RINGKASAN

Kentang (*Solanum tuberosum* L.) merupakan salah satu jenis tanaman hortikultura yang penting di Indonesia. Penyakit hawar daun *Phytophthora infestans* merupakan salah satu kendala utama dalam budidaya kentang. Pengendalian hayati dengan menggunakan mikroba antagonis *Pseudomonas fluorescens* dan *Trichoderma harzianum* adalah salah satu alternatif pengendalian yang ramah lingkungan. Penelitian ini bertujuan untuk menguji kemampuan formula cair *P. fluorescens* dan *T. harzianum* dalam mengendalikan penyakit hawar daun dan pengaruhnya terhadap pertumbuhan serta hasil tanaman kentang di lapangan.

Penelitian dilaksanakan di Laboratorium Perlindungan Tanaman Fakultas Pertanian, Universitas Jenderal Soedirman dan lahan pertanaman kentang di Desa Serang, Kecamatan Karangreja, Kabupaten Purbalingga. Penelitian dilakukan pada bulan Maret sampai Juni 2015. Rancangan percobaan yang digunakan adalah Rancangan Acak Kelompok (RAK) dengan 6 perlakuan dan ulangan 5 kali. Perlakuan terdiri atas control, mankozeb, aplikasi formula cair mikroba antagonis (*P. fluorescens* P60, *P. fluorescens* P8, *T. harzianum*) 1, 4, 8, dan 12 kali. Variabel yang diamati meliputi komponen patosistem (masa inkubasi, intensitas penyakit, laju infeksi, dan kepadatan akhir antagonis), komponen pertumbuhan (tinggi tanaman, jumlah daun, jumlah batang, bobot segar tanaman, bobot kering tanaman, bobot segar akar, dan bobot kering akar), komponen hasil (jumlah umbi per tanaman, dan bobot umbi per tanaman) dan kandungan senyawa fenol. Data pengamatan dianalisis dengan menggunakan uji F pada taraf 5% dilanjutkan dengan uji Dunkan Rentang Berganda (DMRT).

Hasil penelitian menunjukkan bahwa formula cair *P. fluorescens* P60, *P. fluorescens* P8 dan *T. harzianum* yang diaplikasikan 1, 4, 8 dan 12 kali belum mampu menekan masa inkubasi, intensitas penyakit, laju infeksi penyakit hawar daun, namun mampu meningkatkan meningkatkan senyawa fenol (tanin, saponin, dan glikosida). Formula cair *P. fluorescens* dan *T. harzianum* yang diaplikasikan 4, 8, dan 12 kali mampu meningkatkan tinggi tanaman, berturut-turut sebesar 22,63%, 27,50%, dan 28,71%. Formula cair *P. fluorescens* P60, *P. fluorescens* P8 dan *T. harzianum* yang diaplikasikan 12 kali berpotensi dalam meningkatkan bobot segar tanaman, bobot kering tanaman, bobot segar akar dan bobot umbi, berturut-turut sebesar 42,54%, 38,26%, 42,73%, dan 39,50%.

SUMMARY

Potato (*Solanum tuberosum* L.) *is one of the horticulture crop which important in Indonesia. Late blight disease Phytophthora infestans is one of the main obstacles in the cultivation of potatoes. Biological control using antagonistic microbes Pseudomonas fluorescens and Trichoderma harzianum is one of the alternatives control that are environmentally friendly. This research aimed to examine capability of liquid formula P. fluorescens and T. harzianum to control late blight disease, effect for growth, and yield potato in the field.*

This research was conducted in Plant Protection Laboratory of Agriculture Faculty, Jenderal Soedirman University and potato field at Serang vilage, Karangreja Subdistrict, Purbalingga regency. This research was carried out in Maret to June 2015. The design used in this research was Randomized Block Design (RBD) with 6 treatments and 5 replicates. The treatment were control, mankozeb, application liquid formula antagonist microbes (*P. fluorescens* P60, *P. fluorescens* P8, *T. harzianum*) *1, 4, 8, and 12 times. The observed variables were pathosystem components (incubation periode, disease intensity, infection rate, and late density of the antagonist), growth components (crop height, leave total, branch total, fresh crop weight, dry crop weight, fresh root weight, and dry root weight), yield components (tuber total, and tuber weight) and the content of phenolic compounds. The data were analyzed by using the F Test on 5% levels followed by Duncan's Multiple Range Test (DMRT).*

The result showed that application liquid formula P. fluorescens P60, *P. fluorescens* P8 *and T. harzianum 1, 4, 8, and 12 times has not been able to suppress incubation periode, disease intensity, infection rate late blight, but able to increase phenolic compounds (tannins, saponins, and glycosides). Liquid formula P. fluorescens and T. harzianum 4, 8, and 12 times effective to increase crop height, as 22,63%, 27,50%, and 28,71%. Application liquid formula P. fluorescens* P60, *P. fluorescens* P8 *and T. harzianum 12 times potensially to increase fresh crop weight, dry crop weight, fresh root weight, and tuber weight, as 42,54%, 38,26%, 42,73%, and 39,50%.*