

P-77 (68)**IDENTIFICATION OF SOME DROUGHT RESISTANCE MECHANISMS IN FOUR SEEDLING ROOTSTOCKS UNDER WATER STRESS**

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This research was conducted to identify the drought resistance mechanisms of four pistachio seedling rootstocks. Irrigation treatments were include 100 % ET_c (non stress), 65% ET_c (medium stress) and 30% ET_c (severe stress), that applied on 4 months old seedlings for 75 days. Evaluated rootstocks were *Pistacia vera* 'Badami-e-Zarand', 'Ghazvini', 'Sarakhs' and *P. mutica*. Physiological changes (gas exchanges, water relations, photochemical efficiency of photosystem II (Φ_{PSII}), ion leakage and carbon isotope discrimination), biochemical changes (contents of proline, carbohydrate and chlorophyll) and growth changes of plants were investigated. Generally, water stress decreased CO_2 assimilation (A), stomatal conductance (g_s), transpiration rate (T_r), leaf water potential (Ψ_l), relative water content (RWC), Φ_{PSII} , carbon isotope discrimination, chlorophyll content and biomass, while contents of proline, carbohydrate and ion leakage were increased. Based on the results, *P. mutica* and *P. vera* 'Badami-e-Zarand' had higher photosynthesis and higher RWC under water stress. The higher RWC of *P. mutica*, in spite of its lower leaf water potential can be attributed to better osmotic regulation. The highest Φ_{PSII} and chlorophyll content under water stress also were observed in *P. mutica*. A smaller reduction in growth parameters also was observed in *P. mutica* and *P. vera* 'Badami-e-Zarand' under water stress conditions. On the basis of stated reasons, it can concluded that the rootstocks *P. mutica* and *P. vera* 'Badami-e-Zarand' were the most drought tolerant rootstocks. Carbon isotope discrimination and proline accumulation were not suitable indexes for screening of drought tolerant rootstocks.

Keywords: Pistachio, seedling rootstocks, water stress, carbon isotope discrimination