

Development of a soil granule and a sprayable formulation of the entomopathogenic fungus *Metarhizium sp.* to control wireworms

Tanja Bernhardt and Dietrich Stephan

Julius Kühn-Institut, Institute for Biological Control, Darmstadt

E-mail of corresponding author: tanja.b17@web.de

Within the BMEL funded project “Agri-Met” three institutes of the JKI and two industrial partners recently started to develop a biocontrol strategy for wireworms in potato.

The involved JKIs are the Institute for Application Techniques in Plant Protection, Brunswick, the Institute for Plant Protection in Field Crops and Grassland, Brunswick and the Institute for Biological Control, Darmstadt. The two industrial partners are ABITEP GmbH, Berlin and LEHNER Agrar GmbH, Westerstetten.

Wireworms are larvae stages of *Elateridae*. Some genera are carnivorous. But there are also those who feed on roots and seedlings. These species are a great threat to agriculture. They feed on potatoes, carrots, corn, asparagus, salad and much more.

Only some pesticides are registered under §53 of the regulation (EC) 1107/2009. Beside the use of these pesticides current combat strategies against wireworms are mechanical machining of the soil, a special crop rotation or the

cultivation of special plants (legumes) before the actual sowing. These methods alone are not sufficient. In several studies, the entomopathogenic fungus of the genus *Metarhizium* has proven to be effective against wireworms. Therefore, entomopathogenic fungi seem to be a promising alternative for chemical pesticides.

Our part at the Institute for Biological Control is to develop soil granules and sprayable formulations of the entomopathogenic fungus *Metarhizium sp.*

First, it will be tested which strain of *Metarhizium sp.* is effective against the three common Agriotes species *A. lineatus*, *A. obscurus* and *A. sputator*. For these strains liquid fermentation protocols will be developed to produce submerged spores and biomass. By means of fluid bed drying the fungal biomass will be formulated as granule.

First results of the bioassays and of this production and formulation strategy will be discussed.