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71/R/M/5 Amidophosphates for Barley (Resown With Ryegrass), Potatoes and Kale - Mixed Crops

Rothamsted Research

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TL/R/M/5

MIXED CROPS

AMIDOPHOSPHATES FOR BARLEY (RESOWN WITH RYEGRASS), POTATOES AND KALE

Object: To compare different forms of NP fertiliser on a range of crops - West Barnfield I.

Design: 3 randomised blocks of 9 plots for each crop.

Whole plot dimensions:

Barley (resown with ryegrass): 3.66 x 1.83. Area harvested:
1st cut, 0.00037, 2nd cut, 0.00038, 3rd cut, 0.00028.
Potatoes: 3.66 x 2.85. Area harvested: 0.00048.
Kale: 3.66 x 2.13. Area harvested: 1st and 2nd cut, 0.00005,
3rd cut, 0.00026.

Treatments: None (O) and additional treatments DS, TS (Not applied to barley or ryegrass - see note at end),

where T = Phosphoryltriarnide

D = Sodium di-amidophosphate

S = Sprayed on to the crop. Rates: To give 11.2 kg P for potatoes, 8.41 kg P for kale.

and all combinations of:-

1. NP fertilisers: Ammonium phosphate (A), sodium di-amidophosphate (D), urea phosphate (U).

2. Rates of NP fertilisers: To give:-

To barley (resown with ryegrass): 11.2 kg (1), 22.4 kg (2) P.

To potatoes: 22.4 kg (1), 44.8 kg (2) P.

To kale: 16.8 kg (1), 33.6 kg (2) P.

Basal applications: Weedkiller: Paraquat at 0.28 kg in 225 l, and later at 0.56 kg ion in 225 l.

Standard applications:

Barley (resown with ryegrass): 56 kg N, 56 kg K in seedbed for barley, 56 kg N to ryegrass after the first cut and 112 kg N after the second.

Potatoes: 112 kg N, 168 kg K. Weedkiller: Linuron at 0.84 kg plus paraquat at 0.42 kg ion in 562 l. Fungicide plus insecticide: Mancozeb at 1.35 kg plus menazon ('Saphicol' at 0.70 l) in 449 l on 3 occasions.

Kale: 112 kg N, 112 kg K, plus 112 kg N in mid-season.

Insecticide: Menazon ('Saphicol' at 0.70 l in 449 l).

For all crops N was applied as 'Nitro-Chalk', K as muriate of potash.

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Cultivations, etc.: Paraquat applied: 19 Sept, 1970. Ploughed: 24 Sept. Paraquat applied: 5 Feb, 1971.
Barley (resown with ryegrass): NP and NK fertilisers applied, barley seed drilled at 1.91 kg: 1 Apr, 1971. Resown with ryegrass: 28 Apr. Cut, N applied: 8 June. Cut: 14 July. N applied: 23 July. Cut: 7 Sept. Variety: Western Wolths. (Barley: Julia).
Potatoes: NP and NK fertilisers applied, potatoes planted: 13 Apr, 1971. Weedkiller applied: 12 May. Fungicide plus insecticide applied: 16 June. Amidophosphate sprays applied: 22 June. Fungicide plus insecticide applied: 6 July, 28 July. Lifted: 1 Sept. Variety: King Edward.
Kale: NP and NK fertilisers applied, seed drilled: 2 Apr, 1971. Amidophosphate sprays applied, midseason N applied: 22 June. Insecticide applied: 6 July. Harvested: 5 Oct. Variety: Thousand Headed.
Previous crops: Spring Oilseed Rape 1969, winter wheat, 1970.

NOTE: After sowing the barley there was considerable bird damage. Ryegrass was sown between the rows and the barley cut as a green crop. Amidophosphate sprays were not applied to these crops.

Standard errors per plot.

Barley (resown with ryegrass): Grain, tonnes/hectare:
1st cut: 0.247 or 21.9% (16 d.f.)
2nd cut: 0.240 or 7.6% (16 d.f.)
3rd cut: 0.123 or 6.4% (16 d.f.)
Total of 3 cuts: 0.266 or 4.3% (16 d.f.)
Potatoes: Total tubers, tonnes/hectare: 3.20 or 8.9% (16 d.f.)
Kale: Dry matter, tonnes/hectare: 0.942 or 9.8% (16 d.f.)

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SUMMARY OF RESULTS

BARLEY AND RYEGRASS, DRY MATTER: TONNES/HECTARE

D	A1	A2	D1	D2	U1	U2	Mean
1ST CUT							
0.91 (±0.082)	1.18	1.19	1.42 (±0.143)	1.55	0.99	1.07	1.13
2ND CUT							
3.21 (±0.080)	2.96	3.29	2.97 (±0.139)	3.24	3.06	3.20	3.15
3RD CUT							
1.85 (±0.041)	2.03	1.90	1.84 (±0.071)	2.05	1.93	2.02	1.92
TOTAL OF 3 CUTS							
5.98 (±0.089)	6.17	6.37	6.22 (±0.153)	6.84	5.98	6.30	6.20

Mean D.M. %: 1st cut: 15.5
 2nd cut: 22.4
 3rd cut: 37.6
 Total of 3 cuts: 25.2

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O	A1	A2	D1	D2	DS	U1	U2	TS	Mean
POTATOES, TOTAL TUBERS: TONNES/HECTARE									
(±1.85)									
34.5	36.2	37.6	37.0	37.2	34.1	31.5	38.7	35.7	35.8

KALE, DRY MATTER: TONNES/HECTARE									
(±0.544)									
8.20	8.97	9.28	9.53	9.92	9.47	9.53	11.56	10.19	9.63