ROTHAMSTED RESEARCH

Yields of the Field Experiments 1987

Full Table of Content

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

Rothamsted Research

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87/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 sixth year, s. barley, potatoes.

For previous years see 82-86/W/CS/273.

Design: In the sixth year: 2 randomised blocks of 4 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 1983, 1985 and 1987, all s. barley in 1982, 1984 and 1986:

	1983	1985	1987
D P D	Desiree	Maris Piper	Desiree
D D D	Desiree	Desiree	Desiree
D O D	Desiree	None (s. barley)	Desiree
O O D	None (s. barley)	None (s. barley)	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

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):

6 July	12
10 July	12
Total	24

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87/W/CS/273

Standard applications:
Potatoes: Manures: (0:18:36) at 420 kg, (10:10:15+4.5 Mg) at 2900 kg. Weedkiller: Linuron at 1.6 kg in 200 l. Fungicides: Mancozeb at 1.4 kg in 200 l on four occasions, with the pirimicarb on the second. Fentin hydroxide at 0.28 kg in 200 l on two occasions. Insecticide: Pirimicarb at 0.14 kg. Desiccant: Diquat at 0.80 kg ion in 200 l.
S. barley: Manure: 'Nitram' at 230 kg. Fungicides: Propiconazole at 0.12 kg with tridemorph at 0.19 kg in 200 l.

Seed: Potatoes: Desiree, phorate applied at planting.
S. barley: Triumph, dressed triadimenol and fuberidazole, sown at 160 kg.

Cultivations, etc.:-
Potatoes: PK applied: 29 Jan, 1987. Ploughed: 11 Mar. NPK Mg applied: 22 Apr. Subsoiled with 25 cm wide wings on tines 38 cm deep and 66 cm apart, oxamyl applied and rotary cultivated: 23 Apr. Potatoes planted: 24 Apr. Rotary ridged: 15 May. Linuron applied: 22 May. Mancozeb applied: 24 June, 26 July, 5 Aug. Mancozeb applied with pirimicarb: 8 July. Fentin hydroxide applied: 18 Aug, 4 Sept. Desiccant applied: 18 Sept. Haulm mechanically destroyed: 1 Oct. Lifted: 2 Oct.
S. barley: Deep-tine cultivated: 30 Jan, 1987. Ploughed: 11 Mar. Subsoiled with 25 cm wide wings on tines 38 cm deep and 66 cm apart: 23 Apr. Spike harrowed with crumbler attached, seed sown: 30 Apr. N applied: 6 May. Fungicides applied: 3 July. Combine harvested: 10 Sept.

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

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87/W/CS/273

TOTAL TUBERS TONNES/HECTARE

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

SD TREAT VAR SEQ	NONE	TOL+PRO	Mean
D P D	43.0	43.1	43.1
D D D	44.6	43.7	44.2
D O D	50.7	42.7	46.7
O O D	58.4	59.4	58.9
Mean	49.2	47.2	48.2

NEMACIDE VAR SEQ	NONE	OXAMYL	Mean
D P D	37.0	49.1	43.1
D D D	34.8	53.5	44.2
D O D	37.6	55.8	46.7
O O D	57.3	60.4	58.9
Mean	41.7	54.7	48.2

NEMACIDE SD TREAT	NONE	OXAMYL	Mean
NONE	42.4	55.9	49.2
TOL+PRO	41.0	53.5	47.2
Mean	41.7	54.7	48.2

SD TREAT	NONE		TOL+PRO	
NEMACIDE	NONE	OXAMYL	NONE	OXAMYL
VAR SEQ				
D P D	37.9	48.1	36.1	50.2
D D D	33.9	55.2	35.8	51.7
D O D	40.7	60.6	34.4	51.0
O O D	56.9	59.8	57.8	61.1

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

Table	SD TREAT	NEMACIDE	VAR SEQ* SD TREAT
s.e.d.	1.16	1.16	2.31

Table	VAR SEQ* NEMACIDE	SD TREAT NEMACIDE	VAR SEQ* SD TREAT NEMACIDE
s.e.d.	2.31	1.64	3.27

* Within the same level of VAR SEQ only

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

Stratum	d.f.	s.e.	cv%
BLOCK.WP.SP	44	4.63	9.6

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87/W/CS/273

PERCENTAGE WARE 4.44CM (1.75 INCH) RIDDLE

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

SD TREAT	NONE	TOL+PRO	Mean
VAR SEQ			
D P D	62.3	67.4	64.9
D D D	66.0	64.1	65.1
D O D	73.3	64.0	68.6
O O D	79.7	77.7	78.7
Mean	70.3	68.3	69.3

NEMACIDE	NONE	OXAMYL	Mean
VAR SEQ			
D P D	59.3	70.4	64.9
D D D	56.0	74.2	65.1
D O D	60.8	76.4	68.6
O O D	78.2	79.2	78.7
Mean	63.6	75.0	69.3

NEMACIDE	NONE	OXAMYL	Mean
SD TREAT			
NONE	64.8	75.9	70.3
TOL+PRO	62.4	74.2	68.3
Mean	63.6	75.0	69.3

SD TREAT	NONE		TOL+PRO	
NEMACIDE	NONE	OXAMYL	NONE	OXAMYL
VAR SEQ				
D P D	59.1	65.6	59.6	75.2
D D D	55.3	76.8	56.6	71.6
D O D	66.5	80.0	55.2	72.8
O O D	78.2	81.1	78.1	77.3

PLOT AREA HARVESTED 0.00075

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