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Yields of the Field Experiments 1984

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84/R/P/1 Varieties and Stem Canker - Potatoes

Rothamsted Research

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84/R/P/1

POTATOES

VARIETIES AND STEM CANKER

Object: To study the effects of stem canker (Rhizoctonia solani) on plant growth and yield of a range of early and maincrop potato varieties using chitted and unchitted seed - Gt. Knott II.

Sponsors: G.A. Hide, P.J. Read, J.P. Sandison.

Design: Early varieties: 3 randomised blocks of 20 plots.
Maincrop varieties: 3 randomised blocks of 28 plots.

Whole plot dimensions: 3.0 x 10.7.

Treatments:

To EARLY varieties, all combinations of:-

1. VARIETY	Varieties:
A COMET	Arran Comet
ESTIMA	Estima
M PEER	Maris Peer
U PRINCE	Ulster Prince
U SCEPTR	Ulster Sceptre
2. INOCULUM	Inoculum to seed at planting:
NONE	None
RHIZOCT	R. solani inoculum
3. SD TREAT	Seed treatment:
NONE	
CHITTED	

To MAINCROP varieties, all combinations of:-

1. VARIETY	Varieties:
CARA	Cara
DESIREE	Desiree
K EDWARD	King Edward
M PIPER	Maris Piper
P CROWN	Pentland Crown
P SQUIRE	Pentland Squire
RECORD	Record
2. INOCULUM	Inoculum to seed at planting:
NONE	None
RHIZOCT	R. solani inoculum

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3. SD TREAT Seed treatment:

NONE
CHITTED

NOTE: Rhizoctonia inoculum was grown on horticultural vermiculite and sprinkled over seed tubers at planting before covering.

Basal applications: Manures: FYM at 45 t. (10:10:15+4.5 Mg) at 1960 kg. Weedkillers: Linuron at 1.3 kg with paraquat at 0.50 kg ion in 500 l. Fungicide: Fentin hydroxide at 0.28 kg in 200 l on seven occasions, applied with the insecticide on the first and third occasion. Insecticide: Pirimicarb at 0.14 kg on two occasions. Desiccant: Diquat at 0.56 kg ion in 200 l.

Cultivations, etc:- Subsoiled, tines 45 cm deep, 76 cm apart: 6 Oct, 1983. FYM applied: 4 Nov. Ploughed: 9 Nov. NPK Mg applied, heavy spring-tine cultivated: 23 Mar, 1984. Rotary harrowed: 10 Apr. Early potatoes planted by hand: 11 Apr. Maincrop potatoes planted by hand: 12 Apr. Weedkillers applied: 4 May. Fungicide with insecticide applied: 19 June, 17 July. Fungicide alone applied: 3 July, 30 July, 13 Aug, 28 Aug, 11 Sept. Haulm desiccant applied: 4 Oct. Lifted: 16 Oct. Previous crops: S. barley 1982, w. oats 1983.

NOTE: Plant samples were taken on four occasions to assess stem canker, weight of foliage and weight and numbers of tubers.

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84/R/P/1 EARLY POTATOES

TOTAL TUBERS TONNES/HECTARE

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

INOCULUM	NONE	RHIZOCT	MEAN
VARIETY			
A COMET	24.3	22.5	23.4
ESTIMA	33.3	30.8	32.1
M PEER	20.3	17.2	18.7
U PRINCE	19.8	16.9	18.3
U SCEPTR	22.1	19.3	20.7
MEAN	24.0	21.3	22.7

SD TREAT	NONE	CHITTED	MEAN
VARIETY			
A COMET	23.9	23.0	23.4
ESTIMA	32.4	31.7	32.1
M PEER	17.7	19.8	18.7
U PRINCE	18.0	18.6	18.3
U SCEPTR	20.3	21.2	20.7
MEAN	22.5	22.8	22.7

SD TREAT	NONE	CHITTED	MEAN
INOCULUM			
NONE	23.6	24.3	24.0
RHIZOCT	21.3	21.4	21.3
MEAN	22.5	22.8	22.7

INOCULUM	NONE		RHIZOCT	
SD TREAT	NONE	CHITTED	NONE	CHITTED
VARIETY				
A COMET	24.3	24.4	23.5	21.5
ESTIMA	34.2	32.4	30.7	31.0
M PEER	18.9	21.8	16.5	17.8
U PRINCE	19.3	20.2	16.8	16.9
U SCEPTR	21.5	22.8	19.1	19.5

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

TABLE	VARIETY	INOCULUM	SD TREAT	VARIETY INOCULUM
SED	1.44	0.91	0.91	2.03

TABLE	VARIETY SD TREAT	INOCULUM SD TREAT	VARIETY INOCULUM SD TREAT
SED	2.03	1.29	2.88

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

STRATUM	DF	SE	CV%
BLOCK.WP	38	3.52	15.5

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84/R/P/1 EARLY POTATOES

PERCENTAGE WARE 4.44CM (1.75 INCH) RIDDLE

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

INOCULUM	NONE	RHIZOCT	MEAN
VARIETY			
A COMET	39.7	65.5	52.6
ESTIMA	77.0	84.0	80.5
M PEER	32.3	50.5	41.4
U PRINCE	65.3	80.3	72.8
U SCEPTR	42.5	67.5	55.0
MEAN	51.4	69.6	60.5

SD TREAT	NONE	CHITTED	MEAN
VARIETY			
A COMET	50.7	54.5	52.6
ESTIMA	80.9	80.2	80.5
M PEER	41.9	40.9	41.4
U PRINCE	78.1	67.5	72.8
U SCEPTR	53.5	56.5	55.0
MEAN	61.0	59.9	60.5

SD TREAT	NONE	CHITTED	MEAN
INOCULUM			
NONE	54.6	48.1	51.4
RHIZOCT	67.4	71.7	69.6
MEAN	61.0	59.9	60.5

INOCULUM	NONE		RHIZOCT	
SD TREAT	NONE	CHITTED	NONE	CHITTED
VARIETY				
A COMET	35.1	44.2	66.2	64.7
ESTIMA	79.8	74.3	82.0	86.0
M PEER	39.7	24.9	44.1	56.9
U PRINCE	74.8	55.8	81.4	79.2
U SCEPTR	43.9	41.1	63.1	71.9

PLOT AREA HARVESTED 0.00103

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84/R/P/1 MAIN CROP POTATOES

TOTAL TUBERS TONNES/HECTARE

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

INOCULUM	NONE	RHIZOCT	MEAN
VARIETY			
CARA	47.7	43.0	45.4
DESIREE	29.3	27.4	28.3
K EDWARD	32.1	25.9	29.0
M PIPER	30.1	28.4	29.2
P CROWN	44.4	39.3	41.9
P SQUIRE	40.4	32.9	36.6
RECORD	25.5	22.2	23.9
MEAN	35.6	31.3	33.5

SD TREAT	NONE	CHITTED	MEAN
VARIETY			
CARA	43.8	46.9	45.4
DESIREE	29.5	27.2	28.3
K EDWARD	27.9	30.1	29.0
M PIPER	29.3	29.2	29.2
P CROWN	41.6	42.2	41.9
P SQUIRE	37.6	35.7	36.6
RECORD	24.3	23.5	23.9
MEAN	33.4	33.5	33.5

SD TREAT	NONE	CHITTED	MEAN
INOCULUM			
NONE	35.7	35.6	35.6
RHIZOCT	31.1	31.5	31.3
MEAN	33.4	33.5	33.5

INOCULUM	NONE		RHIZOCT	
SD TREAT	NONE	CHITTED	NONE	CHITTED
VARIETY				
CARA	46.8	48.6	40.8	45.2
DESIREE	30.7	27.9	28.3	26.4
K EDWARD	31.6	32.6	24.2	27.5
M PIPER	29.0	31.2	29.6	27.2
P CROWN	43.9	45.0	39.3	39.4
P SQUIRE	41.9	38.9	33.2	32.5
RECORD	26.3	24.8	22.2	22.2

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84/R/P/1 MAIN CROP POTATOES

TOTAL TUBERS TONNES/HECTARE

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

TABLE	VARIETY	INOCULUM	SD TREAT	VARIETY INOCULUM
SED	1.71	0.91	0.91	2.42

TABLE	VARIETY SD TREAT	INOCULUM SD TREAT	VARIETY INOCULUM SD TREAT
SED	2.42	1.29	3.42

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

STRATUM	DF	SE	CV%
BLOCK.WP	54	4.19	12.5

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84/R/P/1 MAIN CROP POTATOES

PERCENTAGE WARE 4.44CM (1.75 INCH) RIDDLE

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

INOCULUM VARIETY	NONE	RHIZOCT	MEAN
CARA	90.3	91.4	90.9
DESIREE	77.9	78.5	78.2
K EDWARD	49.9	55.1	52.5
M PIPER	72.3	72.9	72.6
P CROWN	91.2	91.5	91.4
P SQUIRE	90.8	89.1	90.0
RECORD	65.0	68.7	66.8
MEAN	76.8	78.2	77.5

SD TREAT VARIETY	NONE	CHITTED	MEAN
CARA	90.1	91.6	90.9
DESIREE	78.9	77.5	78.2
K EDWARD	51.4	53.5	52.5
M PIPER	70.8	74.4	72.6
P CROWN	91.4	91.3	91.4
P SQUIRE	88.7	91.2	90.0
RECORD	67.8	65.9	66.8
MEAN	77.0	77.9	77.5

SD TREAT INOCULUM	NONE	CHITTED	MEAN
NONE	77.0	76.5	76.8
RHIZOCT	77.0	79.4	78.2
MEAN	77.0	77.9	77.5

INOCULUM	NONE		RHIZOCT	
SD TREAT	NONE	CHITTED	NONE	CHITTED
VARIETY				
CARA	90.0	90.6	90.2	92.6
DESIREE	79.3	76.5	78.5	78.6
K EDWARD	50.0	49.7	52.8	57.3
M PIPER	70.0	74.5	71.5	74.3
P CROWN	91.4	91.0	91.4	91.6
P SQUIRE	89.8	91.9	87.7	90.6
RECORD	68.7	61.3	66.9	70.5

PLOT AREA HARVESTED 0.00103

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