

# THE INSECT PATHOGENIC SOIL FUNGI IN MANAGING SOIL DWELLING PEST INSECTS- THE PROSPECTS AND INITIATIVES FOR SUSTAINABLE AGRICULTURE IN NEPAL

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Soil insect pests, including white grubs are increasingly important pests of cereal and cash crops in Nepal. The situation is also aggravated by the fact that they are one of the most difficult insect pests to manage due to high levels of insecticide resistance. To explore the possibility of bio-control of white grubs with entomopathogenic fungi, a series of activities were conducted since the middle of 2002 at the Institute of Agriculture and Animal Sciences (IAAS), Rampur and in farmers' fields in Nepal. Several dozens of isolates of the insect pathogenic fungi, *Metarhizium anisopliae* (green muscardine fungus) and about half a dozen of *Beauveria bassiana* (white muscardine fungus) were isolated from infested soil and diseased insects using a selective medium (SM) and the *Galleria* bait method (GBM). Analysis of soils from three different regions of the country showed that *M. anisopliae* is common and was present in about 50% of the samples irrespective of their origin. Disease prevalence in the insects, however, was found between 0 and 2% depending on host origin. Isolation, maintenance, mass production and efficacy tests with *M. anisopliae* were conducted under captivity and field condition. A three-tiered screening strategy was adopted to evaluate the pathogenicity of *M. anisopliae* through bioassay. This resulted in five isolates being identified which were highly pathogenic for pest larvae at concentrations of 10<sup>7</sup> spores/ml. Field testing of these isolates is under way and preliminary results are promising indicating the possibilities to develop mycoinsecticides and to integrate them into existing pest management (IPM) in Nepal in the sustainable agriculture. **Keywords:** Biological control, entomopathogenic fungi, *Metarhizium anisopliae*, *Beauveria bassiana*, *Galleria mellonella*