

RINGKASAN

Tomat merupakan salah satu hasil dari pertanian hortikultura di Indonesia. Budidaya tomat memiliki kendala yang dapat mempengaruhi produksi. Kendalanya yaitu adanya gangguan patogen. Salah satu patogen yang membahayakan adalah *Ralstonia solanacearum* yang menyebabkan penyakit layu bakteri. Petani di Indonesia masih mengandalkan pestisida sintesis dalam mengendalikan penyakit layu bakteri. Penggunaan bakterisida yang tidak bijaksana akan menyebabkan kerusakan lingkungan dan sangat berbahaya bagi kesehatan manusia. Cara alternatif pengendalian yang tepat dan aman bagi lingkungan adalah dengan menggunakan agensia hayati. Penelitian ini bertujuan untuk: (1) mengetahui kemampuan beberapa agensia hayati dalam mengendalikan penyakit layu bakteri pada tanaman tomat, (2) mengetahui pengaruh agensia hayati terhadap pertumbuhan dan hasil tanaman tomat dan, (3) menetapkan agensia hayati terbaik pengendali penyakit layu bakteri pada tanaman tomat.

Penelitian dilaksanakan pada bulan April hingga Juli 2015 di lahan pertanaman tomat, Desa Banteran Kecamatan Sumbang Kabupaten Banyumas dan Laboratorium Perlindungan Tanaman Fakultas Pertanian Universitas Jenderal Soedirman, Purwokerto. Penelitian menggunakan Rancangan Acak Kelompok Lengkap (RAKL) dengan 8 perlakuan dan 4 kali ulangan. Perlakuan yang dicoba meliputi: Kontrol, *Trichoderma* sp. TS.1, *Trichoderma* sp. TS.2, *Gliocladium* sp. TS 32, *Bacillus* sp. B.42, *Bacillus* sp. B.64, *P. fluorescens* 42, dan bakterisida. Variabel yang diamati meliputi masa inkubasi, intensitas penyakit, tinggi tanaman, berat segar tajuk, berat segar akar, jumlah buah, bobot buah, dan analisis senyawa fenol.

Hasil penelitian menunjukkan bahwa agensia hayati *Trichoderma* sp. isolat TS 1 dan *Bacillus* sp. isolat B.64 mampu mengendalikan penyakit layu bakteri dengan menekan intensitas penyakit masing-masing sebesar 47,61% dan 52,37%. *Bacillus* sp. isolat B.64 mampu meningkatkan bobot segar tajuk 37,68%, bobot segar akar 46,17%, jumlah buah 33,45% dan bobot buah 44,82%. *Bacillus* sp. B.64 merupakan agensia hayati terbaik dalam mengendalikan penyakit layu bakteri dan meningkatkan pertumbuhan dan hasil pada tanaman tomat.

SUMMARY

Tomatoes are one of product from farming horticulture in Indonesia. Cultivation of tomatoes having constraints which can affect the production. The obstacle is existence of interference of pathogens. One of the pathogen harmful is *Ralstonia solanacearum* that cause bacterial wilt disease. Farmer in Indonesia still rely synthetic pesticides for controlling of bacterial wilt disease. The use of bactericidal that don't thoughtful will cause environmental damage and very harmful to human health. The right control alternative and safe for the environment is by biological agensia. This research aimed to: (1) know the ability of some biological agent to controlling wilt diseases bacteria in tomato plants (2) know the effect of biological agent for growth and yield of tomato (3) determine the best biological agent in controlling wilt diseases of tomato plants.

Research conducted in April to July 2015 on the tomatoes field, Banteran village in discordant district Banyumas and Laboratory experiment and the protection of the faculty of agriculture plant Jenderal Soedirman University, Purwokerto. The design of the research used Completed Randomize Block Design with 8 treatment and 4 replication. Those who attempted covering: control, *Trichoderma* sp. TS.1; *Trichoderma* sp. TS.2; *Gliocladium* sp. TS 32; *Bacillus* sp. B.42; *Bacillus* sp. B.64; *P. fluorescense* 42; and bactericide. Variable observed covering the incubation, intensity disease, tall plant, heavy fresh header, heavy fresh roots, the number of fruit, weights fruit, and analysis compound of phenol .

Results of the research showed that treatment the biological agent *Trichoderma* sp. isolate TS 1 and *Bacillus* sp. isolate B.64 were able to controlled of bacterial wilt by suppress the disease intensity as 47,61% and 52,37%. *Bacillus* sp. isolate B.64 was the best treatment to increase fresh crop weight as 37,68%, fresh root weight 46,17%, the number of fruit 33,45% and weight of fruit 44,82%. *Bacillus* sp. B.64 was the best biological agent for controlling of bacterial wilt and to increase the growth and yield of tomato plant.