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76/W/P/1 Nutrients and Control of Pcn - Potatoes

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76/W/P/1

POTATOES

NUTRIENTS AND CONTROL OF PCN

Object: To study the effects of N, P, K and Mg on two potato varieties with or without a nematocide to control *Globodera* (formerly *Heterodera*) *rostochiensis* - Woburn Great Hill III.

Sponsors: K. Evans, T.M. Addiscott.

Design: Half replicate of 2 x 2 x 2 x 2 x 2 fully randomised.

Whole plot dimensions: 2.84 x 9.14.

Treatments: All combinations of:-

1. N Nitrogen fertiliser (kg N):

160	160 in basal NPK
240	160 in basal NPK + 80 as 'Nitro-Chalk'

2. P2O5 Phosphate fertiliser (kg P2O5):

160	160 in basal NPK
240	160 in basal NPK + 80 as superphosphate

3. K2O Potassium fertiliser (kg K2O):

250	250 in basal NPK
375	250 in basal NPK + 125 as sulphate of potash

4. MG Magnesium fertiliser (kg Mg):

0	None
100	100 as Epsom salts

5. VARIETY Varieties:

CROWN	Pentland Crown
RECORD	Record

6. ALDICARB Aldicarb (kg):

0	None
10	10

Basal applications: (13:13:20) at 1240 kg. Weedkiller: Linuron at 1.3 kg plus paraquat at 0.42 kg ion in 280 l. Insecticides: Pirimicarb at 0.14 kg in 450 l. Demeton-s-methyl at 0.25 kg in 450 l. Fungicide: Mancozeb at 1.3 kg in 450 l.

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Cultivations, etc.:— Deep-tine cultivated twice: 16 Sept, 17 Sept, 1975.
Ploughed: 6 Nov. Spring-tine cultivated: 1 Mar, 1976. Basal NPK applied, spring-tine cultivated: 24 Mar. Treatment N, P, K and Mg applied: 8 Apr. Aldicarb applied, rotary cultivated, potatoes planted: 13 Apr. Weedkiller applied: 7 May. Grubbed, rotary ridged: 3 June. Pirimicarb applied: 18 June. Fungicide and demeton-s-methyl applied: 30 June. Fungicide applied: 30 July. Haulm mechanically destroyed: 15 Sept. Lifted: 28 Sept. Previous crops: Potatoes 1974, barley 1975.

NOTES: (1) Leaf samples were taken on two occasions for N, P, K, Mg and Ca analyses.
(2) Ground cover measurements were made on two occasions.
(3) Soil samples were taken before planting and after harvest for cyst counts of *Globodera rostochiensis*.

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TOTAL TUBERS TONNES/HECTARE

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

P205	160	240	MEAN
N			
160	20.0	20.2	20.1
240	20.9	21.8	21.4
MEAN	20.4	21.0	20.7
K20	250	375	MEAN
N			
160	18.6	21.6	20.1
240	22.9	19.8	21.4
MEAN	20.7	20.7	20.7
K20	250	375	MEAN
P205			
160	20.6	20.3	20.4
240	20.9	21.2	21.0
MEAN	20.7	20.7	20.7
MG	0	100	MEAN
N			
160	21.1	19.1	20.1
240	20.8	21.9	21.4
MEAN	21.0	20.5	20.7
MG	0	100	MEAN
P205			
160	21.5	19.3	20.4
240	20.4	21.7	21.0
MEAN	21.0	20.5	20.7
MG	0	100	MEAN
K20			
250	20.8	20.7	20.7
375	21.2	20.3	20.7
MEAN	21.0	20.5	20.7
VARIETY	CROWN	RECORD	MEAN
N			
160	22.1	19.1	20.1
240	23.5	19.3	21.4
MEAN	22.8	18.7	20.7
VARIETY	CROWN	RECORD	MEAN
P205			
160	22.4	18.5	20.4
240	23.2	18.9	21.0
MEAN	22.8	18.7	20.7

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TOTAL TUBERS TONNES/HECTARE

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

VARIETY	CROWN	RECORD	MEAN
K20			
250	21.9	19.6	20.7
375	23.7	17.8	20.7
MEAN	22.8	18.7	20.7
VARIETY	CROWN	RECORD	MEAN
MG			
0	22.8	19.1	21.0
100	22.8	18.2	20.5
MEAN	22.8	18.7	20.7
ALDICARB	0	10	MEAN
N			
160	13.8	26.4	20.1
240	14.8	28.0	21.4
MEAN	14.3	27.2	20.7
ALDICARB	0	10	MEAN
P205			
160	14.6	26.3	20.4
240	14.0	28.1	21.0
MEAN	14.3	27.2	20.7
ALDICARB	0	10	MEAN
K20			
250	13.4	28.1	20.7
375	15.1	26.4	20.7
MEAN	14.3	27.2	20.7
ALDICARB	0	10	MEAN
MG			
0	13.7	28.2	21.0
100	14.8	26.2	20.5
MEAN	14.3	27.2	20.7
ALDICARB	0	10	MEAN
VARIETY			
CROWN	16.9	28.7	22.8
RECORD	11.6	25.7	18.7
MEAN	14.3	27.2	20.7

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TOTAL TUBERS TONNES/HECTARE

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

TABLE	N	P205	K20	MG
SED	1.07	1.07	1.07	1.07
TABLE	VARIETY	ALDICARB	N P205	N K20
SED	1.07	1.07	1.52	1.52
TABLE	P205 K20	N MG	P205 MG	K20 MG
SED	1.52	1.52	1.52	1.52
TABLE	N VARIETY	P205 VARIETY	K20 VARIETY	MG VARIETY
SED	1.52	1.52	1.52	1.52
TABLE	N ALDICARB	P205 ALDICARB	K20 ALDICARB	MG ALDICARB
SED	1.52	1.52	1.52	1.52
TABLE	VARIETY ALDICARB			
SED	1.52			

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

STRATUM	DF	SE	CV%
WP	10	3.04	14.7

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PERCENTAGE WARE 3.81CM (1.5 INCH) RIDDLE

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

P205	160	240	MEAN
N			
160	76.7	76.5	76.6
240	79.0	79.9	79.5
MEAN	77.8	78.2	78.0
K20	250	375	MEAN
N			
160	73.4	79.8	76.6
240	80.7	78.2	79.5
MEAN	77.0	79.0	78.0
K20	250	375	MEAN
P205			
160	76.6	79.0	77.8
240	77.4	79.0	78.2
MEAN	77.0	79.0	78.0
MG	0	100	MEAN
N			
160	76.8	76.3	76.6
240	77.6	81.3	79.5
MEAN	77.2	78.8	78.0
MG	0	100	MEAN
P205			
160	78.4	77.3	77.8
240	76.0	80.4	78.2
MEAN	77.2	78.8	78.0
MG	0	100	MEAN
K20			
250	76.5	77.5	77.0
375	77.9	80.1	79.0
MEAN	77.2	78.8	78.0
VARIETY	CROWN	RECORD	MEAN
N			
160	88.7	64.5	76.6
240	90.1	68.8	79.5
MEAN	89.4	66.7	78.0

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PERCENTAGE WARE 3.81CM (1.5 INCH) RIDDLE

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

VARIETY	CROWN	RECORD	MEAN
P205			
160	89.8	65.9	77.8
240	89.0	67.4	78.2
MEAN	89.4	66.7	78.0
VARIETY	CROWN	RECORD	MEAN
K20			
250	88.7	65.4	77.0
375	90.1	67.9	79.0
MEAN	89.4	66.7	78.0
VARIETY	CROWN	RECORD	MEAN
MG			
0	89.1	65.4	77.2
100	89.7	67.9	78.8
MEAN	89.4	66.7	78.0
ALDICARB	0	10	MEAN
N			
160	67.7	85.4	76.6
240	73.5	85.4	79.5
MEAN	70.6	85.4	78.0
ALDICARB	0	10	MEAN
P205			
160	70.3	85.4	77.8
240	70.9	85.5	78.2
MEAN	70.6	85.4	78.0
ALDICARB	0	10	MEAN
K20			
250	68.8	85.3	77.0
375	72.4	85.6	79.0
MEAN	70.6	85.4	78.0
ALDICARB	0	10	MEAN
MG			
0	68.5	86.0	77.2
100	72.8	84.9	78.8
MEAN	70.6	85.4	78.0
ALDICARB	0	10	MEAN
VARIETY			
CROWN	86.2	92.6	89.4
RECORD	55.0	78.3	66.7
MEAN	70.6	85.4	78.0

PLOT AREA HARVESTED 0.00130