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81/R/P/2 Electrostatic Application of Fungicide - Potatoes

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81/R/P/2

POTATOES

ELECTROSTATIC APPLICATION OF FUNGICIDE

Object: To study the effects of applying thiabendazole to seed tubers by electrostatic sprayer on subsequent incidence of stem canker (*Rhizoctonia solani*) and on yield of potatoes - Highfield VI.

Sponsors: G.R. Cayley, G.A. Hide, A.J. Arnold.

Design: 4 randomised blocks of 6 plots.

Whole plot dimensions: 1.5 x 9.53.

Treatments: All combinations of:-

1. CHITMETH Methods of chitting in boxes:

RANDOM	Position of tubers random
ROSE UP	Arranged with rose ends up

2. FUNGMETH Methods of applying thiabendazole fungicide to tubers:

NONE	Not applied
ES CH	By electrostatic sprayer (APE 80) using charged particles
ES UCH	By electrostatic sprayer (APE 80) using uncharged particles

NOTE: (1) *Rhizoctonia* was cultured on vermiculite and spread over the tubers in furrows before splitting back.
(2) Thiabendazole fungicide was applied to tubers after chitting at 50 g per tonne of tubers.
(3) Winter beans were sown on the site in Sept, 1980 but had failed by April 1981 and were replaced by potatoes.

Basal applications: Manures: Chalk at 7.5 t. Muriate of potash at 830 kg, 'Nitro-Chalk' at 750 kg, (0:20:20) at 1460 kg, magnesium sulphate at 900 kg. Weedkillers: Trietazine at 1.2 kg with simazine at 0.17 kg in 250 l. Linuron at 1.13 kg with paraquat at 0.4 kg ion in 250 l. Fungicide: Mancozeb at 1.4 kg in 250 l applied six times, with the insecticide on the first five occasions. Insecticide: Pirimicarb at 0.14 kg. Desiccant: BOV at 170 l.

Seed: King Edward.

Cultivations, etc.: - Chalk applied: 19 Sept, 1980. K applied: 22 Sept. Ploughed: 24 Sept. Disc harrowed, heavy spring-tine cultivated: 27 Sept. Rotary harrowed, beans sown: 29 Sept. Trietazine & simazine applied: 30 Sept. Heavy spring-tine cultivated twice: 15 Apr, 1981. N, PK, and Mg applied: 23 Apr. Chisel ploughed, rotary harrowed, ridged, potatoes planted, split back: 24 Apr. Linuron and paraquat applied: 21 May. Fungicide applied, with insecticide on the first five occasions: 22 June, 1 July, 13 July, 27 July, 11 Aug, 24 Aug. BOV applied: 25 Sept. Remaining haulm mechanically destroyed: 7 Oct. Lifted: 12 Oct. Previous crops: W. wheat 1979, s. wheat 1980.

NOTE: Stem bases were examined for *Rhizoctonia* (Stem canker) and progeny tubers were assessed for black scurf.

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TOTAL TUBERS TONNES/HECTARE

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

FUNGMETH CHITMETH	NONE	ES CH	ES UCH	MEAN
RANDOM	51.3	53.2	51.0	51.9
ROSE UP	51.3	54.3	53.7	53.1
MEAN	51.3	53.8	52.4	52.5

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

TABLE	CHITMETH	FUNGMETH	CHITMETH FUNGMETH
SED	1.13	1.38	1.95

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

STRATUM	DF	SE	CV%
BLOCK.WP	15	2.76	5.3

PERCENTAGE WARE 4.44CM (1.75 INCH) RIDDLE

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

FUNGMETH CHITMETH	NONE	ES CH	ES UCH	MEAN
RANDOM	77.9	76.8	75.1	76.6
ROSE UP	75.5	77.0	79.2	77.2
MEAN	76.7	76.9	77.1	76.9

PLOT AREA HARVESTED 0.00143