ABSTRACT

Grape (*Vitis vinifera* L.) is one of the horticultural commodities with high economic value. Grape propagation can be carried out vegetatively using stem cuttings; however, its success is often constrained by the slow formation of roots and shoots during the early stages of growth. This study aimed to determine the effects of plant growth regulator concentration, soaking duration, and their interaction on the growth of grape cuttings. The research was conducted from November 2025 to January 2026 at the Faculty of Agriculture Experimental Laboratory and Plant Physiology Laboratory, Malikussaleh University. The study used a factorial Randomized Complete Block Design (RCBD) consisting of two factors and three replications. The first factor was Atonik concentration, consisting of Z_0 (control), Z_1 (0.5 ml/L), Z_2 (1 ml/L), and Z_3 (1.5 ml/L). The second factor was soaking duration, consisting of L_0 (no soaking), L_1 (6 hours), L_2 (12 hours), and L_3 (24 hours). The observed variables included growth percentage, number of shoots, number of leaves, shoot diameter, number of stomata, and chlorophyll content. The results showed that the interaction between Atonik concentration and soaking duration significantly affected the number of shoots at 2 WAP and shoot diameter at 4 WAP. Atonik concentration significantly affected shoot diameter at 8 WAP and stomatal number, while soaking duration significantly affected shoot diameter at 4 WAP and chlorophyll content at 6 WAP. The combination of Z_2L_2 (1 ml/L Atonik and 12 hours soaking) produced the best response for several growth parameters of grape cuttings.

Keywords: Atonik, chlorophyll, leaves, shoots, stomata