***The Effect of Nitrogen and Potassium on the Plantlets Growth of Black Potato (Plectranthus rotundifolius) In Vitro***

Supervised by Rudi Wardana, S.Pd., M.Si.

**Eriza Febrianti**
Food Crop Production Technology Study Program
Department of Agricultural Production

## ABSTRACT

*The success of black potato production is influenced by concentration $NH_4NO_3$ and $KH_2PO_4$. This study aims to examine the effect of various concentrations $NH_4NO_3$ and $KH_2PO_4$ on growth black potato planlets in vitro. The study was conducted at the Tissue Culture Laboratory of Jember State Polytechnic from September 2024 to January 2025 using a completely randomized factorial design with two factors: five levels of $NH_4NO_3$ (825–2475 mg/l) as a first factor, and two levels of $KH_2PO_4$ (85 mg/l and 170 mg/l) as a second factor, with 10 treatment combinations and 3 replications. The observed variables included plant height, number leaves, number nodes, internode length, root length, number roots, number shoots, and onset of shoot emergence. The results showed that the interaction between $NH_4NO_3$ and $KH_2PO_4$ had a significant effect on most parameters. The treatment of 1237.5 mg/l $NH_4NO_3$ + 170 mg/l $KH_2PO_4$ produced the highest plant height (7.67 cm) and the highest number of nodes (8.33). The treatment of 825 mg/l $NH_4NO_3$ + 170 mg/l $KH_2PO_4$ produced the longest root length (14.00 cm), the treatment of 2062.5 mg/l $NH_4NO_3$ + 85 mg/l $KH_2PO_4$ produced the highest number of leaves (16.67), the treatment of 1237.5 mg/l $NH_4NO_3$ + 85 mg/l $KH_2PO_4$ produced the highest number of roots (13.00), and N5K2 2475 mg/l $NH_4NO_3$ + 170 mg/l $KH_2PO_4$ produced the highest number of shoots (3.00). The application of $NH_4NO_3$ alone at a concentration of 1237.5 mg/l accelerated the emergence of shoots to 24.50 days, while concentrations that were too high reduced growth due to nitrogen toxicity. This study confirms that moderate doses of $NH_4NO_3$ combined with high doses of $KH_2PO_4$ provide optimal nutrient balance for the in vitro growth of black potato planlets.*

*Keywords: black potato, in vitro, $KH_2PO_4$, $NH_4NO_3$, MS Medium*