

## ABSTRACT

Red lettuce (*Lactuca sativa* L.) is a short-lived horticultural crop that is highly favored by the public due to its high nutritional content, rich in vitamins, minerals, and bioactive compounds, and holds significant economic value in both domestic and international markets. However, its productivity in Indonesia remains low due to limited soil nutrient availability. Efforts to improve yields can be made through the application of biofertilizers and inorganic fertilizers. This study aimed to examine the effects of arbuscular mycorrhizal fungi (AMF) and NPK fertilizer on the growth and yield of red lettuce. The experiment was conducted at the Experimental Field and Laboratory of the Faculty of Agriculture, Malikussaleh University, North Aceh, from May to June 2025. The study used a Randomized Complete Block Design (RCBD) with two factors and three replications. The first factor was AMF ( $M_0$ : 0 g/polybag (control),  $M_1$ : 5 g/polybag,  $M_2$ : 10 g/polybag), and the second factor was NPK fertilizer ( $N_0$ : 0 g/polybag (control),  $N_1$ : 0.5 g/polybag,  $N_2$ : 0,75 g/polybag). Observed parameters included plant height, number of leaves, leaf length, root length, root volume, fresh weight, yield, and root mycorrhizal colonization. The results showed that AMF significantly affected root length, root volume, fresh weight, yield, and root colonization, with the highest response observed at the  $M_2$  (10 g/polybag) dose. NPK fertilizer significantly influenced root length, root volume, fresh weight, and yield, with the best results at the  $N_2$  (0,75 g/polybag) dose. A significant interaction between AMF and NPK was found for root length, root volume, fresh weight, and yield parameters. The combination of  $M_2N_2$  treatment produced the highest overall results.

**Keywords:** *fertilizer dosage, organic fertilizer, inorganic fertilizer.*