

ABSTRAK

KEBERHASILAN APLIKASI ASAP CAIR DAN TRICHODERMA DALAM PENGENDALIAN BUSUK BATANG (*Fusarium oxysporum*) PADA VANILI (*Vanilla planifolia* Andrews.)

Oleh

FIRNANDA PANDU FADLIANSYAH

Vanili sebagai tanaman perkebunan bernilai ekonomi tinggi dengan nilai ekspor hingga 116,7 juta USD di 2022 dan sebanyak 173 ton di 2023. Budidaya vanili menghadapi permasalahan berupa serangan busuk batang yang disebabkan *Fusarium oxysporum*. Penelitian ini bertujuan untuk mengurangi infeksi *Fusarium oxysporum* pada vanili dengan penggunaan asap cair tempurung kelapa dan *Trichoderma harzianum*. Penelitian ini dilaksanakan pada Maret-Juni 2025 di Laboratorium Penyakit Tanaman dan Laboratorium Lapang Terpadu, Fakultas Pertanian, Universitas Lampung. Penelitian ini menggunakan Rancangan Acak Lengkap (RAL) faktorial 4×2 dengan 4 ulangan. Faktor pertama yaitu konsentrasi asap cair (A): A₀ (tanpa asap cair), A₁ (asap cair 5%), A₂ (asap cair 10%), dan A₃ (asap cair 15%). Faktor kedua yaitu aplikasi *Trichoderma harzianum* (T): T₀ (tanpa *Trichoderma harzianum*) dan T₁ (dengan *Trichoderma harzianum*). Homogenitas data diuji dengan uji Bartlett, aditivitas dengan uji Tukey. Selanjutnya dilakukan analisis ragam dan uji lanjut berupa uji DMRT (*Duncan Multiple Range Test*) taraf 5%. Hasil penelitian secara *in vitro* menunjukkan bahwa perlakuan asap cair 5% tanpa *Trichoderma harzianum* menjadi perlakuan terbaik dalam menghambat pertumbuhan *Fusarium oxysporum* dan dapat mematikan *Trichoderma harzianum*. Secara *in vivo* tidak terjadi perbedaan yang nyata antara asap cair dan *Trichoderma harzianum* dalam menurunkan infeksi *Fusarium oxysporum* dan meningkatkan pertumbuhan vegetatif pada fase bibit berumur 4 minggu setelah inokulasi.

Kata kunci: Asap Cair, Busuk Batang, *Fusarium oxysporum*, *Trichoderma harzianum*, Vanilli

ABSTRACT

THE SUCCESS OF LIQUID SMOKE APPLICATION AND TRICHODERMA IN CONTROLLING STEM ROT (*Fusarium oxysporum*) IN VANILLA (*Vanilla planifolia* Andrews.)

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FIRNANDA PANDU FADLIANSYAH

*Vanilla is a high-value plantation crop with export earnings reaching USD 116.7 million in 2022 and a production volume of 173 tons in 2023. Vanilla cultivation faces significant challenges from stem rot disease caused by *Fusarium oxysporum*. This study aimed to reduce *Fusarium oxysporum* infection in vanilla through the application of coconut shell liquid smoke and *Trichoderma harzianum*. The research was conducted from March to June 2025 at the Plant Disease Laboratory and Integrated Field Laboratory, Faculty of Agriculture, University of Lampung. A factorial Completely Randomized Design (CRD) 4×2 with four replications was employed. The first factor was liquid smoke concentration (A): A₀ (no liquid smoke), A₁ (5% liquid smoke), A₂ (10% liquid smoke), and A₃ (15% liquid smoke). The second factor was the application of *Trichoderma harzianum* (T): T₀ (without *Trichoderma harzianum*) and T₁ (with *Trichoderma harzianum*). Data homogeneity was tested using Bartlett's test, and additivity was assessed with Tukey's test. Subsequently, analysis of variance (ANOVA) and Duncan's Multiple Range Test (DMRT) at the 5% significance level were performed. In vitro results indicated that treatment with 5% liquid smoke without *Trichoderma harzianum* was the most effective in inhibiting the growth of *Fusarium oxysporum* but also had a lethal effect on *Trichoderma harzianum*. In vivo, there was no significant difference between liquid smoke and *Trichoderma harzianum* in reducing *Fusarium oxysporum* infection and enhancing vegetative growth at the seedling stage 4 weeks after inoculation.*

Keywords: *Fusarium oxysporum*, Smoke Liquid, Stem Rot, *Trichoderma harzianum*, Vanilla