

RINGKASAN

Cabai rawit merupakan tanaman hortikultura yang memiliki nilai ekonomi tinggi dan menjanjikan. Produksi cabai rawit terhambat oleh adanya penyakit antraknosa yang disebabkan *Colletotrichum capsici*. Antraknosa mengakibatkan penurunan kualitas buah serta menyusutnya kuantitas ataupun mutu hasil produksi. Penggunaan fungisida kimia yang digunakan untuk mengendalikan penyakit antraknosa pada tanaman cabai rawit di Indonesia dinilai belum mampu menunjukkan hasil yang memuaskan, selain itu berdampak buruk bagi lingkungan. Sehingga diperlukan alternatif yang lebih ramah lingkungan dan mampu mengendalikan penyakit antraknosa seperti penggunaan metabolit sekunder yang berasal dari mikroba antagonis. Metabolit sekunder yang dimanfaatkan yaitu berasal dari *Pseudomonas fluorescens* P60 dan *Trichoderma harzianum* T10, yang telah diformula dengan nama Bio P60 dan Bio T10. Tujuan penelitian ini yaitu untuk mengetahui potensi aplikasi Bio P60 dan Bio T10 baik secara tunggal ataupun gabungan terhadap penyakit antraknosa dan pengaruh terhadap produksi cabai rawit.

Penelitian ini dilaksanakan di Desa Bansari, Kecamatan Bansari, Kabupaten Temanggung dari bulan Desember 2022 sampai Juli 2023, menggunakan Rancangan Acak Kelompok dengan 5 perlakuan dan 5 ulangan. Perlakuan yang dicoba yaitu kontrol, kimia (fungisida mankozeb 80%), Bio P60, Bio T10, dan Gabungan Bio P60 dan Bio T10 (perbandingan 1:1). Variabel yang diamati terdiri atas masa inkubasi, insidensi penyakit, intensitas penyakit, *area under disease progress curve* (AUDPC), laju infeksi, dan efektivitas pengendalian, tinggi tanaman, jumlah daun, waktu muncul bunga pertama, waktu muncul buah pertama, jumlah buah, bobot per tanaman, bobot panen per plot (8 m²) dan uji senyawa fenol secara kualitatif. Data dianalisis dengan anova pada taraf kepercayaan 95 %, jika hasil yang didapat menunjukkan pengaruh nyata, maka dilanjutkan DMRT (*Duncan's Multiple Range Test*) pada taraf kesalahan 5 %.

Hasil penelitian menunjukkan bahwa perlakuan gabungan merupakan perlakuan terbaik, ditunjukkan dengan hasil terbaik pada komponen patosistem seperti menunda masa inkubasi, menekan intensitas penyakit, menurunkan nilai AUDPC masing-masing 13,71, 69, 34, 47,06 % dibanding kontrol dan mampu meningkatkan nilai efektivitas pengendalian sebesar 67,67%. Perlakuan gabungan metabolit sekunder Bio P60 dan Bio T10 juga mampu meningkatkan pertumbuhan dan hasil pada tanaman dengan meningkatkan tinggi tanaman, jumlah buah, bobot buah per tanaman dan bobot panen per plot (8 m²) masing-masing sebesar 27,38, 62,65, 90,85, 82,99 % dibanding kontrol. Aplikasi Bio P60, Bio T10, dan gabungannya mampu meningkatkan senyawa fenol (tanin, saponin, dan glikosida) secara kualitatif pada tanaman cabai rawit.

SUMMARY

Chili pepper is a horticultural crop having high economic value and promising. Chili pepper production is hampered by anthracnose caused by Colletotrichum capisci causing a decrease in fruit quality and shrinkage in quantity. The use of synthetic chemical fungicides to control the disease in chili pepper plants in Indonesia is considered unable to show satisfactory results, besides having a bad impact on the environment. Therefore, an alternative control that is more environmentally friendly and able to control the disease is needed, such as the use of secondary metabolites derived from antagonistic microbes. The secondary metabolites used are from Pseudomonas fluorescens P60 and Trichoderma harzianum T10 formulated under the names of Bio P60 and Bio T10, respectively. The purpose of this study was to determine the potential application of Bio P60 and Bio T10 either singly or in combination against anthracnose disease and the effect on chili pepper production.

This research was conducted at Bansari Village, Bansari Subdistrict, Temanggung Regency from December 2022 to July 2023, using a Randomized Block Design with five treatments and five replicates. The treatments were control, chemical fungicide (a.i. mancozeb 80%), Bio P60, Bio T10, and Bio P60 and Bio T10 combined (1:1 ratio). The observed variables consisted of incubation period, disease incidence, disease intensity, area under disease progress curve (AUDPC), infection rate, and control effectiveness, plant height, number of leaves, time of first flower appearance, time of first fruit appearance, number of fruits, weight per plant, harvest weight per plot (8 m²) and qualitative phenolic compound content analysis. Data were analyzed by ANOVA at the 95 % confidence level, if the results obtained showed a significant effect, then followed by DMRT (Duncan's Multiple Range Test) at the 5 % error level.

The results showed that the combined treatment was the best treatment, indicated by the best results on pathosystem components such as delaying the incubation period, suppressing disease intensity, and reducing AUDPC values by 13.71, 69.34, and 47.06 %, respectively, compared to the control and increase the control effectiveness by 67.67 %. The combined treatment of Bio P60 and Bio T10 was also able to increase plant growth and yield by increasing plant height, fruit number, fruit weight per plant and harvest weight per plot (8 m²) by 27.38, 62.65, 90.85, and 82.99 %, respectively, compared to the control. The application of Bio P60, Bio T10, and their combination could qualitatively increase phenolic compounds (tannins, saponins, and glycosides) content in chili pepper plants.