

## ABSTRAK

### **EKSPLORASI JAMUR ENDOFIT TANAMAN PADI (*Oryza sativa* L.) UNTUK PENGENDALIAN *Sarocladium oryzae* PENYEBAB BUSUK PELEPAH DAN POTENSINYA DALAM MEMACU PERTUMBUHAN TANAMAN**

Oleh

**NADIYAH CAHYANINGSIH**

Padi (*Oryza sativa* L.) merupakan salah satu tanaman pangan utama di dunia yang produksinya sering terganggu oleh penyakit tanaman salah satunya, yaitu penyakit busuk pelepah yang disebabkan oleh *Sarocladium oryzae*. Pengendalian penyakit busuk pelepah selama ini masih mengandalkan fungisida kimia yang berdampak negatif terhadap lingkungan. Penelitian ini bertujuan untuk mengeksplorasi jamur endofit dari tanaman padi yang berpotensi sebagai agen antagonis terhadap *S. oryzae* sekaligus sebagai *Plant Growth-Promoting Fungi* (PGPF). Penelitian meliputi eksplorasi jamur endofit dari jaringan akar dan batang padi sehat, uji antagonisme *in vitro* (kultur ganda dan uji volatil), serta evaluasi potensi PGPF pada benih mentimun. Hasil penelitian memperoleh 10 isolat jamur endofit. Isolat BL3B yang teridentifikasi sebagai *Trichoderma* sp. menunjukkan persentase penghambatan tertinggi terhadap *S. oryzae*, yaitu sebesar 63,17% pada metode kultur ganda dan 65,78% pada uji volatil. Hasil pengamatan mikroskopis menunjukkan adanya interaksi antara hifa *S. oryzae* dan hifa jamur endofit yang mengarah pada kontak antarahifa serta dugaan kerusakan hifa patogen akibat keberadaan jamur endofit. Identifikasi morfologi menunjukkan bahwa isolat yang diperoleh berasal dari genus *Aspergillus* spp., *Trichoderma* sp., *Talaromyces* sp., dan *Penicillium* spp. Selain berpotensi sebagai agen antagonis, beberapa isolat juga menunjukkan kemampuan dalam memacu pertumbuhan tanaman, terutama isolat dari genus *Aspergillus* sp. Hasil penelitian menunjukkan bahwa jamur endofit asal tanaman padi berpotensi sebagai agen pengendali hayati sekaligus pemacu pertumbuhan tanaman.

**Kata kunci:** Antagonis, busuk pelepah, jamur endofit, PGPF, *Sarocladium oryzae*.

## **ABSTRACT**

### **EXPLORATION OF ENDOPHYTIC FUNGI FROM RICE (*Oryza sativa* L.) FOR THE BIOLOGICAL CONTROL OF *Sarocladium oryzae*, THE CAUSAL AGENT OF SHEATH ROT, AND THEIR POTENTIAL TO PROMOTE PLANT GROWTH**

**By**

**NADIYAH CAHYANINGSIH**

Rice (*Oryza sativa* L.) is one of the world's major food crops, and its production is frequently constrained by plant diseases, including sheath rot caused by *Sarocladium oryzae*. The management of sheath rot has largely relied on chemical fungicides, which may have adverse effects on the environment. This study aimed to explore endophytic fungi isolated from rice plants for their potential as antagonistic agents against *S. oryzae* and as Plant Growth-Promoting Fungi (PGPF). The study included the isolation of endophytic fungi from the roots and stems of healthy rice plants, in vitro antagonistic assays (dual culture and volatile compound assays), and the evaluation of PGPF potential using cucumber seedlings. A total of 10 endophytic fungal isolates were obtained. Isolate BL3B, identified as *Trichoderma* sp., exhibited the highest inhibitory activity against *S. oryzae*, with inhibition percentages of 63.17% in the dual culture assay and 65.78% in the volatile assay. Microscopic observations revealed interactions between the hyphae of *S. oryzae* and the endophytic fungi, indicating hyphal contact and suggesting damage to the pathogen's hyphae caused by the presence of the endophytic fungi. Morphological identification showed that the isolates belonged to the genera *Aspergillus* spp., *Trichoderma* sp., *Talaromyces* sp., and *Penicillium* spp. In addition to their antagonistic activity, several isolates also demonstrated the ability to promote plant growth, particularly isolates belonging to the genus *Aspergillus*. These findings indicate that endophytic fungi isolated from rice plants have promising potential as biological control agents against sheath rot while also promoting plant growth.

**Keywords:** biological control, endophytic fungi, PGPF, *Sarocladium oryzae*, sheath rot.