Yields of the Field Experiments 1972

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

Rothamsted Research

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.

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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 (O), 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.

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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.)

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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

	31	63	94	125	157	188	Mean
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*$\frac{}{N}$
0.239	0.338

STRAW: TONNES/HECTARE

	31	63	94	125	157	188	Mean
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.

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