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Responses of Some Almond (*Prunus dulcis*) Varieties to Drought Stress

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Abstract

Drought stress, which has become more pronounced due to global climate change, is a significant factor limiting agricultural sustainability. One of the necessary steps to address this issue is the use of drought-tolerant plants. In this study, the drought tolerance of some newly developed almond varieties, such as Makako, Marinada, and Vairo, was determined with the help of morphological and physiological markers. The plants, grafted onto Garnem rootstocks and grown in 18-liter pots, were subjected to deficit irrigation treatments (T1: 100% irrigation (control); T2: 50% irrigation; T3: 25% irrigation) for two years to induce drought stress. At the end of the study, it was found that fresh and dry plant weights, membrane stability index (MSI), leaf water potential (LWP), CO_2 assimilation rate, and stomatal conductance were significantly affected by drought stress. The Marinada variety exhibited the highest fresh and dry plant weights. However, in terms of MSI, LWP, CO_2 assimilation, and stomatal conductance, the Vairo variety showed greater drought tolerance. As a result, the drought tolerance and sensitivity of the grafted varieties on Garnem rootstock were evaluated. However, it is believed that detailed biochemical analyses and field studies are necessary to reach a definitive conclusion.

Key Words: *Drought stress, Almond, Morphological, Physiological, Tolerance*