Pengaruh Aplikasi Mikoriza Arbuskular Terhadap Pertumbuhan Bibit Kopi Robusta *(Coffea canephora)* Pada Kondisi Cekaman Kekeringan. *The Effect of Arbuscular Mycorrhizal Application on the Growth of Robusta Coffee (Coffea canephora) Seedlings under Drought Stress Conditions .Supervised*: Elly Daru Ika Wilujeng, S.P., M.Si

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ABSTRACT

*Coffee is an important plantation commodity for the Indonesian economy. Robusta coffee (*Coffea canephora*) is one of the most widely cultivated types and ranks as the second largest coffee species in the world after Arabica. However, climate change, particularly the El Niño phenomenon, has caused climatic instability, prolonged drought, and increased plant mortality, leading to a significant decline in coffee production. One adaptive effort to reduce the impact of drought stress and improve the resilience of coffee seedlings is the application of Arbuscular Mycorrhizal Fungi (AMF), which enhance water and nutrient uptake through symbiotic associations with plant root systems. This study aimed to determine the effects of arbuscular mycorrhizal application and watering frequency on the growth quality of Robusta coffee seedlings (clone BP 308) under drought stress conditions. The research was conducted at the Soil Laboratory, Experimental Farm, and Seed Production Engineering Laboratory of Politeknik Negeri Jember. The experiment employed a factorial Completely Randomized Design (CRD) with two factors. The first factor was arbuscular mycorrhiza, consisting of 0 g (M0), 10 g (M1), 20 g (M2), and 30 g (M3) per plant. The second factor was watering frequency, consisting of once every 3 days (K1), once every 5 days (K2), and once every 7 days (K3). Data were analyzed using Analysis of Variance (ANOVA), and when significant or highly significant differences were observed, Duncan's Multiple Range Test (DMRT) at a 5% significance level (α = 0.05%) was applied. The results showed that arbuscular mycorrhizal application significantly affected the growth of coffee seedlings, with the best dose obtained at M3 (30 g per plant). The best watering frequency was K1 (once every 3 days), which enhanced vegetative growth. No significant interaction was found between arbuscular mycorrhizal application and watering frequency for all observed parameters.*

Key words: *Robusta coffee, arbuscular mycorrhiza, drought stres*