

Aplikasi *In Planta Pseudomonas Sp.* Dan *Bacillus Sp.* untuk Meningkatkan
Pertumbuhan serta Ketahanan Terhadap Penyakit Darah Pisang pada Tanaman Pisang
Cavendish

Chahyaning Ardhiani
19/449913/PMU/09919

Intisari

Bakteri endofit diketahui memiliki kemampuan sebagai *Plant Growth Promoting* (PGP) dan memicu resistensi terhadap penyakit tanaman. Bakterioma endofit ini pada kultivar pisang Kluthuk diketahui terdapat dari genus *Pseudomonas* sp. dan *Bacillus* sp. Penelitian ini bertujuan untuk mengetahui pengaruh inokulasi bakteri endofit *Pseudomonas* sp. dan *Bacillus* sp. dalam meningkatkan pertumbuhan dan ketahanan tanaman terhadap penyakit darah pisang pada tanaman pisang Cavendish. Bakteri *Pseudomonas* sp. K114 dan K120 serta *Bacillus* sp. K22 diinokulasikan ke dalam planlet pisang cavendish kemudian ditanam di polybag. Setelah enam minggu, masing-masing perlakuan bakteri endofit dibagi menjadi perlakuan reinokulasi bakteri endofit dan tanpa reinokulasi. Inokulasi bakteri *Ralstonia syzigii* penyebab penyakit darah pisang dilakukan pada 12 minggu setelah tanam pada masing-masing perlakuan. Pertumbuhan tanaman dan gejala penyakit diamati dan pada akhir pengamatan dilakukan pengambilan sampel daun, akar dan tanah untuk analisis konfirmasi keberadaan bakteri endofit dengan REP-PCR. Analisis varian dilakukan untuk melihat pengaruh inokulasi bakteri endofit terhadap pertumbuhan tanaman menggunakan ANOVA dengan uji lanjut *Duncan's Multiple Range Test* (DMRT) dan hubungan kedekatan antar isolat dianalisis menggunakan program MVSP. Secara umum, perlakuan reinokulasi pada tanaman dapat meningkatkan pertumbuhan dibandingkan tanpa reinokulasi namun tidak berbeda signifikan terhadap kontrol. Efektivitas perlakuan bakteri endofit belum dapat dibuktikan karena keberadaannya tidak terkonfirmasi pada akhir pengamatan.

Kata kunci: bakteri endofit; *Pseudomonas* sp.; *Bacillus* sp.; *Ralstonia syzigii*; penyakit darah pisang

In Planta Application of *Pseudomonas* sp. and *Bacillus* sp. to Increase Growth and Resistance against Banana Blood Disease in Cavendish Plants

Chahyaning Ardhiani
19/449913/PMU/09919

Abstract

Endophytic bacteria are known to have the ability as Plant Growth Promoting (PGP) and trigger resistance to plant diseases. The core endophytic bacterioma of the Kluthuk cultivar is known to be of the genus *Pseudomonas* sp. and *Bacillus* sp. This study aims to determine the effect of inoculation of endophytic bacteria *Pseudomonas* sp. and *Bacillus* sp. in increasing plant growth and resistance against banana blood disease in Cavendish plants. *Pseudomonas* sp. K114, *Pseudomonas* sp. K120 and *Bacillus* sp. K22 was inoculated into cavendish plantlets and then planted in polybags. After six weeks, each endophytic bacteria treatment was divided into endophytic bacteria reinoculation treatment and non-reinoculation treatment. Inoculation of the *Ralstonia syzigii* that causes banana blood disease was carried out 12 weeks after planting in each treatment. Plant growth and disease symptoms were observed and at the end of the observation leaf, root and soil samples were taken for analysis to confirm the presence of endophytic bacteria by REP-PCR. Analysis of variance was carried out to see the effect of inoculation of endophytic bacteria on plant growth with ANOVA analysis followed by the Duncan Multiple Range Test (DMRT) and the closeness between isolates was analyzed using the MVSP program. In general, reinoculation treatment of endophytic bacteria increased plant growth compared to non-reinoculation treatment but was not significantly different from the control. The Effectiveness of endophytic bacteria treatment not yet be proven as their presesnce was not confirmed at the end of the experiment.

Keywords: Endophytic bacteria; *Pseudomonas* sp.; *Bacillus* sp.; *Ralstonia syzigii*; Banana Blood Disease