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Net blotch field infection studies

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DEPARTMENT OF AGRICULTURE

Western Australia

EXPERIMENTAL SUMMARY 1977



Net Blotch Field Infection Studies

T.N. Khan
Plant Pathology Branch
Plant Research Division

1977 EXPERIMENTAL SUMMARY

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NET BLOTCH FIELD INFECTION STUDIES

Object: To study (i) the possibility of field inoculation in developing net blotch epidemic, and (ii) the varietal differences in disease development amongst commercial cultivars.

Experimental: 2 x 2 x 2 factorial arrangement in split plot design with three replications at Avondale Research Station (77A29) and Newdegate Research Station (77N20). Treatments: Benlate spraying vs. no spraying (main plots), natural infection vs. field inoculation with conidial suspension (sub plots), and 5 varieties (sub sub plots) including a 1:1 mixture of varieties Beecher and Dampier. The benlate spray is known to have no effect of net blotch and it was applied mainly to check the growth of scald and powdery mildew.

Results: Table 1: Development of net blotch. Incidence scored on plot basis on a scale 0-5 with 5 indicating most severe infection.

TABLE 1

Treatment	AVONDALE			NEWDEGATE		
	4 August	17 August	9 Sept.	4 July	9 August	31 August
No Benlate	1.100	1.800	1.625	0.442	0.267	0.617
Benlate	1.367	1.900	2.475	0.725	1.500	2.617
MEAN	1.233	1.850	2.050	0.583	0.883	1.617

TABLE 2: Final assessment of percentage leaf area covered by the net blotch symptoms. (mean of Flag, Second and Third Leaves)

Variety	AVONDALE					NEWDEGATE				
	NATURAL INFECTION		FIELD INOCULATION		Mean	NATURAL INFECTION		FIELD INOCULATION		Mean
	No Benlate	Benlate	No Benlate	Benlate		No Benlate	Benlate	No Benlate	Benlate	
Beecher(BE)	1.39	0.72	2.50	1.67	1.57a*	0.556	1.778	0.444	1.556	1.083 b
Glipper(CL)	3.50	0.61	0.11	0.11	1.08a	0.000	0.000	0.111	0.111	0.056 a
Dampier(DA)	15.50	15.61	15.44	11.33	14.47c	0.042	1.056	0.111	0.222	0.337 a
Atlas (AT)	0.28	1.00	1.50	2.22	1.25a	0.000	1.889	0.194	2.889	1.243 b
Mixture (Mix)	3.11	5.31	6.89	4.72	5.01b	0.111	1.389	0.111	1.333	0.736 ab
X NO BENLATE Vs Benlate	5.02a	4.33a			4.68	0.160a	1.222b			0.691
X NATURAL Vs INOC.	4.70a		4.65a			0.674a		0.708a		

* Means with the same letter are not significantly different at 0.05P.

TABLE 3 Control of scald and powdery mildew through Benlate sprayings. Figures show mean of percentage leaf area infected.

	AVONDALE		NEWDEGATE	
	No Benlate	Benlate	No Benlate	Benlate
Scald	0.712	0.029	21.70	1.40*
Powdery mildew	2.400	1.790	2.77	2.87

* Significantly different at 0.05P.

TABLE 4 Mean percentage of leaf area covered by different diseases on various varieties.

Varieties	AVONDALE			NEWDEGATE		
	Net Blotch	Scald	Powdery Mildew	Net Blotch	Scald	Powdery Mildew
Beecher (BE)	1.57a*	0.022 a	2.89 b	1.083 b	7.50 b	3.86 b
Clipper (CL)	1.08 a	0.783 a	0.24 a	0.056 a	13.35d	0.22 a
Dampier (DA)	14.47 c	0.476 a	0.22 a	0.337 a	21.96e	2.86 b
Atlas (AT)	1.25 a	0.011 a	5.21 c	1.243 b	2.97a	4.03 b
Mixture (BE+DA)	5.01 b	0.569 a	1.91 ab	0.736 ab	11.97c	3.12 b

* Means with the same letters within a column are not significantly different.

Comments:

1. Net blotch infection was much more severe at Avondale. This was also reflected in the development of epidemic.
2. There appears to be no effect of spraying with conidial suspension on overall infection. The failure of inoculation may have been due to adverse environmental conditions following the application of conidia.
3. At Newdegate, Benlate spraying was significantly effective in enhancing the net blotch infection. This may be due to the high level of infection of scald at Newdegate where benlate treatments successfully controlled scald.

4. Dampier was the most severely affected variety in Avondale where as at Newdegate Beecher and Atlas were the most susceptible. This indicates a difference in the pathogenicity.
5. Not significant effect of Benlate spraying on powdery mildew may be due to the low levels of infection at both the locations.
6. Clipper continues to show high degree of resistance to net blotch and a measure of tolerance to powdery mildew.
7. Mixture of Beecher and Dampier showed intermediate level of infection. This may be related to the possible differences in the genetic basis of resistance of the two varieties.