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Yields of the Field Experiments 1958

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58/W/BG/1 Irrigation

Rothamsted Research

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58/Bg/1.1

IRRIGATION EXPERIMENT

Second year of revised scheme (the 8th year)

The effects of irrigation and nitrogen - Woburn Butt Close 1958.

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

Muriate of potash was applied to certain grass plots at 0.6 cwt K_2O per acre after the second cut and each subsequent cut except the last. This made possible a test of (0 v Irrigation) (0 v K) on the main grass plots.

Area of each sub-plot (acres): Cut grass, 0.0264; remainder, 0.0278.
 Area harvested (acres): Sugar beet, 0.0176; spring wheat, 0.0089;
 spring beans, 0.0082; cut grass, 0.0165.

Rainfall and Irrigation: inches

Week ending	Rain-fall	Cut grass B and C	Sugar beet			Wheat A and C	Beans C
			A	B	C		
May 5	.18	.75					
12	.14						
19	.81	.75					
26	.30		-	.50	.50	.50	.50
June 2	.77	.50				.50	.50
9	1.11						
16	1.05	.50					
23	.83						
30	1.97						
July 7	.84						
14	.11						
21	.01	.78	.75	-	.75	.50	
28	1.24	.50	.50	-	.50		
Aug 4	.23						
11	.32						
18	.83	.50					
25	.76						
Sept 1	.43						
8	.51						
15	.40						
22	.59						
29	.76						
Total	14.19	4.28	1.25	.50	1.75	1.50	1.00

- Note: (1) On grass 0 = A, B = C; on wheat 0 = B, A = C.
 (2) Owing to weather conditions the experimental insecticide spray treatment of beans was omitted.

58/Bg/1.2

Cultivations, etc.:

Sugar beet. Ploughed: Sept 2, Oct 9, 1957 and Mar 18, 1958.
 Ground chalk applied: Mar 6. Salt applied: Mar 17. 'Nitro-Chalk' applied: Apr 15. Seed drilled at 10 lb per acre:
 Apr 17. Basal fertilizer applied: Apr 18. Singled: May 27-28.
 Sprayed with miscible DDT at 3 pints in 40 gallons per acre:
 May 3. Sprayed with demeton methyl at 12 oz in 40 gallons per acre: June 26. Lifted: Oct 20-21. Variety: Klein E.
 Spring wheat. Ploughed: Dec 10-19, 1957. Fertilizers applied, seed drilled at 3 bushels per acre: Mar 25, 1958. Combine harvested: Sept 1. Variety: Peko.
 Spring beans. Ploughed: Sep 30, 1957 and Jan 14, 1958. Dung applied: Jan 14. Seed combine drilled at 200 lb per acre: Mar 25. Combine harvested: Oct 15.
 Variety: Garton's Spring Tick.
 Grass. Basal fertilizers applied: Dec 2, 1957. 'Nitro-Chalk' applied: Apr 14, 1958. Cut 8 times (all plots): May 14, June 3, June 24, July 15, Aug 6, Sept 5, Oct 8, Nov 14; 'Nitro-Chalk' applied after each cut, except the last. Muriate of potash applied after second and subsequent cuts except the last. Variety: Cocksfoot S37.

Standard errors per plot.

Sugar beet.	Total sugar, whole plot:	4.78 cwt per acre	or 10.5%
			(6 d.f.)
	sub plot:	5.05 cwt per acre	or 11.1%
			(8 d.f.)
Tops,	whole plot:	2.41 tons per acre	or 21.4%
			(6 d.f.)
	sub plot:	1.46 tons per acre	or 12.9%
			(8 d.f.)
Spring wheat.	Grain (at 85% D.M.),	Whole plot:	2.46 cwt per acre or 9.8%
			(8 d.f.)
		Sub plot:	1.81 cwt per acre or 7.2%
			(10 d.f.)
Spring beans.	Grain (at 85% D.M.),	Whole plot:	2.51 cwt per acre or 14.1%
			(8 d.f.)
		Sub plot:	1.54 cwt per acre or 8.6%
			(10 d.f.)
Cut grass.	Dry matter,	Whole plot:	1.40 cwt per acre or 7.3%
	Totals of		(8 d.f.)
	Cuts 1 & 2.	Sub plot:	1.02 cwt per acre or 5.3%
			(10 d.f.)
	Totals of	Whole plot:	3.87 cwt per acre or 6.2%
	Cuts 3-8.		(6 d.f.)
		Sub plot:	4.24 cwt per acre or 6.8%
			(8 d.f.)

58/Bg/1.3

Summary of Results

Sugar beet

N: cwt per acre	Irrigation				Mean
	0	A	B	C	
Roots (washed): tons per acre					
0.6	12.70	11.64	11.63	11.76	11.93
1.2	15.54	15.28	15.96	16.40	15.79
Mean	14.12	13.46	13.79	14.08	13.86
Difference	2.84	3.64	4.33	4.64	3.86
Sugar Percentage					
0.6	16.6	16.5	16.8	16.3	16.5
1.2	16.1	16.5	16.2	16.5	16.3
Mean	16.4	16.5	16.5	16.4	16.4
Difference	-0.5	0.0	-0.6	+0.2	-0.2
Total sugar: cwt per acre					
	(± 3.44) ^{SE}				
0.6	42.1	38.1	39.0	38.3	39.4
1.2	50.4	50.3	51.5	54.2	51.6
Mean (± 2.75)	46.2	44.2	45.2	46.2	45.4
Diff. (± 4.12)	8.3	12.2	12.5	15.9	12.2 (± 2.06)
Tops: tons per acre					
	(± 1.513) ^{SE}				
0.6	9.58	9.19	8.32	7.94	8.76
1.2	14.82	13.57	13.53	13.14	13.77
Mean (± 1.391)	12.20	11.38	10.92	10.54	11.26
Diff. (± 1.189)	5.24	4.38	5.21	5.20	5.01 (± 0.594)

* For use in horizontal and diagonal comparisons only.

58/Bg/1.4

Spring Wheat

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

N: cwt per acre	Irrigation		Mean
	O & B	A & C	
	$(\pm 1.13)^{\#}$		
0.4	24.3	23.0	23.6
0.8	27.6	25.4	26.5
Mean (± 1.00)	25.9	24.2	25.1
Diff. (± 1.42)	3.3	2.4	2.9 (± 0.74)

[#] For use in horizontal and diagonal comparisons only.

Mean dry matter % as harvested: 79.8

Spring Beans

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

Dung: tons per acre	Irrigation		Mean
	O	C	
	$(\pm 1.12)^{\#}$		
None	18.0	18.9	18.5
12	16.9	17.4	17.2
Mean (± 1.02)	17.5	18.2	17.8
Diff. (± 0.89)	-1.1	-1.5	-1.3 (± 0.63)

[#] For use in horizontal and diagonal comparisons only.

Mean dry matter % as harvested: 74.3

58/Bg/1.5

Cut Grass

Total of Cuts 1 & 2. Dry matter: cwt per acre

N: cwt per acre ⁺	Irrigation		Mean
	O & A	B & C	
	(±0.64)		
0.3	16.6	18.8	17.7
0.6	19.3	22.4	20.9
Mean (±0.57)	17.9	20.6	19.3
Diff. (±0.59)	2.7	3.6	3.2 (±0.42)

Mean dry matter % as cut: 21.3

Total of Cuts 3-8. Dry matter: cwt per acre

N: cwt per acre ⁺	Irrigation		K ₂ O: cwt per acre including basal		Mean
	O & A	B & C	1.2	4.8 ⁺⁺	
	(±2.00) [⊥]		(±2.00) [⊥]		
0.3	56.9	57.6	55.9	58.7	57.3
0.6	68.3	65.8	62.7	71.4	67.1
Mean	62.6	61.7	59.3	65.1	62.2
	(±1.58)		(±1.58)		
Difference	11.4	8.2	6.8	12.7	9.8 (±1.73)
	(±2.45)		(±2.45)		

K ₂ O: cwt per acre ⁺⁺ including basal	Irrigation		Mean
	O & A	B & C	
	(±2.23)		
1.2	60.5	58.0	59.3
4.8	64.7	65.5	65.1
Diff. (±3.16)	4.2	7.5	5.8

⊥ For use in horizontal and diagonal comparisons only.

⁺ For each cut⁺⁺ Total for 6 cuts

Mean dry matter % as cut: 17.7