

Application Techniques of Amino Acids via Foliar Spraying and Soil Drenching on Tobacco Plant Growth and Yield

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ABSTRACT

Tobacco (*Nicotiana tabacum* L.) is a high-value agricultural commodity; therefore, improving plant growth and yield requires the application of appropriate cultivation techniques. One approach is the use of amino acids as biostimulants. The effectiveness of amino acids is influenced by the application method, including foliar spraying and root drench. This study aimed to determine the effect of amino acid application techniques—specifically foliar spraying and root drenching—on the growth and yield of tobacco plants. The study was conducted from August to November 2025 on the grounds of the Jember State Polytechnic in Summersari, Jember Regency, East Java. A non-factorial Randomized Block Design (RBD) was used, consisting of five treatments and four replications. The treatments included no amino acid application, drenching and spraying at a volume of 250 ml, and drenching and spraying at a volume of 500 ml per plant. The amino acid used was derived from lemuru fish at a concentration of 25 ml/L. The parameters observed included plant height, number of leaves, stem diameter, fresh weight, dry weight, number of harvested leaves, and harvest weight. The data were analyzed using analysis of variance (ANOVA) and followed by a 5% BNJ test when significant effects were found. The results of the study showed that A0 (No Amino Acid Application), A1 (Application of 6.25 ml of amino acid / 250 ml of water / polybag, drench application), A2 (Application of 6.25 ml of amino acids per 250 ml of water per polybag, applied via drip irrigation), A3 (Application of 12.5 ml of amino acids per 500 ml of water per polybag, applied via drip irrigation), and A4 (Application of 12.5 ml of amino acids per 500 ml of water per polybag, applied via spray application)) had no significant effect on any of the vegetative growth parameters (plant height, number of leaves, and stem diameter), biomass accumulation (fresh weight and dry weight), or harvest components (number of harvested leaves and harvest weight) of the tobacco plants.

Keywords: Tobacco, Amino Acids, Foliar Spray, Soil Drench.