ROTHAMSTED RESEARCH

Yields of the Field Experiments 1985

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85/R/P/3 Maintenance of Seed Health - Potatoes

Rothamsted Research

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85/R/P/3

POTATOES

SEED HEALTH

Object: To study the effects of three amounts of pest and disease control on two potato varieties grown for seed - Whittlocks.

Sponsors: R.W. Gibson, R. Harrington, G.A. Hide, G.R. Cayley.

Design: 2 randomised blocks of 3 plots split into 6 plus 1 plot split into 4.

Whole plot dimensions: 108.0 x 7.62.

Treatments: All combinations of:-

Whole plots

1. VARIETY	Varieties:
R EDWARD	Rothamsted once-grown King Edward
S EDWARD	Scots F.S. King Edward
S PIPER	Scots F.S. Maris Piper

Sub plots

2. PATHCONT	Pest and pathogen control (in addition to basals) cumulative to 1984 for Rothamsted seed:
STANDARD	None
ENHANCED	Seed treatment with tolclofos methyl at 0.24 kg and imazalil at 0.010 kg per tonne of tubers, applied by hydraulic and uncharged electrostatic sprayers respectively. Cypermethrin at 0.04 kg with 7.0 l oil in 500 l applied by hydraulic sprayer on 14 June, 1985. Plants with 'virus' symptoms were removed on 4 June and 25 June
FULL	As for ENHANCED plus:- The imazalil was applied by charged electrostatic sprayer. Cypermethrin at 0.04 kg with oil at 7.0 l in 500 l was also applied on 28 June, 11 July, 26 July and (to HAULM D LATER plots only) 14 Aug
3. HAULM D	Dates of destroying haulm and of lifting:
EARLY	Haulm mechanically destroyed, 12 Aug, 1985. Haulm desiccant applied 14 Aug and potatoes lifted 18 Sept
LATER	Haulm mechanically destroyed 4 Sept. Haulm desiccant applied 5 Sept and potatoes lifted 11 Oct

Plus one whole plot of Rothamsted once-grown Maris Piper divided for all combinations of:-

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1. PTHCT RP Pest and pathogen control, as above:

   ENHANCED
   FULL

2. HLM D RP Dates of destroying haulm and of lifting, as above:

   EARLY
   LATER

NOTE: PATHCONT FULL provided for removal of plants with 'blackleg' symptoms. This was done in 1984 but not in 1985 because symptoms were not found.

Basal applications: Manures: (0:18:36) at 690 kg. FYM at 35 t. (10:10:15+4.5 Mg) at 1960 kg. Weedkillers: Paraquat at 0.60 kg ion in 250 l. Linuron at 1.3 kg with paraquat at 0.50 kg ion in 200 l. Fungicide: Mancozeb at 1.4 kg in 200 l on five occasions, applied with the pirimicarb on all but the first. Insecticides: Phorate at 1.7 kg. Pirimicarb at 0.14 kg on four occasions. Haulm desiccant: Diquat at 0.80 kg ion in 500 l.

Cultivations, etc.:- Paraquat applied: 19 Sept, 1984. PK applied: 10 Oct. FYM applied: 27 Nov. Ploughed: 6 Dec. Heavy spring-tine cultivated: 19 Mar, 1985. NPK Mg applied: 3 Apr. Rotary harrowed: 10 Apr. Potatoes planted by hand, phorate applied: 15 Apr. Linuron and paraquat applied: 16 May. Mancozeb applied: 20 June. Mancozeb with pirimicarb applied: 3 July, 23 July, 6 Aug and 21 Aug. Previous crops: W. barley 1983, w. oilseed rape 1984.

NOTE: Aphid counts were made and virus infection assessed throughout the season. Plants were sampled in early August for stem infections and tuber samples were taken at harvest for observations on storage diseases.

TOTAL TUBERS TONNES/HECTARE

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

PATHCONT VARIETY	STANDARD	ENHANCED	FULL	MEAN
R EDWARD	48.0	47.3	44.8	46.7
S EDWARD	51.0	47.4	44.8	47.7
S PIPER	56.8	51.5	50.6	53.0
MEAN	51.9	48.8	46.7	49.1

HAULM D VARIETY	EARLY	LATER	MEAN
R EDWARD	38.8	54.5	46.7
S EDWARD	40.0	55.5	47.7
S PIPER	46.6	59.4	53.0
MEAN	41.8	56.5	49.1

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TOTAL TUBERS TONNES/HECTARE

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

HAULM D PATHCONT	EARLY	LATER	MEAN
STANDARD	45.1	58.8	51.9
ENHANCED	41.0	56.5	48.8
FULL	39.3	54.1	46.7
MEAN	41.8	56.5	49.1

PATHCONT	STANDARD		ENHANCED		FULL	
HAULM D	EARLY	LATER	EARLY	LATER	EARLY	LATER
VARIETY						
R EDWARD	40.7	55.3	38.9	55.7	36.9	52.6
S EDWARD	43.3	58.7	39.6	55.3	37.1	52.5
S PIPER	51.2	62.4	44.5	58.6	44.0	57.3

HLM D RP PATHCT RP	EARLY	LATER	MEAN
ENHANCED	42.5	55.9	49.2
FULL	40.6	51.6	46.1
MEAN	41.6	53.7	47.6

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

TABLE	PATHCONT	HAULM D	VARIETY* PATHCONT
SED	0.76	0.62	1.32

TABLE	VARIETY* HAULM D	PATHCONT HAULM D	VARIETY* PATHCONT HAULM D
SED	1.07	1.07	1.86

* ONLY WITHIN THE SAME LEVEL OF PATHCONT

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

STRATUM	DF	SE	CV%
BLOCK.WP.SP	15	1.86	3.8

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PERCENTAGE WARE 4.44CM (1.75 INCH) RIDDLE

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

PATHCONT VARIETY	STANDARD	ENHANCED	FULL	MEAN
R EDWARD	67.4	63.8	62.0	64.4
S EDWARD	78.9	68.6	65.0	70.8
S PIPER	78.8	75.7	75.4	76.6
MEAN	75.1	69.4	67.5	70.6

HAULM D VARIETY	EARLY	LATER	MEAN
R EDWARD	50.5	78.3	64.4
S EDWARD	62.0	79.7	70.8
S PIPER	70.4	82.9	76.6
MEAN	61.0	80.3	70.6

HAULM D PATHCONT	EARLY	LATER	MEAN
STANDARD	67.0	83.1	75.1
ENHANCED	59.4	79.3	69.4
FULL	56.5	78.4	67.5
MEAN	61.0	80.3	70.6

PATHCONT	STANDARD		ENHANCED		FULL	
HAULM D	EARLY	LATER	EARLY	LATER	EARLY	LATER
VARIETY						
R EDWARD	54.9	79.9	50.0	77.5	46.6	77.5
S EDWARD	73.0	84.8	59.1	78.0	53.9	76.2
S PIPER	73.1	84.6	69.0	82.4	69.1	81.6

HLM D RP PATHCT RP	EARLY	LATER	MEAN
ENHANCED	49.4	72.9	61.1
FULL	55.2	75.6	65.4
MEAN	52.3	74.2	63.3

SUB PLOT AREA HARVESTED 0.00457

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