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Numerical Results of the Field Experiments 1970

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70/R/G/1 Grass Anhydrous Ammonia, Aqueous Ammonia and Urea Solutions

Rothamsted Research

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GRASS

(70/R/G/1)

Anhydrous ammonia, aqueous ammonia and urea solution, Bones
Close 1970.

Design: 4 randomised blocks of 22 plots.

Area of each plot: 0.0184. Area harvested: 0.0054.

Treatments: None (NO) (2 plots* per block) and all combinations of:-

1. Nitrogen fertiliser:

Injected:

Anhydrous ammonia (IA)

Aqueous ammonia (IQ)

Urea solution (IU)

Broadcast 'Nitro-Chalk':

Applied in 3 equal dressings (ED)

Applied as a single dressing (BS)

2. N: 1 (N1), 2 (N2), 3 (N3), 4 (N4) cwt N (total for the season).

Basal applications: 8 cwt (0:14:28).

Cultivations, etc.: Remains of partly burnt straw from a fire at the
farm in autumn 1968 spread over field: 29 Dec, 1969 to 8 Jan, 1970.

Basal PK applied: 17 Mar. Aqueous ammonia injected, anhydrous
ammonia injected (IA1 and IA2* plots): 19 Mar. Urea injected:
20 Mar. 'Nitro-Chalk' applied (treatment BS and first dressing
of ED): 21 Mar. Anhydrous ammonia injected (excluding IA1 plots):
9 Apr. Cut 3 times: 3 June, 4 Aug, 19 Oct. 'Nitro-Chalk'
applied after first 2 cuts for ED treatment.

* The anhydrous ammonia injector did not function properly for IA1
and IA2 on 19 Mar, and on 9 Apr, treatment IA2 was repeated on
one of the NO plots in each block. Yields from the IA treatments
have been omitted from the analysis.

NOTE: Grass samples were taken to determine dry matter and percentage
of N, P and K. Percentage of Mg was determined in some samples.

Standard errors per plot. Dry matter, cwt:

1st cut: 3.55 or 7.9% (45 d.f.)

2nd cut: 1.92 or 19.1% (45 d.f.)

3rd cut: 2.50 or 17.6% (45 d.f.)

Total of 3 cuts: 5.14 or 7.4% (45 d.f.)

70/R/G/1

SUMMARY OF RESULTS

DRY MATTER: CWT

	IQ	IU	BD	BS	Mean
1ST CUT					
(±1.78)					
N1	46.3	43.3	42.6	46.7	44.7
N2	45.6	44.3	47.3	43.1	45.1
N3	45.1	44.5	48.0	43.4	45.2
N4	46.3	41.9	46.0	41.6	43.9
Mean (±0.89)	45.8	43.5	46.0	43.7	44.7

NO 36.7
IA N2 38.8
IA N3 41.6
IA N4 39.6

2ND CUT					
(±0.96)					
					(±0.48)
N1	7.5	7.7	8.7	7.6	7.9
N2	9.3	11.1	10.2	10.0	10.1
N3	10.5	10.4	10.8	11.8	10.9
N4	11.7	9.9	12.4	11.6	11.4
Mean (±0.48)	9.7	9.8	10.5	10.3	10.1

NO 3.1
IA N2 8.5
IA N3 11.2
IA N4 9.5

Mean D.M. % (All plots): 1st cut: 21.2
2nd cut: 25.4

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DRY MATTER: CWT

	IQ	IU	BD	BS	Mean
3RD CUT					
	(±1.25)				(±0.62)
N1	3.7	3.9	13.1	5.1	6.5
N2	11.0	15.0	18.8	13.0	14.5
N3	15.8	18.3	18.0	17.2	17.3
N4	21.5	17.9	18.0	16.3	18.4
Mean (±0.62)	13.0	13.8	17.0	12.9	14.2

NO 2.1
IA N2 14.5
IA N3 17.6
IA N4 19.6

TOTAL OF 3 CUTS

	(±2.57)				(±1.28)
N1	57.5	55.0	64.4	59.4	59.1
N2	65.9	70.4	76.3	66.1	69.7
N3	71.4	73.1	76.9	72.4	73.4
N4	79.5	69.7	76.4	69.5	73.8
Mean (±1.28)	68.6	67.0	73.5	66.9	69.0

NO 41.9
IA N2 61.7
IA N3 70.3
IA N4 68.7

Mean D.M. % (All plots): 3rd cut: 24.4
Total of 3 cuts: 23.7