

Title Persistence and efficacy of *Metarhizium anisopliae* (Metschnikoff) Sorokin (Deuteromycotina: Hyphomycetes) and diatomaceous earth against *Sitophilus oryzae* (L.) (Coleoptera: Curculionidae) and *Rhyzopertha dominica* (F.) (Coleoptera: Bostrychidae) on wheat and maize

Author Christos G. Athanassiou, Nickolas G. Kavallieratos, Basileios J. Vayias, Johanna B. Tsakiri, Nickoleta H. Mikeli, Constantin M. Meletsis and Željko Tomanović

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Abstract

Wheat and maize were treated with 8×10^6 and 8×10^8 conidia/kg of the entomopathogenic fungus *Metarhizium anisopliae* (Metschnikoff) Sorokin, alone and in combination with 250 ppm Diatomaceous Earth (DE). Bioassays were conducted after application and monthly for 5 months using adult *Sitophilus oryzae* (L) and *Rhyzopertha dominica* (F.). Both treated grains and the bioassay samples were held at 27 ± 1 °C and $65 \pm 5\%$ r.h. Mortality assessments were made at 7 and 14 d, and after the 14 d counts all adults were removed and the samples incubated at the same environmental conditions for 60 d to record progeny production. Mortality of *S. oryzae* exposed for 7 d on both grains decreased during the 5-month period, however, maximum mortality usually occurred in the combination of the highest fungal rate with the DE. Mortality of *S. oryzae* was generally lower in maize than in wheat. Mortality of *R. dominica* in both grains was generally greater than mortality observed for *S. oryzae*. Progeny production of *S. oryzae* increased gradually during the 5 months, but this increase varied depending on the treatment. Similar results were noted for *R. dominica* with generally lower progeny production compared with *S. oryzae*.