

## Abstrak

Busuk pangkal batang merupakan penyakit penting pada tanaman lada yang disebabkan oleh *Phytophthora capsici*. Penyakit ini dapat menurunkan produksi lada hingga 80%. Penggunaan fungisida telah menyebabkan penurunan keefektifan pengendalian dan resistensi patogen. Tujuan dari penelitian ini adalah mengetahui pengaruh beberapa agens pengendali hayati dalam mengendalikan penyakit busuk pangkal batang pada tanaman lada. Penelitian ini dilaksanakan pada bulan Desember 2018 – Juni 2019 di laboratorium dan di rumah kaca Departemen Hama dan Penyakit Tumbuhan, Fakultas Pertanian, UGM. Rancangan yang digunakan adalah Rancangan Acak Kelompok Lengkap (RAKL) 3 blok, 8 perlakuan, dan 5 ulangan. Hasil yang diperoleh pada pengujian di laboratorium menunjukkan bahwa *Trichoderma* sp. mampu menghambat pertumbuhan *P. capsici* secara *in vitro* sebesar 75%, *Bacillus* spp. sebesar 63,97%. Hasil yang diperoleh pada pengujian di rumah kaca, insidensi penyakit busuk pangkal batang pada perlakuan *Trichoderma* sp. sebesar 53,33%, perlakuan Jamur Mikoriza Arbuskular sebesar 100%, perlakuan *Bacillus* spp. sebesar 73,33%, perlakuan kombinasi *Trichoderma* sp., *Bacillus* spp., dan Jamur Mikoriza Arbuskular sebesar 60%, dan kontrol positif sebesar 100%. Hasil penelitian di rumah kaca menunjukkan bahwa *Trichoderma* sp. dan kombinasi *Trichoderma* sp., *Bacillus* spp., dan Jamur Mikoriza Arbuskular merupakan agens pengendali hayati yang efektif untuk menekan insidensi penyakit busuk pangkal batang lada.

Kata kunci: *Phytophthora capsici*, busuk pangkal batang lada, agens pengendali hayati

### *Abstract*

Foot rot disease is an important disease on Pepper (*Piper nigrum*) caused by *Phytophthora capsici*. This disease can reduce the production up to 80%. The use of fungicides could produce residue to the environment. Purpose of this research was to study the effectiveness some biological control agents to control the disease. This research was carried out on December 2018 - June 2019 in laboratory and greenhouse of Department of Plant Protection, Faculty of Agriculture, Universitas Gadjah Mada. Randomized Completely Block Design (RCBD) was used in screen-house trial with 3 blocks, 8 treatments, and 5 replications of each treatment. The result of laboratory trial showed that *Trichoderma* sp. was able to inhibit *P. capsici* in vitro by 75% of inhibition percentage, while *Bacillus* spp. was 63.97%. The result of the screen-house trial revealed that the incidences of foot rot disease under treatments of *Trichoderma* sp., Mycorrhiza Arbuscular, *Bacillus* spp., combination of *Trichoderma* sp, *Bacillus* spp, and Mycorrhiza Arbuscular, as well as positive control were 53.33%, 100%, 73.33%, 60%, and 100%, respectively. The result of greenhouse trial indicated that *Trichoderma* sp. and combination of *Trichoderma* sp, *Bacillus* spp, and Mycorrhiza Arbuscular were effective to be biological control agent to suppress incidence of foot rot disease on pepper.

**Keywords:** *Phytophthora capsici*, foot rot disease, biological control agents