ROTHAMSTED RESEARCH

Numerical Results of the Field Experiments 1970

Full Table of Content

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

Rothamsted Research

Rothamsted Research (1971) *70/R/G/1 Grass Anhydrous Ammonia, Aqueous Ammonia and Urea Solutions ;* Numerical Results Of The Field Experiments 1970, pp 312 - 314 **- DOI: https://doi.org/10.23637/ERADOC-1-59**

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 (N0) (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 (BD)
     - 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 BD): 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 BD 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 N0 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.)

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70/R/G/1

SUMMARY OF RESULTS

DRY MATTER: CWT

	IQ	IU	BD	BS	Mean
		1ST CUT			
		(±1.78)			(±0.89)
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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70/R/G/1

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

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