The Use of Trichoderma sp. Fungi as Biological Agents to Control Leaf Spot Disease (Cercospora* sp.*) in Soybean Plants

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ABSTRACT

Leaf spot disease caused by Cercospora sp. is one of the major diseases affecting beans, which can reduce both the quality and quantity of the harvest. Commonly used control methods involve the use of chemicals (fungicides), however, excessive use can lead to pathogen resistance, environmental pollution and residues in the soil. This study aims to evaluate the effectiveness of Trichoderma sp. as a biological agent in inhibiting the growth of Cercospora sp. in vitro and reduced the severity of the disease in beans. The study was conducted in vitro inhibitory assay using the dual culture method, with concentrations of (10^7, 10^8, and 10^9 cfu/ml), as well as field trials measuring disease incidence, plant height, and the fresh and dry weights of the pods. The results showed that Trichoderma sp. could inhibit the growth of Cercospora sp. by 2.5% in vitro at concentrations of 10^7 and 10^8 cfu/ml showed the best inhibitory effects after 96 hours of incubation (2.49% and 2.39% respectively). In field trials, the severity of leaf spot infection showed no significant difference between the Trichoderma sp. and Propikonazol treatments. However, Trichoderma sp. had a more favourable effect on vegetative growth, with plant height (38.7 cm) greater than that observed with Propikonazol (30.2 cm). There were no significant differences in the fresh and dry weight of the pods across all treatments. The results of the study indicate that Trichoderma sp. has the potential to be used as an environmentally friendly biological control alternative against leaf spot disease in soya beans.

Keywords: Leaf spot, Cercospora sp, Trichoderma sp, biological control