

EXPLORATION AND IDENTIFICATION OF ENTOMOPATHOGENIC NEMATODES IN CORN FIELDS IN WONOGIRI REGENCY

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ABSTRACT

Entomopathogenic nematodes are known as effective biological agents in controlling plant pest populations in an environmentally friendly manner. This study aims to explore and identify entomopathogenic nematodes in corn fields in Wonogiri Regency through morphological, morphometric, and molecular approaches. The research was conducted by taking soil samples from corn fields in Wonogiri Regency, namely in Sidoharjo, Girimarto, Ngadirojo, Nguntoronadi, and Baturetno Subdistricts. The study's results showed that the highest population density was found in Ngadirojo Subdistrict. Entomopathogenic nematodes from all isolates exhibited smooth or rounded lips that were not prominent, a narrow stoma, and a distinct metacarpus with a terminal bulb in the esophagus. The tail of the Sidoharjo isolate was shorter compared to those from Girimarto, Ngadirojo, Nguntoronadi, and Baturetno, which were conical to tapering in shape. morphometry characteristics of the nematodes from the five locations showed variation in body size, with body lengths ranging from 460,75 to 512,68 μm . morphometry indices (a, b, and c) were relatively stable, as was the vulva position (54,19–56,95% of body length). Body diameter, pharynx length, and tail length varied among isolates, with the largest measurements generally found in the Baturetno isolate. Based on morphological and morphometric characteristics, the Sidoharjo isolate was identified as *Steinernema feltiae*, while the Girimarto, Ngadirojo, Nguntoronadi, and Baturetno isolates were identified as *Metarhabditis amsactae*. The Polymerase Chain Reaction (PCR) results were negative due to protein and polysaccharide contamination.

Keywords: *Biological Agent, Plant Protection, Polymerase Chain Reaction (PCR)*

EKSPLORASI DAN IDENTIFIKASI NEMATODA ENTOMOPATOGEN PADA LAHAN JAGUNG DI KABUPATEN WONOGIRI

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ABSTRAK

Nematoda entomopatogen dikenal sebagai agen hayati yang efektif dalam mengendalikan populasi hama tanaman secara ramah lingkungan. Penelitian ini bertujuan untuk mengeksplorasi dan mengidentifikasi nematoda entomopatogen pada lahan jagung di Kabupaten Wonogiri melalui pendekatan morfologi, morfometri, dan molekuler. Penelitian dilakukan dengan pengambilan sample tanah dari lahan pertanian jagung di Kabupaten Wonogiri yaitu di Kecamatan Sidoharjo, Girimarto, Ngadirojo, Nguntoronadi, dan Baturetno. Hasil penelitian menunjukkan bahwa kepadatan populasi tertinggi terdapat pada Kecamatan Ngadirojo. Nematoda entomopatogen dari seluruh isolat memiliki bibir halus atau bulat yang tidak menonjol, stoma sempit, metakorpus jelas dengan bulb terminal pada esofagus. Bentuk ekor dari isolat Sidoharjo lebih pendek dari isolat Girimarto, Ngadirojo, Nguntoronadi, dan Baturetno yang berbentuk kerucut hingga meruncing. Karakteristik morfometrik nematoda entomopatogen dari lima lokasi menunjukkan variasi ukuran tubuh, dengan panjang tubuh berkisar antara 460,75–512,68 μm . Indeks morfometrik (a, b, dan c) relatif stabil, begitu pula posisi vulva (54,19–56,95% dari panjang tubuh). Diameter tubuh, panjang faring, dan ekor menunjukkan variasi antar isolat, dengan ukuran tertinggi umumnya ditemukan pada isolat Baturetno. Berdasarkan ciri morfologi dan morfometrik, isolat Sidoharjo merupakan nematoda *Steinernema feltiae*, sedangkan nematoda entomopatogen dari isolat Girimarto, Ngadirojo, Nguntoronadi, dan Baturetno adalah nematoda *Metarhabditis amsactae*. Hasil *Polymerase Chain Reaction* (PCR) menunjukkan hasil yang negatif karena adanya kontaminasi protein dan polisakarida.

Kata kunci : Agen Hayati, *Polymerase Chain Reaction* (PCR)