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Yields of the Field Experiments 1961

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61/W/B/6 Irrigation

Rothamsted Research

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61/B/6.1

IRRIGATION EXPERIMENT

The 11th year - revised 1960

The effects of irrigation and nitrogen - Woburn Butt Close 1961.

For details of previous cropping, treatments etc. see "Details of the Classical and Long Term Experiments" 1956.

Cut grass: The basal PK compound is now applied in winter. Applications of muriate of potash are now made in spring and after each cut except the last at the rates 0.3; 0.6 cwt K₂O per acre. Plots of the different treatments may be cut and manured independently if rates of growth vary.

(Applied to 1/2 plot)

Beans: Owing to weather conditions the third year crop in the rotation was spring, and not winter beans.

Area of each whole plot (acres): Spring beans: 0.0555.

Sub plots (acres): Grass: 0.0264; remainder: 0.0277.

Area harvested (acres): Early potatoes: 0.0171; barley: 0.0098; spring beans: 0.0181; Cut grass: 0.0165.

Rainfall and Irrigation: inches

Week ending	Rain-fall	Grass C	Barley G	Potatoes C	A	Beans B	C
May 1	0.36						
8	0.62						
15	-						
22	0.01	0.50	0.50	0.50	-	0.50	0.50
29	0.01	-	-	-	-	-	-
June 5	0.23	0.50	0.50	0.50	-	0.50	0.50
12	0.03	0.75	0.50	0.75	-	0.50	0.50
19	0.85	-	0.23	-	-	-	-
26	0.02	0.75	0.50	0.75	0.50	-	0.50
July 3	0.33	0.75	0.50	0.75	0.75	-	0.75
10	-	0.75	0.50	0.75	0.75	-	0.75
17	1.03	0.75	-	-	-	-	-
24	0.02	-	-	-	-	-	-
31	0.10	0.75	-	-	0.50	-	0.50
Aug 7	0.71	0.50	-	-	0.50	-	0.50
14	0.86						
21	0.21						
28	0.55						
Sept 4	0.32						
11	0.30						
Total	6.56	6.00	3.23	4.00	3.00	1.50	4.50

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Cultivations, etc.:

- Early potatoes: Ploughed twice: Sept 24, 1960 and Feb 14, 1961. Machine planted, fertilisers applied: Mar 17. Appropriate plots sprayed with simazine: Mar 31. Earthed up (except the simazine plots): May 23. Lifted: July 18. Simazine plots ploughed: July 19. Trefoil (inoculated seed) sown at 30 lb per acre: July 21. Variety: Arran Pilot.
- Barley: Ploughed: Feb 7, 1961. Fertilisers applied: Mar 7. Seed drilled at $2\frac{1}{4}$ bushels per acre: Mar 8. Sprayed with CMFP at 5 pints in 40 gallons per acre: May 10. Combine harvested: Aug 17. Variety: Proctor.
- Spring beans: Ploughed 3 times: Aug 16 and Sept 26, 1960; Jan 19, 1961. Seed placement drilled at 200 lb per acre with PK compound: Feb 22. Sprayed with demeton methyl at 12 fluid oz in 40 gallons per acre: May 29. Combine harvested: O and A - Aug 12, B and C - Aug 21. Variety: Tick
- Grass: PK compound applied: Nov 9, 1960. Muriate of potash and 'Nitro-Chalk' applied: Mar 21, 1961. Cut six times: Apr 18, May 15, June 15, July 14, Aug 14, Sept 11. Muriate of potash and 'Nitro-Chalk' applied to appropriate plots after each cut except the last. One application, however (immediately following the fourth cut), was to appropriate irrigated plots only. Variety: S22 Italian ryegrass.

Standard errors per plot.

- Early potatoes, total tubers
- | | |
|---------------------|---------------------------------------|
| Whole plot: | 1.338 tons per acre or 15.7% (4 d.f.) |
| $\frac{1}{2}$ plot: | 0.554 tons per acre or 6.5% (4 d.f.) |
| $\frac{1}{4}$ plot: | 1.012 tons per acre or 11.9% (8 d.f.) |
- Barley, (grain at 85% dry matter)
- | | |
|-------------|-------------------------------------|
| Whole plot: | 2.06 cwt per acre or 6.9% (5 d.f.) |
| Sub plot: | 2.16 cwt per acre or 7.3% (10 d.f.) |
- Spring beans, (grain at 85% dry matter)
- | | |
|-------------|------------------------------------|
| Whole plot: | 1.98 cwt per acre or 9.6% (6 d.f.) |
|-------------|------------------------------------|
- Cut grass, dry matter. Total of 6 cuts
- | | |
|-------------|------------------------------------|
| Whole plot: | 3.38 cwt per acre or 5.4% (6 d.f.) |
| Sub plot: | 4.60 cwt per acre or 7.4% (8 d.f.) |

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Summary of Results

Early potatoes, Total tubers: tons per acre

Weed control	Irrigation		Weed control Normal Simazine cultivation spray		Mean
	0	C			
	(±0.320) ⁽¹⁾	(±0.805) ⁽²⁾			
Normal cultivation	6.01	14.13			
Simazine spray	5.23	8.77			
N: cwt per acre including basal					
	(±0.413) ⁽³⁾	(±0.369) ⁽⁴⁾	(±0.413) ⁽³⁾	(±0.805) ⁽⁴⁾	
0.6	5.31	10.26	9.58	5.98	7.78
1.2	5.93	12.64	10.55	8.02	9.29
Mean	5.62	11.45	10.07	7.00	8.54
Difference	0.62 ^(±0.226)	2.38	0.97 ^(±0.773)	2.04	1.51
	(±0.584)		(±0.584)		(±0.413)

Barley, (Grain at 85% dry matter): cwt per acre

N: cwt per acre including basal	Irrigation		Mean
	0	C	
	(±0.88) ⁽³⁾	(±1.05) ⁽⁴⁾	
0.2	23.3	29.0	26.2
0.4	31.3	35.4	33.4
Mean	(±0.84)	27.3	32.2
Difference	(±1.25)	+8.0	+6.4
			(±1.76)

Mean dry matter % as harvested: 82.3

Spring beans, (Grain at 85% dry matter): cwt per acre

0	Irrigation			Mean
	A	B	C	
13.3	21.3	18.7	28.8	20.5
	(±1.14)			

Mean dry matter % as harvested: 77.9

- (1) For use in horizontal and interaction comparisons
- (2) For use in vertical and diagonal comparisons
- (3) For use in vertical and interaction comparisons
- (4) For use in horizontal and diagonal comparisons.

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Cut grass, Dry matter: cwt per acre

Total of 6 cuts

For each cut K ₂ O cwt per acre	N cwt per acre	Irrigation		Mean
		0	C	
		(±2.66) ⁽¹⁾	(±2.71) ⁽²⁾	
None	0.3	46.0	68.9	57.4
0.3	0.3	44.7	69.4	57.1
None	0.6	46.2	81.5	63.8
0.6	0.6	45.4	97.9	71.6
Mean (±1.38)		45.6	79.4	62.5

Mean dry matter % as cut: 22.9

- (1) For use in comparisons within the same irrigation or absence or presence of K.
- (2) For use in comparisons involving different irrigations or absence or presence of K.