

**Control of Leaf Spot Disease in Cowpea (*Vigna unguiculata*) Using the
Biological Control Agent *M. anisopliae* Under
In Vitro and In Vivo Conditions**
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ABSTRACT

*Leaf spot disease caused by *C. canescens* is one of the diseases that causes low productivity of cowpea in Indonesia. An environmentally friendly control method is to use the biological agent *M. anisopliae*. This study aims to analyze the ability and effect of *M. anisopliae* in suppressing *C. canescens* on cowpea in vitro and in vivo. The in vitro test used a completely randomized design with 3 levels (control, 10^6 , and 10^7 conidia.ml $^{-1}$) and 6 replicates, while the in vivo test used a comparison between 2 fields, namely using the fungicide mancozeb and *M. anisopliae* as biological agent. Based on the in vitro results, the treatment with *M. anisopliae* at 10^7 conidia.ml $^{-1}$ can suppress the growth of *C. canescens* by 17.19%. The in vivo results showed that the incidence of disease in the mancozeb and *M. anisopliae* treatments averaged 55% and 50% respectively, while the intensity of attack at 49 dap in the *M. anisopliae* was 0.89% lower than in the mancozeb treatment, which was 2.34%. The plant height and number of productive branches in the mancozeb were 92.15 cm and 7.70 branches, while in the *M. anisopliae*, they were 76.85 cm and 5.25 branches, showing a significant difference. The number of pods and fresh weight of pods in the mancozeb was 2.65 pods and 10.19 grams, while in the *M. anisopliae* it was 3.03 pods and 9.93 grams, showing no significant difference. The results of the study indicate that *M. anisopliae* has the potential to suppress the growth of *C. canescens*, although it did not show a significant difference in growth and production.*

Keywords: *C. canescens*, cowpea, *M. anisopliae*