

Occurrence of Entomopathogenic Nematodes and their Potential in the Management of Diamondback Moth in Kale

J.O. Nyasani, J.W. Kimenju, F.M. Olubayo, S.I. Shibairo and G.K. Mutua
Department of Plant Science and Crop Protection, University of Nairobi,
P.O. Box 30197-0100, Nairobi, Kenya

Abstract: This study was aimed at determining the occurrence of entomopathogenic nematodes (EPNs) in different agroecosystems and their potential as biocontrol agents in the management of DBM. Soil samples were taken from a planted forest, pasture, a coffee field and a vegetable garden. EPNs were isolated from the soil using *Galleria mellonella* as the bait insect. Laboratory bioassays were conducted to determine the lethal time fifty (LT₅₀), which is time till 50% lethality, of the EPN isolates to DBM larvae using the leaf disc bioassay method. Five isolates of EPNs namely *Heterorhabditis indica*, *Steinernema kariii*, *Steinernema wesieri*, *Steinernema* sp. and *Heterorhabditis* sp. were used. The frequency of occurrence of EPNs was lowest, 27%, in the soil from vegetable garden, followed by forest soil, 33%. EPNs were present in 50 and 77% of the soil samples from pasture and coffee ecosystems, respectively. The LT₅₀ of *S. kariii*, *H. indica* and *S. wesieri* was 38.10, 20.27 and 23.80 h, respectively. *Heterorhabditis indica*, *S. kariii*, *S. wesieri*, *Steinernema* sp. and *Heterorhabditis* sp. caused 96.0, 93.3, 92.0, 88.0 and 86.7% mortality in the DBM larvae within 72 h, respectively. This study has demonstrated that the frequency of occurrence of EPNs is different in various agroecosystems. The study has also showed that EPNs have a great potential that may be exploited along with other suitable strategies in integrated management of DBM.

Key words: Biocontrol agent, *Heterorhabditis* spp., lethal time fifty, *Plutella xylostella*, *Steinernema* spp.