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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
0	None	None
K	376	188

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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.

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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