXAMYL(76) HLM KILL	SPACING OXAMYL(77) HLM KILL	FERTLSER OXAMYL(77) HLM KILL
SED	4.45	4.45	4.45	4.45
TABLE	OXAMYL(76) OXAMYL(77) HLM KILL	SPACING FERTLSER OXAMYL(76) OXAMYL(77)	SPACING FERTLSER OXAMYL(76) HLM KILL	SPACING FERTLSER OXAMYL(77) HLM KILL
SED	4.45	6.30	6.30	6.30
TABLE	SPACING OXAMYL(76) OXAMYL(77) HLM KILL	FERTLSER OXAMYL(76) OXAMYL(77) HLM KILL	SPACING FERTLSER OXAMYL(76) OXAMYL(77) HLM KILL	
SED	6.30	6.30	8.90	

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

STRATUM	DF	SE	CV%
BLOCK.WP	30	8.90	28.9

PERCENTAGE WARE 3.81CM (1.5 INCH) RIDDLE

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

FERTLSER SPACING	STANDARD	EXTRA	MEAN
25 CM	85.6	80.8	83.2
50 CM	88.3	90.1	89.2
MEAN	87.0	85.5	86.2
OXAMYL(76) SPACING	0	10	MEAN
25 CM	83.5	82.9	83.2
50 CM	88.1	90.4	89.2
MEAN	85.8	86.7	86.2
OXAMYL(76) FERTLSER	0	10	MEAN
STANDARD	87.4	86.5	87.0
EXTRA	84.2	86.8	85.5
MEAN	85.8	86.7	86.2

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PERCENTAGE WARE 3.81CM (1.5 INCH) RIDDLER

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

OXAMYL(77)	0	10	MEAN	
SPACING				
25 CM	81.4	85.0	83.2	
50 CM	86.9	91.6	89.2	
MEAN	84.1	88.3	86.2	
OXAMYL(77)	0	10	MEAN	
FERTLSER				
STANDARD	85.1	88.8	87.0	
EXTRA	83.2	87.8	85.5	
MEAN	84.1	88.3	86.2	
OXAMYL(77)	0	10	MEAN	
OXAMYL(76)				
0	84.0	87.5	85.8	
10	84.2	89.1	86.7	
MEAN	84.1	88.3	86.2	
HLM KILL	STANDARD	LATE	MEAN	
SPACING				
25 CM	80.6	85.9	83.2	
50 CM	90.8	87.7	89.2	
MEAN	85.7	86.8	86.2	
HLM KILL	STANDARD	LATE	MEAN	
FERTLSER				
STANDARD	87.7	86.2	87.0	
EXTRA	83.7	87.3	85.5	
MEAN	85.7	86.8	86.2	
HLM KILL	STANDARD	LATE	MEAN	
OXAMYL(76)				
0	86.6	85.0	85.8	
10	84.8	88.5	86.7	
MEAN	85.7	86.8	86.2	
HLM KILL	STANDARD	LATE	MEAN	
OXAMYL(77)				
0	84.8	83.5	84.1	
10	86.6	90.1	88.3	
MEAN	85.7	86.8	86.2	
FERTLSER	STANDARD		EXTRA	
OXAMYL(76)	0	10	0	10
SPACING				
25 CM	87.8	83.4	79.2	82.5
50 CM	86.9	89.7	89.2	91.1

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PERCENTAGE WARE 3.81CM (1.5 INCH) RIDDLE

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

FERTLSER STANDARD			EXTRA	
OXAMYL(77)	0	10	0	10
SPACING				
25 CM	84.2	87.0	78.6	83.0
50 CM	86.0	90.6	87.7	92.6
OXAMYL(76)	0		10	
OXAMYL(77)	0	10	0	10
SPACING				
25 CM	82.4	84.6	80.4	85.5
50 CM	85.7	90.5	88.1	92.7
OXAMYL(76)	0		10	
OXAMYL(77)	0	10	0	10
FERTLSER				
STANDARD	86.1	88.6	84.1	89.0
EXTRA	81.9	86.5	84.4	89.1
FERTLSER STANDARD			EXTRA	
HLM KILL STANDARD		LATE STANDARD	LATE STANDARD	LATE
SPACING				
25 CM	84.7	86.5	76.4	85.2
50 CM	90.6	86.0	91.0	89.3
OXAMYL(76)	0		10	
HLM KILL STANDARD		LATE STANDARD	LATE STANDARD	LATE
SPACING				
25 CM	82.7	84.3	78.4	87.4
50 CM	90.4	85.7	91.2	89.6
OXAMYL(76)	0		10	
HLM KILL STANDARD		LATE STANDARD	LATE STANDARD	LATE
FERTLSER				
STANDARD	89.4	85.3	85.9	87.1
EXTRA	83.7	84.7	83.7	89.9
OXAMYL(77)	0		10	
HLM KILL STANDARD		LATE STANDARD	LATE STANDARD	LATE
SPACING				
25 CM	79.3	83.5	81.8	88.2
50 CM	90.3	83.4	91.3	91.9
OXAMYL(77)	0		10	
HLM KILL STANDARD		LATE STANDARD	LATE STANDARD	LATE
FERTLSER				
STANDARD	87.2	83.0	88.2	89.5
EXTRA	82.4	83.9	84.9	90.7
OXAMYL(77)	0		10	
HLM KILL STANDARD		LATE STANDARD	LATE STANDARD	LATE
OXAMYL(76)				
0	86.8	81.3	86.3	88.7
10	82.8	85.7	86.8	91.4

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PERCENTAGE WARE 3.81CM (1.5 INCH) RIDDLE

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

OXAMYL(76)	0		10		
OXAMYL(77)	0	10	0	10	
SPACING FERTLSER					
25 CM STANDARD	87.1	88.4	81.2	85.6	
EXTRA	77.6	80.7	79.6	85.3	
50 CM STANDARD	85.2	88.7	86.9	92.5	
EXTRA	86.2	92.2	89.2	92.9	
OXAMYL(76)	0		10		
HLM KILL STANDARD		LATE STANDARD		LATE	
SPACING FERTLSER					
25 CM STANDARD	88.6	87.0	80.9	85.9	
EXTRA	76.8	81.5	76.0	88.9	
50 CM STANDARD	90.3	83.6	91.0	88.4	
EXTRA	90.6	87.8	91.3	90.8	
OXAMYL(77)	0		10		
HLM KILL STANDARD		LATE STANDARD		LATE	
SPACING FERTLSER					
25 CM STANDARD	83.9	84.4	85.5	88.5	
EXTRA	74.7	82.6	78.2	87.9	
50 CM STANDARD	90.5	81.6	90.8	90.4	
EXTRA	90.2	85.2	91.7	93.4	
OXAMYL(77)	0		10		
HLM KILL STANDARD		LATE STANDARD		LATE	
SPACING OXAMYL(76)					
25 CM	0	82.8	82.0	82.6	86.6
	10	75.8	85.0	81.1	89.8
50 CM	0	90.8	80.6	90.1	90.9
	10	89.9	86.3	92.5	92.9
OXAMYL(77)	0		10		
HLM KILL STANDARD		LATE STANDARD		LATE	
FERTLSER OXAMYL(76)					
STANDARD	0	90.8	81.5	88.0	89.2
	10	83.6	84.5	88.3	89.8
EXTRA	0	82.8	81.1	84.6	88.3
	10	82.1	86.8	85.3	93.0
OXAMYL(77)	0		10		
HLM KILL STANDARD		LATE STANDARD		LATE	
SPACING FERTLSER OXAMYL(76)					
25 CM STANDARD	0	89.8	84.5	87.3	89.6
	10	78.1	84.4	83.7	87.5
EXTRA	0	75.8	79.5	77.8	83.6
	10	73.5	85.7	78.5	92.1
50 CM STANDARD	0	91.8	78.5	88.7	88.8
	10	89.1	84.7	92.9	92.0
EXTRA	0	89.8	82.6	91.5	93.0
	10	90.6	87.8	92.0	93.9

PLOT AREA HARVESTED 0.0087