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## Yields of the Field Experiments 1964

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### 64/R/IR/C/15 Irrigation - Potatoes and Grass

#### Rothamsted Research

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64/C/15.1

IRRIGATION EXPERIMENT

(IRA and IRB)

The effect of irrigation on potatoes and grass - preliminary year,  
Great Field I and II 1964.

Design:

Potatoes: A single replicate of 4 x 2 x 2 x 2 x 2 in two blocks, a component of the 5 factor interaction being confounded with blocks. Each block is divided into 4 whole plots for the irrigation treatments, and at right angles into 4 strips for varieties and spacing. There is a further split for chitting and N.

Grass ley. 2 randomised blocks of 4 plots each, plots being divided into 4 sub plots each.

Area of each sub plot:-

Potatoes: 0.0204. Area harvested: 0.0080.

Grass: 0.1598. Area harvested: 0.0046.

Treatments. Potatoes: All combinations of:-

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

To strips of 1/4 plots 2. Varieties: Majestic (M), King Edward (E).  
3. Spacing: Seed 12 inches (1), 18 inches (2) apart in the rows.

1/8 plots 4. Chitting: None (O), seed chitted (Ch).  
5. Nitrogen: 0.75 (N1), 1.5 (N2) cwt N as 'Nitro-Chalk' broadcast on the flat before rotary cultivation.

Grass ley: All combinations of:-

Whole plots 1. Irrigation: None (O), irrigated (C).  
2. Species: S215 Meadow Fescue at 30 lb (F), Timothy at 23 lb (T).

Sub plots 3. Nitrogen: None, 0.3, 0.6, 0.9 cwt N as 'Nitro-Chalk' in seedbed and after each cut except the last (NO, N1, N2, N3).

Basal dressing:

To potatoes: 2 cwt P2O5 and 4 cwt K2O as 0:14:28 rotary cultivated in.

To grass ley: 2 cwt P2O5 and 2 cwt K2O as 0:20:20 in seedbed.

Cultivations, etc.:-

Potatoes: Sprayed with dalapon at 5.9 lb acid equivalent in 4 gals: Oct 9, 1963 and again at 2.95 lb: Oct 22. Ploughed: Nov 6 - 28.

64/C/15.2

Basal dressing applied: Apr 6, 1964. 'Nitro-Chalk' applied, rotary cultivated, potatoes planted: Apr 30. Earthed up: June 22. Sprayed three times with mancozeb at 1.2 lb in 35 gals: June 30, July 17, July 31. Sprayed with diquat (Reglone at 3 pints in 40 gals): Sept 18. Lifted: Sept 24. Previous crops: Winter wheat 1962, barley 1963.

Grass ley: Ploughed: Nov 1, 1963. Basal dressing applied: Apr 7, 1964. Seedbed 'Nitro-Chalk' applied, seed drilled: Apr 30. Sprayed with 2,4-D butoxyethyl ester at 0.44 lb acid equivalent in 40 gals: June 10. Cut: July 22. 'Nitro-Chalk' applied: July 27. Cut: Sept 7. Previous crops: Winter wheat 1962, barley 1963.

Standard errors per plot.

Potatoes, total tubers

1/4 plot: 0.389 or 2.7% (8 d.f.)

1/8 plot: 1.142 or 8.0% (20 d.f.)

Grass ley, dry matter

Sub plot: 1st cut: 2.78 or 17.0% (12 d.f.)

2nd cut: 1.86 or 18.3% (12 d.f.)

Total of 2 cuts: 3.01 or 11.3% (12 d.f.)

RAINFALL AND IRRIGATION: INCHES

WEEK ENDING	RAINFALL	POTATOES			GRASS
		A	B	C	C
MAY 5	0.43				
12	0.06				
19	0.29				
26	0.46				
JUNE 2	1.08				
9	0.85				
16	0.90				
23	1.46				
30	0.00				
JULY 7	0.24				
14	0.65				
21	0.29				
28	0.06	1.00		1.00	
AUG 4	0.03				0.50
11	0.07				1.50
18	0.32		1.00	1.00	
25	0.05				1.00
SEPT 1	0.03				
8	0.10				
15	0.44				
22	0.18				
29	0.00				
OCT 6	0.31				
<b>TOTAL</b>	<b>8.30</b>	<b>1.00</b>	<b>1.00</b>	<b>2.00</b>	<b>3.00</b>

64/C/15.3

SUMMARY OF RESULTS

POTATOES

TOTAL TUBERS

	O	A	B	C	Mean
Mean	13.02	14.85	12.81	16.18	14.21
		(±0.137)*			(±0.069)
M	13.68	15.93	13.66	17.35	15.15
E	12.36	13.77	11.95	15.01	13.27
		(±0.137)*			(±0.069)
S1	12.91	14.68	12.85	15.95	14.10
S2	13.13	15.02	12.76	16.41	14.33
		(±0.404)*			(±0.202)
O	12.96	14.43	12.85	15.81	14.01
Ch	13.08	15.27	12.77	16.55	14.41
		(±0.404)*			(±0.202)
N1	12.40	14.55	11.77	15.38	13.52
N2	13.64	15.14	13.85	16.98	14.90
		(±0.194)*			
M S1	13.77	15.96	13.94	17.34	15.25
E S1	12.06	13.39	11.75	14.56	12.94
M S2	13.59	15.89	13.38	17.37	15.06
E S2	12.67	14.15	12.15	15.46	13.61
		(±0.571)*			
M O	13.66	14.47	13.65	17.03	14.70
E O	12.26	14.39	12.05	14.60	13.32
M Ch	13.69	17.39	13.67	17.68	15.61
E Ch	12.47	13.15	11.86	15.42	13.22
		(±0.571)*			
M N1	13.36	16.32	12.99	16.48	14.79
E N1	11.44	12.79	10.54	14.28	12.26
M N2	14.00	15.53	14.33	18.23	15.52
E N2	13.28	14.75	13.36	15.74	14.28

\* For use in vertical and interaction comparisons

64/C/15.4

	% WARE				
	O	A	B	C	Mean
Mean	92.4	95.0	92.4	95.9	93.9
M	94.9	96.7	95.3	97.3	96.1
E	89.9	93.3	89.4	94.5	91.8
S1	90.7	94.5	91.3	95.4	93.0
S2	94.1	95.6	93.5	96.3	94.9
O	92.2	94.8	92.2	95.7	93.7
Ch	92.6	95.3	92.6	96.1	94.1
N1	91.0	94.3	91.3	95.4	93.0
N2	93.8	95.8	93.5	96.4	94.9
M S1	94.1	96.6	94.4	97.1	95.5
E S1	87.2	92.4	88.3	93.8	90.4
M S2	95.7	96.9	96.3	97.5	96.6
E S2	92.5	94.3	90.6	95.2	93.1
M O	94.6	96.7	95.1	97.5	96.0
E O	89.8	92.9	89.2	93.9	91.5
M Ch	95.2	96.8	95.5	97.1	96.2
E Ch	89.9	93.8	89.7	95.1	92.1
M N1	93.9	96.4	94.9	97.1	95.6
E N1	88.0	92.3	87.7	93.6	90.4
M N2	95.9	97.1	95.7	97.5	96.6
E N2	91.7	94.4	91.2	95.3	93.2

64/C/15.5

GRASS, DRY MATTER

	NO	N1	N2	N3	Mean
1ST CUT					
Mean	8.6	14.7	18.7	23.6	16.4
			(±0.98)		
O	8.6	16.6	20.3	24.8	17.6
C	8.5	12.7	17.0	22.5	15.2
			(±1.39)*		
F	10.1	18.0	22.6	28.2	19.7
T	7.0	11.3	14.8	19.1	13.0
			(±1.39)*		
	O	C			
F	20.7	18.7			
T	14.4	11.6			

Mean D.M. %: 18.9

2ND CUT

Mean	6.8	10.5	11.1	12.5	10.2
			(±0.66)		
O	4.5	5.8	7.7	6.7	6.1
C	9.1	15.2	14.6	18.3	14.3
			(±0.93)*		
F	8.7	13.0	16.0	17.3	13.7
T	5.0	7.9	6.3	7.6	6.7
			(±0.93)*		
	O	C			
F	10.1	17.4			
T	2.2	11.2			

Mean D.M.%: 29.7

\* For use in vertical and interaction comparisons

64/C/15.6

TOTAL OF 2 CUTS

	NO	N1	N2	N3	Mean
Mean	15.4	25.1 (±1.07)	29.8	36.1	26.6
O	13.2	22.4 (±1.51)*	28.0	31.4	23.7
C	17.6	27.9	31.6	40.8	29.5
F	18.8	31.0 (±1.51)*	38.6	45.5	33.5
T	11.9	19.2	21.0	26.7	19.7
	O	C			
F	30.8	36.1			
T	16.6	22.8			

Mean D.M. %: 24.3

\* For use in vertical and interaction comparisons