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# Yields of the Field Experiments 1972

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## 72/R/RN/11 Irrigation - W. Wheat, Kale

### Rothamsted Research

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72/R/RN/11

IRRIGATION

Object: To study the effects of different timing and intensity of irrigation on a rotation of crops. Other agronomic factors are included from time to time - Great Field I and II.

Sponsors: B.J. Legg, J.V. Lake, B.K. French.

The ninth year, winter wheat, kale.

For previous years see 64/C/15(t), 65/C/14(t), 66/C/9(t), 67/C/7(t), 68/C/6(t), 69/R/RN/11(t), 70/R/RN/11(t) and 71/R/RN/11(t).

Design (each crop): 4 randomised blocks of 4 plots, split into half and quarter plots.

Whole plot dimensions:

Winter wheat: 30.4 x 13.1. Sub plot area harvested: 0.00347.

Kale: 15.2 x 32.0. Sub plot area harvested: 0.00098.

Treatments:

Winter wheat: All combinations of:-

- Whole plots: 1. Irrigation (I): None (O), full irrigation (I).  
2. Row spacing and seed rate (RS): Rows 17.8 cm (7 inches) apart, 224 kg seed (C), rows 35.6 cm (14 inches) apart, 56 kg seed (W).

- Half plots: 3. Sowing date (SD): 6 Oct, 1971 (E), 17 Mar, 1972 (L).  
Quarter plots: 4. Nitrogen: 45, 90 kg N as 'Nitro-Chalk'.

Kale: All combinations of:-

- Whole plots: 1. Irrigation (I): None (O), full irrigation (I).  
2. Row spacing and seed rate (RS): Rows 53.3 cm (21 inches) apart, 1.68 kg seed (C), rows 106.7 cm (42 inches) apart, 0.42 kg seed (W).

- Half plots: 3. Sowing date (SD): 18 Apr, 1972 (E), 30 May, 1972 (L).  
Quarter plots: 4. Fertiliser (F) (alternating with 1971 rates to potatoes): 753, 1130 kg (20:15:15).

Standard applications:

Winter wheat: 282 kg (0:20:20) combine drilled. Weedkiller:

Autumn sown wheat (E): MCPA, mecoprop and dicamba ('Tetralex Plus' at 7 l in 220 l). Spring sown wheat (L): Ioxynil, bromoxynil, dichlorprop and MCPA ('Tetroxone' at 5.6 l in 220 l).

Kale: Manures: None.

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Seed: Winter wheat: Maris Ranger.

Kale: Maris Kestrel, graded and dressed with gamma BHC and captan.

Cultivations, etc.:

Winter wheat: Ploughed: 23 Sept, 1971. Seed combine drilled (E):

6 Oct. N applied to L plots, seed combine drilled (L):

17 Mar, 1972. Weedkiller applied (E): 17 Apr. N applied to

E plots: 20 Apr. Weedkiller applied (L): 8 May. Combine

harvested (E): 5 Sept. Combine harvested (L): 7 Sept.

Kale: Deep-tine cultivated twice: 12 Nov and 10 Dec, 1971. NPK

fertiliser applied (E): 6 Apr, 1972. Seed drilled (E):

18 Apr. NPK applied (L): 19 May. Seed drilled (L):

30 May. Cut: 21 Nov.

Standard errors per plot.

Wheat, grain, tonnes/hectare:

Whole plot: 0.389 or 7.0% (9 d.f.)

1/2 plot: 0.369 or 6.6% (12 d.f.)

1/4 plot: 0.628 or 11.3% (24 d.f.)

Kale, fresh weight: tonnes/hectare:

Whole plot: 5.62 or 7.0% (9 d.f.)

1/2 plot: 4.66 or 5.8% (12 d.f.)

1/4 plot: 5.95 or 7.5% (24 d.f.)

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RAINFALL AND IRRIGATION: MM

Week- ending	Rainfall	IRRIGATION	
		WHEAT (Winter and Spring)	KALE (Early and Late)
May 6	11.0		
May 13	11.1		
May 20	6.3		
May 27	14.1		
June 3	4.5	25.0	
June 10	11.5		
June 17	5.2	15.0	
June 24	13.8		
July 1	3.2	25.0	
July 8	12.7		
July 15	0.0		
July 22	4.7	25.0	25.0
July 29	0.6	25.0	25.0
Aug 5	29.0		
Aug 12	18.1		
Aug 19	TR		
Aug 26	0.0		25.0
Sept 2	0.0		
Sept 9	16.2		
Sept 16	6.9		
Sept 23	8.1		
Sept 30	TR		
Total	177.0	115.0	75.0

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TABLES OF MEANS

WHEAT

GRAIN: TONNES/HECTARE

	RS		SD		N: KG/HA		Mean
	C	W	E	L	45	90	
I							
O	6.39	5.38	6.34	5.43	5.87	5.89	5.88
I	5.83	4.69	5.56	4.97	5.20	5.32	5.26
		RS					
		C	6.45	5.78	5.93	6.30	6.11
		W	5.44	4.62	5.15	4.91	5.03
				SD			
				E	5.92	5.97	5.95
				L	5.16	5.24	5.20
Mean					5.54	5.61	5.57

STANDARD ERRORS OF DIFFERENCES

I	RS	SD	N	I	I	RS	I	RS	SD
				RS	SD	SD	N	N	N
0.194	0.194	0.130	0.157	0.275	0.234	0.234	0.250	0.250	0.204
Unless same levels of									
I					0.184		0.222		
RS						0.184		0.222	
SD									0.222

Mean D.M. %: 82.9

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WHEAT

STRAW: TONNES/HECTARE

	RS		SD		N: KG/HA		Mean
	C	W	E	L	45	90	
I							
O	5.83	4.99	6.04	4.78	5.24	5.58	5.41
I	5.92	5.71	6.36	5.27	5.58	6.05	5.81
		RS					
		C	6.67	5.73	5.73	6.03	5.88
		W	5.08	4.97	5.09	5.61	5.35
				SD			
				E	5.90	6.50	5.41
				L	4.92	5.13	5.82
Mean					6.20	5.02	5.61

Mean D.M. %: 74.0

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KALE

FRESH WEIGHT: TONNES/HECTARE

	RS		SD		F: KG/HA		Mean
	C	W	E	L	753	1130	
I							
O	82.1	79.0	81.0	80.1	80.5	80.6	80.5
I	81.3	77.0	79.4	78.9	79.6	78.7	79.2
		RS					
		C	82.0	81.4	81.0	82.4	81.7
		W	78.4	77.5	79.1	76.9	78.0
				SD			
				E	80.7	79.7	80.2
				L	79.4	79.6	79.5
Mean					80.1	79.7	79.9

STANDARD ERRORS OF DIFFERENCES

I	RS	SD	F	I	I	RS	I	RS	SD
				RS	SD	SD	F	F	F
2.81	2.81	1.65	1.49	3.97	3.26	3.26	3.18	3.18	2.22
Unless same levels of									
I					2.33		2.10		
RS						2.33	2.10		
SD								2.10	