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# Yields of the Field Experiments 1980

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## 80/R/G/1 Grass Liquid Fertiliser and Nitrification Inhibitors

### Rothamsted Research

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80/R/G/1

GRASS

LIQUID FERTILISER AND NITRIFICATION INHIBITORS

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

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

Design: 3 randomised blocks of 20 plots.

Whole plot dimensions: 2.44 x 12.2.

Treatments: All combinations of:-

1. N TIME                      Times of injecting aqueous urea and nitrification inhibitors:  
  
    22 NOV                      22 November, 1979  
    24 JAN                      24 January, 1980  
    24 MAR                      24 March, 1980
  
2. N INHIB                    Nitrification inhibitors, added to aqueous urea supplying 375 kg N:  
  
    U3 0                        None  
    U3 NI                       Nitrapyrin at 1.5 kg  
    U3 ST2                      Sodium trithiocarbonate (rate equivalent to 10 kg carbon disulphide)  
    U3 ST1+P                   Sodium trithiocarbonate (rate equivalent to 5 kg carbon disulphide) plus potassium ethyl xanthate at 5 kg  
    U3 ST2+P                   Sodium trithiocarbonate (rate equivalent to 10 kg carbon disulphide) plus potassium ethyl xanthate at 5 kg

plus five extra treatments

- EXTRA                      'Nitro-Chalk' dressings (kg N):
- 0                              None
- NC2 D                       250 divided equally between 3 application dates -  
                                 10 Mar, 1980, 2 June, 28 July
- NC3 D                       375 divided equally between 3 application dates -  
                                 10 Mar, 1980, 2 June, 28 July
- NC4 D                       500 divided equally between 3 application dates -  
                                 10 Mar, 1980, 2 June, 28 July
- NC3 S                       375 as a single application on 10 Mar

NOTE: For the combination N TIME 24 Mar and N INHIB U3 ST1+P, sodium trithiocarbonate was replaced by dicyandiamide at 15 kg.

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

Cultivations, etc.: - Topped: 21 Nov, 1979. Cut: 28 May 1980, 23 July, 23 Oct. Previous crops: W. oats 1978, grass 1979.

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NOTE: Urea concentration in soil was measured within 14 days of injection. Nitrate and ammonium in soil were measured at 21 day intervals until early May. Nitrate in herbage was measured after the first cut.

1ST CUT (28/5/80) DRY MATTER TONNES/HECTARE

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

N INHIB N TIME	U3 0	U3 NI	U3 ST2	U3 ST1+P	U3 ST2+P	MEAN
22 NOV	5.27	5.85	5.78	5.73	5.89	5.71
24 JAN	5.19	5.46	5.39	5.32	5.30	5.33
24 MAR	4.23	4.17	4.26	4.11*	4.37	4.23
MEAN	4.90	5.16	5.15	5.06*	5.19	5.09

  

EXTRA	0	NC2 D	NC3 D	NC4 D	NC3 S	MEAN
	0.70	3.42	4.45	4.04	5.31	3.58

GRAND MEAN 4.71

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

TABLE	EXTRA	N TIME	N INHIB	N TIME N INHIB
SED	0.172	0.077	0.099	0.172

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

STRATUM	DF	SE	CV%
BLOCK.WP	38	0.210	4.5

\* SEE NOTE ON FIRST PAGE