

## RINGKASAN

Penyakit hawar daun bakteri (HDB) pada tanaman padi yang disebabkan bakteri patogen *Xanthomonas oryzae* pv. *oryzae* dapat menyebabkan penurunan kuantitas hasil. Cara pengendalian penyakit ini secara umum dilakukan dengan menggunakan bakterisida sintetis kimia, yang menyebabkan banyak dampak negatif, baik terhadap komponen biotik maupun komponen abiotik. Oleh karena itu, banyak dilakukan penelitian mengenai pengendalian penyakit ini yang lebih efektif dan ekologis, salah satunya dengan menginduksi ketahanan tanaman melalui aplikasi agen hayati berupa bakteri endofit. Bakteri endofit merupakan bakteri yang berasal dari jaringan seperti jaringan daun, pelepah, dan akar. Bakteri endofit yang digunakan dalam penelitian ini adalah bakteri endofit akar padi dari varietas Ciherang. Tujuan penelitian ini adalah mempelajari pengaruh bakteri endofit akar padi terhadap komponen ketahanan tanaman baik secara struktural maupun biokimia dan mengevaluasi ketahanan padi terhadap penyakit hawar daun bakteri (HDB).

Penelitian dilaksanakan di Lahan Percobaan; Laboratorium Perlindungan Tanaman, dan Laboratorium Mikrobiologi ITP, Fakultas Pertanian, Universitas Jenderal Soedirman, Purwokerto. Penelitian dilaksanakan selama empat bulan, yaitu pada bulan Juli, sampai dengan Desember 2020. Rancangan percobaan yang digunakan yaitu Rancangan Acak Kelompok (RAK) dengan satu faktor, yaitu perlakuan aplikasi bakteri endofit akar padi yang meliputi: A=Kontrol; B= Bakteri endofit akar padi SM1; C= Bakteri endofit akar padi SB1; D= Bakteri endofit akar padi SB3, dengan 6 kali ulangan. Variabel yang diamati yaitu intensitas penyakit, warna daun, kandungan klorofil a dan b, kerapatan stomata, trikoma, serta ketebalan dinding sel, kandungan fenol total, aktivitas enzim peroksidase, dan kandungan asam salisilat.

Hasil penelitian menunjukkan bahwa inokulasi bakteri endofit akar padi berpengaruh meningkatkan kerapatan stomata, tetapi tidak berpengaruh dalam meningkatkan warna daun, kerapatan trikoma, ketebalan dinding sel, dan tidak berpotensi menurunkan intensitas penyakit HDB pada 76 HST. Inokulasi bakteri endofit akar padi isolat SB1 cenderung meningkatkan kandungan klorofil a dan b sebesar 32,28% dan 25,71%, dibanding kontrol, sedangkan isolat SM1 cenderung meningkatkan kandungan fenol total, tetapi semua isolat bakteri cenderung tidak berpotensi meningkatkan aktivitas enzim peroksidase dan kandungan asam salisilat. Aplikasi bakteri endofit akar padi tidak meningkatkan ketahanan terhadap penyakit hawar daun bakteri pada umur 76 HST berdasarkan nilai intensitas penyakit.

## SUMMARY

*Bacterial Leaf Blight (BLB) in rice plants caused by the pathogenic bacteria Xanthomonas oryzae pv. oryzae can cause a decrease in the quantity of yields. The method of controlling this disease is generally carried out by using chemical synthetic bactericides, which cause many negative impacts, both on the biotic component and the abiotic component. Therefore, many studies have been carried out on more effective and ecological control of this disease, one of which is by inducing plant resistance through the application of biological agents in the form of endophytic bacteria. Endophytic bacteria are bacteria that come from tissues such as leaf, midrib, and root tissue. The endophytic bacteria used in this study was about rice root endophytic bacteria from the Ciherang variety. The purpose of this study was to study the effect of rice root endophytic bacteria on plant resistance components both structurally and biochemically and to evaluate rice resistance to bacterial leaf blight (BLB).*

*The research was carried out in the experimental field; Plant Protection Laboratory, and Microbiology Laboratory of Food Science and Technology, Faculty of Agriculture, Jenderal Soedirman University, Purwokerto. The research was conducted for four months, from July to December 2020. The experimental design used was a randomized block design (RBD) with one factor, namely the application of rice root endophytic bacteria which included: A = Control; B = SM1 rice root endophytic bacteria; C = SB1 rice root endophytic bacteria; D = SB3 rice root endophytic bacteria, with 6 replications. The variables observed were disease intensity, leaf color, chlorophyll a and b content, stomatal density, trichomes, and cell wall thickness, total phenol content, peroxidase enzyme activity, and salicylic acid content.*

*The results showed that the inoculation of rice root endophytic bacteria affected increasing stomata density, but had no effect on increasing leaf color, trichome density, cell wall thickness, and did not have the potential to reduce the intensity of BLB disease at 76 DAP (days after planting). Inoculation of rice root endophytic bacteria SB1 isolates tended to increase chlorophyll a and b content by 32.28% and 25.71%, compared to control, while SM1 isolates tended to increase the total phenol content, but all bacterial isolates tended not to have the potential to increase peroxidase enzyme activity and salicylic acid content. The application of rice root endophytic bacteria did not increase resistance to bacterial leaf blight at the age of 76 DAP based on the value of disease intensity.*