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71/R/B/1 and 71/BB/B/1 Growth and Yield on Contrasted Sites - Barley

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71/R/B/1 and 71/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 71/R&BB/WW/6)- Rothamsted (R) Great Knott III and Broom's Barn (BB) Marl Pit Field.

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

Whole plot dimensions:-

Great Knott III (R): 15.2 x 48.0. Sub plot area harvested: 0.00434.
Marl Pit Field (BB): 15.2 x 45.7. Sub plot area harvested: 0.00413.

Treatments: All combinations of:-

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

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

Total irrigation was 33.0 mm applied on two occasions (R) and 58.4 mm applied on three occasions (BB).

Basal applications:

Great Knott III (R): 1260 kg (0:20:20) plus 900 kg Epsom salts ploughed in in autumn, 360 kg (0:20:20) combine drilled.

Marl Pit Field (BB): 1260 kg (0:20:20) plus 900 kg Epsom salts ploughed in in autumn 251 kg (0:20:20) combine drilled.

Weedkiller (both fields): MCPA, mecoprop and dicamba ('Banlene Plus' at 5.6 l in 225 l).

Fungicide (both fields): Tridemorph at 0.53 kg applied with the weedkiller.

Weedkiller to Great Knott III (R) only: Paraquat at 0.56 kg ion in 225 l.

Cultivations, etc.:

Great Knott III (R): Basal PK and Epsom salts applied:

15 Sept, 1970. Paraquat applied: 14 Oct. Ploughed:

2 - 10 Nov. N applied, seed combine drilled at 180 kg:

11 Mar, 1971. Weedkiller plus fungicide applied: 10 May.

Irrigated: 20 May - 5.1 mm, 8 June - 27.9 mm. Combine

harvested: 18 Aug. Variety: Julia. Previous crops:

Potatoes 1969, winter wheat 1970.

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Marl Pit Field (BB): Basal PK applied: 18 Sept, 1970. Epsom salts applied: 16 Oct. Ploughed: 20 Oct. Seed combine drilled at 180 kg: 5 Mar, 1971. N applied: 23 Mar. Weedkiller plus fungicide applied: 10 May. Irrigated: 14 May - 26.7 mm, 21 May - 16.5 mm, 26 May - 15.2 mm. Combine harvested: 12 Aug. Variety: Julia. Previous crops: Sugar beet 1969, barley 1970.

Standard errors per plot. Grain, tonnes/hectare:

Great Knott III (R): Sub plot: 0.303 or 4.8% (20 d.f.)

Marl Pit Field (BB): Sub plot: 0.266 or 4.9% (20 d.f.)

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SUMMARY OF RESULTS

GREAT KNOTT III (R)

N: KG/HA

	31	63	94	125	157	188	Mean
	GRAIN: TONNES/HECTARE						
	(±0.175)*						
O	5.65	6.40	6.71	6.64	6.64	6.21	6.37
I	5.36	6.42	6.56	6.60	6.85	6.19	6.33
Mean (±0.124)	5.50	6.41	6.64	6.62	6.75	6.20	6.35

STRAW: TONNES/HECTARE

O	3.25	5.35	5.60	5.77	5.90	5.58	5.24
I	3.61	5.11	5.89	5.65	6.34	5.88	5.41
Mean	3.43	5.23	5.74	5.71	6.12	5.73	5.33

Mean D.M. %: Grain: 83.5
Straw: 77.6

* For use in horizontal and interaction comparisons only

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MARL PIT FIELD (BB)

N: KG/HA

	31	63	94	125	157	188	Mean
GRAIN: TONNES/HECTARE							
(± 0.154)*							
O	4.07	4.99	5.37	5.85	5.90	5.77	5.33
I	4.76	5.34	6.01	5.93	6.11	5.56	5.62
Mean (± 0.109)	4.41	5.16	5.69	5.89	6.00	5.67	5.47
STRAW: TONNES/HECTARE							
O	3.30	4.28	4.81	5.56	5.72	6.08	4.96
I	3.97	5.04	6.08	6.25	6.72	6.36	5.74
Mean	3.63	4.66	5.45	5.91	6.22	6.22	5.35

Mean D.M. %: Grain: 82.7
Straw: 82.8

* For use in horizontal and interaction comparisons only