

## Effect of Crown Gall and Phylloxera Resistant Rootstocks on Grafted Vitis Vinifera CV. Sultana Grapevine

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**Abstract :** The bacterium of *Agrobacterium vitis* causes crown and root gall disease, an important disease of grapevine, *Vitis vinifera* L. Also, Phylloxera is one of the most important pests in viticulture. Grapevine rootstocks were developed to provide increased resistance to soil-borne pests and diseases, but rootstock effects on some traits remain unclear. The interaction between rootstock, scion and environment can induce different responses to the grapevine physiology. 'Sultana' (*Vitis vinifera* L.) is one of the most valuable raisin grape cultivars in Iran. Thus, the aim of this study was to determine the rootstock effect on the growth characteristics and yield components and quality of 'Sultana' grapevine grown in the Urmia viticulture region. The experimental design was completely randomized blocks, with four treatments, four replicates and 10 vines per plot. The results show that all variables evaluated were significantly affected by the rootstock. The Sultana/110R and Sultana/Nazmieh were among other combinations influenced by the year and had a higher significant yield/vine (13.25 and 12.14, respectively). Indeed, they were higher than that of Sultana/5BB (10.56 kg/vine) and Sultana/Spota (10.25 kg/vine). The number of clusters per burst bud and per vine and the weight of clusters were affected by the rootstock as well. Pruning weight/vine, yield/pruning weight, leaf area/vine and leaf area index are variables related to the physiology of grapevine, which was also affected by the rootstocks. In general, rootstocks had adapted well to the environment where the experiment was carried out, giving vigor and high yield to Sultana grapevine, which means that they may be used by grape growers in this region. In sum, the study found the best rootstocks for 'Sultana' to be Nazmieh and 110R in terms of root and shoot growth. However, the choice of the right rootstock depends on various aspects, such as those related to soil characteristics, climate conditions, grape varieties, and even clones, and production purposes.

**Keywords :** grafting, vineyards, grapevine, susceptibility

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