

RINGKASAN

Tanaman tomat (*Lycopersicum esculentum* Mill.) merupakan salah satu komoditas hortikultura yang penting di Indonesia. Salah satu kendala dalam menurunnya produktivitas tomat adalah penyakit layu yang disebabkan oleh *Fusarium oxysporum* f.sp. *lycopersici*. Pengendalian dengan menggunakan mikroba antagonis *Bacillus* sp. merupakan salah satu cara pengendalian yang ramah lingkungan. Penelitian ini bertujuan untuk mengetahui pengaruh aplikasi formulasi isolat *Bacillus* sp B42 dan B64 dalam mengendalikan layu fusarium pada tanaman tomat serta mengetahui pengaruhnya terhadap pertumbuhan tanaman tomat. Penelitian dilaksanakan di Laboratorium Perlindungan Tanaman Fakultas Pertanian Unsoed, Purwokerto dan, lahan pertanaman tomat di Desa Banteran, Kecamatan Sumbang, Kabupaten Banyumas, mulai bulan April – September 2016. Rancangan percobaan yang digunakan adalah rancangan acak kelompok (RAK) non-faktorial dengan 4 perlakuan dan 7 ulangan, perlakuan terdiri atas kontrol, *Bacillus* sp. B42, *Bacillus* sp. B64, dan fungisida. Variabel yang diamati adalah masa inkubasi, intensitas penyakit, laju infeksi, tinggi tanaman, jumlah daun, bobot segar total, bobot segar akar, bobot segar tajuk, dan kandungan senyawa fenol. Hasil penelitian menunjukkan bahwa formulasi *Bacillus* sp. B42 mampu menekan intensitas penyakit sebesar 39,40%, meningkatkan tinggi tanaman sebesar 38,40%, meningkatkan jumlah daun sebesar 22,13%, meningkatkan bobot basah total sebesar 42,41%, meningkatkan bobot basah tajuk sebesar 42,87%, dan meningkatkan bobot basah akar sebesar 43,72%, serta mampu meningkatkan kandungan senyawa fenol (tanin dan saponin) dalam jaringan tanaman.

SUMMARY

Tomato plants (Lycopersicon esculentum Mill.) was one of important horticultural commodity in Indonesia. One of the obstacles in the decline in productivity is the tomato wilt disease caused by Fusarium oxysporum f lycopersici. Control using antagonistic microbes Bacillus sp. is one way to control environmentally friendly. This study aimed to determine the effect of the formulation application of Bacillus sp isolates B42 and B64 in controlling fusarium wilt on tomato plants as well as determine the effect on growth of tomato plants. This research was conducted at the Laboratory of Plant Protection, Faculty of Agriculture, Jenderal Soedirman University, Purwokerto, and tomato field at Banteran Village, Sumbang Subdistrict, Banyumas Regency, from April-September, 2016. The experimental design used was a randomized block design (RAK) non-factorial with 4 treatments and 7 replications, the treatments were control, Bacillus sp. B42, Bacillus sp. B64, and fungicides. The variables measured were the incubation period, the intensity of the disease, infection rate, plant height, leaf number, total fresh weight, root fresh weight, fresh weight of the header, and the content of phenolic compounds. The results showed that the formulations of Bacillus sp. B42 is able to suppress the intensity of the disease amounted to 39.40%, increased plant height of 38.40%, increased the number of leaves by 22.13%, increased the total wet weight of 42.41%, increased the weight of the wet canopy of 42.87%, and increased root wet weight of 43.72%, and able to enhanced the content of phenolic compounds (tannins and saponins) in the plant tissue.

