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71/R/P/1 Seed Stocks, Diseases and Fungicides - Potatoes

Rothamsted Research

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POTATOES

SEED STOCKS, DISEASES AND FUNGICIDES

Object: To study the effects of systemic fungicides and re-infection with Oospora and Rhizoctonia, on potato stocks either freed from these diseases by the use of stem cuttings, or not. Varieties and the effects of chitting are also studied - Whittlocks.

Design: 4 randomised blocks of 12 plots (plus one extra block for sampling). Plots split into 4.

Whole plot dimensions: 5.69 x 9.52. Sub-plot area harvested: 0.00135.

Treatments: All combinations of:-

Whole plots: 1. Seed stocks, diseases and fungicides:

F, FB, FC, PCB, H, HC, HCB, HCBP, HCOE, HCOL,
HCRL, HCORL

where F = Once grown seed from Rothamsted*

H = Healthy seed (from stem cuttings)

B = Seed treated with fungicide (Benomyl 5% dust at 4.47 kg per tonne of seed)

P = Seed treated with fungicide ('Plantvax' 5% dust at 4.47 kg per tonne of seed)

C = Chitted seed

O = Seed inoculated with Oospora

R = Seed inoculated with Rhizoctonia

E = Early inoculation (inoculated on 20 Jan, 1971 using vermiculite as a carrier)

L = Late inoculation (applied to furrow at planting, using vermiculite as a carrier)

Quarter plots: 2. Varieties: King Edward (KE), Majestic (M), Pentland Crown (PC), Record (R)

* For Record 'A' stock was used.

Basal applications: 1506 kg (13:13:20). Weedkiller: Linuron at 0.84 kg in 427 l. Fungicide: Mancozeb at 1.35 kg in 438 l on 2 occasions. Insecticide: Demeton-s-methyl at 245 g with the first application of mancozeb.

Cultivations, etc.: Ploughed: 1 Oct, 1970. NPK applied: 6 Apr, 1971.

Rotary cultivated: 19 Apr. Potatoes hand planted: 20 Apr. Weedkiller applied: 11 May. Fungicide and insecticide applied: 24 June.

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Fungicide applied: 16 Aug. Sprayed with undiluted BOV at 168 l:
16 Sept. Lifted: 30 Sept. Previous crops: Spring wheat 1969,
fallow 1970.

NOTE: Stem and plant numbers were recorded before lifting. During
the season samples were taken from the sampling block for disease
assessment on progeny tubers. At harvest a sub-sample was taken
for disease assessment in the eyes.

Standard errors per plot. Total tubers, tonnes/hectare:

Whole plot: 1.53 or 2.9% (33 d.f.)

Sub plot: 2.55 or 4.8% (108 d.f.)

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SUMMARY OF RESULTS

	KE	M	PC	R	Mean
TOTAL TUBERS: TONNES/HECTARE					
	(1) and (2)				(± 0.76)
F	48.0	50.5	47.2	33.2	44.7
FB	45.7	50.0	45.0	35.8	44.1
FC	56.2	56.4	52.4	37.9	50.7
FCB	55.0	62.4	54.9	42.1	53.6
H	54.0	54.1	42.7	44.2	48.7
HC	60.5	60.0	56.7	44.6	55.5
HCB	60.5	64.5	56.4	45.4	56.7
HCBP	62.3	62.1	57.3	46.1	57.0
HCOE	58.9	59.9	55.5	45.0	54.8
HCOL	59.4	58.9	57.2	42.8	54.6
HCRL	59.8	59.1	57.9	44.4	55.3
HCORL	61.0	63.1	54.3	43.5	55.5
Mean (± 0.37)	56.8	58.4	53.1	42.1	52.6

- (1) (± 1.34) For use in vertical and diagonal comparisons only
 (2) (± 1.27) For use in horizontal and interaction comparisons only

% WARE: 4.44 CM (1.75 INCH) RIDDLE

F	72.2	82.6	84.6	80.1	79.9
FB	62.0	80.4	81.0	75.9	74.8
FC	75.6	79.8	85.0	81.6	80.5
FCB	73.0	80.3	82.8	79.6	79.0
H	67.1	80.7	79.3	74.4	75.4
HC	73.6	79.2	81.1	77.6	77.9
HCB	71.9	82.1	81.3	79.2	78.6
HCBP	71.2	83.0	83.7	79.3	79.3
HCOE	73.2	82.7	82.7	81.9	80.1
HCOL	75.1	83.3	84.5	82.0	81.3
HCRL	74.7	82.1	83.4	80.9	80.3
HCORL	76.1	81.9	82.2	80.0	80.1
Mean	72.2	81.5	82.6	79.4	78.9