

Research Paper :

Evaluavation of bio-agents against *Curvulara lunata*, the causal agent of grain discolouration in rice

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SUMMARY

In the present research studies, the antagonistic microorganisms were tested for their efficacy in inhibition of growth of *C. lunata*. Many fungi have been isolated from discolored grain, in which *Curvularia lunata* (Wakker) Boedign was found dominant pathogen (35.30%) of grain discolouration of rice in rice growing tracts of Tungabhadra Project Area and Upper Krishna Project Area of Karnataka state in India comprising of Raichur, Koppal and Gulbarga districts during 2007. Among the different bio-agents, *Bacillus subtilis* (97.77%) followed by fungal bio-agent *Trichoderma viride* (96.44%) and *T. harzianum* (93.50%) were found to be effective. Seed treatment with *T. viride* was found to inhibit *C. lunata* association with grain discolouration with 90.05 per cent germination and 1170.00 vigour index followed by *Bacillus subtilis* with 87.99% germination and 989.11 vigour index.

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Key words :
Rice, Grain
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Rice (*Oryzae sativa* L.) is most widely grown cereal crop of the world. Majority of the fungi, viz., *Curvularia lunata*, *Alternaria alternata*, *Fusarium moniliformae*, and *Heliminthosporium oryzae*, responsible for causing grain discolouration have been reported to be seed borne in nature (Ou, 1985; Mew *et al.*, 1988 and Singh, 1993). Grain discolouration now has assumed to be great importance in recent years because of the changes in cropping practices; intensive system like increased fertilizer application and yearly more rice seasons. But not too many resistant varieties combined with good yield characters are available for cultivation.

In the present investigation, an attempt has been made to identify the best bio-agent for the inhibition of mycelial growth of *C. lunata* and so also to get the higher seed germination and seedling vigour through seed treatment.

MATERIALS AND METHODS

The present investigation 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.

Collection of the samples:

Discoloured rice 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.

Dual culture test:

Bioagents obtained indigenously and from Tamil Nadu Agricultural University (TNAU), Coimbatore were tested for their efficacy under *in vitro* using dual culture technique as well as seed treatment.

Bioagents were evaluated for their

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