

## Screening for Muskmelon Resistance to a Pathogenic Strain of Myrothecium roridum Using Detached Leaves

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Introduction: Myrothecium roridum Tode ex Fries can be a serious pathogen to muskmelon (Cucumis melo L.) (1,3). Genetic resistance to M. roridum can be assessed using seed germination and seedling growth tests (2); however, these tests are labor intensive and are influenced by seed quality. The purpose of the current study was to determine whether inoculation of leaves detached from field and greenhouse plants could be used as a screening procedure for determining resistance.

Materials and Methods: Twelve muskmelon genotypes (Table 1) were grown in the greenhouse and in the field. Leaves approximately 9 cm in diameter were excised at either the third or fourth node on lateral branches of mature plants and placed in 9 cm petri dishes lined with filter paper moistened with 2 ml distilled water prior to inoculation.

A spore suspension ( $10^6$  spores/ml) was prepared of a pathogenic strain of Myrothecium roridum (ATCC#52485). Droplets (25  $\mu$ l) of the spore suspension were applied to 2 interveinal areas on detached leaves and covered with moistened filter paper discs (12 mm) for 24 hr. Controls were treated with sterile distilled water. Detached leaves were incubated under normal laboratory conditions for a total of 7 days, then measured for diameter of necrosis plus associated chlorosis at each inoculated site. A lesion index was calculated by dividing lesion diameter by 12 mm. Lesion sporulation was measured by excising diseased leaf tissue, mincing it in a vial containing 2 ml sterile water, and counting spores in the resultant solution with a hemacytometer. There were 4 replications per experiment and each experiment was repeated.

Results and Discussion: In all inoculated leaves, a susceptible reaction was characterized by necrotic lesions surrounded by chlorotic areas at the point of inoculation. There were significant differences among genotypes for lesion size and sporulation for both greenhouse and field grown leaves (Table 1). Controls for each genotype did not exhibit chlorosis or necrosis (data not shown).

In general, genotype rankings from inoculated greenhouse material were similar to those from field material, indicating the consistency of the detached leaf assay. Four of the genotypes ('Amarelo', 'Hale's Best', 'Iroquois' and 'PMR 45') were also used in the seed germination and seedling growth study (2) and exhibited the same relative performance. As the detached leaf test is less labor intensive and allows for easier quantification of results, we are using it to study the inheritance of resistance to M. roridum in muskmelon.

### Literature Cited

1. Bruton, B.D. 1982. Myrothecium roridum, a probable devastating pathogen of muskmelon in south Texas. *Phytopath.* 72:355. (Abstr.)
2. Kuti, J., T.J Ng, and G.A. Bean. 1985. Effect of inoculation with Myrothecium roridum Tode ex Fries on seed germination and early seedling growth of 12 cultivars of muskmelon (Cucumis melo). *CGC* 8:44-45.
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Table 1. Lesion size and sporulation on detached leaves of 12 muskmelon genotypes inoculated with Myrothecium roridum.

Genotype	Lesion index <sup>z</sup>		Sporulation <sup>y</sup>	
	Greenhouse	Field	Greenhouse	Field
Amarelo	3.3	2.9	4.65	4.10
Edisto 47	4.7	4.4	3.16	2.85
Hale's Best	1.9	2.2	2.82	2.79
Imperial 4-50	3.9	3.8	2.93	2.25
Iroquois	7.8	6.7	5.09	4.71
MD63-53	7.3	6.9	5.98	4.42
MD80-2	6.7	6.0	4.90	4.95
Ogen	2.2	2.7	2.69	2.30
Perlita	4.0	3.6	2.57	2.40
PMR 6	3.0	3.4	3.25	2.85
PMR 45	2.9	2.3	2.98	2.72
Tam Uvalde	3.6	3.5	2.73	2.94
lsd(.05)	0.5	0.6	1.35	0.97

<sup>z</sup>Lesion index calculated by dividing lesion diameter by 12 mm.

<sup>y</sup>Log<sub>10</sub> of spores/ml extracted from diseased tissue.

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