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76/R/CS/155 Rainfall and Leaching - Oats

Rothamsted Research

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76/R/CS/155

RAINFALL AND LEACHING

Object: To study the residual effects of leaching of nitrate nitrogen by a range of winter rainfall rates on yields of oats after spring wheat - Long Hoos VI/VII 4.

Sponsor: T.M. Addiscott.

The second year, spring oats.

For previous year see 75/R/CS/155.

Design: 2 blocks of 16 plots, randomisation restricted.

Whole plot dimensions: 2.13 x 2.13.

Treatments: All combinations of:-

1. RAINFALL(75) 'Rainfall' (mm), October 1974 - February 1975 inclusive:

(177)	177
(258)	258
(396)	396
(484)	484

2. N(75) Nitrogen fertiliser, applied 16 May, 1975 (kg N), none to oats:

(0)	None
(40)	40
(80)	80
(120)	120

NOTES: (1) Natural rainfall in the period October 1974 - February 1975 was 396 mm. Smaller rates were achieved by covering and the larger rate by supplementing natural rainfall with irrigation.

(2) The crop was harvested green on 30 June and yields of total produce recorded.

Basal applications: Manures: (0:14:28) at 880 kg. Fungicides: Tridemorph at 0.53 kg in 340 l.

Seed: Manod, sown at 190 kg.

Cultivations, etc.:- Spring-tine cultivated: 15 Sept, 1975. PK applied: 24 Sept. Ploughed: 29 Sept. Spring-tine cultivated: 3 Oct and 22 Mar, 1976. Seed sown: 23 Mar. Fungicide applied: 16 June. Harvested green: 30 June.

NOTES: (1) Concentrations of nitrate and ammonium ions at four soil depths were determined at the beginning and end of Oct-Feb period.

(2) N percentage in green crop was determined.

76/R/CS/155

GREENCROP DRY MATTER TONNES/HECTARE

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

	N(75)	(0)	(40)	(80)	(120)	MEAN
RAINFALL(75)						
(177)		1.18	1.00	1.35	1.25	1.20
(258)		1.24	1.19	1.00	2.14	1.39
(396)		1.00	1.51	1.08	1.09	1.17
(484)		1.31	1.16	0.96	1.47	1.22
MEAN		1.18	1.21	1.10	1.49	1.25

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

TABLE	RAINFALL(75)	N(75)	RAINFALL(75)	N(75)
SED	0.105	0.105	0.209	

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

STRATUM	DF	SE	CV%
BLOCK.WP	15	0.209	16.8

MEAN DM% 30.8

PLOT AREA HARVESTED 0.00046