

6TH WORLD PLANT GENOMICS AND PLANT SCIENCE CONGRESS

March 16-17, 2023 | Dubai, UAE

Biochemical Responses of some commercial Grapevine cultivars Grafted on Ch1 (*Vitis vinifera* L.) Rootstock under Drought Stress Condition

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Drought stress is the most important environmental limiting factor of the growth, development, and yield of crop plants and horticulture. In this study, the induction of drought resistance of commercial cultivars (as scion) by Ch1 rootstock was evaluated based on biochemical responses. Factorial experiment was performed in a completely randomized design (CRD) with three replications in the greenhouse. Plant materials consisted of five commercial grapevine cultivars (own-rooted plants of Black seedless, Flame seedless, Turkman seedless, Soltana, and Shahani and the scion these cultivars grafted on Ch1 rootstock). Drought stress treatment was irrigation stopping for 30 days from July to August and without irrigation stopping was as and control. Ch1 rootstock significantly increased the amount of proline, total protein, and enzyme activity of guaiacol peroxidase and catalase of cultivars in drought stress environment. The amount of hydrogen peroxide decreased in all grafted cultivars on Ch1 in both stress and non-drought stress environments by 14.3% and 18.9%, respectively. Soltana cultivar grafted on Ch1 rootstock showed the highest drought resistance.

Biography

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Therefore, it can be concluded that Ch1 rootstock is recommended as a rootstock for inducing drought resistance in grapevine cultivars scion.

Keywords: Own rooted grapevine, grafting, drought tolerance, catalase, proline. Membrane Stability Index.

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1. Alexieva, V., Sergiev I., Mapelli S. & Karanov, E. The effect of drought and ultraviolet radiation on growth and stress markers in pea and wheat. *Plant Cell Environ* (2001).
2. Arve, L.E., Torre, S., Olsen, J.E. & Tanino, K.K. Stomata responses to drought stress and air humidity. In: Shanker, A. & Venkateswarlu, B., (Eds) *Abiotic Stress in Plants- Mechanisms and Adaptations*. InTech Open Access Publisher (2011).
3. Bajji, M. & Kinet, J.M.S. The use of the electrolyte leakage method for assessing cell membrane stability as a water stress tolerance in durum wheat. *Plant Growth* (2002).