Pengaruh Mikoriza terhadap Layu Fusarium Pada Tanaman Pisang Mas (*Musa acuminata L. 'Lady Finger'*)

Anthony Jovian Saputra
19/441256/BI/10248
Pembimbing : Rina Sri Kasiamdari, S.Si., Ph.D.

INTISARI

Tanaman pisang berperan penting bagi pertanian di Indonesia. Delapan puluh tujuh persen tanaman pisang diproduksi untuk dikonsumsi. Penyakit layu Fusarium menjadi penyakit utama dalam Tanaman Pisang, termasuk pisang Mas (*Musa acuminata* L. 'Lady Finger'). Layu fusarium pada pisang disebabkan oleh *Fusarium oxysporum* f.sp. *cubense* (*Foc*). Patogen ini menyerang tanaman secara perlahan berupa layu kuning hingga berakibat kematian. Layu fusarium termasuk patogen tular tanah yang dapat diatasi dengan Mikoriza. *Arbuscular Mycorrhizal Fungi* (AMF) sangat efektif dalam menangkal infeksi yang ditimbulkan oleh *Fusarium oxysporum.* AMF yang digunakan dalam penelitian ini *Rhizophagus aggregatus* yang diperbanyak dari inang *Sorghum bicolor*. Inokulum *Foc* dibiakkan dalam media PDA kemudian diberikan kepada tanaman pisang Mas. Gejala infeksi *Foc* dinilai dengan skoring *DSI* 0-4. Tanaman pisang mas diamati selama 57 HSI dengan perlakuan kontrol(K), mikoriza(M), mikoriza + *Fusarium*(MF), dan *Fusarium*(F). Parameter yang diamati yaitu *DSI* (0 – 4), tinggi tanaman, jumlah daun, dan diameter tanaman. Data kemudian diolah menggunakan analisis ANOVA, DMRT, dan korelasi *Pearson*. Hasil penelitian menunjukkan bahwa *Fusarium* menghambat pertumbuhan tanaman pisang Mas. AMF *R. aggregatus* efektif menekan penyakit layu Fusarium (*DSI* 0) pada perlakuan MF tanaman pisang Mas, dan meningkatkan pertumbuhan tanaman pada perlakuan M dengan perubahan tinggi tanaman dari 29,68 ± 3,53 cm menjadi 34,18 ±1,43 cm pada 57 HSI, perubahan diameter tanaman dari 1,48 ± 0,10 cm menjadi 2,03 ± 0,13 cm pada 57 HSI, dan perubahan jumlah daun dari 3,75 ± 1,50 cm menjadi 5,50 ± 1.00 pada 57 HSI. Infeksi *R. aggregatus* juga ditemukan pada perlakuan M dan MF dengan peresentasi kolonisasi 76,95 ± 6,58% dan 73,09 ± 1,83%.

Kata kunci; *fusarium, infeksi, mikoriza, pisang, tanaman*

The Effect of Mycorrhizae on Fusarium Wilt in Lady Finger Banana Plant (*Musa acuminata* L. 'Lady Finger')

Anthony Jovian Saputra
19/441256/BI/10248
Supervisor: Rina Sri Kasiamdari, S.Si., Ph.D.

ABSTRACT

Banana plants hold a crucial role in Indonesian agriculture, with eighty-seven percent of their production dedicated to consumption. The predominant affliction among banana plants is Fusarium wilt disease, affecting varieties such as Mas banana (*Musa acuminata* L. 'Lady Finger'). Fusarium wilt in bananas is attributed to *Fusarium oxysporum* f.sp. *cubense* (*Foc*), a soil-borne pathogen that gradually induces yellow wilt, ultimately leading to plant demise. Fortunately, this ailment can be addressed through Mycorrhiza treatment. Arbuscular Mycorrhizal Fungi (AMF), particularly *Rhizophagus aggregatus* was propagated from the host *Sorghum bicolor*, exhibits high efficacy in thwarting *Fusarium oxysporum* infections. The *Foc* inoculum was cultured in PDA medium and then applied to *Musa acuminata* plants. To evaluate *Foc* infection, a Disease Severity Index (*DSI*) scoring system ranging from 0 to 4 is employed. In a 57-day observation period post-application (DAP) on *M. acuminata* plants, various treatments were administered, including control (K), mycorrhiza (M), mycorrhiza + *Fusarium* (MF), and *Fusarium* (F). Parameters such as *DSI* (0 – 4), plant height, number of leaves, and plant diameter were meticulously recorded. The data were then processed using ANOVA, DMRT analysis, and Pearson correlation. The findings revealed *Fusarium's* inhibitory impact on the growth of *M. acuminata* plants. However, in the MF treatment, the introduction of AMF *R. aggregatus* effectively suppressed Fusarium wilt disease (*DSI* 0), while the M treatment exhibited enhanced plant growth. Notable changes at 57 DAP included an increase in plant height from 29.68 ± 3.53 cm to 34.18 ± 1.43 cm, plant diameter from 1.48 ± 0.10 cm to 2.03 ± 0.13 cm, and the number of leaves from 3.75 ± 1.50 to 5.50 ± 1.00. R. aggregatus infection was also identified in the M and MF treatments, with colonization percentages of 76.95 ± 6.58% and 73.09 ± 1.83%, respectively.

Keywords: *banana, fusarium, infection, mycorrhiza, plant*