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72/R/WS/3 Spring Wheat N Levels and Physiology

Rothamsted Research

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72/R/WS/3

SPRING WHEAT

N LEVELS AND PHYSIOLOGY

Object: To study the physiological basis of the response of spring wheat to a wide range of nitrogen levels - Fosters Corner.

Sponsor: G.N. Thorne.

Design: 2 randomised blocks of 18 plots.

Whole plot dimensions: 2.41 x 13.7. Area harvested: 0.00094.

Treatments: All combinations of:-

1. Nitrogen: 0, 25, 50, 75, 100, 125, 150, 175, 200 kg N as 'Nitro-Chalk'.
2. Seed rates: 84, 179 kg.

Basal applications: 630 kg (0:14:28). Weedkiller: Bromoxynil, ioxynil, dichlorprop and MCPA ('Tetroxone' at 5.6 l in 340 l). Fungicides: Tridemorph at 0.53 kg in 340 l on 4 occasions and oxycarboxin ('Plantvax 75' at 2.0 kg in 340 l) on one occasion.

Seed: Kleiber.

Cultivations, etc.:- Deep-tine cultivated twice: 12 Nov, 1971. Basal PK applied: 21 Mar, 1972. Seed drilled: 23 Mar. Test N applied: 1 May. Weedkiller applied: 17 May. Fungicides applied: tridemorph: 23 May, 2 June, 14 June, 26 June, oxycarboxin: 6 July. Combine harvested: 6 Sept. Previous crops: Fallow 1970, potatoes 1971.

NOTE: Plant counts were made after germination and shoot counts throughout the season. Plant samples were taken on 8 occasions for growth analysis. Soil moisture was measured on 4 occasions and light penetration on 3. Rates of photosynthesis of leaves were measured on 8 occasions and translocation on 3. Scores were made for mildew (*Erysiphe graminis*), % anthesis and yellowness at ripening.

Standard error per plot.

Grain, tonnes/hectare: 0.665 or 12.6% (17 d.f.)

72/R/WS/3

TABLE OF MEANS

GRAIN: TONNES/HECTARE

N: KG/HA

	0	25	50	75	100	125	150	175	200	Mean
SEED RATE: KG/HA										
84	4.49	5.14	5.23	5.88	5.45	5.82	5.58	5.04	5.32	5.33
179	4.05	5.05	4.52	4.90	5.41	5.73	5.80	5.74	5.74	5.21
Mean	4.27	5.10	4.88	5.39	5.43	5.77	5.69	5.39	5.53	5.27

STANDARD ERROR OF DIFFERENCES

N	SEED RATE	N	SEED RATE
0.471	0.222		0.665

Mean D.M. %: 78.4