



EXPLORATION OF ENTOMOPATHOGENIC NEMATODES AND THEIR ROLE IN SUSTAINABLE PEST MANAGEMENT

MOHAN C*, JYOTI RANJAN MISHRA AND NAHAR SINGH MAWAI

Forest Protection Division, ICFRE - Tropical Forest Research Institute, Jabalpur, MP, India

*Corresponding author email: mohanentomology@gmail.com

ABSTRACT: Entomopathogenic nematodes (EPNs) emerge as remarkable allies in sustainable agriculture, belonging to the families Steinernematidae and Heterorhabditidae. Collaborating seamlessly with specific bacteria, *Xenorhabdus* or *Photorhabdus*, EPNs exhibit superheroic qualities by combating insect pests in a natural and eco-friendly manner, earning them a prime role in integrated pest management (IPM). EPNs display versatility in pest targeting, addressing a spectrum that includes beetles, caterpillars, and fly larvae. Their effectiveness hinges on environmental nuances like soil type, moisture levels, and temperature, aspects continually refined through advances in production and application methods, seamlessly integrating EPNs into modern pest management strategies for agricultural and horticultural ecosystems. In essence, entomopathogenic nematodes emerge as nature's pest control squad, offering a sustainable and environmentally conscious solution to curb troublesome insects. The journey is ongoing, demanding continuous research and development to unlock the full potential of these diminutive guardians within the global framework of pest management strategies.

Keywords: *Entomopathogenic nematodes, environmentally conscious, integrated pest management, pest, sustainable, symbiotic bacteria*

Citation: Mohan C, Mishra JR, Mawai NS (2023) Exploration of entomopathogenic nematodes and their role in sustainable pest management. Indian J Trop Biodiv 31(2): 90-104.

Received on : 21/11/2023

Accepted on : 05/02/2024

Published on : 30/03/2024

INTRODUCTION

Entomopathogenic ('entomo' = insect; and 'pathogenic' = disease causing or killing) nematodes are tiny roundworms found in soil, are aptly named for their ability to infect and kill insects. Unlike plant-parasitic nematodes that harm crops, these beneficial nematodes assist farmers by contributing to the biological control of insect pests. Among the numerous nematode

families associated with insects, two families, Steinernematidae and Heterorhabditidae, have garnered significant attention from scientists. This is because they can be efficiently produced in large quantities, applied effectively, and has demonstrated their effectiveness against specific target insects. These nematodes have a mutualistic relationship with various bacterial species, namely *Xenorhabdus* (in Steinernema