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## INVESTIGATIONS ON THE CAUSES OF DISCOLOURATION OF RICE GRAIN

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The grain quality of rice is severely reduced due to discoloration of grains, an emerging problem of many rice growing areas of Sri Lanka. The objectives of the present study were to identify microorganisms causing grain discoloration of rice grown in Sri Lanka and to identify effective control measures.

Seeds of four varieties of rice (i.e. Bg 300, Bg 352, Bg 357 and Bg 358) were collected from rice fields of RRDI, Batalagoda. Fungi and bacteria associated with discoloured grains were isolated by the standard blotter method and the PDA plate method. Efficiency of the commercially available fungicide (i.e. 50% CarbendazimWP) and a biological control agent (i.e. *Bacillus subtilis*) was determined using a pot experiment to control grain discoloration. The efficiency of the commercially available fungicide (i.e. 50% CarbendazimWP) and a biological control agent (i.e. *Bacillus subtilis*) was determined using a pot experiment to control grain discoloration.

*Fusarium moniliforme*, *Penicillium* spp., *Helminthosporium oryzae*, *Aspergillus flavus* and *Aspergillus niger* were isolated as commonly-occurring fungal species and *Burkholderia cepacia* was isolated as a bacterial species from discoloured rice seeds. *Fusarium moniliforme* was recorded as the fungus present at the highest frequency in all rice varieties tested. Efficiency of the commercially available fungicide (i.e. 50% CarbendazimWP) and a biological control agent (i.e. *Bacillus subtilis*) was determined using a pot experiment to control grain discoloration.

Carbendazim was found to be more effective than the bacterial antagonist in reducing rice grain discoloration. Treating the four rice varieties with 50% Carbendazim (1mg in 300 ml of water) resulted in a 64-96 % reduction of grain discoloration in comparison to the reduction given by the bacterial antagonist (i.e. 57-94%).