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79/R/CS/232 Aqueous Urea and Nitrification Inhibitors - Ley

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79/R/CS/232

AQUEOUS UREA AND NITRIFICATION INHIBITORS

Object: To study the residual effects of adding nitrification inhibitors to liquid fertilisers on the yield and nitrogen uptake of grass cut for silage - Rothamsted (R) Great Harpenden I.

Sponsors: J. Ashworth, A. Penny, M.V. Hewitt.

The second year, ley.

For previous year see 78/R/G/1.

Design: 2 randomised blocks of 28 plots.

Whole plot dimensions: 2.43 x 9.14.

Treatments (applied for the 1978 crop only, no fresh treatments applied for 1979): All combinations of:-

1. U T I N Rates of nitrogen fertiliser applied as aqueous urea as a single application, injection tines spaced 30 cm apart (kg N):

2	250
3	375

2. N TIME Times of applying aqueous urea:

AUTUMN	25 Nov, 1977
SPRING	10 Mar, 1978

3. NI FORM Forms of nitrification inhibitors added to aqueous urea:

NONE	None
NITRAPYR	Nitrapyrin
SOD TRI	Sodium trithiocarbonate
NIT CS	Nitrapyrin + carbon disulphide

plus twelve extra treatments:

EXTRA

Aqueous urea, tines spaced 60 cm apart, no inhibitors:

- | | |
|---------|------------------------------|
| UT2 N2A | Supplying 250 kg N in autumn |
| UT2 N2S | Supplying 250 kg N in spring |
| UT2 N3A | Supplying 375 kg N in autumn |
| UT2 N3S | Supplying 375 kg N in spring |

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Aqueous urea + ammonium nitrate, tines spaced 30 cm apart, supplying 375 kg N applied in spring

UATIN3SO No nitrification inhibitor
 UATIN3ST Sodium trithiocarbonate
 UATIN3SN Nitrapyrin
 UATIN3SM Mixture of nitrapyrin and carbon disulphide

'Nitro-Chalk', dressing divided (kg N total):

NC N2 250
 NC N3 375
 NC N4 500
 NONE None

Basal applications: Manures: (0:14:28) at 500 kg. N at 30 kg as 'Nitro-Chalk'.

Cultivations, etc.: Grass cut (no yields) 14 Nov, 1978. PK applied: 16 Nov.
 N applied: 12 Apr, 1979. Grass cut: 4 June.

NOTE: Grass samples were assessed for N content.

1ST AND ONLY CUT (4/6/79) DRY MATTER TONNES/HECTARE

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

TABLE	EXTRA	U T I N	N T I M E	N I F O R M
SED	0.270	0.095	0.095	0.135
TABLE	U T I N N T I M E	U T I N N I F O R M	N T I M E N I F O R M	U T I N N T I M E N I F O R M &EXTRA
SED	0.135	0.191	0.191	0.270

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

STRATUM	DF	SE	CV%
BLOCK.WP	27	0.270	12.4
PLOT AREA HARVESTED	0.00078		

79/R/CS/232

1ST AND ONLY CUT (4/6/79) DRY MATTER TONNES/HECTARE

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

N TIME	AUTUMN	SPRING	MEAN		
U T1 N					
2	1.81	2.00	1.91		
3	2.23	2.05	2.14		
MEAN	2.02	2.03	2.02		
NI FORM	NONE	NITRAPYR	SOD TRI	NIT CS	MEAN
U T1 N					
2	1.84	2.06	1.92	1.80	1.91
3	1.98	2.12	2.31	2.15	2.14
MEAN	1.91	2.09	2.11	1.98	2.02
NI FORM	NONE	NITRAPYR	SOD TRI	NIT CS	MEAN
N TIME					
AUTUMN	1.81	2.06	2.17	2.04	2.02
SPRING	2.02	2.12	2.06	1.91	2.03
MEAN	1.91	2.09	2.11	1.98	2.02
U T1 N	NI FORM	NONE	NITRAPYR	SOD TRI	NIT CS
	N TIME				
2	AUTUMN	1.73	1.97	1.81	1.74
	SPRING	1.96	2.16	2.02	1.86
3	AUTUMN	1.89	2.16	2.53	2.34
	SPRING	2.07	2.08	2.09	1.96
EXTRA					
UT2 N2A	1.93				
UT2 N2S	1.85				
UT2 N3A	2.16				
UT2 N3S	2.29				
UATIN3SO	1.98				
UATIN3ST	1.90				
UATIN3SN	2.17				
UATIN3SM	2.66				
NC N2	3.11				
NC N3	2.86				
NC N4	3.83				
NONE	1.79				
MEAN	2.38				

GRAND MEAN 2.17