

Research Paper :

Cultural and physiological studies on *Curvularia lunata*, a casual agent of grain discolouration in rice

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SUMMARY

Many fungi have been isolated from discolored grain, *Curvularia lunata* (Wakker) Boed. was found as a dominant pathogen. Cultural studies revealed that *C. lunata* gave maximum dry mycelial weight (225.00 mg) at 13th day after incubation. Among the solid media, Potato dextrose agar, Sabouraud's agar and Host extract agar were best for the growth and sporulation of *C. lunata*. Among the various liquid media used, maximum dry mycelial weight was observed in Sabouraud's medium (458.00 mg). The diverse response of *C. lunata* to different temperature levels of 15, 20, 25, 30, 35 and 40° C and different pH levels viz., 4, 6, 7, 8 and 10 and also different relative humidity levels 100, 90, 80, 70 and 60 per cent was tested. Temperature of 25° C showed good growth and excellent sporulation. At 90 to 100 per cent of relative humidity and pH 6 were found congenial for growth and sporulation of *C. lunata* under *in vitro* conditions.

Key words :

Rice, Grain discolouration, *Curvularia lunata*, Cultural, Physiological studies

Rice (*Oryza sativa* L.) is an important food crop belonging to family Poaceae and is the staple food of more than half of the world's population. About 90 per cent of the world's rice is produced and consumed in Asia alone. Majority of the fungi, viz., *Curvularia lunata*, *Alternaria alternata*, *Fusarium moniliforme*, *Helminthosporium oryzae* responsible for causing grain discolouration are reported to be seed borne in nature (Ou, 1985; Mew *et al.*, 1988; Agarwal *et al.*, 1989 and Singh, 1993). Grain discolouration now has assumed great importance in recent years because of the changes of cropping practices into intensive system like increased fertilizer application and developed more rice seasons yearly but not too many resistant varieties combined with good yield characters are available for cultivation. Rice is mostly grown in the wet season, when high humidity and high temperature prevail. These conditions are congenial for infection of seed with number of fungi.

MATERIALS AND METHODS

The investigation on studies on grain discolouration in rice was carried out during 2006-2007 at the Department of Plant Pathology, College of Agriculture, Raichur, University of Agricultural Sciences Dharwad. Raichur is situated in North Eastern Dry Zone (Zone 2) of Karnataka State at 16° 12' N

latitude/ 77° 21' E longitude with an altitude of 389.37 m above mean sea level.

Discoloured grains were collected from different rice growing areas of Raichur, Gulbarga, Koppal and Dharwad districts. The collected samples were packed in cloth bags and stored at room temperature (25 ± 2° C) for further investigation. Fungi were isolated and identified based on the morphological characteristics. Mostly from both unsterilized and sterilized seeds on Potato-dextrose agar and each colony arising separately on the seeds was picked up into PDA slant and the percentage occurrence of each fungal species was calculated from the total isolates.

Growth phase of *C.lunata*:

Twenty ml of Potato dextrose broth (PDB) was added into each of 100 ml conical flasks and sterilized. The flasks were then inoculated with five mm disc of fungal culture and incubated at 28 ± 1° C for different intervals. Three flasks were harvested at a time, starting from the third day onwards up to 21st day by leaving a gap of two days between the two successive harvests. The cultures were filtered through previously weighed Whatman number 42 filter paper of nine centimeter diameter, which were dried to a constant weight at 60° C in a hot air oven prior to filtration. The mycelial mat on the filter paper was thoroughly washed

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