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Yields of the Field Experiments 1981

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81/R/G/1 Nitrification Inhibitors - Grass

Rothamsted Research

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81/R/G/1

GRASS

NITRIFICATION INHIBITORS

Object: To study the effects of adding nitrification inhibitors to granular urea on the yield and nitrogen uptake of grass cut for silage - White Horse II.

Sponsor: G.A. Rodgers.

Design: 3 randomised blocks of 15 plots.

Whole plot dimensions: 2.43 x 12.2.

Treatments: All combinations of:-

1. N TIME Times of applying urea and nitrification inhibitors:

20 JAN 20 January, 1981
2 APR 2 April

2. N INHIB Forms of urea (supplying 375 kg N) and nitrification inhibitors added to urea:

AU3 O Aqueous urea, injected into soil, no inhibitor
GU3 O Granular urea, broadcast, no inhibitor
GU3 DIC Granular urea plus dicyandiamide at 16 kg, broadcast
GU3 CAL Granular urea plus calcium chloride at 50 kg, broadcast
GU3 HYD Granular urea plus hydroquinone at 5 kg, broadcast

plus five extra treatments:

EXTRA Nitrogen dressings (kg N) divided equally between three application dates - 2 Apr, 1981, 4 June, 12 Aug:

O None
NC2 D 250 as 'Nitro-Chalk'
NC3 D 375 as 'Nitro-Chalk'
NC4 D 500 as 'Nitro-Chalk'
GU3 D 375 as granular urea

Basal applications: Manures: (0:14:28) at 500 kg.

Cultivations, etc.: - PK applied: 21 Nov, 1980. Cut: 3 June, 1981, 7 Aug, 5 Nov. Previous crops: Grass 1979 & 1980.

NOTE: Ammonia volatilisation was measured. Urea, ammonium, and nitrate were determined in soils from treatments other than EXTRA.

81/R/G/1

1ST CUT (3/6/81) DRY MATTER TONNES/HECTARE

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

N INHIB N TIME	AU3 O	GU3 O	GU3 DIC	GU3 CAL	GU3 HYD	MEAN
20 JAN	5.33	4.50	5.08	4.79	4.76	4.89
2 APR	4.38	4.61	4.96	4.69	4.74	4.68
MEAN	4.86	4.55	5.02	4.74	4.75	4.78
EXTRA	0 1.57	NC2 D 5.34	NC3 D 4.86	NC4 D 4.99	GU3 D 4.80	MEAN 4.31

GRAND MEAN 4.63

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

TABLE	EXTRA	N TIME	N INHIB	N TIME N INHIB & EXTRA
SED	0.308	0.138	0.217	0.308

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

STRATUM	DF	SE	CV%
BLOCK.WP	28	0.377	8.1

1ST CUT MEAN DM% 18.3

81/R/G/1

2ND CUT (6&7/8/81) DRY MATTER TONNES/HECTARE

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

N INHIB N TIME	AU3 0	GU3 0	GU3 DIC	GU3 CAL	GU3 HYD	MEAN
20 JAN	1.60	0.60	1.14	0.91	0.74	1.00
2 APR	2.50	1.39	1.83	1.65	1.41	1.76
MEAN	2.05	1.00	1.49	1.28	1.08	1.38
EXTRA	0	NC2 D	NC3 D	NC4 D	GU3 D	MEAN
	0.43	2.48	3.11	3.42	2.77	2.44

GRAND MEAN 1.73

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

TABLE	EXTRA	N TIME	N INHIB	N TIME N INHIB & EXTRA
SED	0.178	0.080	0.126	0.178

2ND CUT (6&7/8/81) DRY MATTER TONNES/HECTARE

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

STRATUM	DF	SE	CV%
BLOCK.WP	28	0.219	12.6

2ND CUT MEAN DM% 17.9

81/R/G/1

3RD CUT (4&5/11/81) DRY MATTER TONNES/HECTARE

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

N INHIB N TIME	AU3 O	GU3 O	GU3 DIC	GU3 CAL	GU3 HYD	MEAN
20 JAN	0.47	0.56	0.52	0.33	0.62	0.50
2 APR	0.73	0.35	0.46	0.44	0.55	0.51
MEAN	0.60	0.45	0.49	0.39	0.59	0.50
EXTRA	0	NC2 D	NC3 D	NC4 D	GU3 D	MEAN
	0.34	2.29	2.56	2.61	2.32	2.03

GRAND MEAN 1.01

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

TABLE	EXTRA	N TIME	N INHIB	N TIME N INHIB & EXTRA
SED	0.203	0.091	0.143	0.203

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

STRATUM	DF	SE	CV%
BLOCK.WP	28	0.248	24.6

3RD CUT MEAN DM% 27.7

81/R/G/1

TOTAL OF 3 CUTS DRY MATTER TONNES/HECTARE

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

N INHIB N TIME	AU3 O	GU3 O	GU3 DIC	GU3 CAL	GU3 HYD	MEAN
20 JAN	7.40	5.65	6.73	6.03	6.12	6.39
2 APR	7.61	6.35	7.25	6.78	6.71	6.94
MEAN	7.50	6.00	6.99	6.41	6.41	6.66
EXTRA	0	NC2 D	NC3 D	NC4 D	GU3 D	MEAN
	2.35	10.11	10.53	11.01	9.90	8.78

GRAND MEAN 7.37

TOTAL OF 3 CUTS DRY MATTER TONNES/HECTARE

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

TABLE	EXTRA	N TIME	N INHIB	N TIME N INHIB & EXTRA
SED	0.420	0.188	0.297	0.420

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

STRATUM	DF	SE	CV%
BLOCK.WP	28	0.515	7.0

TOTAL OF 3 CUTS MEAN DM% 21.3

PLOT AREA HARVESTED 0.00093