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

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83/R/P/1

POTATOES

VARIETIES AND STEM CANKER

Object: To study the effects of stem canker (*Rhizoctonia solani*) on plant development and yield of a range of early and maincrop potato varieties - Summerdells II.

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

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

Whole plot dimensions: 3.00 x 9.14.

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. RHZ FUNG | R. solani infection and fungicide to tubers: |
| NONE | None |
| SEED R | Seed with black scurf symptom |
| SEED R+F | Seed with black scurf symptom, treated with iprodione |
| SOIL R | R. solani inoculum to soil |

To MAINCROP varieties, all combinations of:-

- | | |
|-------------|---|
| 1. VARIETY | Varieties: |
| CARA | Cara |
| DESIREE | Desiree |
| K EDWARD | King Edward |
| P CROWN | Pentland Crown |
| M PIPER | Maris Piper |
| P SQUIRE | Pentland Squire |
| RECORD | Record |
| 2. RHZ FUNG | R. solani infection & fungicide to tubers: |
| NONE | None |
| SEED R | Seed with black scurf symptom |
| SEED R+F | Seed with black scurf symptom, treated with iprodione |
| SOIL R | R. solani inoculum to soil |

NOTES: (1) The fungal inoculum was grown on a vermiculite plus malt medium. It was applied by hand around the tubers at planting.

(2) The iprodione treatment was applied by dipping tubers into a 0.05% solution for five minutes.

83/R/P/1

Basal applications: Manures: (0:18:36) at 700 kg. (10:10:15+4.5 Mg) at 2010 kg. Weedkillers: Paraquat at 0.84 kg ion in 250 l. Linuron at 1.0 kg with paraquat at 0.56 kg ion in 500 l. Fungicides: Mancozeb at 1.4 kg in 250 l on three occasions. Fentin hydroxide at 0.28 kg in 250 l applied on five occasions, with the insecticide on the first four occasions. Insecticide: Pirimicarb at 0.14 kg. Desiccant: BOV at 170 l.

Cultivations, etc:- PK applied: 20 Sept, 1982. Paraquat applied: 16 Oct. Ploughed: 9 Dec. NPK Mg applied: 4 May, 1983. Rotary harrowed for early-sown potatoes, heavy spring-tine cultivated for maincrop: 11 May. Early potatoes planted by hand, maincrop area rotary harrowed: 16 May. Maincrop potatoes planted by hand: 23 May. Linuron and paraquat applied: 7 June. Mancozeb applied: 22 June. Fentin hydroxide with pirimicarb applied: 1 July, 8 July, 18 July, 28 July. Fentin hydroxide alone applied: 11 Aug. Mancozeb applied: 25 Aug, 9 Sept. Haulm mechanically destroyed: 7 Oct. Haulm desiccant applied: 19 Oct. Lifted: 26 Oct. Previous crops: S. barley 1981, w. oats 1982.

- NOTES: (1) Emergence counts were made in June.
(2) Measurements of aspects of plant growth and of *R. solani* infection of stem bases and stolons were made in July and August.
(3) Infection of mature tubers was assessed.

83/R/P/1 EARLY POTATOES

TOTAL TUBERS TONNES/HECTARE

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

RHZ FUNG VARIETY	NONE	SEED R	SEED R+F	SOIL R	MEAN
A COMET	29.9	30.4	29.6	30.5	30.1
ESTIMA	26.2	29.7	27.7	27.9	27.9
M PEER	15.8	15.2	16.8	15.4	15.8
U PRINCE	16.7	16.7	16.4	16.9	16.7
U SCEPTR	17.1	17.9	17.8	18.1	17.7
MEAN	21.1	22.0	21.7	21.8	21.6

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

TABLE	VARIETY	RHZ FUNG	VARIETY RHZ FUNG
SED	0.76	0.68	1.52

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

STRATUM	DF	SE	CV%
BLOCK.WP	38	1.86	8.6

PERCENTAGE WARE 4.44CM (1.75 INCH) RIDDLE

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

RHZ FUNG VARIETY	NONE	SEED R	SEED R+F	SOIL R	MEAN
A COMET	61.3	65.8	56.0	71.2	63.5
ESTIMA	68.5	71.5	69.6	72.7	70.6
M PEER	31.0	37.9	32.4	40.2	35.4
U PRINCE	74.9	81.1	81.0	81.1	79.5
U SCEPTR	54.5	55.2	53.1	61.2	56.0
MEAN	58.0	62.3	58.4	65.3	61.0

PLOT AREA HARVESTED 0.00117

83/R/P/1 MAIN CROP POTATOES

TOTAL TUBERS TONNES/HECTARE

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

RHZ FUNG VARIETY	NONE	SEED R	SEED R+F	SOIL R	MEAN
CARA	34.1	37.0	37.0	37.3	36.3
DESIREE	32.6	32.6	33.7	31.2	32.5
K EDWARD	36.3	36.6	34.9	31.8	34.9
P CROWN	33.4	33.7	31.4	34.6	33.2
M PIPER	32.0	33.0	31.4	31.6	32.0
P SQUIRE	38.3	36.4	36.8	36.3	36.9
RECORD	29.5	26.4	27.4	26.7	27.5
MEAN	33.7	33.7	33.2	32.8	33.4

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

TABLE	VARIETY	RHZ FUNG	VARIETY RHZ FUNG
SED	0.89	0.67	1.77

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

STRATUM	DF	SE	CV%
BLOCK.WP	54	2.17	6.5

PERCENTAGE WARE 4.44CM (1.75 INCH) RIDDLE

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

RHZ FUNG VARIETY	NONE	SEED R	SEED R+F	SOIL R	MEAN
CARA	84.9	88.3	85.8	86.3	86.3
DESIREE	62.8	69.4	63.3	69.8	66.3
K EDWARD	42.7	46.2	35.9	55.1	45.0
P CROWN	80.2	84.6	79.9	85.6	82.6
M PIPER	49.8	51.3	51.0	54.6	51.6
P SQUIRE	81.7	85.9	84.0	88.9	85.1
RECORD	56.4	59.3	63.4	60.9	60.0
MEAN	65.5	69.3	66.2	71.6	68.1

PLOT AREA HARVESTED 0.00117