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PII: S1049-9644(18)30228-7
DOI: https://doi.org/10.1016/j.biocontrol.2018.04.003
Reference: YBCON 3748

To appear in: *Biological Control*

Received Date: 28 July 2017
Revised Date: 6 April 2018
Accepted Date: 9 April 2018

Please cite this article as: Kumar, D., Gouda, S.A., Evaluation of mycoparasitic efficacy of nematode-trapping fungi against *Rhizoctonia solani* inciting sheath blight disease in rice (*Oryza sativa* L.), *Biological Control* (2018), doi: https://doi.org/10.1016/j.biocontrol.2018.04.003

Evaluation of mycoparasitic efficacy of nematode-trapping fungi against *Rhizoctonia solani* inciting sheath blight disease in rice (*Oryza sativa* L.)

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Abstract

Sheath blight incited by *Rhizoctonia solani* is an important rice disease that constitutes a major challenge to rice production worldwide. Nematode-trapping fungi possess the ability to capture, kill and digest the nematodes. However, the ability of many nematode-trapping fungi parasitizing the soil borne plant pathogens may fillip the gap towards maximum exploitation of these fungi in biological control strategy. In present study, we have investigated the mycoparasitc potential of *Arthobotrys conoides, A. eudermata, Dactylellina gephyropaga and D. phymatopaga* against *Rhizotonia solani* in *in vitro* and rice plants grown under green house conditions. We found that *Arthobotrys conoides, A. eudermata and Dactylellina gephyropaga* started forming coils around hyphae of *Rhizoctonia solani* within 24 hours of hyphal interaction. *A. eudermata* was found highly mycoparasitic on all isolates of *R. solani* followed by *A. conoides* and *D. gephyropaga. Dactylellina phymatopaga* failed to parasitize any isolates of *R. solani*. At the site of coiling, a strong cell wall proliferation was observed in Rhizoctonia cells and the cytoplasm of these cells subsequently disintegrated. Treatment of *R. solani* infested soils with colony forming units of *A. eudermata, A. conoides and D. gephyropaga* decreased sheath blight infection in rice tillers by 43.39-50.74% as compared to non-treated but *R. solani* inoculated plants.

Keywords

Arthrobotrys conoides, Arthrobotrys eudermata, Dactylellina gephyropaga, mycoparasitism and *Rhizoctonia solani*