

## **ABSTRACT**

### **APPLICATION OF *Trichoderma viride* AND ORGANIC MATTER FOR BIOLOGICAL CONTROL OF FUSARIUM WILT DISEASE (*Fusarium oxysporum* f.sp. *cubense*) ON BANANA PLANT**

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Fusarium wilt disease caused by *Fusarium oxysporum* f.sp. *cubense* is one of the problems to increase banana plant production. This research was aimed to determine the effect of combination treatment between *Trichoderma* spp. and organic matter for growing and developing fusarium wilt disease on banana plant. This research was conducted in two phases, they are screening of *Trichoderma* isolate and efficacy trial of *Trichoderma* spp. for suppressing fusarium wilt disease growth. Screening of *Trichoderma* spp. is conducted by determining five soil samples on banana plant rhizosphere, then they were isolated to get some isolate of *Trichoderma* spp. and then they were tested by in-vitro. Efficacy trial of *Trichoderma* spp. for suppressing fusarium wilt disease consists of 12 treatments and four time replications, every one time replication consists of 10 plants, treatment was prepared with randomized complete block design then analyzed by analysis of variance followed by Orthogonal analysis (P 0,05). Organic matter

that was used are rice straw, cassava peel, and compost. *Trichoderma viride* was obtained by screening of *Trichoderma* isolate. Application of *T. viride* could suppress disease incident up to 65%, and disease severity up to 34,16%. The highest disease incident was in treatment FT<sub>0</sub>O<sub>0</sub> (100%) and organic matter only (78,33%). Application of *T. viride* only had lower incident and severity disease than combination of *T. viride* and organic matter. Different application time (nursery and soil medium) was not significantly difference for incident and severity disease fusarium wilt. Kind of organic matter was not significantly difference for incident and severity disease fusarium wilt.

Key words: *Trichoderma viride*, *Fusarium oxysporum* f.sp. *cubense* (Foc), rice straw, cassava peel, compost, fusarium wilt, organic matter, biological control.