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85/R/P/5 Nitrophosphates - Potatoes

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85/R/P/5

POTATOES

NITROPHOSPHATES

Object: To study the effects of different amounts of water soluble phosphate in nitrophosphate fertilizers on growth and P uptake of potatoes - Highfield V.

Sponsor: K.G. Copestake.

Design: 3 randomised blocks of 13 plots.

Whole plot dimensions: 3.0 x 21.0.

Treatments: All combinations of:-

- | | |
|----------|---|
| 1. P SOL | Phosphate water solubility (%): |
| 59 | Compound fertilizer 16.4 : 14.2 : 17.5 with 59% of the P2O5 water soluble |
| 73 | Compound fertilizer 15.9 : 16.2 : 15.3 with 73% of the P2O5 water soluble |
| 95 | Compound fertilizer 15.0 : 15.0 : 15.0 with 95% of the P2O5 water soluble |

- | | |
|-----------|------------------------------|
| 2. P RATE | Rate of phosphate (kg P2O5): |
|-----------|------------------------------|

50
100
150
200

plus one extra treatment:

EXTRA

NONE No phosphate fertilizer

NOTE: The compound fertilizers used to apply the phosphate treatments supplied differing amounts of the total 231 kg N and 242 kg K2O required on all plots. Additional amounts of N (as 'Nitrotop' 33.5% N) and K2O (as muriate of potash 60% K2O) were applied as needed to achieve this total. Combinations of P SOL 59 with P RATE 150 and 200 each received a total of 247 kg of K2O in error.

Basal applications: Manures: Chalk at 5.0 t, on two occasions. Sulphate of magnesium (as Epsom salts at 470 kg). Weedkillers: Linuron at 1.3 kg with paraquat at 0.50 kg ion in 500 l. Fungicides: Mancozeb at 1.4 kg in 200 l on four occasions with the pirimicarb on the second and third occasions. Fentin hydroxide at 0.28 kg in 200 l on two occasions. Insecticide: Pirimicarb at 0.14 kg on two occasions. Desiccant: Diquat at 0.80 kg ion in 200 l.

Seed: Pentland Crown.

85/R/P/5

Cultivations, etc.:— Disced: 14 Aug, 1984. First chalk applied: 23 Aug. Ploughed: 11 Sept. Second chalk applied: 2 Oct. N, P and K applied: 23 Apr, 1985. Mg applied, rotary harrowed, potatoes planted: 24 Apr. Weedkillers applied: 16 May. Mancozeb alone applied: 20 June, 6 Aug. Mancozeb with pirimicarb applied: 4 July, 23 July. Fentin hydroxide applied: 21 Aug, 11 Sept. Haulm mechanically destroyed: 18 Sept. Desiccant applied: 12 Oct. Lifted: 25 Oct. Previous crops: S. barley 1983, w. oats 1984.

NOTE: Emergence and stem counts were made. Samples were taken for fresh and dry weight of crop components in summer and at maturity.

TOTAL TUBERS TONNES/HECTARE

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

P RATE	50	100	150	200	MEAN
P SOL					
55	51.2	53.9	53.9	55.2	53.5
73	52.0	51.7	55.0	55.7	53.6
95	48.6	55.1	56.4	56.3	54.1
MEAN	50.6	53.6	55.1	55.7	53.7
NONE	39.3				
GRAND MEAN	52.6				

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

TABLE	P SOL	P RATE	P SOL P RATE &NONE
SED	2.47	2.86	4.95

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

STRATUM	DF	SE	CV%
BLOCK.WP	24	6.06	11.5

85/R/P/5

PERCENTAGE WARE 4.44CM (1.75) INCH RIDDLE

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

P RATE	50	100	150	200	MEAN
P SOL					
55	98.6	98.1	98.1	97.1	98.0
73	98.1	97.9	97.7	97.4	97.8
95	98.2	97.8	98.2	97.0	97.3
MEAN	98.3	97.9	98.0	97.2	97.8

NONE 98.5

GRAND MEAN 97.9

PLOT AREA HARVESTED 0.00165