

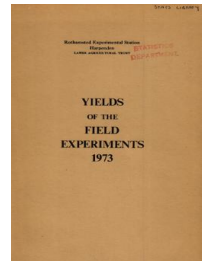
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73/R&bb/WW/2 - Growth Yield on Contrasted Sites - Winter Wheat

Rothamsted Research

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73/R/WW/2 and 73/BB/WW/2

WINTER WHEAT

GROWTH AND YIELD ON CONTRASTED SITES

Object: To try to account for yields and differences between yields of wheat 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/BS/1 and BB/BS/1). Rothamsted (R) - Great Knott III, and Broom's Barn (BB) - New Piece.

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

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.
New Piece (BB): 15.2 x 45.7. Sub plot area harvested: 0.00413.

Treatments: All combinations of:-

Whole plots: 1. Irrigation:

IRRIGN

None

O

Full irrigation

I

Sub plots: 2. Nitrogen fertiliser (kg N):

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 110.5 mm applied on 4 occasions (BB).

Basal applications (both fields): Manures: (0:20:20) at 1300 kg and Epsom salts at 900 kg worked into seedbed. (10:24:24) at 250 kg combine drilled. Weedkiller: MCPA, mecoprop and dicamba ('Tetralix Plus' at 7.0 l in 220 l (R) and 'Banlene Plus' at 5.6 l in 220 l (BB)). Fungicide: Tridemorph at 0.53 kg in 220 l.

Seed: Cappelle, dressed with dieldrin, sown at 200 kg.

73/R/WW/2 and 73/BB/WW/2

Cultivations, etc.:-

Great Knott III (R): Basal PK and Epsom salts applied: 13 Oct, 1972.

Deep-tine cultivated: 16 Oct. Rotary cultivated: 17 Oct. Seed sown: 20 Oct. N applied: 13 Apr, 1973. Weedkiller applied: 26 Apr. Fungicide applied: 18 May. Irrigated 14 and 18 June. Combine harvested: 22 Aug. Previous crops: Barley 1971, beans 1972.

New Piece (BB): Deep-tine cultivated: 28 Sept and 2 Oct, 1972.

Basal PK and Epsom salts applied: 6 Oct. Seed sown: 10 Oct. N applied: 12 Apr, 1973. Weedkiller applied: 16 Apr. Fungicide applied: 15 May. Irrigated: 8, 14, 15 June and 5 July. Combine harvested: 16 Aug. Previous crops: Sugar beet 1971, beans 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:

Great Knott III (R): 0.260 or 4.1% (20 d.f.)

New Piece (BB): 0.288 or 5.1% (20 d.f.)

73/R/WW/2 and 73/BB/WW/2

TABLES OF MEANS

GREAT KNOTT III (R)

GRAIN: TONNES/HECTARE

	N						
	31	63	94	125	157	188	Mean
IRRIGN							
O	7.47	6.61	6.27	6.56	6.07	6.31	6.55
I	6.88	6.23	5.96	5.72	5.63	5.52	5.99
Mean	7.18	6.42	6.12	6.14	5.85	5.91	6.27

STANDARD ERRORS OF DIFFERENCES

	N	IRRIGN*
		N
	0.150	
*Within the same level of IRRIGN only		0.207

STRAW: TONNES/HECTARE

O	7.25	8.19	8.31	8.38	8.15	8.17	8.07
I	6.03	8.15	8.75	7.68	8.13	7.78	7.75
Mean	6.64	8.17	8.53	8.03	8.14	7.97	7.91

Mean D.M. % Grain 82.5
Straw 83.4

73/R/WW/2 and 73/BB/WW/2

NEW PIECE (BB)

GRAIN: TONNES/HECTARE

	N						
	31	63	94	125	157	188	Mean
IRRIGN							
O	5.19	5.73	5.87	5.86	5.40	5.45	5.59
I	5.15	5.86	6.03	5.86	5.73	5.43	5.68
Mean	5.17	5.80	5.95	5.86	5.57	5.44	5.63

STANDARD ERRORS OF DIFFERENCES

	N	IRRIGN*
		N
	0.166	
*Within the same level of IRRIGN only		0.235

STRAW: TONNES/HECTARE

O	6.10	6.27	6.75	6.96	6.78	7.25	6.69
I	6.48	6.80	7.17	7.12	7.03	7.36	6.99
Mean	6.29	6.53	6.96	7.04	6.91	7.30	6.84

Mean D.M. % Grain 87.5
Straw 67.8