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70/R/B/2 and 70/W/B/2 Barley Varieties X N and Mildew Control (Erysiphe Graminis)

Rothamsted Research

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BARLEY

(70/R/B/2 and 70/W/B/2)

Varieties x N and mildew control (*Erysiphe graminis*), Rothamsted (R)
Great Knott I and Woburn (W) Great Hill III 1970.

Design: Great Knott I (R): 4 randomised blocks of 14 plots, split
into 3.
Great Hill III (W): 4 randomised blocks of 16 plots, split
into 3.

Area of each sub plot: Great Knott I (R): 0.0080. Area harvested: 0.0054.
Great Hill III (W): 0.0048. Area harvested: 0.0032.

Treatments: All combinations of:-

- Whole plots: 1. Varieties: Akka (A), Bala - Great Hill III (W) only
(B), Julia (J), Midas (M), Sultan (S), Vada (V),
Zephyr (Z), Akka sown in late May (AL). Seed rates:
Great Knott I (R) - A and AL plots 150 lb, remainder
140 lb. Great Hill III (W): All plots 140 lb.
2. Fungicide: None (O), 1 lb ethirimol as a seed
dressing (F).
- Sub plots: 3. Nitrogen: 0.3 (N1), 0.6 (N2), 0.9 (N3) cwt N (R)
and 0.4 (N1), 0.8 (N2), 1.2 (N3) cwt N (W) as
'Nitro-Chalk'.

Basal applications: 220 lb (0:20:20) combine drilled. Weedkillers:-
Great Knott I (R): 2,4-D at 0.5 lb and dichlorprop at 2 lb in
20 gals. Great Hill III (W): Diquat at 0.34 lb and paraquat at
0.34 lb in 25 gals. Ioxynil at 9 oz and mecoprop at 27 oz in
25 gals.

Cultivations, etc.:-

- Great Knott I (R): Ploughed: 17 - 31 Oct, 1969 and 3 Nov. Combine
drilled (except AL plots): 2 Apr, 1970. N applied: 14 Apr.
Weedkiller applied: 18 May. AL plots: N applied, seed combine
drilled: 19 May. A plots combine harvested: 30 July. Remaining
plots* combine harvested: 14 Aug. Previous crops: Fallow 1968,
winter wheat 1969.
- Great Hill III (W): Ploughed: 4 Sept, 1969. Rotary cultivated:
24 Oct. Diquat/paraquat applied: 17 Mar, 1970. Combine drilled
(except AL plots): 27 Mar. All N applied: 9 Apr. Ioxynil/mecoprop
applied: 15 May. AL plots combine drilled: 20 May. A plots
combine harvested: 31 July. Remaining plots excluding AL
combine harvested: 12 Aug. Previous crops: Potatoes 1968, fallow
1969.

70/R&W/B/2

- NOTES: (1) The weather after sowing AL plots was very dry, growth was very poor and yields were not taken.
(2) Samples were taken for assessment of mildew (*Erysiphe graminis*) and other foliar diseases.
(3) At Woburn the appearance of the crop in July caused doubt about the allocation of the N-rates to sub-plots within some of the whole plots of block 1: this block has been omitted from the tables involving N and from the corresponding analysis.

Standard errors per plot.	Grain, cwt:
Great Knott I (R):	Whole plot: 1.58 or 5.4% (33 d.f.) Sub plot: 2.42 or 8.3% (72 d.f.)
Great Hill III (W)	
All 4 blocks:	Whole plot: 4.93 or 14.0% (39 d.f.)
Block 1 omitted:	Whole plot: 4.69 or 14.6% (26 d.f.) Sub plot: 5.08 or 15.9% (56 d.f.)

70/R&W/B/2

SUMMARY OF RESULTS

GRAIN: CWT

GREAT KNOTT I (R)

	A	J	M	S	V	Z	Mean
	(±0.79)						(±0.32)
O	14.9	33.3	32.0	31.5	30.1	32.1	29.0
F	15.4	33.2	31.6	32.9	30.7	33.6	29.6
	(1) and (2)						(±0.35)
N1	13.8	29.3	27.2	28.6	27.8	28.4	25.9
N2	14.5	34.2	33.7	33.7	30.5	33.7	30.1
N3	17.0	36.3	34.3	34.2	32.9	36.6	31.9
Mean (±0.56)	15.1	33.3	31.8	32.2	30.4	32.9	29.3
	O	F					
	(3) and (4)						
N1	25.2	26.5					
N2	29.5	30.6					
N3	32.2	31.6					

Mean D.M. %: 85.2

(1) (±0.89) (3) (±0.52) For use in horizontal and diagonal comparisons only

(2) (±0.86) (4) (±0.49) For use in vertical and interaction comparisons only

70/R&W/B/2

GRAIN: CWT

GREAT HILL III (W)

ALL 4 BLOCKS

	A	B	J	M	S	V	Z	Mean
	(±2.46)							(±0.93)
O	28.1	34.3	34.8	38.9	32.6	31.8	36.2	33.8
F	27.0	39.0	37.5	37.2	36.4	39.4	38.8	36.5
Mean (±1.74)	27.5	36.7	36.2	38.0	34.5	35.6	37.5	35.1

BLOCK 1 OMITTED

	(1) and (2)							(±0.78)
N1	21.1	32.1	27.0	34.2	30.0	31.3	28.2	29.1
N2	26.3	36.2	36.8	33.3	30.8	33.6	35.5	33.2
N3	25.6	30.0	31.9	35.4	38.3	37.4	38.0	33.8
Mean (±1.91)	24.3	32.8	31.9	34.3	33.0	34.1	33.9	32.0

	O	F
	(3) and (4)	

N1	28.4	29.8
N2	31.7	34.7
N3	31.9	35.7

Mean (±1.02)	30.7	33.4
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Mean D.M. %: 82.6

(1) (±2.56) (3) (±1.37) For use in horizontal and diagonal comparisons only

(2) (±2.07) (4) (±1.11) For use in vertical and interaction comparisons only

BARLEY

(70/R/B/3 and 70/W/B/3)

Deep drilled urea and 'Nitro-Chalk', Rothamsted (R) Great Knott I and Woburn (W) Great Hill III 1970.

Design: 4 blocks of 8 plots (randomisation restricted) plus 1 nil plot per block.

Area of each plot:

Great Knott I (R): 0.0161.	Area harvested: 0.0103.
Great Hill III (W): 0.0154.	Area harvested: 0.0099.

Treatments: No nitrogen (NO) and all combinations of:-

1. Forms of nitrogen: 'Nitro-Chalk' 21% N (C), urea 46% N (U).
2. Methods of application: Deeply drilled by 'Fiona' drill in 6 inch rows before drilling seed (D), broadcast by hand after drilling seed (B).
3. Rates of nitrogen: 0.5 (N1), 1.0 (N2) cwt N.

NOTE: (1) The seed was drilled on all plots by the 'Fiona' drill in rows 6 inches apart.

Basal applications: Manures: 280 lb (0:20:20). Broadcast by 'Fiona' drill.

Weedkillers: Great Knott I (R): 2,4-D at 0.5 lb and dichlorprop at 2 lb in 20 gals.

Great Hill III (W): 0.34 lb diquat plus 0.34 lb paraquat in 25 gals, ioxynil at 7.5 oz plus mecoprop at 22.5 oz in 25 gals.

Cultivations, etc.:

Great Knott I (R): Ploughed: 17 - 31 Oct and 3 Nov, 1969. Seed drilled at 120 lb, basal PK, urea and 'Nitro-Chalk' applied: 2 Apr, 1970. Weedkiller applied: 18 May. Combine harvested: 12 Aug. Variety: Julia. Previous crops: Fallow 1968, winter wheat 1969.

Great Hill III (W): Ploughed: 4 - 10 Sept, 1969. Rotary cultivated: 24 Oct. Deep-tine cultivated: 1 Nov. Diquat/paraquat applied: 17 Mar, 1970. Seed drilled at 120 lb, basal PK, urea and 'Nitro-Chalk' applied: 31 Mar. Ioxynil/mecoprop applied: 15 May. Combine harvested: 11 Aug. Variety: Julia. Previous crops: Potatoes 1968, fallow 1969.

70/R&W/B/3

- NOTES: (2) The 'Fiona' drill was used on all plots to prepare the seedbed, being drawn idle through the E and NO plots.
(3) The percentage of N in the grain was determined.

Standard errors per plot. Grain, cwt:

Great Knott I (R): 1.23 or 3.5% (21 d.f.)
Great Hill III (W): 3.81 or 9.8% (21 d.f.)

70/R&W/B/3

SUMMARY OF RESULTS

GRAIN: CWT

GREAT KNOTT I (R)

	D	B	N1	N2	Mean
	(±0.43)		(±0.43)		(±0.31)
C	35.7	35.1	34.3	36.5	35.4
U	34.8	34.7	33.8	35.8	34.8
			(±0.43)		(±0.31)
		D	34.2	36.4	35.3
		B	33.9	35.9	34.9
Mean (±0.31)			34.0	36.1	35.1

NO 18.6
 General mean: 33.3

Mean D.M. %: 85.2

70/B&W/B/3

GRAIN: CWT

GREAT HILL III (W)

	D	B	N1	N2	Mean
	(±1.35)		(±1.35)		(±0.95)
C	39.4	40.1	40.7	38.8	39.8
U	38.8	37.8	38.9	37.7	38.3
			(±1.35)		(±0.95)
		D	40.0	38.2	39.1
		B	39.6	38.3	39.0
Mean (±0.95)			39.8	38.2	39.0

NO 29.5
 General mean: 38.0

Mean D.M. %: 80.2