

ABSTRAK

UJI ANTAGONIS ISOLAT *Bacillus thuringiensis* SEBAGAI PENGENDALI JAMUR *Colletotrichum* sp. PENYEBAB PENYAKIT ANTRAKNOSA PADA BUAH CABAI MERAH (*Capsicum annuum*)

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Penurunan kuantitas dan kualitas cabai pascapanen disebabkan karena adanya infeksi jamur patogen *Colletotrichum* sp. Infeksi *Colletotrichum* sp. pada cabai dapat dikendalikan dengan agen hayati. Salah satu agen hayati yang dapat digunakan yaitu bakteri *Bacillus thuringiensis*. Tujuan dilakukannya penelitian ini untuk mengetahui kemampuan antagonis *Bacillus thuringiensis* dalam menghambat pertumbuhan *Colletotrichum* sp. serta untuk mengetahui efektivitas *Bacillus thuringiensis* dalam mengurangi keparahan penyakit akibat *Colletotrichum* sp. pada buah cabai merah. Penelitian ini dilakukan menggunakan Rancangan Acak Lengkap (RAL) dengan 7 isolat *Bacillus thuringiensis* yang diujikan secara *in vitro*. Persentase penghambatan paling besar di ujikan secara *in vivo* sebanyak 9 ulangan dengan parameter pengamatan persentase keparahan penyakit. Kontrol positif uji *in vivo* menggunakan buah cabai merah yang dilukai dan diberi suspensi konidia jamur *Colletotrichum* sp. Data persentase keparahan penyakit dianalisis menggunakan uji *One-Way ANOVA* dan dilanjutkan dengan uji beda nyata terkecil taraf 5%. Hasil uji *in vitro* didapati 3 isolat *Bacillus thuringiensis* memiliki persentase penghambatan yang besar yakni isolat kode Bt2, Bt3, dan Bt6 dengan nilai 76,76%, 60,96% dan 100%. Hasil uji *in vivo* menunjukkan adanya perbedaan signifikan persentase keparahan penyakit antara isolat kode Bt2 dan Bt3 dengan Bt6. Isolat kode Bt6 mampu menekan pertumbuhan jamur *Colletotrichum* sp. dengan melilit hifa jamur yang menandakan adanya interaksi kompetisi dan mikroparasitisme antara jamur dengan bakteri. Selain itu, isolat kode Bt6 efektif digunakan sebagai agen hayati dalam menghambat pertumbuhan *Colletotrichum* sp.

Kata Kunci: Antraknosa, *Bacillus thuringiensis*, Cabai Merah, *Colletotrichum* sp., Uji Antagonis

ABSTRACT

ANTAGONIST TEST OF *Bacillus thuringiensis* ISOLATES AS A CONTROL OF FUNGUS *Colletotrichum* sp. CAUSING ANTHRACNOSE DISEASE IN RED CHILI (*Capsicum annuum*)

By

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The decrease in quantity and quality of post-harvest chili is caused by infection with the pathogenic fungus *Colletotrichum* sp. *Colletotrichum* sp. infection in chili can be controlled with biological agents. One of the biological agents that can be used is the bacterium *Bacillus thuringiensis*. The purpose of this study was to determine the ability of the antagonist *Bacillus thuringiensis* in inhibiting the growth of *Colletotrichum* sp. and to determine the effectiveness of *Bacillus thuringiensis* in reducing the severity of disease caused by *Colletotrichum* sp. in red chili fruit. This study was conducted using a Completely Randomized Design (CRD) with 7 isolates of *Bacillus thuringiensis* tested in vitro. The largest percentage of inhibition was tested in vivo with 9 replications with the observation parameter of the percentage of disease severity. The positive control of the in vivo test used injured red chili fruit and was given a suspension of *Colletotrichum* sp. conidia of the fungus. Data on the percentage of disease severity were analyzed using the One-Way ANOVA test and continued with the smallest significant difference test at a level of 5%. The results of the in vitro test found 3 isolates of *Bacillus thuringiensis* that had a large percentage of inhibition, namely isolates code Bt2, Bt3, and Bt6 with values of 76.76%, 60.96% and 100%. The results of the in vivo test showed a significant difference in the percentage of disease severity between isolates code Bt2 and Bt3 with Bt6. Isolate code Bt6 was able to suppress the growth of *Colletotrichum* sp. by wrapping around the fungal hyphae indicating the interaction of competition and microparasitism between fungi and bacteria. In addition, isolate code Bt6 is effective as a biological agent in inhibiting the growth of *Colletotrichum* sp.

Keyword: Anthracnose, *Bacillus thuringiensis*, Red Chili, *Colletotrichum* sp., Antagonist test