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77/R/WS/2 Irrigation, Lodging, N, Ccc and Microflora - S. Wheat

Rothamsted Research

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77/R/WS/2

SPRING WHEAT

IRRIGATION, LODGING, N, CCC AND MICROFLORA

Object: To study the effects of irrigation, artificial lodging, nitrogen fertiliser and a growth regulator on grain microflora and yield - Long Hoos V 2.

Sponsor: R.A. Hill.

Design: 2 randomised blocks of 2 plots split into 8.

Whole plot dimensions: 9.75 x 17.4.

Treatments: All combinations of:-

Whole plots

- | | |
|------------|--------------|
| 1. IRRIGTN | Irrigation: |
| NONE | None |
| FULL | Full (75 mm) |

Sub plots

- | | |
|------|-----------------------------|
| 2. N | Nitrogen fertiliser (kg N): |
| 25 | |
| 100 | |

- | | |
|------------|----------------------------|
| 3. LODGING | Lodging: |
| NONE | None, supported by netting |
| LODGED | Lodged, under netting |

- | | |
|-------------|---|
| 4. GRWTHREG | Growth regulator: |
| NONE | None |
| CHLORMEQ | Chlormequat (CCC) at 1.1 kg in 340 l on 19 June, 1977 |

NOTES: (1) N applied on 9 May.

(2) Irrigation was applied at 5 mm on each dry day during the season, divided equally between morning and afternoon.

Basal applications: Manures: (0:14:28) at 940 kg. Weedkillers: Dicamba with mecoprop and MCPA ('Tetralix Plus' at 5.6 l in 340 l).

Seed: Sappo, sown at 180 kg.

Cultivations, etc.: Deep-tine cultivated: 13 Sept, 1976. PK applied: 8 Nov. Ploughed: 9 Nov to 14 Dec. Power harrowed and seed sown: 14 Apr, 1977. Weedkillers applied: 1 June. Combine harvested: 27 Sept. Previous crops: Lupins 1975, spring oats 1976.

NOTE: Grain microflora were assessed during the season and at harvest. Grain was assessed for mycotoxins before and after harvest and after storage.

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GRAIN TONNES/HECTARE

***** TABLES OF MEANS *****

N	25	100	MEAN	
IRRIGTN				
NONE	2.43	2.64	2.54	
FULL	2.43	2.38	2.40	
MEAN	2.43	2.51	2.47	
LODGING	NONE	LODGED	MEAN	
IRRIGTN				
NONE	3.77	1.30	2.54	
FULL	3.72	1.09	2.40	
MEAN	3.74	1.20	2.47	
LODGING	NONE	LODGED	MEAN	
N				
25	3.58	1.29	2.43	
100	3.91	1.11	2.51	
MEAN	3.74	1.20	2.47	
GRWTHREG	NONE	CHLORMEQ	MEAN	
IRRIGTN				
NONE	2.38	2.69	2.54	
FULL	2.31	2.50	2.40	
MEAN	2.35	2.60	2.47	
GRWTHREG	NONE	CHLORMEQ	MEAN	
N				
25	2.35	2.51	2.43	
100	2.34	2.68	2.51	
MEAN	2.35	2.60	2.47	
GRWTHREG	NONE	CHLORMEQ	MEAN	
LODGING				
NONE	3.60	3.89	3.74	
LODGED	1.09	1.30	1.20	
MEAN	2.35	2.60	2.47	
N	25	100		
LODGING	NONE	LODGED	NONE	LODGED
IRRIGTN				
NONE	3.51	1.36	4.03	1.25
FULL	3.64	1.22	3.79	0.96
N	25	100		
GRWTHREG	NONE	CHLORMEQ	NONE	CHLORMEQ
IRRIGTN				
NONE	2.30	2.56	2.46	2.83
FULL	2.41	2.45	2.22	2.54

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GRAIN TONNES/HECTARE

***** TABLES OF MEANS *****

LODGING	NONE		LODGED	
GRWTHREG	NONE	CHLORMEQ	NONE	CHLORMEQ
IRRIGTN				
NONE	3.56	3.99	1.20	1.40
FULL	3.65	3.79	0.97	1.21

LODGING	NONE		LODGED	
GRWTHREG	NONE	CHLORMEQ	NONE	CHLORMEQ
N				
25	3.53	3.62	1.18	1.39
100	3.68	4.15	0.99	1.22

	LODGING	NONE		LODGED	
	GRWTHREG	NONE	CHLORMEQ	NONE	CHLORMEQ
IRRIGTN	N				
NONE	25	3.35	3.67	1.25	1.46
	100	3.76	4.30	1.15	1.35
FULL	25	3.70	3.58	1.11	1.33
	100	3.59	3.99	0.84	1.08

***** STANDARD ERRORS OF DIFFERENCES OF MEANS *****

TABLE	N	LODGING	GRWTHREG	IRRIGTN*
				N

SED	0.065	0.065	0.065	0.092
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TABLE	IRRIGTN*	N	IRRIGTN*	N
	LODGING	LODGING	GRWTHREG	GRWTHREG

SED	0.092	0.092	0.092	0.092
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TABLE	LODGING	IRRIGTN*	IRRIGTN*	IRRIGTN*
	GRWTHREG	N	N	LODGING
		LODGING	GRWTHREG	GRWTHREG

SED	0.092	0.129	0.129	0.129
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TABLE	N	IRRIGTN*
	LODGING	N
	GRWTHREG	LODGING
		GRWTHREG

SED	0.129	0.183
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* WITHIN THE SAME LEVEL OF IRRIGTN ONLY

***** STRATUM STANDARD ERRORS AND COEFFICIENTS OF VARIATION *****

BLOCK.WP.SP	14	0.183	7.4
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GRAIN MEAN DM% 76.0

SUB PLOT AREA HARVESTED 0.00087