

EXPLORATION OF TERMITE SYMBIOTIC BACTERIA AS APH IN SOYBEAN SEEDLING DAMPING DISEASE IN VITRO

Supervisor: Trisnani Alif, S.Si., M.Sc.

Vernanda Hani Pradana Sakti

Study Program of Crops Production Technology

Departement of Agricultural Production

ABSTRACT

*Termite symbiotic bacteria have potential as biological control agents that have not been extensively researched. This research aims to determine the potential of termite symbiotic bacteria as a biological control agent for the damping-off disease (*Sclerotium rolfsii*) in soybean plants. The research was conducted in the plant protection laboratory, biosciences laboratory, and innovation garden of Politeknik Negeri Jember for 4 months. This research used a Completely Randomized Design (CRD) with 6 treatments and repeated 4 times, namely: P1 *Sclerotium rolfsii* (*S. rolfsii*) pathogen as the negative control, P2: *S. rolfsii* pathogen with IR1A1, P3: *S. rolfsii* pathogen with IR1A4, P4: *S. rolfsii* pathogen with IR1A6, P5: *S. rolfsii* pathogen with IR4D2, and P6: *S. rolfsii* pathogen against the positive control of the fungicide with the active ingredient Pyraclostrobin at a dose of 0.25ml/l. The research stages begin with the isolation of termite symbiotic bacteria, antagonistic screening tests, hypersensitivity tests, and in vitro antagonistic tests. From the test results, four isolates showed the ability to inhibit the pathogen *S. rolfsii*. The isolates are IR1A1, IR1A4, IR1A6, and IR4D2. The inhibition of *S. rolfsii* ranged from 28.97% to 95.79% in vitro. The most effective bacterial isolate in suppressing the pathogen and capable of surpassing fungicide treatment is the IR1A6 isolate, which has an inhibition rate of up to 95.79%.*

Keywords: *Biological agents, symbiotic bacteria, soybean, termite.*