ROTHAMSTED RESEARCH

Yields of the Field Experiments 1982

Full Table of Content

82/R/CS/272 Nitrification Inhibitors - Ryegrass

Rothamsted Research

Rothamsted Research (1983) *82/R/CS/272 Nitrification Inhibitors - Ryegrass ;* Yields Of The Field Experiments 1982, pp 164 - 169 **- DOI: https://doi.org/10.23637/ERADOC-1-33**

82/R/CS/272

NITRIFICATION INHIBITORS

Object: To study the effects of adding nitrification inhibitors to liquid and solid fertilizers on the yield and nitrogen uptake of grass cut for silage - Highfield Drive.

Sponsors: G.A. Rodgers, F.V. Widdowson.

The first year, ryegrass.

Design: 3 randomised blocks of 18 plots.

Whole plot dimensions: 2.4 x 12.2.

Treatments: All combinations of:-

1. N TIME(1)		Times of injecting aqueous urea and nitrification inhibitors:
	25 JAN	25 January, 1982
	22 MAR	22 March
2. N INHIB(1)		Nitrification inhibitors, added to injected aqueous urea supplying 375 kg N:
	AU3 0	None
	AU3 ETR	Etridiazole at 1.5 kg
	AU3 NIT	Nitrapyrin at 1.5 kg

plus all combinations of:

1. N TIME(2)		Times of broadcasting prilled urea treated with nitrification inhibitors:
	23 MAR	23 March, 1982
	DIVIDED	Dressing divided equally between three dates, 23 March, 9 June, 22 July
2. N INHIB(2)		Nitrification inhibitors, added to prilled urea supplying 375 kg N:
	PU3 0	None
	PU3 DIC	Dicyandiamide at 56 kg
	PU3 HYD	Hydroquinone at 5.0 kg

plus six extra treatments

	EXTRA	'Nitro-Chalk' dressings (kg N):
	0	None
	NC3 S	375 on 23 March, 1982

https://doi.org/10.23637/ERADOC-1-33

82/R/CS/272

Dressing divided equally between three dates 23 March, 9 June, 22 July

NC1 D	125
NC2 D	250
NC3 D	375
NC4 D	500

Basal applications: Manures: (0:14:28) at 780 kg.

Cultivations, etc.:- PK applied: 24 Nov, 1981. Cut: 1 June, 1982, 14 July, 19 Oct. Previous crops: S. barley undersown grass 1980, grass 1981.

NOTES: (1) N in herbage was measured for each cut.
(2) Amounts of ammonia volatilised for soil were measured one month after each treatment.
(3) Amounts of urea, ammonium and nitrate in soils were regularly measured from January.

https://doi.org/10.23637/ERADOC-1-33

82/R/CS/272

1ST CUT (1/6/82) DRY MATTER TONNES/HECTARE

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

N INHIB(1) / N TIME(1)	AU3 0	AU3 ETR	AU3 NIT	MEAN
25 JAN	6.74	6.50	6.58	6.61
22 MAR	6.16	5.95	6.35	6.16
MEAN	6.45	6.22	6.47	6.38

N INHIB(2) / N TIME(2)	PU3 0	PU3 DIC	PU3 HYD	MEAN
23 MAR	5.94	6.49	5.87	6.10
DIVIDED	5.79	5.69	5.70	5.73
MEAN	5.87	6.09	5.79	5.91

EXTRA	0	NC3 S	NC1 D	NC2 D	NC3 D	NC4 D	MEAN
	2.24	5.98	4.58	5.62	6.23	6.12	5.13

GRAND MEAN 5.81

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

TABLE	EXTRA	N TIME(1)	N INHIB(1)	N TIME(2)
SED	0.245	0.142	0.174	0.142

TABLE	N INHIB(2)	N TIME(1) N INHIB(1)	N TIME(2) N INHIB(2)
SED	0.174	0.245	0.245

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

STRATUM	DF	SE	CV%
BLOCK.WP	34	0.301	5.2

1ST CUT MEAN DM% 22.6

https://doi.org/10.23637/ERADOC-1-33

82/R/CS/272

2ND CUT (14/7/82) DRY MATTER TONNES/HECTARE

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

N INHIB(1) / N TIME(1)	AU3 0	AU3 ETR	AU3 NIT	MEAN
25 JAN	2.07	1.94	2.08	2.03
22 MAR	2.43	2.53	2.20	2.38
MEAN	2.25	2.23	2.14	2.21

N INHIB(2) / N TIME(2)	PU3 0	PU3 DIC	PU3 HYD	MEAN
23 MAR	1.51	1.16	1.44	1.37
DIVIDED	2.24	1.81	1.61	1.89
MEAN	1.88	1.48	1.52	1.63

EXTRA	0	NC3 S	NC1 D	NC2 D	NC3 D	NC4 D	MEAN
	0.13	2.15	0.70	1.66	2.05	2.29	1.49

GRAND MEAN 1.78

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

TABLE	EXTRA	N TIME(1)	N INHIB(1)	N TIME(2)
SED	0.162	0.093	0.114	0.093

TABLE	N INHIB(2)	N TIME(1) N INHIB(1)	N TIME(2) N INHIB(2)
SED	0.114	0.162	0.162

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

STRATUM	DF	SE	CV%
BLOCK.WP	34	0.198	11.2

2ND CUT MEAN DM% 18.5

https://doi.org/10.23637/ERADOC-1-33

82/R/CS/272

3RD CUT (19/10/82) DRY MATTER TONNES/HECTARE

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

N INHIB(1) / N TIME(1)	AU3 0	AU3 ETR	AU3 NIT	MEAN
25 JAN	0.69	0.94	0.77	0.80
22 MAR	1.10	1.47	1.05	1.21
MEAN	0.89	1.20	0.91	1.00

N INHIB(2) / N TIME(2)	PU3 0	PU3 DIC	PU3 HYD	MEAN
23 MAR	0.62	0.84	0.71	0.73
DIVIDED	2.62	2.63	2.72	2.66
MEAN	1.62	1.73	1.71	1.69

EXTRA	0	NC3 S	NC1 D	NC2 D	NC3 D	NC4 D	MEAN
	0.25	1.11	1.39	2.17	2.58	2.39	1.65

GRAND MEAN 1.45

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

TABLE	EXTRA	N TIME(1)	N INHIB(1)	N TIME(2)
SED	0.159	0.092	0.112	0.092

TABLE	N INHIB(2)	N TIME(1) N INHIB(1)	N TIME(2) N INHIB(2)
SED	0.112	0.159	0.159

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

STRATUM	DF	SE	CV%
BLOCK.WP	34	0.195	13.4

3RD CUT MEAN DM% 28.8

https://doi.org/10.23637/ERADOC-1-33

82/R/CS/272

TOTAL OF 3 CUTS DRY MATTER TONNES/HECTARE

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

N INHIB(1) / N TIME(1)	AU3 0	AU3 ETR	AU3 NIT	MEAN
25 JAN	9.50	9.37	9.43	9.44
22 MAR	9.69	9.95	9.60	9.75
MEAN	9.60	9.66	9.51	9.59

N INHIB(2) / N TIME(2)	PU3 0	PU3 DIC	PU3 HYD	MEAN
23 MAR	8.07	8.49	8.01	8.19
DIVIDED	10.66	10.13	10.03	10.27
MEAN	9.37	9.31	9.02	9.23

EXTRA	0	NC3 S	NC1 D	NC2 D	NC3 D	NC4 D	MEAN
	2.62	9.24	6.66	9.45	10.85	10.80	8.27

GRAND MEAN 9.03

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

TABLE	EXTRA	N TIME(1)	N INHIB(1)	N TIME(2)
SED	0.367	0.212	0.260	0.212

TABLE	N INHIB(2)	N TIME(1) N INHIB(1)	N TIME(2) N INHIB(2)
SED	0.260	0.367	0.367

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

STRATUM	DF	SE	CV%
BLOCK.WP	34	0.450	5.0

TOTAL OF 3 CUTS MEAN DM% 23.3

PLOT AREA HARVESTED 0.00093

https://doi.org/10.23637/ERADOC-1-33