

RINGKASAN

Cabai merah (*Capsicum annuum* L.) merupakan tanaman dari komoditas hortikultura yang cukup populer, serta harganya yang berfluktuasi dan mengikuti permintaan pasar. Akan tetapi dalam budidayanya, petani sering dihadapkan dengan berbagai kendala, salah satunya yaitu serangan hama dan patogen. Sejauh ini pengendalian yang dilakukan petani adalah dengan menggunakan pestisida anorganik yang dapat berbahaya bagi lingkungan apabila digunakan secara terus menerus dan dalam jangka waktu yang lama. Salah satu upaya untuk mengurangi penggunaan pestisida kimia yaitu dengan memanfaatkan agens hayati. Penelitian ini bertujuan untuk mengetahui 1) pengaruh pemberian agens hayati terhadap pengendalian penyakit oleh virus pada tanaman cabai merah, 2) pengaruh perlakuan agens hayati terhadap pertumbuhan dan hasil tanaman cabai merah.

Penelitian dilaksanakan di *Experimental Farm* Fakultas Pertanian Universitas Jenderal Soedirman, Karangwangkal, Purwokerto Utara. Persiapan penelitian dilaksanakan di Laboratorium Perlindungan Tanaman Fakultas Pertanian Universitas Jenderal Soedirman. Penelitian ini dilakukan selama lima bulan mulai bulan September 2020 hingga bulan Januari 2021. Rancangan percobaan yang digunakan adalah Rancangan Acak Kelompok, dengan 6 perlakuan dan jumlah ulangan 4 kali, jumlah unit percobaan ada 24 dan setiap unit terdiri atas 3 tanaman sehingga terdapat 72 unit tanaman percobaan. Perlakuan yang dicoba meliputi K0 (Kontrol), K1 (*Trichoderma* sp. lahan marginal), K2 (*Beauveria bassiana*), K3 (*Bacillus* sp. rizosfer albazia), K4 (formula cair BioP60), K5 (Insektisida Klorpirifos 400g/l). Variabel pengamatan meliputi, masa inkubasi, intensitas penyakit, serangga vektor virus, jumlah tunas, tinggi tanaman, jumlah buah pertanaman, dan bobot buah pertanaman. Data dianalisis dengan uji F pada taraf kesalahan 5%. Apabila hasil analisis menunjukkan berbeda nyata, dilanjutkan dengan uji lanjut menggunakan *Duncan's Multiple Range Test*.

Hasil penelitian menunjukkan pemberian *Trichoderma* sp, *B.bassiana*, dan formula cair BioP60, dapat menekan intensitas penyakit oleh virus, sedangkan perlakuan *Bacillus* sp. kurang mampu menekan intensitas penyakit oleh virus pada tanaman cabai merah. Pemberian formula cair BioP 60 selain mampu menekan intensitas penyakit oleh virus juga mampu meningkatkan tinggi tanaman, jumlah buah, dan bobot buah berturut turut, 18%, 33%, dan 59% dibandingkan kontrol. Serangga vektor yang menularkan virus penyebab penyakit yang ditemukan pada tanaman cabai dengan perlakuan agens hayati *Trichoderma* sp, *Beauveria bassiana*, formula cair BioP60 yaitu kutu daun, sedangkan pada perlakuan *Bacillus* sp yaitu kutu daun dan kutu kebul.

SUMMARY

Red pepper (Capsicum annum L.) is a popular horticultural commodity, which is the price fluctuates and follows the market demand. But in cultivation, farmers are often faced with several obstacles, one of which is pest and disease attacks. The control carried out by farmers is by using chemical pesticides which can be harmful to the environment if used continuously. One of the efforts to reduce the use of chemical pesticides is by utilizing biological agents. This research aims to determine 1) the effect of providing biological agents on disease control by viruses in red pepper plants, 2) the effect of biological agents on the growth and yield of red pepper plants

The research was conducted at Experimental Farm, Faculty of Agriculture, Jenderal Soedirman University, Karangwangkal, North Purwokerto. Preparation were carried out at the Laboratory of Plant Protection, Faculty of Agriculture, Jenderal Soedirman University. The research was done from September 2020 until January 2021. The experimental design used was a randomized block design, with 6 treatments and 4 repetitions, and each unit consisted of 3 plants so there were 72 experimental plant units. The treatments consisted of K0 (Control), K1 (Trichoderma sp. marginal land), K2 (Beauveria bassiana), K3 (Bacillus sp. rhizosphere albazia), K4 (BioP60 liquid formula), K5 (insecticide Klorpirifos concentrate 400g/l). Observation variables include incubation period, disease intensity (%), virus vector insect, number of buds, the height of plants (cm), number of crops (g), and weight of crop fruit (g). Data were analyzed using the F test at an error level of 5%. If the results of the analysis show significantly different results, followed by further tests using Duncan's Multiple Range Test.

The results showed that the treatment using Trichoderma sp., B. bassiana, Bacillus sp., BioP60 liquid formula, and Chlorpyrifos 400g/l insecticide was able to suppress intensity diseases by viruses in red chili plants, while the treatment of Bacillus sp. not able to suppress the intensity of disease by viruses in red chili plants. The treatment BioP 60 liquid formula beside able to reduce the intensity of disease by viruses also was able to increase plant height, fruit number, and fruit weight, respectively, by 18%, 33%, and 59% compared to control. Insect vectors that transmit disease-causing viruses found in chili plants treated with biological agents Trichoderma sp, Beauveria bassiana, BioP60 liquid formula were aphids, while in Bacillus sp treatments were aphids and whitefly