Soil Biodiversity and Ecosystem Services

MEETING PROGRAMME
and
ABSTRACTS

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(P-6) In vitro screening for Trichoderma strains with the potential to control Armillaria species causing tree root diseases

Bettina Bóka1, Virág Vizler1, György Sipos2, András Szekeres1, Csaba Vágvölgyi1, László Kredics1

1Department of Microbiology, Faculty of Science and Informatics, University of Szeged, Hungary
2Department of Forest Protection, Institute of Sylviculture and Forest Protection, University of West Hungary, Bajcsy-Zsilinszky Endre utca 4., H-9400 Sopron, Hungary

kredics@bio.u-szeged.hu

Armillaria species cause soil-borne root diseases to almost all woody plants including both crop and forest trees, therefore, there is an emerging need for environment-friendly biocontrol solutions of the problem. *Trichoderma harzianum* was found to suppress the pathogen in tea stem sections buried in the soil (Otieno et al. 2003), however, *Trichoderma* spp. were found to be ineffective for *Armillaria* root rot control in peach (Schnabel et al. 2011).

Twelve *Trichoderma* strains were selected from the Szeged Microbiology Collection (SZMC). All strains derived from Hungarian soil samples and identified by barcoding-based sequence analysis of the internal transcribed spacer region region performed with *TrichOkey*2.0 at [www.isth.info](http://www.isth.info). The 12 *Trichoderma* strains represented species *T. asperellum* (2), *T. harzianum* (5), *T. atroviride* (2), as well as *T. virens*, *T. gamsii* and *T. hamatum* (1-1 each). The *Trichoderma* strains were confronted in all combinations with 11 *Armillaria* strains representing *A. ostoyae* (6), *A. gallica* (2), *A. cepistipes* (2), *A. mellea* (2), *Armillaria* sp. (6), and *A. borealis* (1) on potato dextrose agar plates. *Armillaria* strains were inoculated with agar plugs (5 mm in diameter) cut from the edge of 2-week-old colonies 1.5 cm from the center of PDA plates, while the inoculation of *Trichoderma* strains was performed after 14 days of incubation in a similar way to a position 3 cm apart from the inoculation position of the *Armillaria* strains. After further 10 days of incubation, Biocontrol Index (BCI) values were calculated based on image analysis of plate photos performed according to Szekeres et al. (2006). Results revealed that the examined *Trichoderma* strain efficiently restricted colony growth of the *Armillaria* strains and in many cases they were able to overgrow and intensely produce conidia on the surface of *Armillaria* colonies. The results suggest that *Trichoderma* strains have the potential to control *Armillaria* root diseases in crop and forest trees.

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Keywords: *Armillaria*, root disease, *Trichoderma*, biocontrol, in vitro antagonism

References: