ABSTRACT

IN VITRO TEST OF SOME *Trichoderma* spp. ISOLATES AND THE EFFECTIVITY OF *Trichoderma harzianum* AND ORGANIC MATTER TO CONTROL FOOT ROT OF BLACK PEPPER IN THE FIELD

By

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Serious problem in the crop cultivation of black pepper is foot rot caused by the fungus *Phytophthora capsici*. The objective of this research was to determine the effectiveness of isolates of *Trichoderma harzianum* combined with organic matter to controll foot rot paper disease in the field. The hypothesis of this research were (1) isolates of *Trichoderma* sp. can suppress the growth of *Phytophthora capsici* in vitro; (2) the ability of *Trichoderma* in suppressing the growth of *Phytophthora capsici* differed between isolates; (3) the combination of isolates of *Trichoderma* sp. and organic matter can suppress foot rot progression in the field; (4) a different type of organic matter has different capabilities indirectly to suppress progression of the disease. For in vitro test, total of seven *Trichoderma* isolates (two were isolates from Cahaya Negeri black pepper field and five were from cultur collection) were used in this experiment. In the field, treatments arranged in a randomized block design with ten replications. The data were analyzed by analysis of variance and differences followed by LSD test with significance level at 5%. The results showed that isolate T3 M (*Trichoderma harzianum*) has a higher power than isolate antagonists T2 M, T1, T3, T1 M, Tv and Tk. Treatment *Trichoderma harzianum* and organic matter did not decrease the occurrence of the disease. In addition, this treatment increased the density of *Trichoderma harzianum* in the soil in the field.

Keywords: Organic matter, foot rot pepper, *Phytophthora capsici*, *Trichoderma*