

*Opinion Article***Note on entomopathogenic nematode and its life cycle****Peters Van\***

Department of Zoology and Entomology, Swedish University of Agricultural Sciences, Uppsala, Sweden.

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**DESCRIPTION**

Entomopathogenic nematodes are a type of worm that attacks insects and destroys them. The word “entomopathogenic” is derived from the Greek words, “entomon” is named as insect and “pathogenic” named as disorder. They are animals that operate as a biocontrol intermediary between microbial diseases and predators/parasitoids, and are commonly associated with pathogens due to their symbiotic relationship with bacteria. Entomopathogenic nematodes, unlike many other parasitic thread worms that cause disease in living animals, solely infect insects. Entomopathogenic nematodes are endoparasitic, meaning they live parasitically inside the diseased insect host. They infect a wide range of plant insects, including moth larvae, butterflies, flies, and beetles, as well as adult beetles, grasshoppers, and crickets. EPNs have been discovered in a variety of biologically different settings all over the world. They are diverse, complicated, and specialised in nature. The members of the Steinernematidae and Heterorhabditidae families, which can be used in biological control of toxic insects, are the most commonly studied entomopathogenic nematodes. They’re the only insect-parasitic nematodes with the right mix of biological control qualities.

**Life cycle**

The life cycles of the genera belonging to the families Heterorhabditidae and Steinernematidae are highly investigated due to their economic value. Phylogenetically, they are not related, although their life cycles are comparable. The cycle begins with an infective juvenile whose sole purpose is to find new hosts and infect them. When a host is found, the nematodes enter the insect’s body cavity by natural openings such as the mouth, anus, spiracles, or thin cuticle areas. Infectious juveniles release a mutualistic bacterium from their intestines after consuming an insect, which quickly multiplies. For steinerernematides and heterorhabditids, respectively, these bacteria of the genus *Xenorhabdus* or *Photorhabdus* cause

host mortality within 24–48 hours. The bacteria are protected by the nematodes, which in move destroy the insect host and provide nutrition to the nematode. No nematode can function as an entomoparasite without this mutualism. The nematodes and bacteria feed on the liquefying host together and reproduce for multiple generations inside the cadaver, growing through the J2-J4 growth stages to be become millennials. Infectious juveniles of steinerematids can mature into males or females, but heterorhabditids develop into self-fertilizing hermaphrodites with two sexes in later generations. When food becomes scarce in the host, the adults create new infective juveniles which are suited to survive in the external world. The EPNs’ life cycles are finished in a few of days. Hundreds of thousands of infective juveniles emerge after around a week and leave in search of new hosts, carrying an inoculation of mutualistic bacteria acquired from the internal host environment with them. The bacteria develop the environment for their growth and reproduction in the host corpse. To help overcome their host’s defences, the nematodes bacteria supplies anti-immune proteins.

The feeding methods of entomopathogenic nematodes vary by species, altering their soil depth distributions and host preferences. Infectious juveniles use a variety of methods to obtain hosts, including ambush and cruise foraging. Some *Steinernema* species nictate, or raise their bodies off the soil surface, to better position them to adhere to passing insects, which are considerably larger in size, in order to destroy victims. Many *Steinernema* can bounce by making a loop with their body, which stores energy and propels them through the air when released. Other plants prefer to cruise rather than nictate. Instead, they rummage through the earth in quest of host organisms. The nematodes’ feeding behaviours have an impact on which hosts they infect. Ambush predators like *Steinernema carpocapsae*, for example, infect more insects at the surface, but cruise predators like *Heterorhabditis bacteriophora* infect insects deep in the soil.

\*Corresponding author. Peters Van, E-mail: [petersvan@gmail.com](mailto:petersvan@gmail.com).