

## ABSTRACT

This study aims to explore the effect of oil palm frond biochar (*Elaeis guineensis* Jacq.) and mycorrhiza on the growth of oil palm seedlings in pre nursery nurseries. The growth of oil palm seedlings in prenursery is greatly influenced by nutritional factors which are one of the important determinants of plant yield and quality. Excessive use of inorganic fertilizers can damage the environment, so this study seeks more environmentally friendly alternatives. The study was conducted at the experimental garden of the Faculty of Agriculture, Malikussaleh University, North Aceh, from October 2024 to January 2025, using a Factorial Randomized Block Design. This study used a Factorial Randomized Block Design with three replications. The first factor is (B0) 0 g/plot, (B1) 7 g/plot, (B2) 14 g/plot (B3) 21 g/plot. The second factor is (P0) 0 g/plot, (P1) 5 g/plot, (P2) 10 g/plot, (P3) 15 g/plot. The results showed that oil palm frond biochar had a significant effect on various growth parameters, including plant height, stem diameter, leaf chlorophyll, upper stomata length, upper stomata width, number of upper stomata, upper stomata length, upper stomata width, lower stomata length, lower stomata width, number of upper stomata, number of lower stomata, root length and root volume. While mycorrhiza also showed a significant effect on plant height, stem diameter, leaf chlorophyll, upper stomata length, upper stomata width, lower stomata length, lower stomata width, number of upper stomata, number of lower stomata, root length and root volume. There was an interaction between biochar and mycorrhiza that affected root length. The best treatment was obtained from a combination of biochar treatments with a level of 21 g/plot (B3) and mycorrhiza 15 g/plot (P3). This treatment provides new insights to improve the growth of oil palm seedlings sustainably.

Keywords: Biochar, Oil Palm, Mycorrhiza,