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Title: Morpho - molecular characterization of diversity in Sarocladium oryzae causing sheath rot in paddy

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Abstract: Sheath rot caused by *Sarocladium oryzae* (Sawada) W. Gams & D. Hawksw is an important seed borne fungal disease of paddy which is becoming a major concern to the rice farmers in our country. Variability in *Sarocladium oryzae* both by morphological and molecular methods were used in the present investigation. Diseased specimens were collected from more than 50 different geographical locations spread across 15 states of our country. Czapek Dox Agar medium was found better in comparison to Potato Dextrose Agar medium for growth as well as sporulation of the pathogen. Maximum growth and sporulation was seen at 30°C in CDA medium. Thirty isolates which were purified have been used in the present investigation. Based on the growth of various isolates on CDA medium at 30°C these thirty isolates can be grouped into three major categories of slow, moderate and fast growing cultures and similar grouping can also be done for sporulation behaviour into low, medium and highly sporulating cultures. Based on the colony characteristics of various isolates representing different geographical locations of our country, these thirty isolates can be divided into six groups which represents different geographical locations. 7 RAPD and 8 ISSR primers were used against all 30 isolates. All RAPD primers showed 100% polymorphism except OPS13 (61.4%) and OPD5 (74%). Among ISSR primers ISSR5 & ISSR18 showed 100% polymorphism. In the combined cluster analysis of RAPD and ISSR markers, the same geographical region isolates fits into same cluster as evident from the cluster I which includes Kadapa, Ragolu, Maruteru, West Godavari and Aduthurai, which all are from Southern plain region of the country. The work has the potential of being exploited further to characterize the variability spectrum of this important pathogen with many other marker systems available.

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