

Full Length Research Paper

The physical and chemical characteristics of vineyard soils and its heavy metal content in semi-arid environments

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Turkey is one of the most important seedless raisin producers in the world market. Approximately, 82% of the seedless raisin has been produced in Aegean Region of Turkey and 25% of it has been produced in the Plain of Alasehir, located in Aegean Region. Therefore, the Plain of Alasehir was selected to study the physical and chemical characteristics, and the heavy metal contents of the vineyard soils. Hence, the soil samples were collected from 26 different locations in 13 different vineyards to analyze the macro and micro elements, such as total N (TN), P, K, Ca, Mg, Fe, Zn, Mn, and Cu and, the total heavy metal contents, such as Fe, Zn, Mn, Cu, Ni, Co, Pb, Cd, and Cr. Results showed that the soil samples were moderately alkaline. The salinity was suitable to grow seedless grape. The soil textures were either lime or sandy-loam with poor organic matter content. TN, P, Ca, and Mg concentrations were sufficient in the soil; however, 38.5 % of the samples were insufficient for K content. Similarly, Mn and Cu concentrations were sufficient while Fe and Zn were insufficient. Boron concentrations were high in 76.9% of the soil samples, which is a great concern for seedless grape production. Cd and Cr toxicity were not detected while Pb pollution was observed in only one vineyard. There was Co pollution in the 23.1% and %53.8 of the soil samples for the first and the second depth, respectively. Ni pollution was detected in some soil samples.

Key words: Vineyards (*Vitis vinifera* L.), macro elements, micro element, soil productivity, heavy metal, raisin.
