Sustainable Crop Protection Using Nematodes (Steinernema Spp) as Biological Control Agents

Makirita, Winisia E.; Pentok, Myima; Wu, Lili; Liu, Yong; Chacha, Musa; He, Nongyue; Li, Xiaolong; Zhang, Fengqin; Liu, Tonghua

To download full text click that link
DOI: https://doi.org/10.1166/jbmb.2019.1856

Abstract

Crop productions play an important role in food production, raw material production and income generation. Crop production is challenged by pest infestation with new outbreaks every now and then, reducing yield and increasing production cost. The use of biological control agent has been cited as the potential approach in pest management due to the high performing ability with limited effects on the environment and non-targeted organisms. Entomopathogenic nematode is one of the biological control agents used for management of insect pest and it is mostly used in many developed countries with increasing application interest in developing countries. Entomopathogenic formulations from steinernema species (spp) are commercially available, although shipping and stability have been the major challenge. Recently, more than 90 spp. have been isolated from different region and this shows the possibility of having more beneficial strains of steinernema in our surroundings. Research have determined the high performance of entomopathogenic nematode against local insect, this shows the importance of isolating local stain to manage the local pest. On other hands, the different materials have been proven to enhance the pathogenic effect and stability of the nematode when incorporated together and this opens more windows in identifying potential materials for entomopathogenic nematode formulation. Despites some few available challenges of entomopathogenic nematodes applications, it is gaining more attention in agricultural and forest industry due to its broad range of activities and this serves as a potential bio control agent. It is from this view, that this review discussed the potential of Steinernema spp. in crop protection and its performance.

Keywords

Crop; Entomopathogenic Nematode; Pest; Steinernema; Xenorhabdus