

## ABSTRACT

Fusarium wilt caused by *Fusarium oxysporum* is one of the most destructive soil-borne diseases affecting banana (*Musa paradisiaca*) cultivation, with potential crop losses reaching up to 50%. This study aims to evaluate the antagonistic potential of *Trichoderma* spp. isolated from the rhizosphere of coffee plants as a biological control agent against *F. oxysporum* under *in vitro* conditions. The research was conducted at the Laboratory of Pests and Plant Diseases, Faculty of Agriculture, Universitas Malikussaleh, using a Completely Randomized Design (CRD) with 13 *Trichoderma* isolates and three replications. The dual culture method was applied to assess antagonism, and the data were analyzed using ANOVA and Duncan's Multiple Range Test (DMRT) at a 5% significance level. The results showed that isolate G2DTLD had the highest inhibition zone against *F. oxysporum*, with 74,72% on the 5th day and 80,59% on the 7th day. The lowest inhibition was observed in isolates G3DTLM and G1DTLD. The inhibitory effect of *Trichoderma* spp. was attributed to mechanisms such as nutrient competition, hyperparasitism, and antibiotic production. This study supports the potential of *Trichoderma* spp. as an eco-friendly biological control agent against *F. oxysporum* in banana crops.

Keywords: antagonism, banana, *Fusarium oxysporum*, *in vitro*, *Trichoderma* spp.