

Application of Arbuscular Mycorrhizal Fungi (AMF) Biofertilizer and Reduction of Inorganic Fertilizer NPK on the Yield of Peanut Plants (*Arachis hypogaea* L.)

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ABSTRACT

Peanut production in Indonesia is not optimal due to declining soil fertility due to the continuous and large use of inorganic fertilizers. The provision of mycorrhizal biofertilizers and the reduction of NPK inorganic fertilizers is one of the efforts to increase plant productivity. This study aims to examine the effect of Arbuscular Mycorrhizal Fungi (AMF) biofertilizers and the reduction of NPK inorganic fertilizers on peanut yields. This study was conducted from June to November 2025, located in Patemon Village, Pakusari District, Jember Regency (Lat: -8.137463, Long 113.75223) with a soil pH of 7.37. The experimental design used was a factorial RAK with two factors and three replications. The first factor of mycorrhizal consists of 0 grams, 10 grams, 20 grams and 30 grams. The second factor is the reduction of NPK consisting of 37.5 grams/m², 28.12 grams/m² and 18.75 grams/m². The research results showed that the 30 grams mycorrhizal treatment had a significant effect on plant height (18.1 cm) and the number of branches (7.9 branches). The application of NPK fertilizer at a dose of 18.75 grams/m² had a significant effect on the number of branches (8.0 branches) and the weight of fresh pods per sample (92.1 grams). The application of mycorrhizal and the reduction of NPK fertilizer at doses of 30 grams and 18.75 grams/m² had a significant effect on the number of branches (10.4 branches), the number of pods per sample (31.4 pieces), and the weight of dry pods per sample (80.7 grams). The mycorrhizal has a positive effect on plant production because its function is to increase the ability of roots to absorb nutrients and reduce the use of inorganic NPK fertilizers. The impact of this is that nutrient absorption by plants becomes optimal and supports sustainable agriculture.

Keywords: *bio fertilizer, fertilizer or, legume*