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Yields of the Field Experiments 1948

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48/CA/1 Wheat - Eyespot

Rothamsted Research

Rothamsted Research (1949) *48/CA/1 Wheat - Eyespot* ; Yields Of The Field Experiments 1948, pp 58 - 61

48/Ca/1.1

WHEAT

Control of "Eyespot"

The effects of sulphate of ammonia, of rate and depth of sowing and of spraying, on the sixth successive Wheat crop.

RW - Little Knott 1948

System of replication: 3 x 3 x 3 design in 6 blocks of 9 plots each, certain three-factor interactions and the effect of spraying being confounded with block differences.

Area of each plot 0.0151 acre.

Treatments:

Sulphate of ammonia: None, 0.4, 0.8 cwt N per acre applied as a top-dressing in March (N_0, N_1, N_2).
 Depth of sowing: Shallow ($\frac{1}{2}$ " $^0, 1, 2$), normal ($1\frac{1}{2}$ " 1), deep (3" 2) (D_0, D_1, D_2).
 Rate of sowing: $1\frac{1}{2}, 2\frac{1}{2}$ or $3\frac{1}{2}$ bushels per acre (R_0, R_1, R_2).
 Spraying: 3 Blocks sprayed with sulphuric acid ($12\frac{1}{2}\%$ by volume B.O.V. at 100 gallons per acre) before germination and again in spring.

Basal Manuring: 3 cwt per acre superphosphate and 1 cwt per acre muriate of potash drilled across the plots.

Cultivations etc:

Ploughed: Sept 8 - 13. Basal Manures applied: Oct 8. Cultivated: Oct 17. Ring-rolled: Oct 18. Springtined, rolled and springtined and ring-rolled: Oct 21. Seed drilled: Oct 22. Harrowed in: Oct 23. Sprayed with B.O.V.: Nov 1 and again Mar 8. Sulphate of Ammonia applied: Mar 15. Ring-rolled: Apr 28. Sprayed against weeds: May 14. Hand pulled rye: May 21. Hand pulled wild oats and other weeds: June 15 - 16. Hand pulled wild oats: various days: June 20 - 30. Harvested: Aug 21. Variety: Squareheads Master ($13/4$).
 Previous crop: Wheat.

Standard errors per plot:

Grain: 2.02 cwt per acre or 10.4%	(24 d.f.)
Straw: 5.19 cwt per acre or 7.9%	(24 d.f.)
% Eyespot, (transformed values).	
Sprayed blocks - 2.57	6 d.f.)
Unsprayed - 6.48	6 d.f.)
% Take All (transformed values) - 8.68	24 d.f.)

Note: The analysis of diseased wheat has been carried out on percentages transformed to degrees and all tests of significance should be applied to the transformed values.

Grain: cwt per acre (± 1.17 Means ± 0.67) 48/Ca/1.2

Unsprayed				Sprayed				Effect of Spraying (± 0.95)(1)	
R ₀	R ₁	R ₂	Mean	R ₀	R ₁	R ₂	Mean		
D ₀	15.0	17.8	16.0	16.3	25.8	22.9	23.4	24.0	7.7
D ₁	16.4	15.6	13.5	15.2	23.5	21.2	22.6	22.4	7.2
D ₂	17.2	17.2	12.9	15.8	24.9	22.8	20.9	20.9	7.1
	N ₀	N ₁	N ₂		N ₀	N ₁	N ₂		
D ₀	17.0	14.2	17.7		20.4	25.6	26.1		
D ₁	14.4	15.8	15.4		17.0	23.7	26.7		
D ₂	15.2	15.7	16.5		15.7	25.1	27.9		
R ₀	17.7	13.6	17.3	16.2	18.9	26.2	29.1	24.7	8.5
R ₁	17.0	16.1	17.6	16.9	19.1	23.5	24.3	22.3	5.4
R ₂	11.7	16.1	14.7	14.2	15.0	24.7	27.2	22.3	8.1
Mean	15.5	15.2	16.5	15.8	17.7	24.8	26.9	23.1	
Effect of spraying (± 0.95)(1)					2.2	9.6	10.4		

Straw: cwt per acre (± 3.13 Means ± 1.81)

Unsprayed				Sprayed				Effect of Spraying (± 2.45)(1)	
R ₀	R ₁	R ₂	Mean	R ₀	R ₁	R ₂	Mean		
D ₀	55.3	62.6	55.4	57.7	81.1	74.9	78.2	78.1	20.4
D ₁	59.3	58.3	52.1	56.6	75.0	69.9	72.7	72.5	15.9
D ₂	56.5	63.7	48.6	56.3	76.2	72.2	70.0	72.8	16.5
	N ₀	N ₁	N ₂		N ₀	N ₁	N ₂		
D ₀	55.4	54.6	63.3		71.0	80.3	83.0		
D ₁	49.4	56.8	63.5		57.8	74.5	85.3		
D ₂	51.9	55.8	61.1		54.5	78.5	85.4		
R ₀	56.7	51.7	62.7	57.0	64.3	79.2	88.8	77.4	20.4
R ₁	57.0	59.3	68.3	61.5	61.1	76.2	79.7	72.3	10.8
R ₂	42.9	56.2	56.9	52.0	57.9	77.9	85.1	73.6	21.6
Mean	52.2	55.7	62.6	56.9	61.1	77.8	84.5	74.5	
Effect of spraying (± 2.45)(1)					8.9	22.1	21.9		

(1) Standard error for comparison between main effects only.

Percentage Straws showing Severe Eyespot at Harvest
(means from transformed values)

48/0a/1.0

	Unsprayed				Sprayed				Effect of Spraying
	R ₀	R ₁	R ₂	Mean	R ₀	R ₁	R ₂	Mean	
D ₀	51.6	57.5	42.5	50.5	10.3	15.0	9.7	11.4	-39.1
D ₁	62.3	38.6	66.5	56.0	11.4	12.1	11.3	11.7	-44.3
D ₂	35.3	58.0	52.2	48.4	10.9	15.0	9.1	12.2	-36.2
	N ₀	N ₁	N ₂		N ₀	N ₁	N ₂		
D ₀	37.2	62.8	51.8		12.3	12.8	9.7		
D ₁	35.7	58.8	72.3		6.4	13.3	16.2		
D ₂	37.5	55.4	52.8		10.3	16.1	10.7		
R ₀	41.3	56.0	51.8	49.7	9.1	13.8	11.8	11.4	-38.3
R ₁	36.8	52.8	64.3	51.4	14.4	14.8	13.0	14.0	-37.4
R ₂	32.3	68.0	61.0	53.8	5.8	13.7	11.4	10.1	-43.7
Mean	36.8	59.0	59.0	51.6	9.4	14.0	12.1	11.8	
	Effect of Spraying				-27.4	-45.0	-46.9		

(Transformed values)

	Unsprayed (± 3.74 Means ± 2.16)				Sprayed (± 1.48 Means ± 0.86)				Effect of Spraying (± 2.32) ⁽¹⁾
	R ₀	R ₁	R ₂	Mean	R ₀	R ₁	R ₂	Mean	
D ₀	45.9	49.3	40.7	45.3	18.7	22.8	18.1	19.8	-25.5
D ₁	52.1	38.4	54.6	48.4	19.8	20.4	19.7	20.0	-28.4
D ₂	36.5	49.6	46.2	44.1	21.0	22.8	17.6	20.5	-23.6
	N ₀	N ₁	N ₂		N ₀	N ₁	N ₂		
D ₀	37.6	52.4	46.0		20.5	20.9	18.1		
D ₁	36.7	50.1	58.3		14.6	21.4	23.8		
D ₂	37.8	48.1	46.5		18.7	23.7	19.1		
R ₀	40.0	48.4	46.0	44.8	17.6	21.8	20.1	19.8	-25.0
R ₁	37.4	46.6	53.3	45.8	22.3	22.6	21.1	22.0	-23.8
R ₂	34.6	55.6	51.4	47.2	13.9	21.7	19.8	18.5	-28.7
Mean	37.4	50.2	50.2	45.9	17.9	22.0	20.4	20.1	
	Effect of Spraying (± 2.32) ⁽¹⁾				-19.5	-28.2	-29.8		

(1) Standard error for comparison between main effects only.

Percentage Straws showing "take-all" at Harvest 48/Ca/1.4
(means from transformed values)

Unsprayed					Sprayed				Effect of Spraying
	R ₀	R ₁	R ₂	Mean	R ₀	R ₁	R ₂	Mean	
D ₀	17.9	23.3	19.8	20.3	28.9	28.1	27.0	28.0	7.7
D ₁	6.6	23.3	30.8	19.0	29.8	18.7	36.3	28.0	9.0
D ₂	14.5	20.6	16.6	17.1	20.6	34.7	41.3	32.0	14.9
	N ₀	N ₁	N ₂		N ₀	N ₁	N ₂		
D ₀	35.5	17.1	10.8		37.5	26.5	20.6		
D ₁	37.3	9.0	14.4		50.2	19.1	17.6		
D ₂	39.2	15.0	4.4		42.2	37.7	17.4		
R ₀	23.2	20.4	1.3	12.5	41.2	24.0	15.8	26.3	13.8
R ₁	34.2	17.0	17.4	22.4	30.2	27.2	23.5	26.8	4.4
R ₂	55.8	5.5	14.4	22.0	59.0	31.5	16.6	34.7	12.7
Mean	37.3	13.6	9.3	18.9	43.2	27.5	18.6	29.2	
Effect of Spraying					5.9	13.9	9.3		

(Transformed values)
(± 5.01 Means ± 2.89)

Unsprayed					Sprayed				Effect of Spraying (± 4.09) ⁽¹⁾
	R ₀	R ₁	R ₂	Mean	R ₀	R ₁	R ₂	Mean	
D ₀	25.0	28.9	26.4	26.3	32.5	32.0	31.3	31.9	5.1
D ₁	14.9	28.9	33.7	25.8	33.1	25.6	37.1	31.9	6.1
D ₂	22.4	27.0	24.1	24.5	27.0	36.1	40.0	34.4	9.9
	N ₀	N ₁	N ₂		N ₀	N ₁	N ₂		
D ₀	36.6	24.5	19.2		37.8	31.0	27.0		
D ₁	37.7	17.5	22.3		45.1	25.9	24.8		
D ₂	38.7	22.8	12.0		40.5	37.9	24.7		
R ₀	28.8	26.9	6.5	20.7	39.9	29.3	23.4	30.9	10.2
R ₁	35.8	24.4	24.7	28.3	33.3	31.4	29.0	31.2	2.9
R ₂	48.3	13.5	22.3	28.0	50.2	34.1	24.1	36.1	8.1
Mean	37.7	21.6	17.8	25.7	41.1	31.6	25.5	32.7	
Effect of Spraying					3.4	10.0	7.7		

(1) Standard error for comparison between main effects only.