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# Yields of the Field Experiments 1981

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

### Rothamsted Research

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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 \*\*\*\*\*

| FUNG METH<br>CHIT METH | 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 | CHIT METH | FUNG METH | CHIT METH<br>FUNG METH |
|-------|-----------|-----------|------------------------|
| 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 \*\*\*\*\*

| FUNG METH<br>CHIT METH | 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