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73/R&W/CS/93 - Rates of NPK Fertiliser - Wheat

Rothamsted Research

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73/R/CS/93 and 73/W/CS/93

RATES OF NPK FERTILISER

Object: To study the residual effects of a range of rates of compound NPK fertiliser applied to potatoes on the yield of winter wheat - Rothamsted (R) Delafield and Woburn (W) Great Hill III.

Sponsor: F.V. Widdowson.

The second year, winter wheat.

For previous year see 72/R&W/CS/93(t).

Design: 4 blocks of 8 plots, split into 2.

Whole plot dimensions: Delafield (R): 4.27 x 16.1. Great Hill III (W): 4.27 x 21.0. Area harvested: Delafield (R): 0.00217. Great Hill III (W): 0.00286.

Treatments: All combinations of:-

Whole plots: 1. Compound fertiliser (13:13:20) to potatoes in 1972 (kg):		FERT 72
	1260	1260
	1880	1880
	2510	2510
	3140	3140
2. Spacing of potatoes within the row in 1972 (cm):		SPACING
	30	30
	45	45
Sub plots: 3. Variety of potatoes in 1972:		VARIETY
Delafield (R) Great Hill III (W)		
King Edward Pentland Crown		Edward Crown
Pentland Crown Record		Crown Record
4. Nitrogen fertiliser to wheat in 1973 (kg N):		N 73
Delafield (R) Great Hill III (W)		
37.5	63	37.5 63
75.0	126	75.0 126

73/R/CS/93 and 73/W/CS/93

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Basic applications:

Delafield (R): Weedkiller: Dicamba, mecoprop and MCPA ('Tetralex Plus' at 7.0 l in 220 l).

Great Hill III (W): Weedkiller: Ioxynil at 0.63 kg plus mecoprop at 1.9 kg in 280 l.

Seed: Delafield (R): Cappelle, sown at 200 kg.

Great Hill III (W): Cappelle, sown at 190 kg.

Cultivations, etc.:-

Delafield (R): Deep-tine cultivated twice: 23 Oct, 1972. Power harrowed: 25 Oct. Seed sown: 27 Oct. N applied: 13 Apr, 1973. Weedkiller applied: 18 Apr. Combine harvested: 23 Aug.

Great Hill III (W): Deep-tine cultivated: 23 Oct, 1972. Seed sown: 25 Oct. N applied: 18 Apr, 1973. Weedkiller applied: 26 Apr. Combine harvested: 23 Aug.

Standard errors per plot. Grain, tonnes/hectare.

Delafield (R):	Whole plot: 0.525 or 8.3% (14 d.f.)
	Sub plot: 0.663 or 10.4% (16 d.f.)
Great Hill III (W):	Whole plot: 0.763 or 15.1% (14 d.f.)
	Sub plot: 0.682 or 13.5% (16 d.f.)

73/R/CS/93 and 73/W/CS/93

TABLES OF MEANS

GRAIN: TONNES/HECTARE

DELAFIELD (R)

	SPACING		VARIETY		N 73		Mean
	30	45	Edward	Crown	37.5	75.0	
FERT 72							
1260	6.93	7.21	7.03	7.11	7.10	7.04	7.07
1880	6.83	6.82	6.79	6.86	6.98	6.67	6.83
2510	6.24	5.95	6.25	5.94	6.33	5.86	6.10
3140	5.68	5.19	5.96	4.91	5.72	5.15	5.44
	SPACING						
		30	6.69	6.15	6.70	6.14	6.42
		45	6.32	6.26	6.36	6.22	6.29
			VARIETY				
			Edward		6.76	6.26	6.51
			Crown		6.31	6.10	6.21
Mean					6.53	6.18	6.36

STANDARD ERRORS OF DIFFERENCES

FERT 72	SPACING	VARIETY	N 73	FERT 72	FERT 72	FERT 72	SPACING	SPACING	VARIETY
				SPACING	VARIETY	N 73	VARIETY	N 73	N 73
0.263	0.186	0.166	0.166	0.371	0.352	0.352	0.249	0.249	0.235
Except when comparing means with same level of									
FERT 72				0.332	0.332				
SPACING							0.235	0.235	
VARIETY									0.249
N 73									0.249

Mean D.M. % 85.0

73/R/CS/93 and 73/W/CS/93

GRAIN: TONNES/HECTARE

GREAT HILL III (W)

	SPACING		VARIETY		N 73		Mean
	30	45	Crown	Record	63	126	
FERT 72							
1260	5.45	5.70	5.56	5.58	5.52	5.63	5.57
1880	5.15	4.78	5.29	4.65	5.11	4.82	4.97
2510	5.08	5.08	5.29	4.87	5.10	5.06	5.08
3140	4.39	4.74	4.70	4.43	4.74	4.39	4.57
	SPACING						
		30	5.24	4.80	5.05	4.98	5.02
		45	5.19	4.97	5.19	4.97	5.08
			VARIETY				
			Crown		5.29	5.13	5.21
			Record		4.95	4.82	4.88
Mean					5.12	4.98	5.05

STANDARD ERRORS OF DIFFERENCES

FERT 72	SPACING	VARIETY	N 73	FERT 72	FERT 72	FERT 72	SPACING	SPACING	VARIETY
				SPACING	VARIETY	N 73	VARIETY	N 73	N 73
0.381	0.270	0.170	0.170	0.539	0.451	0.451	0.319	0.319	0.241
Except when comparing means with same level of									
	FERT 72			0.341	0.341				
	SPACING						0.241	0.241	
	VARIETY								0.319
	N 73								0.319

Mean D.M. % 87.0