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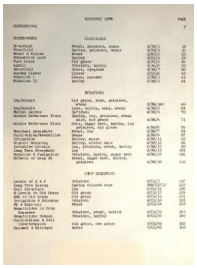
ROTHAMSTED RESEARCH

Yields of the Field Experiments 1976

Full Table of Content



76/R/CS/161 Injected N - Old Grass

Rothamsted Research

Rothamsted Research (1977) *76/R/CS/161 Injected N - Old Grass ;* Yields Of The Field Experiments 1976, pp 199 - 204 **- DOI: https://doi.org/10.23637/ERADOC-1-15**

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76/R/CS/161

INJECTED N

Object: To study the effects of injecting aqueous urea, with or without a nitrification inhibitor, at three rates and two spacings on the yield and nitrogen uptake of old grass cut for silage - Highfield IX.

Sponsors: F.V. Widdowson, A. Penny, J. Ashworth.

The second year, old grass.

Design: 2 randomised blocks of 18 plots.

Whole plot dimensions: 4.27 x 15.2.

Treatments: All combinations of:-

1. LIQUID N(76) — Liquid nitrogen fertiliser in 1976:

UREA	Aqueous solution of urea, no nitrification inhibitor
UREA+ATC	Aqueous solution of urea plus ammonium trithiocarbonate as a nitrification inhibitor

2. SPACING — Spacing between tines injecting liquid fertiliser, cumulative 1975 and 1976:

30 CM	30 cm
60 CM	60 cm

3. N RATE — Rate of liquid fertiliser, applied as a single annual dressing, cumulative 1975 and 1976 (kg N):

250	250
375	375
500	500

SOLID N(76) — plus six treatments given 'Nitro-Chalk', rates cumulative 1975 and 1976, dressing divided between cuts (kg N, total/annum):

0	0
100	100
200	200
300	300
400	400
500	500

NOTES: (1) The whole area was grazed in 1975, yields were not taken.
(2) Ammonium trithiocarbonate was applied at 16 kg to SPACING, 30 CM and at 8 kg to SPACING, 60 CM.

Cultivations, etc.:- Aqueous urea and inhibitors injected: 26 Feb, 1976. 'Nitro-Chalk' applied: 3 Mar, 6 May, 3 June, 7 July, 13 Aug, 2 Sept. Cut: 5 May, 2 June, 10 Aug, 2 Nov.

NOTE: It was intended to make six cuts during the season but drought prevented this.

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76/R/CS/161

1ST CUT (5/5/76) DRY MATTER TONNES/HECTARE

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

SOLID N(76)	0	100	200	300	400	500	MEAN
	1.01	1.25	1.87	2.41	2.69	3.04	2.04

SPACING / LIQUID N(76)	30 CM	60 CM	MEAN
UREA	3.10	2.90	3.00
UREA+ATC	2.76	2.67	2.72
MEAN	2.93	2.79	2.86

N RATE / LIQUID N(76)	250	375	500	MEAN
UREA	2.69	3.00	3.30	3.00
UREA+ATC	2.51	2.82	2.82	2.72
MEAN	2.60	2.91	3.06	2.86

N RATE / SPACING	250	375	500	MEAN
30 CM	2.80	2.97	3.01	2.93
60 CM	2.40	2.86	3.10	2.79
MEAN	2.60	2.91	3.06	2.86

SPACING	LIQUID N(76) N RATE	UREA	UREA+ATC
30 CM	250	2.94	2.66
	375	3.07	2.87
	500	3.28	2.74
60 CM	250	2.44	2.36
	375	2.94	2.78
	500	3.31	2.89

GRAND MEAN 2.59

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

TABLE	SOLID N(76)	LIQUID N(76)	SPACING	N RATE
SED	0.215	0.088	0.088	0.107

TABLE	LIQUID N(76) SPACING	LIQUID N(76) N RATE	SPACING N RATE	LIQUID N(76) SPACING N RATE
SED	0.124	0.152	0.152	0.215

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

STRATUM	DF	SE	CV%
BLOCK.WP	17	0.215	8.3

1ST CUT MEAN DM% 19.5

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76/R/CS/161

2ND CUT (2/6/76) DRY MATTER TONNES/HECTARE

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

SOLID N(76)	0	100	200	300	400	500	MEAN
	0.77	1.11	1.59	2.13	2.12	1.99	1.62

SPACING LIQUID N(76)	30 CM	60 CM	MEAN
UREA	1.82	1.58	1.70
UREA+ATC	1.58	1.63	1.60
MEAN	1.70	1.60	1.65

N RATE LIQUID N(76)	250	375	500	MEAN
UREA	1.74	1.79	1.56	1.70
UREA+ATC	1.69	1.80	1.32	1.60
MEAN	1.71	1.80	1.44	1.65

N RATE SPACING	250	375	500	MEAN
30 CM	1.74	1.79	1.57	1.70
60 CM	1.69	1.80	1.31	1.60
MEAN	1.71	1.80	1.44	1.65

SPACING	LIQUID N(76) N RATE	UREA	UREA+ATC
30 CM	250	1.76	1.71
	375	1.90	1.68
	500	1.79	1.35
60 CM	250	1.72	1.67
	375	1.68	1.92
	500	1.34	1.29

GRAND MEAN 1.64

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

TABLE	SOLID N(76)	LIQUID N(76)	SPACING	N RATE
SED	0.262	0.107	0.107	0.131

TABLE	LIQUID N(76) SPACING	LIQUID N(76) N RATE	SPACING N RATE	LIQUID N(76) SPACING N RATE
SED	0.151	0.185	0.185	0.262

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

STRATUM	DF	SE	CV%
BLOCK.WP	17	0.262	16.0

2ND CUT MEAN DM% 24.3

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3RD CUT (10/8/76) DRY MATTER TONNES/HECTARE

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

SOLID N(76)	0	100	200	300	400	500	MEAN
	0.38	0.39	0.39	0.26	0.32	0.24	0.33

SPACING	30 CM	60 CM	MEAN
LIQUID N(76)			
UREA	0.25	0.24	0.25
UREA+ATC	0.28	0.28	0.28
MEAN	0.27	0.26	0.26

N RATE	250	375	500	MEAN
LIQUID N(76)				
UREA	0.23	0.24	0.27	0.25
UREA+ATC	0.29	0.29	0.28	0.28
MEAN	0.26	0.26	0.27	0.26

N RATE	250	375	500	MEAN
SPACING				
30 CM	0.24	0.26	0.30	0.27
60 CM	0.28	0.27	0.24	0.26
MEAN	0.26	0.26	0.27	0.26

LIQUID N(76)		UREA	UREA+ATC
SPACING	N RATE		
30 CM	250	0.20	0.28
	375	0.26	0.26
	500	0.30	0.30
60 CM	250	0.27	0.29
	375	0.22	0.31
	500	0.23	0.25

GRAND MEAN 0.29

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

TABLE	SOLID N(76)	LIQUID N(76)	SPACING	N RATE
SED	0.080	0.033	0.033	0.040

TABLE	LIQUID N(76) SPACING	LIQUID N(76) N RATE	SPACING N RATE	LIQUID N(76) SPACING N RATE
SED	0.046	0.057	0.057	0.080

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

STRATUM	DF	SE	CV%
BLOCK.WP	17	0.080	28.1

3RD CUT MEAN DM% 36.2

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4TH CUT (2/11/76) DRY MATTER TONNES/HECTARE

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

SOLID N(76)	0	100	200	300	400	500	MEAN
	1.47	2.20	2.54	2.47	2.16	1.88	2.12

SPACING / LIQUID N(76)	30 CM	60 CM	MEAN
UREA	2.15	2.20	2.18
UREA+ATC	2.12	2.11	2.11
MEAN	2.14	2.15	2.14

N RATE / LIQUID N(76)	250	375	500	MEAN
UREA	2.24	2.23	2.06	2.18
UREA+ATC	2.09	2.24	2.01	2.11
MEAN	2.16	2.24	2.03	2.14

N RATE / SPACING	250	375	500	MEAN
30 CM	2.17	2.19	2.05	2.14
60 CM	2.16	2.29	2.02	2.15
MEAN	2.16	2.24	2.03	2.14

SPACING	LIQUID N(76) N RATE	UREA	UREA+ATC
30 CM	250	2.19	2.15
	375	2.19	2.18
	500	2.08	2.03
60 CM	250	2.29	2.02
	375	2.27	2.31
	500	2.04	1.99

GRAND MEAN 2.14

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

TABLE	SOLID N(76)	LIQUID N(76)	SPACING	N RATE
SED	0.173	0.071	0.071	0.087

TABLE	LIQUID N(76) SPACING	LIQUID N(76) N RATE	SPACING N RATE	LIQUID N(76) SPACING N RATE
SED	0.100	0.122	0.122	0.173

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

STRATUM	DF	SE	CV%
BLOCK.WP	17	0.173	8.1

4TH CUT MEAN DM% 13.7

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76/R/CS/161

TOTAL OF 4 CUTS DRY MATTER TONNES/HECTARE

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

SOLID N(76)	0	100	200	300	400	500	MEAN
	3.62	4.95	6.39	7.27	7.28	7.15	6.11

SPACING / LIQUID N(76)	30 CM	60 CM	MEAN
UREA	7.32	6.92	7.12
UREA+ATC	6.74	6.69	6.72
MEAN	7.03	6.80	6.92

N RATE / LIQUID N(76)	250	375	500	MEAN
UREA	6.90	7.26	7.18	7.12
UREA+ATC	6.57	7.16	6.42	6.72
MEAN	6.74	7.21	6.80	6.92

N RATE / SPACING	250	375	500	MEAN
30 CM	6.95	7.20	6.93	7.03
60 CM	6.53	7.21	6.67	6.80
MEAN	6.74	7.21	6.80	6.92

SPACING	LIQUID N(76) N RATE	UREA	UREA+ATC
30 CM	250	7.09	6.81
	375	7.42	6.99
	500	7.45	6.42
60 CM	250	6.72	6.34
	375	7.10	7.32
	500	6.92	6.42

GRAND MEAN 6.65

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

TABLE	SOLID N(76)	LIQUID N(76)	SPACING	N RATE
SED	0.422	0.172	0.172	0.211

TABLE	LIQUID N(76) SPACING	LIQUID N(76) N RATE	SPACING N RATE	LIQUID N(76) SPACING N RATE
SED	0.243	0.298	0.298	0.422

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

STRATUM	DF	SE	CV%
BLOCK.WP	17	0.422	6.3

TOTAL OF 4 CUTS MEAN DM% 23.4

PLOT AREA HARVESTED 0.00282

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