

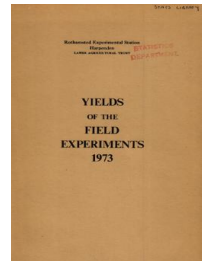
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73/R&bb/BS/1 - Growth & Yield on Contrasted Sites - Spring Barley

Rothamsted Research

Rothamsted Research (1974) *73/R&bb/BS/1 - Growth & Yield on Contrasted Sites - Spring Barley* ; Yields Of The Field Experiments 1973, pp 316 - 319 - DOI:

<https://doi.org/10.23637/ERADOC-1-98>

73/R/BS/1 and 73/BE/BS/1

SPRING 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 73/R and BB/WW/2) - Rothamsted (R), Long Hoos I and II, and Broom's Barn (BB), Dunholme Field.

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

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

Whole plot dimensions:

Long Hoos I and II (R): 15.2 x 48.0. Sub plot area harvested: 0.00434.
Dunholme 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 fertiliser (kg N):

31	31
63	63
94	94
125	125
157	157
188	188

Total irrigation was 50.8 mm applied on 2 occasions (R) and 111.8 mm applied on 4 occasions (BB).

Basal applications:

Long Hoos (R): Manures: (0:20:20) at 360 kg combine drilled.

Weedkiller: MCPA, mecoprop and dicamba ('Tetralax Plus' at 7.0 l in 220 l). Fungicide: Tridemorph at 0.53 kg in 220 l.

NOTE: The site had a basal dressing of (0:20:20) at 1300 kg and Epsom salts at 900 kg in autumn 1971.

Dunholme Field (BB): Manures: (0:20:20) at 1300 kg. Epsom salts at 900 kg in autumn. (0:20:20) at 380 kg combine drilled. Weedkiller: MCPA, mecoprop and dicamba ('Banlene Plus' at 5.6 l in 220 l). Fungicide: Tridemorph 0.53 kg in 220 l.

Seed: Julia, dressed with ethirimol, sown at 160 kg (R) and 180 kg (BB).

73/R/BS/1 and 73/BB/BS/1

Cultivations, etc.:-

Long Hoos (R): Ploughed: 9 Nov, 1972. N applied, springtime cultivated and seed sown: 9 Mar, 1973. Weedkiller and fungicide applied:

11 May. Irrigated: 14 and 18 June. Combine harvested: 10 Aug.

Previous crops: Beans 1971, winter wheat 1972.

Dunholme Field (BB): Basal PK and Epsom salts applied: 6 Oct, 1972.

Ploughed: 10 Nov. N applied: 8 Mar, 1973. Seed sown: 12 Mar.

Weedkiller and fungicide applied: 14 May. Irrigated: 8, 14, 15 June

and 5 July. Combine harvested: 9 Aug. Previous crops: Sugar beet 1971, winter wheat 1972.

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 sub plot. Grain: tonnes/hectare.

Long Hoos I and II (R): 0.318 or 5.7% (20 d.f.)

Dunholme Field (BB): 0.221 or 3.9% (20 d.f.)

73/R/BS/1 and 73/BB/BS/1

TABLES OF MEANS

LONG HOOS I AND II (R)

GRAIN: TONNES/HECTARE

	N						
	31	63	94	125	157	188	Mean
IRRIGN							
O	4.39	5.28	5.96	6.06	6.11	5.97	5.63
I	4.51	5.44	5.92	5.76	5.93	6.07	5.61
Mean	4.45	5.36	5.94	5.91	6.02	6.02	5.62

STANDARD ERRORS OF DIFFERENCES

N IRRIGN*
N

0.184

* Within the same level
of IRRIGN only

0.260

Mean D.M. % 84.8

STRAW: TONNES/HECTARE

IRRIGN							
O	1.94	2.97	4.25	4.77	5.05	5.10	4.01
I	2.65	3.28	4.15	5.15	4.94	5.28	4.24
Mean	2.30	3.12	4.20	4.96	5.00	5.19	4.13

Mean D.M. % 95.1

73/R/BS/1 and 73/BB/BS/1

DUNHOLME FIELD (BB)

GRAIN: TONNES/HECTARE

	N						
	31	63	94	125	157	188	Mean
IRRIGN							
O	5.89	6.01	5.24	5.20	5.43	5.39	5.52
I	5.86	6.10	5.79	5.81	5.77	5.97	5.88
Mean	5.87	6.05	5.51	5.50	5.60	5.68	5.70

STANDARD ERRORS OF DIFFERENCES

	N	IRRIGN*
	N	
	0.128	
* Within the same level of IRRIGN only		0.185

Mean D.M. % 81.4

STRAW: TONNES/HECTARE

IRRIGN							
O	4.39	4.61	4.99	4.92	4.79	4.73	4.74
I	4.71	6.02	6.18	5.76	6.06	5.73	5.74
Mean	4.55	5.32	5.59	5.34	5.43	5.23	5.24

Mean D.M. % 64.4