

## Intisari

Penyakit antraknosa yang disebabkan oleh *Colletotrichum gloeosporioides* merupakan salah satu penyakit penting yang dapat menyebabkan kehilangan hasil yang cukup tinggi dalam produksi bawang merah di Indonesia. Pemanfaatan agens hayati menjadi salah satu alternatif dalam pengendalian penyakit tumbuhan untuk mengurangi risiko bahaya penggunaan pestisida kimia. Penelitian ini bertujuan untuk mengetahui kemampuan dan mekanisme agens hayati jamur mikoriza arbuskular *Rhizophagus intraradices*, bakteri *Bacillus thuringiensis* dan silika, baik secara tunggal maupun kombinasi dalam menekan perkembangan penyakit antraknosa pada bawang merah dan memacu pertumbuhan tanaman. Penelitian di rumah kaca menggunakan Rancangan Acak Lengkap (RAL) Faktorial dengan faktor perlakuan yaitu inokulasi patogen (I0 dan I1) dan aplikasi *R. intraradices*, *B. thuringiensis* serta kombinasinya dengan silika (P1-P6). Hasil penelitian di rumah kaca menunjukkan bahwa tidak ada interaksi yang nyata antara perlakuan inokulasi patogen dengan aplikasi kombinasi *R. intraradices*, *B. thuringiensis* dan silika terhadap intensitas penyakit antraknosa. Kombinasi perlakuan *R. intraradices*, *B. thuringiensis* dan silika mampu menekan perkembangan penyakit antraknosa bawang merah hingga 6 MST dan meningkatkan tinggi tanaman, jumlah daun dan jumlah anakan. Penelitian di lapangan menggunakan rancangan *Oversite* dengan dua faktor yaitu varietas (V1-V3) serta aplikasi *R. intraradices*, *B. thuringiensis* dan silika (P1-P6). Hasil analisis ragam menunjukkan bahwa penggunaan varietas dengan perlakuan *R. intraradices*, *B. thuringiensis* dan silika berinteraksi nyata terhadap intensitas penyakit antraknosa, tinggi tanaman, berat segar tanaman dan berat segar umbi. Aplikasi perlakuan *R. intraradices*, *B. thuringiensis* dan silika belum mampu menekan penyakit antraknosa di lapangan, namun mampu meningkatkan tinggi tanaman dan bobot segar tanaman dan umbi.

Kata kunci : *Allium cepa*, Biokontrol, *Colletotrichum gloeosporioides*, mikoriza, PGPB

## Abstract

Anthracoze caused by *Colletotrichum gloeosporioides* is one of the significant diseases that can lead to substantial yield loss in shallot production in Indonesia. The utilization of biological agents has become an alternative in plant disease management to reduce the risks associated with chemical pesticide use. This study aims to determine the abilities and mechanisms of the biological agents, namely arbuscular mycorrhizal fungus *Rhizophagus intraradices*, bacterium *Bacillus thuringiensis*, and silica, both individually and in combination, in suppressing the development of anthracnose in shallots and promoting plant growth. Greenhouse experiments were conducted using a Completely Randomized Design (CRD) factorial arrangement with treatment factors being pathogen inoculation (I0 and I1) and the application of *R. intraradices*, *B. thuringiensis*, and their combination with silica (P1-P6). The results of the greenhouse study indicated that there was no significant interaction between pathogen inoculation treatment and the combined application of *R. intraradices*, *B. thuringiensis* and silica in terms of anthracnose disease intensity. The combined treatment of *R. intraradices*, *B. thuringiensis*, and silica effectively suppressed the development of anthracnose in shallots for up to 6 weeks after treatment and led to an increase in plant height, leaf number, and tiller count. Field experiments were conducted using an Oversight design with two factors: varieties (V1-V3) and the application of *R. intraradices*, *B. thuringiensis* and silica (P1-P6). Analysis of variance results showed that the use of varieties in combination with the treatment of *R. intraradices*, *B. thuringiensis* and silica had a significant interaction effect on anthracnose disease intensity, plant height, plant fresh weight, and bulb fresh weight. The application of *R. intraradices*, *B. thuringiensis* and silica treatments did not effectively suppress anthracnose in the field, but it did enhance plant height and the fresh weight of both plants and bulbs.

Keywords: *Allium cepa*, Biocontrol, *Colletotrichum gloeosporioides*, mycorrhiza, PGPB