

# **EXPLORATION AND IDENTIFICATION OF BIOLOGICAL CONTROL AGENTS IN PEPPER PLANTATIONS IN BANJARNEGARA DISTRICT**

**By: Azmi Gendis Prawesti**

Supervised by: Mofit Eko Poerwanto

## **ABSTRACT**

Pepper (*Piper nigrum*) is one of the spice-producing plants with high economic value in Indonesia. However, several issues in pepper cultivation lead to decreased productivity, one of which is the disturbance caused by Plant Pest Organisms (PPOs). This study aims to identify biological control agents present in pepper plantations. The research utilized soil sample isolation (pure plate method), root sample isolation, and root isolation techniques. After isolation, the isolates were purified and subsequently identified through macroscopic, microscopic, and PCR methods. Exploration using the pure plate method resulted in four isolates: TA 1, TA 2, TA 3, and TA 4. Isolation of BCAs using rice media produced three isolates: NA 1, NA 2, and NA 3. Root isolation yielded four isolates: AK 1, AK 2, AK 3, and AK 4. Pepper plantations in Banjarnegara contain various biological control agents that have the potential to be used in managing Plant Pest Organisms (PPOs). Several types of fungi found such as *Aspergillus flavus*, *Aspergillus niger*, *Rhizopus* sp., *Aspergillus fumigatus*, *Trichoderma* sp., *Trichoderma hamatum*, *Penicillium* sp., and *Xylaria* sp. demonstrate the diversity of microorganisms that can be utilized in biological control strategies for pepper plants.

*Keywords : Pepper, Biological control agents*