

Effect of Light on the Growth and Sporulation of *Myrothecium roridum* and *M. verrucaria*

B.G. BHARATH AND S. LOKESH

Department of Studies in Applied Botany, Seed Pathology and Biotechnology, University of Mysore,
Manasagangotri, Mysore 570 006
boramma@rediffmail.com

Fungi such as *Myrothecium roridum* Tode ex Fr., and *Myrothecium verrucaria* (Albertini & Schwein) Detmar ex Fr., were isolated from the incubated seeds of watermelon [*Citrullus lanatus* (Thunb.) Matsum and Nakai] and their cultures were maintained on Potato Dextrose Agar medium in the culture tubes. During routine studies a significant difference was noticed in the sporulation of *Myrothecium* species. In the present study, much emphasis has been made to evaluate the effect of light on the growth and sporulation of *Myrothecium* species. For this purpose, cultures of *M. roridum* and *M. verrucaria* were maintained on PDA plates. 5 mm diameter culture discs of both the species were obtained using sterilized cork borer and each discs were individually inoculated onto the center of the freshly prepared PDA plates and separately incubated under visible light (400-700nm), near ultraviolet (NUV) light (360nm) and complete darkness at $22\pm 2^\circ$ C for a period of 8-days. Further, each plate was evaluated for the radial growth and sporulation of each fungal species. At equal intervals of 2 days, each plate was observed for the colony growth and sporulation. The data were recorded and consolidated based on the triplicates. For the assessment of sporulation from each culture plate 10 culture discs of 5mm diameter were plugged and suspended in the tubes contained sterilized distilled water. Such tubes were further agitated gently for a period of 5-10 min using mechanical shaker and the supernatant was collected and

centrifuged at 1000 rpm for 5 min. Then the sediment was collected and resuspended in 2 ml of mounting fluid (lactic acid: glycerol: water @ 2:2:1 ratio). The suspension was agitated, a drop was placed on to haemocytometer and in all the cases, the total number of spores/ml of the suspension were recorded. Ultimately the spore load/cm² of the culture discs was calculated and the data were tabulated.

Results indicated in Tables 1 and 2 represents the varied response of fungal species with respect to their growth and sporulation. Among the cultures maintained under complete darkness, *M. roridum* showed luxuriant sporulation. Compared to *M. verrucaria*, *M. roridum* showed least growth and sporulation under light condition. In contrast *M. verrucaria* showed high sporulation under light condition. In contrary, on 6 day itself *M. roridum* showed heavy sporulation under darkness. Darkness may be the serious stress for the fungus, hence stimulated the sporulation, free of any additional nutrients. Lokesh and Somashekar [1] have also made similar observation during 1988, with respect to *Rhizoctonia solani* in which the production of sclerotia was varied depending upon the light conditions. Though NUV is known to stimulate the fungi for sporulation, in this study, it has been noticed that rather than NUV, complete darkness, facilitated the fungus for luxuriant sporulation. These observations are of great importance, which indicates its usefulness to procure more inoculum, whenever required in the

Table 1. Effect of light on growth and sporulation of watermelon isolates *Myrothecium roridum* and *M. verrucaria*

Incubation period (days)	Growth and sporulation of fungi at different light condition											
	Visible light				Near Ultra Violet light				Darkness			
	Colony diameter (cm)		Sporulation		Colony diameter (cm)		Sporulation		Colony diameter (cm)		Sporulation	
Mr±SE	Mv±SE	Mr	Mv	Mr±SE	Mv±SE	Mr	Mv	Mr±SE	Mv±SE	Mr	Mv	
2	0.8±0.1 ^d	1.1±0.05 ^d	-	-	1.0±0.2 ^d	1.2±0.2 ^d	-	-	1.3±0.1 ^d	0.7±0.06 ^d	-	-
4	1.3±0.06 ^c	2.0±0.1 ^c	-	+	1.7±0.2 ^c	2.3±0.08 ^c	-	+	2.5±0.05 ^c	1.5±0.08 ^c	-	-
6	1.8±0.2 ^b	2.6±0.2 ^b	-	+	2.5±0.06 ^b	3.2±0.1 ^b	-	+	3.4±0.1 ^b	2.2±0.1 ^b	+	+
8	2.9±0.06 ^a	3.5±0.1 ^a	-	+	3.3±0.08 ^a	3.9±0.06 ^a	-	+	4.0±0.08 ^a	2.8±0.05 ^a	+	+

Data based on 3 replicate each.

Mr = *Myrothecium roridum*

Mv = *Myrothecium verrucaria*

+ = Presence of spores

- = Absence of spores

SE = Standard Error of the Mean. According to Duncan's Multiple Range Test (DMRT) the values followed by different superscripts were remain significantly different at P = 0.05.

Table 2. Influence of light conditions on spore load of *Myrothecium roridum* and *M. verrucaria*

Incubation period (days)	Variation in the spore load* of <i>Myrothecium</i> spp, under different light conditions					
	Visible light		Near Ultra Violet		Darkness	
	Mr	Mv	Mr	Mv	Mr	Mv
2	-	-	-	-	-	-
4	-	1x10 ²	-	1x10 ³	-	-
6	-	1x10 ⁴	-	1x10 ⁵	1x10 ¹	1x10 ²
8	-	1x10 ⁷	-	1x10 ⁹	1x10 ³	1x10 ⁵

Data based on 3 replicate each. Mr = *Myrothecium roridum* Mv = *Myrothecium verrucaria* * Spore load/cm² of culture discs.

laboratory for the purpose of inoculation or while performing any relevant test in relation to growth and sporulation of fungus.

REFERENCES

1. S. LOKESH & R.K. SOMASHEKAR (1988). Influence of light on growth pattern of *Rhizoctonia solani* - a Maize isolate. *Curr. Sci.*, 57(11): 614-615.