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Yields of the Field Experiments 1967

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67/R/IR/C/7 Irrigation - Beans and Barley

Rothamsted Research

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67/C/7.1

IRRIGATION

(IR)

The effect of irrigation on barley and spring beans - Great Field I and II, 1967.

Design:

Barley: 2 randomised blocks of 4 whole plots, each split into 4.
Spring beans: Single replicate of 4 x 2 x 2 x 2 x 2, with component of 5 factor interaction confounded and with split plot confounding.

Area of each sub-plot:-

Barley:	0.0400.	Area harvested:	0.0212
Spring beans:	0.0321.	Area harvested:	0.0077

Treatments: Barley: All combinations of:-

Whole plots: 1. Irrigation: None (O), early (A), late (B), full (C).

To 1/4 plots: 2. Varieties: Maris Badger (M), Impala (I).
3. Nitrogen: 0.3 (N1), 0.6 (N2), as compound fertiliser (basal) plus 'Nitro-Chalk'.

Spring beans: All combinations of:-

Whole plots: 1. Irrigation: None (O), early (A), late (B), full (C).

1/2 plots: 2. Residues of N to barley 1966: 0.5 (R1), 0.8 (R2) cwt N as compound fertiliser (basal) plus 'Nitro-Chalk'.

To 1/4 plots: 3. Row spacing: 10.5 (C), 21 (W) inches.
4. Seed rate: 200 (L), 300 (H) lb.

1/8th plots: 5. Rates of PK: 400 (F1), 560 (F2) lb compound (0:14:28). 400 lb of these was applied as basal dressing.

Basal applications: Barley: 40 cwt ground chalk, 224 lb (15:15:15) combine drilled. Weedkiller: Mecoprop/2,4-D (Methoxone Extra at 6 pints in 35 gals).

Beans: 40 cwt ground chalk, 400 lb (0:14:28) broadcast by drill.

Weedkiller: Simazine at 1 lb a.i. in 32 gals. Insecticide: Demeton-s-methyl (Metasystox at 12 fluid oz in 37 gals also at 12 fluid oz in 3 gals - the second application by fixed-wing aircraft).

Cultivations, etc.:-

Barley: Ground chalk applied: Nov 10, 1966. Ploughed: Nov 11 - 22.

Seed drilled at 140 lb: Mar 13, 1967. 'Nitro-Chalk' applied:

Mar 21. Weedkiller applied: May 11. Combine harvested:

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Aug 22. Previous crops: Spring beans 1965, potatoes 1966.
 Spring beans: Ground chalk applied: Nov 10, 1966. Ploughed:
 Nov 11. Basal PK applied: Mar 18, 1967. PK dressings applied,
 seed drilled, weedkiller applied: Mar 20. Insecticide applied:
 June 14 and July 11. Combine harvested: Sept 8. Previous
 crops: Potatoes 1965, barley 1966.

RAINFALL AND IRRIGATION: INCHES

Week- ending	Rain- fall	IRRIGATION					
		Barley			Beans		
		A	B	C	A	B	C
May 6	1.42						
13	0.25						
20	1.08						
27	1.98						
June 3	0.17						
10	0.01						
17	0.00	1.00	-	1.00	1.00	-	1.00
24	0.70	1.30	-	1.30	1.00	-	1.00
July 1	1.33						
8	0.07						
15	0.03	-	1.00	1.00	-	1.00	1.00
22	1.31	-	1.00	1.00	-	1.00	1.00
29	0.62						
Aug 5	0.24						
12	0.27				-	1.00	1.00
19	1.13						
26	0.00						
Sept 2	0.31						
9	0.51						
16	0.26						
23	0.48						
30	0.71						
Total	12.88	2.30	2.00	4.30	2.00	3.00	5.00

Standard errors per plot.

Barley, grain: Sub plot: 2.46 or 6.4% (12 d.f.)

Spring beans, grain: 1/4 plot: 2.59 or 7.0% (8 d.f.)

1/8 plot: 2.19 or 5.9% (10 d.f.)

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SUMMARY OF RESULTS

BARLEY

	O	A	B	C	Mean
	GRAIN				
Mean	38.2	41.1	34.8	38.5	38.2
		(± 1.23)*			(± 0.61)
M	39.8	41.7	34.6	37.6	38.4
I	36.6	40.6	35.1	39.4	37.9
		(± 1.23)*			(± 0.61)
N1	35.9	39.6	32.3	36.4	36.1
N2	40.5	42.6	37.4	40.6	40.3

* For use in vertical and interaction comparisons only

STRAW

Mean	21.1	26.0	19.5	23.1	22.4
M	24.2	28.7	20.3	24.0	24.3
I	17.9	23.3	18.7	22.3	20.6
N1	19.2	25.1	17.7	20.3	20.5
N2	23.0	27.0	21.3	26.0	24.3

Mean D.M. %: Grain: 82.1
 Straw: 90.9

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SPRING BEANS

GRAIN

	O	A	B	C	Mean
Mean	33.1	36.9	38.5	38.6	36.8
R1	34.9	37.1	38.3	37.9	37.1
R2	31.3	36.7	38.7	39.2	36.5
		(± 0.91)*			
C	35.5	38.7	40.9	39.8	38.7
W	30.6	35.2	36.1	37.4	34.8
		(± 0.91)*			
L	30.6	35.3	36.8	37.5	35.1
H	35.5	38.6	40.2	39.6	38.5
		(1) and (2)			(± 0.39)
F1	32.8	36.5	38.6	38.6	36.6
F2	33.3	37.3	38.4	38.5	36.9

(1) (± 1.47) For use in horizontal and diagonal comparisons

(2) (± 0.77) For use in vertical and interaction comparisons

* For use in vertical and interaction comparisons only

Mean D.M. %: 73.0