



INTISARI

Produksi pisang (*Musa* spp.) menghadapi penyakit layu fusarium yang disebabkan oleh jamur tular tanah *Fusarium oxysporum* f.sp. *cubense* (FOC), yang juga dikenal sebagai penyakit Panama. FOC menginfeksi akar melalui luka, menetap dan berkembang di berkas pembuluh. Upaya pengendalian layu fusarium dengan agens hayati dinilai lebih ramah lingkungan dibandingkan dengan fungisida. Penelitian ini bertujuan untuk mengetahui kemampuan *Bacillus* spp. dalam menekan perkembangan penyakit layu fusarium dan pengaruhnya terhadap pertumbuhan tanaman pisang. Penelitian ini dilakukan di Laboratorium Ilmu Penyakit Tumbuhan, Departemen Hama dan Penyakit Tumbuhan, Fakultas Pertanian, Universitas Gadjah Mada. Pengujian terhadap penyakit layu fusarium pisang dilakukan dengan menggunakan 3 isolat *Bacillus* spp. yaitu *Bacillus cereus* RC76, *Bacillus velezensis* B-27, dan *Bacillus* isolat Tlg4 serta *Trichoderma asperellum* sebagai pembanding. Pengujian secara *in vitro* dan *in vivo* dilakukan untuk melihat efektifitas agens hayati dalam menekan perkembangan penyakit layu fusarium pisang serta pengaruhnya dalam memacu pertumbuhan tanaman pisang. Uji *in vitro* dilakukan dengan metode *dual culture* dalam media PDA dan diinkubasi selama tujuh hari. Sedangkan, uji *in vivo* dilakukan pada polibag menggunakan kultivar Mas dengan rancangan penelitian Rancangan Acak Kelompok Lengkap. Hasil penelitian menunjukkan bahwa terjadi penghambatan pertumbuhan FOC pada pengujian secara *in vitro* dengan perlakuan *Bacillus cereus* RC76 (14%), *Bacillus velezensis* B-27 (9%), *Bacillus* isolat Tlg4 (43%), dan *Trichoderma asperellum* (57%), sedangkan pada uji *in vivo* hanya perlakuan *Bacillus* isolat Tlg4 yang mampu menghambat perkembangan penyakit layu fusarium pisang sebesar 34%. Pada penelitian ini seluruh perlakuan terbukti mampu mendukung pertumbuhan tinggi tanaman pisang, namun tidak dengan lingkaran pelepah.

Kata kunci: Pisang, *Fusarium oxysporum* f.sp. *cubense*, *Bacillus* spp., agens hayati.

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ABSTRACT

Banana (*Musa* spp.) production faces fusarium wilt caused by the soil-borne fungus *Fusarium oxysporum* f.sp. *cubense* (FOC), which is also known as Panama disease. FOC infect roots through wounds, settle and develop in vascular bundles. Efforts to control fusarium wilt with biological agents are considered more environmentally friendly than fungicides. This study aims to determine the ability of *Bacillus* spp. in suppressing the development of fusarium wilt and its effect on the growth of banana plants. This research was conducted at the Laboratory of Plant Diseases, Department of Plant Pests and Diseases, Faculty of Agriculture, Gadjah Mada University. Tests for banana fusarium wilt disease were carried out using 3 isolates of *Bacillus* spp. namely *Bacillus cereus* RC76, *Bacillus velezensis* B-27, and *Bacillus* isolates Tlg4 and *Trichoderma asperellum* as a comparison. In vitro and in vivo tests were carried out to see the effectiveness of biological agents in suppressing the development of banana fusarium wilt and their effect in stimulating the growth of banana plants. The in vitro test was carried out using the dual culture method in PDA media and incubated for seven days. Meanwhile, the in vivo test was carried out on polybags using the Mas cultivar with a Complete Randomized Block Design study design. The results showed that there was an inhibition of FOC growth in in vitro testing with *Bacillus cereus* RC76 (14%), *Bacillus velezensis* B-27 (9%), and *Trichoderma asperellum* (57%). Meanwhile, in the in vivo test, only the treatment of *Bacillus* isolate Tlg4 was able to inhibit the development of banana fusarium wilt by 34%. In this study, all treatments were proven to be able to support the growth of banana plant height, but not the pseudostem circumference.

Keywords : Banana, *Fusarium oxysporum* f.sp. *cubense*, *Bacillus* spp., biological agents.

Signed.

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