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78/R/P/3 Growth Study - Potatoes

Rothamsted Research

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78/R/P/3

POTATOES

GROWTH STUDY

Object: To study the effects of modifying haulm structure by mechanical or chemical means on growth, tuber bulking, radiation interception, photosynthesis rates and yield of potatoes - Long Hoos IV 3.

Sponsor: D.W. Wood.

Design: 2 randomised blocks of 2 plots split into 4.

Whole plot dimensions: 11.6 x 22.0.

Treatments: All combinations of:-

Whole plots

- | | |
|-------------|--|
| 1. TBR SIZE | Seed tuber sizes: |
| SMALL | In the weight range 60- 80 g per tuber |
| LARGE | In the weight range 95-125 g per tuber |

Sub plots

- | | |
|-------------|--|
| 2. TREATMNT | Treatments: |
| NONE | None |
| APEX R | Stem apex removed after tuber initiation |
| BRANCH R | Lateral branches removed after tuber initiation |
| GRTH REG | Growth regulator, chlorflurenol methyl ester applied as foliar spray at tuber initiation |

NOTE: Chlorflurenol methyl ester applied at 8.4 g in 840 l on 28 June, 1978.

Basal applications: Manures: (0:14:28) at 720 kg. (20:14:14) at 600 kg. 'Nitro-Chalk 25' at 280 kg. Weedkiller: Metribuzin at 0.98 kg in 430 l. Insecticide: Pirimicarb at 0.14 kg. Fungicide: Mancozeb at 1.3 kg in 430 l on the first occasion, applied with the insecticide, at 1.9 kg in 900 l on the second and third occasions.

Seed: Pentland Crown.

Cultivations, etc.: - Autumn PK applied: 4 Oct, 1977. Ploughed: 10 Oct. NPK and additional N applied: 18 Apr, 1978. Heavy spring-tine cultivated: 9 May. Rotary cultivated, ridged, hand planted and split back: 10 May. Rotary ridged: 25 May. Weedkiller applied: 16 June. Insecticide and fungicide applied: 10 July. Fungicide applied: 17 Aug and 28 Aug. Lifted: 9 Oct. Previous crops: Beans 1976, spring wheat 1977.

NOTE: Seed sprout characteristics were assessed at planting. Emergence counts were made daily in early June. Full growth analyses were done at fortnightly intervals between early July and mid-September. Photosynthetic and respiration rates of leaves were assessed. Radiation interception was measured in July.

78/R/P/3

TOTAL TUBERS TONNES/HECTARE

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

| TREATMNT TBR SIZE | NONE | APEX R | BRANCH R | GRTH REG | MEAN |
|----------------------|------|--------|----------|----------|------|
| SMALL | 44.3 | 44.3 | 45.9 | 37.3 | 43.0 |
| LARGE | 46.9 | 43.5 | 44.7 | 41.2 | 44.1 |
| MEAN | 45.6 | 43.9 | 45.3 | 39.2 | 43.5 |

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

| TABLE | TREATMNT | TBR SIZE* TREATMNT |
|-------|----------|-----------------------|
| SED | 0.67 | 0.95 |

* WITHIN SAME LEVEL OF TBR SIZE ONLY

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

| STRATUM | DF | SE | CV% |
|-------------|----|------|-----|
| BLOCK.WP.SP | 6 | 0.95 | 2.2 |

PLOT AREA HARVESTED 0.00181

PERCENTAGE WARE 4.45CM (1.75INCH) RIDDLE

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

| TREATMNT TBR SIZE | NONE | APEX R | BRANCH R | GRTH REG | MEAN |
|----------------------|------|--------|----------|----------|------|
| SMALL | 47.0 | 41.8 | 31.5 | 26.8 | 36.8 |
| LARGE | 28.6 | 22.2 | 29.7 | 22.0 | 25.6 |
| MEAN | 37.8 | 32.0 | 30.6 | 24.4 | 31.2 |

PLOT AREA HARVESTED 0.00181