

Research Article

Variability among *Rhizoctonia solani* Inciting Rice Sheath Blight from Different Agro-Climatic Zones of Telangana State

B¹ Deepak Reddy, B¹ Vidya Sagar, G¹ Sridevi and V² Prakasam

¹Department of Plant Pathology, College of Agriculture, Professor Jaya Shankar Telangana State Agricultural University, Rajendranagar, Hyderabad - 500 030, Telangana, India ²Department of Plant Pathology, ICAR- Indian Institute of Rice Research, Hyderabad-500 030, Email: vprakasam.iari@gmail.com

Abstract

Thirty sheath blight affected paddy samples were collected from Telangana State. Pathogen *Rhizoctonia solani* (AG1-IA) was isolated and identified based on cultural, morphological and pathogenic variations. Among thirty isolates, eleven isolates were categorized into fast growing, eighteen isolates into medium growing and one isolate (Ts-Rs-16) from Warangal under slow growing category, where maximum number of isolates (29) reached full growth (90mm) with in 36 to 48 h after inoculation, which were categorized as medium to fast growing. The isolate Ts-Rs-16 had taken 84 h for covering the full plate (90 mm). Time taken for sclerotial initiation ranged from 3 to 5 days. Morphological features under light microscopy revealed that all the isolates characteristically branched out at right angle at the distal end of the cell which is an important taxonomical feature of *R. solani*. The isolate Ts-Rs-13 (Warangal –rural) branched at maximum degree of angle (92.7°). Hyphal width of all the thirty isolates varied from 4.7µm (Ts-Rs-18) to 9.3 µm (Ts-Rs-23). Pathogenicity of all 30 isolates of *R. solani* was tested by cut leaf method. In this method all isolates produced characteristic sheath blight symptoms. Eleven isolates produced symptoms after 108 hours of inoculation, fifteen isolates produced after 132 hours of inoculation. The isolate Ts-Rs-16 had taken more than 132 hrs to produce 100 per cent relative lesion height.

Key words: Rice, sheath blight, *Rhizoctonia solani*, variability

Citation: Deepak Reddy B, Vidya Sagar B, Sridevi G and Prakasam V. 2019. Variability among *Rhizoctonia solani* inciting rice sheath blight from different agro-climatic zones of Telangana state. *J Mycol Pl Pathol* 49(1): 56-66.

Sheath blight of rice, caused by the fungus *Rhizoctonia solani* (teleomorph: *Thanatephorus cucumeris*), is one of the most prevalent diseases of rice (*Oryza sativa*). Disease occurs in all rice growing areas of world (Savary et al 2006). Yield losses of 70 per cent have been reported by (Naidu, 1992). A modest estimation of losses due to sheath blight of rice in India has been reported up to 54.3 per cent (Chahal et al 2003). Sheath blight disease was reported in all the ten districts of Telangana, However, moderate to severe form (30-50%) of disease invasion was reported from 1995 to 2014 in three districts viz., Nalgonda, Khammam and Karimnagar (Laha et al 2016). Diversity within rice sheath blight isolates has been studied by cultural, morphological, pathogenicity testing and also by various molecular techniques. Accuracy in

distinguishing pathogen is essential to ensure the success of extensive disease management. Resistant cultivars have not been bred due to the low inherent level of resistance in rice to *R. solani* (AG1-IA). These difficulties are compounded by the lack of adequate information on the population biology of the pathogen, particularly in tropical agro-ecosystems. However, understanding of disease epidemiology and host pathogen is greatly dependent on knowledge of the diversity of the pathogen. Study on morphological character(s) of a particular organism is an important aspect to discriminate them into genus, species and even sub-species level. It gives us preliminary idea about the existing variability of such organism and helps us in their formal grouping and placement based on such morphological variation. Sriram et al 1997, Meena