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Yields of the Field Experiments 1976

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76/R/CS/1 Levels of N and K - Potatoes

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76/R/CS/1

LEVELS OF N AND K

Object: To study the residual effects of N, P and K fertilisers applied to grass 1958-1967 and further dressings of P and K to tillage crops 1969-71 - Harwoods Piece.

Sponsor: F,V, Widdowson.

The 19th year, potatoes.

For previous years see 58/Cg/2(t), 59/Cg/2(t), 60/Ci/1, 61/Dg/1, 62/C/11, 63/C/7, 64/C/6(t), 65/C/6(t), 66/C/5, 67/C/4, 68/C/4(t), 69/R/CS/1(t), 70/R/CS/1(t), 71/R/CS/1(t) and 72-75/R/CS/1.

Design: 4 randomised blocks of 12 plots split into 2.

Whole plot dimensions: 2.13 x 16.5.

Treatments: All combinations of:-

Whole plots

1. NPK NPK residues and fresh dressings of P and K:

| | To grass 1958-67 | | | To potatoes 1971 and 1976 | |
|----------|------------------|---|---|---------------------------|---|
| | N | P | K | P | K |
| (N0)P1K0 | 0 | 1 | 0 | 1 | 0 |
| (N1)P1K0 | 1 | 1 | 0 | 1 | 0 |
| (N1)P1K1 | 1 | 1 | 1 | 1 | 1 |
| (N1)P1K2 | 1 | 1 | 2 | 1 | 2 |
| (N2)P1K0 | 2 | 1 | 0 | 1 | 0 |
| (N2)P1K1 | 2 | 1 | 1 | 1 | 1 |
| (N2)P1K2 | 2 | 1 | 2 | 1 | 2 |
| (N3)P1K0 | 3 | 1 | 0 | 1 | 0 |
| (N3)P1K1 | 3 | 1 | 1 | 1 | 1 |
| (N3)P1K2 | 3 | 1 | 2 | 1 | 2 |
| (N3)P0K2 | 3 | 0 | 2 | 0 | 2 |
| (N3)P2K2 | 3 | 2 | 2 | 2 | 2 |

To grass: N1, 2, 3 = 38, 75, 113 kg N per cut. P1, 2 = 75, 150 kg P205 per annum. K1, 2 = 38, 75 kg K20 per cut.

To potatoes 1971: P1, 2 = 125, 250 kg P205. K1, 2 = 125, 250 kg K20.

To potatoes 1976: P1, 2 = 188, 376 kg P205. K1, 2 = 188, 376 kg K20.
All tillage crops received basal N.

Sub plots

2. POTASH Muriate of potash (kg K20):

| | Total 1969-71 | 1976 |
|---|---------------|------|
| O | None | None |
| K | 376 | 188 |

76/R/CS/1

Basal applications: Manures: 310 kg N as 'Nitro-Chalk'. Weedkillers: Paraquat at 0.14 kg ion in 220 l applied in autumn. Linuron at 1.2 kg plus paraquat at 0.14 kg ion in 220 l in spring. Fungicide: Mancozeb at 1.3 kg in 450 l. Insecticide: Pirimicarb at 0.14 kg in 450 l. Haulm desiccant: Diquat at 0.59 kg ion in 450 l.

Seed: Pentland Crown.

Cultivations, etc:- Test P and K applied: 10 Sept, 1975. Autumn weedkiller applied: 22 Oct. Ploughed: 25 Nov. N applied: 30 Mar, 1976. Rotary cultivated and planted: 1 Apr. Grubbed and rotoridged: 13 Apr. Weedkillers applied: 10 May. Grubbed: 4 June. Insecticide applied: 17 June. Fungicide applied: 28 July. Haulm mechanically destroyed: 24 Sept. Haulm desiccant applied: 28 Sept. Lifted: 15 Nov.

NOTE: Leaf samples were taken on 11 August for K and Mg analysis.

76/R/CS/1

TOTAL TUBERS TONNES/HECTARE

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

| POTASH NPK | 0 | K | MEAN |
|---------------|------|------|------|
| (N0)P1K0 | 18.5 | 25.6 | 22.0 |
| (N1)P1K0 | 19.1 | 23.0 | 21.0 |
| (N1)P1K1 | 21.8 | 26.4 | 24.1 |
| (N1)P1K2 | 27.7 | 28.9 | 28.3 |
| (N2)P1K0 | 16.3 | 24.7 | 20.5 |
| (N2)P1K1 | 24.6 | 29.5 | 27.1 |
| (N2)P1K2 | 25.7 | 26.6 | 26.1 |
| (N3)P1K0 | 19.7 | 25.4 | 22.6 |
| (N3)P1K1 | 22.8 | 24.7 | 23.8 |
| (N3)P1K2 | 26.7 | 30.6 | 28.7 |
| (N3)P0K2 | 26.6 | 27.5 | 27.0 |
| (N3)P2K2 | 32.2 | 29.9 | 31.0 |
| MEAN | 23.5 | 26.9 | 25.2 |

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

| TABLE | NPK | POTASH | NPK POTASH |
|---|------|--------|---------------|
| SED | 2.19 | 0.62 | 2.67 |
| EXCEPT WHEN COMPARING MEANS WITH SAME LEVEL(S) OF: NPK | | | 2.16 |

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

| STRATUM | DF | SE | CV% |
|-------------|----|------|------|
| BLOCK.WP | 33 | 3.10 | 12.3 |
| BLOCK.WP.SP | 36 | 3.06 | 12.1 |

PERCENTAGE WARE 3.81CM (1.5 INCH) RIDDLE

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

| POTASH NPK | 0 | K | MEAN |
|---------------|------|------|------|
| (N0)P1K0 | 93.4 | 94.6 | 94.0 |
| (N1)P1K0 | 93.9 | 95.7 | 94.8 |
| (N1)P1K1 | 96.3 | 95.2 | 95.8 |
| (N1)P1K2 | 96.8 | 96.8 | 96.8 |
| (N2)P1K0 | 92.5 | 94.6 | 93.5 |
| (N2)P1K1 | 95.3 | 96.4 | 95.8 |
| (N2)P1K2 | 96.3 | 96.9 | 96.6 |
| (N3)P1K0 | 94.8 | 96.0 | 95.4 |
| (N3)P1K1 | 95.5 | 96.4 | 96.0 |
| (N3)P1K2 | 96.3 | 95.7 | 96.0 |
| (N3)P0K2 | 95.8 | 96.3 | 96.0 |
| (N3)P2K2 | 95.7 | 96.7 | 96.2 |
| MEAN | 95.2 | 95.9 | 95.6 |

SUB PLOT AREA HARVESTED 0.00095