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## Yields of the Field Experiments 1972

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### 72/R/B/1 and 72/R/BB/B/1 Barley Growth and Yield on Contrasted Sites

#### Rothamsted Research

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72/R/B/1 and 72/BB/B/1

BARLEY

GROWTH AND YIELD ON CONTRASTED SITES

**Object:** To try to account for yields and differences between yields of barley on sites at Rothamsted and Broom's Barn by studying crop growth rates, nutrient uptake, water use etc., at a wide range of nitrogen levels, with and without irrigation. Also to study the interaction between site differences and crops (see also 72/R & BB/WW/6) - Rothamsted (R), Pastures and Broom's Barn (BB), Windbreak Field.

**Sponsors:** P.J. Welbank, F.V. Widdowson.

**Design:** 3 randomised blocks of 2 plots, split into 6.

**Whole plot dimensions:**

Pastures (R): 15.2 x 48.0. Sub plot area harvested: 0.00434.

Windbreak Field (BB): 36.6 x 45.7. Sub plot area harvested: 0.00413.

**Treatments:** All combinations of:-

Whole plots: 1. Irrigation (I): None (0), full irrigation (C).

Sub plots: 2. Nitrogen: 31, 63, 94, 125, 157, 188 kg N as 'Nitro-Chalk'.

Total irrigation was 68.6 mm applied on 3 occasions (R) and 81.0 mm applied on 4 occasions (BB).

**Basal applications:**

Manures (both fields): 1260 kg (0:20:20) plus 900 kg Epsom salts ploughed in in autumn, 360 kg (0:20:20) combine drilled.

**Weedkillers:**

Pastures (R): Paraquat at 0.56 kg ion in 220 l. MCPA, mecoprop and dicamba ('Banlene Plus' at 5.6 l in 220 l).

Windbreak Field (BB): MCPA, mecoprop and dicamba ('Banlene Plus' at 4.2 l) plus mecoprop at 1.4 l in 220 l.

**Seed:** Julia dressed with ethirimol sown at 160 kg.

**Cultivations, etc.:**

Pastures (R): Paraquat applied: 2 Oct, 1972. Basal PK and Epsom salts applied, plots ploughed: 19 Nov. N applied: 17 Mar, 1972. Seed combine drilled: 18 Mar. 'Banlene Plus' applied: 18 May. Irrigated: 13 June, 16 June, 6 July. Combine harvested: 23 Aug. Previous crops: Spring beans 1970, barley 1971.

72/R/B/1 and 72/BB/B/1

Windbreak Field (BB): Basal PK applied: 6 Sept, 1971. Epsom salts applied: 15 Sept. Ploughed: 1 Oct. N applied: 16 Mar, 1972. Seed combine drilled: 17 Mar. Weedkiller applied: 16 May. Irrigated: 2 June, 13 June, 29 June, 30 June. Combine harvested: 11 Aug. Previous crops: Wheat 1970 and 1971.

NOTE: Crop samples were taken throughout the season. The percentage of N, P and K was measured in all samples. The number of tillers or ear-bearing stems was counted, and the leaf areas measured at each sampling. Mildew (*Erysiphe graminis*) assessments were made. 1000 grain weights were determined. Soil moisture content was estimated by neutron probe weekly.

Standard errors per plot. Grain, tonnes/hectare:

Pastures (R): Sub plot: 0.320 or 4.9% (20 d.f.)  
Windbreak Field (BB): Sub plot: 0.414 or 7.5% (20 d.f.)

72/R/B/1 and 72/BB/B/1

TABLES OF MEANS

PASTURES (R)

N: KG/HA

	31	63	94	125	157	188	Mean
GRAIN: TONNES/HECTARE							
I							
O	6.54	6.84	6.95	6.64	6.79	6.49	6.71
C	6.38	6.79	6.60	6.29	5.79	5.86	6.29
Mean	6.46	6.82	6.77	6.47	6.29	6.18	6.50

STANDARD ERRORS OF DIFFERENCES

N	I*
	N
0.185	0.261

STRAW: TONNES/HECTARE

I							
O	5.11	5.73	6.56	6.72	6.50	7.21	6.31
C	5.13	6.51	6.50	7.03	7.09	7.30	6.60
Mean	5.12	6.12	6.53	6.88	6.80	7.25	6.45

Mean D.M. %: Grain: 84.6  
Straw: 86.6

\* Within the same level of I only.

72/R/B/1 and 72/BB/B/1

WINDBREAK FIELD (BB)

N: KG/HA

	31	63	94	125	157	188	Mean
GRAIN: TONNES/HECTARE							
I							
O	4.55	5.13	5.76	5.96	6.19	6.19	5.63
C	4.76	6.10	5.82	5.88	5.24	5.11	5.48
Mean	4.65	5.61	5.79	5.92	5.71	5.65	5.56

STANDARD ERRORS OF DIFFERENCES

N	I* N
0.239	0.338

STRAW: TONNES/HECTARE

I							
O	3.66	5.00	4.80	5.76	5.09	5.73	5.01
C	4.55	5.41	6.83	6.48	6.90	6.03	6.03
Mean	4.10	5.21	5.82	6.12	6.00	5.88	5.52

Mean D.M. %: Grain: 85.1  
Straw: 57.3

\* Within the same level of I only.