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76/R/CS/169 Organic Matter and Responses to N - Grass

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76/R/CS/169

ORGANIC MATTER AND RESPONSES TO N

Object: To study the effects of different amounts of organic matter in the soil on the uptake of nitrogen fertiliser by grass - Highfield and Fosters Ley Arable (see also 75/R/RN/1&2).

Sponsors: A.E. Johnston, A. Penny.

The second year, grass.

For previous year see 75/R/CS/169.

Design: On each field: 2 blocks of 6 plots for each date of sowing grass.

Whole plot dimensions: 3.50 x 8.23.

Treatments: All combinations of:-

1. FIELD Fields:

HIGHFLD	Highfield (old grass until 1949)
FOSTERS	Fosters (old arable until 1949)

2. SOW DATE Date of sowing grass:

1949	1949
1973	1973 (grass 1949-1963, arable 1964-1972)

3. N PERCUT Nitrogen fertiliser, cumulative to 1975, (kg N) per cut:

0	None (2 plots per block)
25	25
50	50
75	75
100	100

Basal applications: Manures: (0:14:28) at 500 kg. Chalk at 8.7 t.

NOTE: N PERCUT was not applied as planned after the second cut because little growth had been made in the prevailing dry conditions.

Cultivations, etc.: - PK and chalk applied: 4 Dec, 1975. N applied: 24 Mar, 1976, 24 May. Cut: 21 May, 29 June, 11 Nov.

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1ST CUT (21/5/76) DRY MATTER TONNES/HECTARE

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

SOW DATE	1949	1973	MEAN
N PERCUT			
0	0.88	0.86	0.87
25	1.59	2.00	1.79
50	2.07	2.89	2.48
75	2.94	3.52	3.23
100	3.41	4.12	3.76
MEAN	1.96	2.37	2.17

FIELD	HIGHFLD	FOSTERS	MEAN
N PERCUT			
0	1.05	0.69	0.87
25	2.08	1.50	1.79
50	2.74	2.23	2.48
75	3.60	2.86	3.23
100	4.05	3.48	3.76
MEAN	2.43	1.91	2.17

FIELD	HIGHFLD	FOSTERS	MEAN
SOW DATE			
1949	2.27	1.66	1.96
1973	2.59	2.16	2.37
MEAN	2.43	1.91	2.17

N PERCUT	SOW DATE 1949		SOW DATE 1973	
	FIELD	HIGHFLD	FOSTERS	HIGHFLD
0		1.02	0.75	1.07
25		1.93	1.25	2.24
50		2.45	1.69	3.02
75		3.46	2.43	3.75
100		3.72	3.09	4.38
				FOSTERS
				0.64
				1.76
				2.76
				3.30
				3.87

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

TABLE	N PERCUT	N PERCUT*		N PERCUT***	
		SOW DATE	FIELD	SOW DATE	FIELD
SED	0.174	0.247	0.247	0.349	MIN REP
	0.151	0.214	0.214	0.302	MAX-MIN

* WITHIN SAME LEVEL OF SOW DATE ONLY

** WITHIN SAME LEVEL OF FIELD ONLY

*** WITHIN SAME LEVEL OF SOW DATE.FIELD ONLY

N PERCUT

MAX-MIN O V ANY OF REMAINDER

MIN REP ANY OF REMAINDER

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

STRATUM	DF	SE	CV%
BLOCK.WP.SP	24	0.349	16.1
1ST CUT MEAN DM%	23.5		
		215	

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2ND CUT (29/6/76) DRY MATTER TONNES/HECTARE

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

SOW DATE	1949	1973	MEAN
N PERCUT			
0	0.40	0.31	0.36
25	0.70	0.63	0.67
50	0.77	0.65	0.71
75	0.71	0.67	0.69
100	0.59	0.54	0.56
MEAN	0.60	0.52	0.56

FIELD	HIGHFLD	POSTERS	MEAN
N PERCUT			
0	0.31	0.40	0.36
25	0.74	0.59	0.67
50	0.79	0.63	0.71
75	0.81	0.58	0.69
100	0.51	0.61	0.56
MEAN	0.58	0.54	0.56

FIELD	HIGHFLD	POSTERS	MEAN
SOW DATE			
1949	0.52	0.67	0.60
1973	0.64	0.40	0.52
MEAN	0.58	0.54	0.56

N PERCUT	1949		1973	
	FIELD	HIGHFLD	POSTERS	HIGHFLD
0		0.30	0.50	0.33
25		0.67	0.74	0.81
50		0.84	0.70	0.73
75		0.56	0.87	1.05
100		0.45	0.73	0.58

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

TABLE	N PERCUT	N PERCUT*	N PERCUT**	N PERCUT***	MIN REP	MAX-MIN
		SOW DATE	FIELD	SOW DATE		
SED	0.095	0.134	0.134	0.190		
	0.082	0.116	0.116	0.164		

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

STRATUM	DF	SE	CV%
BLOCK.WP.SP	24	0.190	34.0
2ND CUT MEAN DM%	43.1		

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3RD CUT (10/11/76) DRY MATTER TONNES/HECTARE

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

SOW DATE	1949	1973	MEAN
N PERCUT			
0	0.65	0.62	0.64
25	1.00	1.03	1.01
50	1.28	1.40	1.34
75	1.44	1.61	1.52
100	1.60	1.63	1.61
MEAN	1.10	1.15	1.13

FIELD	HIGHFLD	FOSTERS	MEAN
N PERCUT			
0	0.67	0.61	0.64
25	1.09	0.94	1.01
50	1.26	1.41	1.34
75	1.52	1.52	1.52
100	1.65	1.58	1.61
MEAN	1.15	1.11	1.13

FIELD	HIGHFLD	FOSTERS	MEAN
SOW DATE			
1949	1.18	1.03	1.10
1973	1.11	1.19	1.15
MEAN	1.15	1.11	1.13

N PERCUT	SOW DATE 1949		SOW DATE 1973		
	FIELD	HIGHFLD FOSTERS	HIGHFLD	FOSTERS	
0		0.71	0.59	0.62	0.63
25		1.21	0.79	0.98	1.09
50		1.25	1.30	1.28	1.52
75		1.47	1.41	1.58	1.63
100		1.73	1.47	1.57	1.68

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

TABLE	N PERCUT	N PERCUT* SOW DATE	N PERCUT** FIELD	N PERCUT*** SOW DATE FIELD	MIN REP	MAX-MIN
SED	0.077	0.109	0.109	0.154		
	0.067	0.094	0.094	0.133		

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

STRATUM	DF	SE	CV%
BLOCK.WP.SP	24	0.154	13.7
3RD CUT MEAN DM%	15.3		

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TOTAL OF 3 CUTS DRY MATTER TONNES/HECTARE

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

SOW DATE	1949	1973	MEAN
N PERCUT			
0	1.93	1.79	1.86
25	3.29	3.66	3.48
50	4.12	4.94	4.53
75	5.09	5.80	5.45
100	5.60	6.28	5.94
MEAN	3.66	4.05	3.85

FIELD	HIGHFLD	FOSTERS	MEAN
N PERCUT			
0	2.03	1.70	1.86
25	3.92	3.03	3.48
50	4.79	4.27	4.53
75	5.94	4.96	5.45
100	6.22	5.66	5.94
MEAN	4.15	3.55	3.85

FIELD	HIGHFLD	FOSTERS	MEAN
SOW DATE			
1949	3.97	3.36	3.66
1973	4.34	3.75	4.05
MEAN	4.15	3.55	3.85

N PERCUT	SOW DATE 1949		SOW DATE 1973		
	FIELD	HIGHFLD FOSTERS	HIGHFLD	FOSTERS	
0		2.03	1.84	2.03	1.56
25		3.81	2.77	4.03	3.30
50		4.55	3.70	5.03	4.85
75		5.48	4.70	6.39	5.22
100		5.91	5.29	6.53	6.04

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

TABLE	N PERCUT	N PERCUT* SOW DATE	N PERCUT** FIELD	N PERCUT*** SOW DATE FIELD	MIN REP	MAX-MIN
SED	0.233	0.329	0.329	0.466		
	0.202	0.285	0.285	0.404		

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

STRATUM	DF	SE	CV%
BLOCK.WP.SP	24	0.466	12.1
TOTAL OF 3 CUTS MEAN DM%	27.3		
SUB PLOT AREA HARVESTED	0.00075		