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Screening of 22 entomopathogenic or potential plant growth promoting fungal isolates for pathogenicity to cabbage root fly, *Delia radicum* (Linnaeus, 1758)

J. Razinger, M. Lutz, H.-J. Schroers, G. Urek, J. Grunder

Entomopathogenicity of nine entomopathogenic or potentially plant growth promoting fungal species was assessed against cabbage root fly (CRF) in soil and *in vitro* laboratory bioassays. The fungal strains were isolated from various substrata in Slovenia and Austria. The soil experiments mimicked natural exposure pathways of the various insect life stages to the fungal strains. Spore concentrations used in soil tests were comparable to economic rates for in-furrow application (3.85×10^6 spores g^{-1} dry soil). In *in vitro* tests, spore suspensions with a concentration of 1×10^8 spores ml^{-1} were applied directly to CRF eggs. The short term in-vitro tests lasting 14 days were designed to screen aggressiveness of the various isolates to CRF.

The following fungal species were tested: *Trichoderma atroviride* (2 isolates), *Trichoderma koningiopsis* (1), *Trichoderma gamsii* (3), *Beauveria brongniartii* (1), *Beauveria bassiana* (3), *Metharhizium robertsii* (2), *Metharhizium anisopliae* (6), *Purpureocillium lilacinum* (2) and *Clonostachys solani* (2). All isolates tested were infective to one or more of the tested life stages of CRF (eggs, larvae, imago or pupae). Abbott's corrected mortality in soil experiments ranged from $20.0 \pm 13.2\%$ to $75.0 \pm 13.2\%$ and in the short term in-vitro experiments from $12.8 \pm 9.4\%$ to $47.6 \pm 9.0\%$.

Additional long term in vitro tests lasting 35 days were performed with four Slovenian isolates of *Trichoderma* – *Trichoderma atroviride* (1) and *Trichoderma gamsii* (3) and Austrian isolates – *Metharhizium robertsii* (1), *Metharhizium anisopliae* (2) and *Beauveria bassiana* (1), to see the effect these fungal strains have on the whole life cycle of CRF.

In these tests *Trichoderma* spp. isolates exhibited low entomopathogenic activity, with the exception of *Trichoderma gamsii* isolate 1, and no mycosis was observed on any of the CRF's life stages. Of the Austrian isolates, *Beauveria bassiana* produced sporulating mycelium on eggs, *Metharhizium robertsii* and *Metharhizium anisopliae* isolate 1 on larvae, whereas *Metharhizium anisopliae* isolate 2, in addition to larvae, also produced sporulating mycelium on pupae. The use of different fungal isolates in integrated CRF management programs is discussed.

Key words: biological control, entomopathogenic fungi, BCA, biological control agents, dipterous insect pests

Author address: Zurich University of Applied Sciences, Campus Grueental P.O.Box 335, Waedenswil, CH-8820, Switzerland, Agricultural Institute of Slovenia, Hacquetova ulica 17, Ljubljana, SI-1000, Slovenia (jaka.razinger@zhaw.ch, jaka.razinger@kis.si)