EFFECTIVENESS OF MYCORRHIZAL BIOLOGICAL FERTILIZER APPLICATION UNDER SEVERAL CONDITIONS OF DROUGHT STRESS ON THE GROWTH OF COCOA SEEDLINGS (Theobroma cacao L.)

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ABSTRACT

Cocoa (Theobroma cacao L.) is a very important export commodity in Indonesia for the country's foreign exchange earnings. However, cocoa production declined in 2018-2022 due to the impact of drought. One way to overcome this phenomenon is to improve cocoa cultivation techniques, starting from the seedling phase, by using mycorrhizal biofertilizer. The objective of this study was to determine the effectiveness of mycorrhizal biofertilizer application under several drought stress conditions on cocoa seedling growth. This study was conducted from June to October 2025 at the Green House Laboratory of the Jember State Polytechnic. This study used a factorial design (RAK), consisting of two factors: mycorrhizal biofertilizer (M0 control, M1 application dose of 4 grams/polybag, M2 application dose of 8 grams/polybag) and watering interval (C0 control, C1 watering every 3 days, C2 watering every 5 days). There were nine treatment combinations with three replications. The experimental data were analyzed using Anova and a 5% BNJ follow-up test. The results showed that the application of mycorrhizal biofertilizer had a significant effect on root volume at a dose of 8 grams/polybag (4,41 cm^3). The drought stress treatment with watering intervals had no effect on the growth of cocoa seedlings in all observation parameters. The interaction between mycorrhizal biofertilizer and drought stress with watering intervals showed that the application of 4 grams/polybag of mycorrhizal biofertilizer with watering once a day had a significant effect on the number of leaves (14.53 leaves).

Keywords : Nursery, cocoa, Mycorrhiza, Stress.