



# Effect of different light intensities, different light duration patterns and different temperatures on growth and sclerotial development of *Rhizoctonia solani*

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**Abstract :** At low light intensity (500 lux), the radial growth of *R. solani* was 45 mm and sclerotia were formed after 7<sup>th</sup> day of inoculation whereas at high light intensities (1000, 1500 and 2000 lux), the mycelial growth was restricted at 35 mm, 30 mm and 25 mm, respectively and the no sclerotia formation was noticed. In different light duration patterns viz., Continuous light, alternate light-dark, alternate dark-light and continuous dark, there was no difference in mycelial colour, growth pattern and radial growth of the pathogen. Similarly, the sclerotial characters had also not shown variation in terms of position, size and shape but only the number of sclerotia varied whereas at 15°C, there was no growth of *Rhizoctonia solani* but at 20°C, the radial growth was 5.62 µm but the sclerotia were not formed. At 25 and 30°C, the colour of the mycelium, growth pattern and the radial growth did not show any difference, but the hyphal width at 25°C (5.62 µm) and 30°C (7.00 µm) differed significantly. Similarly the position and size of sclerotia did not show any marked difference but the size and number of sclerotia differed significantly.

**Key Words :** Genotypes, Micronutrient, Tillering behavior, Direct seeding, Seed treatment

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## INTRODUCTION

*Rhizoctonia solani* Kuhn. is most destructive fungus and also caused sheath blight on paddy crops. The disease is known in East and South East Asia since 1910 (Ramakrishnan, 1971). In India, the disease was first reported by Pracer and Chahal (1963) from Gurdaspur (Punjab). *Rhizoctonia solani* which is capable of attacking a tremendous range of host plant through out the world, causing a variety of diseases including root rots, cankers, damping off, fruit decay and foliage disease (Alexopoulos *et al.*, 2007). The disease is characterized by the formation of lesions on leaf sheaths and culms at the water level, which become confluent giving characteristic banded appearance. The infection may spread up to the culms, killing all the leaves under favourable weather conditions. Losses up to 20 per cent in grain yield has been

reported when disease invades at flag leaf stage (Singh, 1990), however, the resultant losses have been related with rice varieties cultivated.

The fungus exhibits considerable amount of variability in its morphological and physiological characters. The variability has been expressed in terms of colony colour, growth pattern, rate of colony growth and anastomosis groups by various workers (Meena *et al.*, 2001; Yang *et al.*, 2002; Basu *et al.*, 2004). *Rhizoctonia solani* isolates from high temp. regions yielded growth on PDA at 35°C but tended to grow poorly at 12°C, whereas those from low temp. regions grew poorly at 35°C and well at 12°C (Hashiba *et al.*, 1974). Lokesh and Somashekar (1988) studied the influence of light on growth pattern of *Rhizoctonia solani* and reported that the growth of the sclerotia of *R. solani* under visible light was greater with higher sclerotial production than cultures under UV and

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