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71/R/CS/76 and 71/W/CS/76 Rates of N P K Fertiliser - Potatoes

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71/R/CS/76 and 71/W/CS/76

RATES OF NPK FERTILISER

Object: To study the effects of a range of rates of compound NPK fertiliser on the yields of potatoes - Rothamsted (R) Long Hoos III and Woburn (W) Lansome II.

The first year, potatoes.

Design:

Long Hoos III (R): 3 randomised blocks of 8 plots split into 2.
Lansome II (W): 2 randomised blocks of 8 plots split into 2.

Whole plot dimensions:-

Long Hoos III (R): 4.27 x 21.0. Sub plot area harvested: 0.00143.
Lansome II (W): 4.27 x 21.0. Sub plot area harvested: 0.00143.

Treatments:-

Whole plots: All combinations of:-

1. Rates of compound fertiliser (13:13:20): 1255, 1882, 2510, 3137 kg.
2. Spacing: Seed potatoes 30.5 cm (12 inches) (S1), 45.7 cm (18 inches) (S2) apart within the row.

Sub plots: 3. Varieties:-

Long Hoos III (R): King Edward (KE), Pentland Crown (PC).

Lansome II (W): Pentland Crown (PC), Record (R).

All rows were planted 71.1 cm (27 inches) apart. Seed of King Edward and Pentland Crown was chitted but Record was not.

Basal applications:-

Long Hoos III (R): Manures: None: Weedkiller: Linuron at 0.84 kg in 427 l. Fungicide: Mancozeb at 1.34 kg in 438 l on 2 occasions. Insecticide: Demeton-s-methyl at 245 g applied with the fungicide on the first occasion.

Lansome II (W): Manures: None. Weedkiller: Linuron at 1.12 kg in 371 l. Fungicide with insecticide: Mancozeb at 1.34 kg with demeton-s-methyl at 245 g in 416 l. Fungicide: Mancozeb at 1.34 kg in 371 l.

Cultivations, etc.:-

Long Hoos III (R): Ploughed: 30 Sept, 1970. NPK applied and rotary cultivated in, potatoes machine planted: 6 Apr, 1971. Weedkiller applied: 10 May. Grubbed: 3 June. Earthed up: 4 June. Fungicide and insecticide applied: 24 June. Fungicide applied: 13 Aug. Sprayed with undiluted BOV at 168 l: 16 Sept. Previous crops: Barley 1969, fallow 1970.

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Lansome II (W): Ploughed: 4 Sept, 1970. Deep-tine cultivated: 21 Oct. NPK applied: 29 Mar, 1971. Rotary cultivated 1st stroke: 30 Mar, 2nd stroke: 31 Mar. Potatoes planted: 2 Apr. Weed-killer applied: 5 May. Rotary ridged: 2 June. Fungicide with insecticide applied: 29 June. Fungicide applied: 13 Aug. Haulm destroyed mechanically: 17 Sept. Sprayed with undiluted BOV at 225 l: 20 Sept. Lifted: 24 Sept. Previous crops: Barley 1969, beans 1970.

NOTE: The percentages of N, P and K in the tubers and of K and Mg in the leaves, were determined.

Standard errors per plot. Total tubers: tonnes/hectare:

Long Hoos III (R):	Whole plot:	2.59	or	5.2%	(14 d.f.)
	Sub plot:	2.89	or	5.8%	(16 d.f.)
Lansome II (W):	Whole plot:	3.00	or	10.9%	(7 d.f.)
	Sub plot:	4.67	or	16.9%	(8 d.f.)

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SUMMARY OF RESULTS

LONG HDGS III (R)

COMPOUND FERTILISER (13:13:20) KG/HA

	1255	1882	2510	3137	Mean
	TOTAL TUBERS: TONNES/HECTARE				
	(±1.49)				(±0.75)
S1	42.5	48.3	54.3	60.2	51.3
S2	40.9	43.9	53.0	52.0	47.5
	(1) and (2)				(±0.59)
KE	38.2	41.8	51.6	54.0	46.4
PC	45.1	50.4	55.8	58.1	52.4
Mean (±1.06)	41.7	46.1	53.7	56.1	49.4

(1) (±1.18) For use in horizontal and diagonal comparisons only
 (2) (±1.35) For use in vertical and interaction comparisons only

% WARE: 4.44 CM (1.75 INCH) RIDDLE

S1	69.5	73.3	78.3	81.7	75.7
S2	76.8	77.9	81.7	81.1	79.4
KE	65.3	69.1	73.2	76.7	71.1
PC	81.0	82.1	86.8	86.2	84.0
Mean	73.1	75.6	80.0	81.4	77.5

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LANSOME II (W)

COMPOUND FERTILISER (13:13:20) HG/HA

	1255	1882	2510	3137	Mean
TOTAL TUBERS: TONNES/HECTARE					
	(±2.12)				(±1.06)
S1	20.4	25.7	33.6	32.8	28.1
S2	18.9	23.8	27.9	37.5	27.0
	(1) and (2)				(±1.17)
PC	27.2	31.2	38.4	45.4	35.5
R	12.0	18.4	23.2	24.9	19.6
Mean (±1.50)	19.6	24.8	30.8	35.1	27.6

(1) (±2.34) For use in horizontal and diagonal comparisons only

(2) (±2.23) For use in vertical and interaction comparisons only

% WARE: 4.44 CM (1.75 INCH) RIDDLE

S1	48.1	57.0	68.4	72.7	61.6
S2	51.5	63.6	68.3	79.6	65.7
PC	71.0	70.1	77.3	86.7	76.3
R	28.6	50.4	59.5	65.6	51.0
Mean	49.8	60.3	68.4	76.2	63.7