



ECOLOGY AND BEHAVIOR OF ENTOMOPATHOGENIC NEMATODES: THE IMPACT ON SOIL ENVIRONMENT

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ABSTRACT

Entomopathogenic nematodes are widely used as biological control agents against soil-dwelling pests. Their distribution and activity are closely related to various soil properties, including moisture and temperature. This article analyzes the impact of the ecology and behavior of nematodes on the soil environment.

KEYWORDS: Optimal moisture conditions, soil moisture, Moisture and temperature effects.

INTRODUCTION

Moisture and temperature effects. The reproduction and spread of nematodes are directly related to soil moisture. Optimal moisture conditions significantly enhance their activity and effectiveness. Soil temperature also plays a crucial role; temperatures ranging from 12 to 28°C are considered optimal for most species. Above 28°C, nematode activity diminishes.

Behavior and movement. Entomopathogenic nematodes utilize various foraging strategies to locate and infect their hosts. Some species are less active, employing a wait-and-see approach, while others are highly active in seeking food. Nematodes move by vibrating their infective juvenile bodies, a behavior known as "nictation."

Dispersal factors nematodes can be passively dispersed over long distances through water, wind, and infested hosts. Soil structure and porosity also affect their dispersal. Salinity in the soil negatively impacts the spread of infective juveniles.

Survivability factors key factors affecting survivability include moisture, temperature, and soil composition. Nematodes require water droplets in soil interstitial spaces for effective movement. High temperatures can protect nematodes in the soil environment, but ultraviolet rays and desiccation can rapidly destroy infective juveniles.

CONCLUSIONS

Entomopathogenic nematodes play a vital role in biological control. They are sensitive to ecological factors such as moisture, temperature, and soil composition. Maintaining these factors at optimal levels ensures nematode effectiveness. Therefore, understanding their dispersal and survivability factors is crucial for developing effective biological control programs. Prior to application, careful assessment of soil conditions is essential.

In summary, entomopathogenic nematodes are a natural and effective method for controlling pests. Their adaptability to the environment and various foraging strategies are distinguishing features. However, to ensure their effectiveness, key soil factors such as moisture and temperature must be considered.

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