

ABSTRACT

DETERMINATION OF POSSIBLE EFFECTS OF GEOTHERMAL ENERGY PLANTS ON YIELD AND QUALITY IN FIG

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This study is carried out to investigate the possible effects of the geothermal energy plants, whose number is increasing in the last years, on the yield and the quality in fig. In this respect, during 2013 and 2014 fig production seasons, at each of the distances 600-650 m (close distance), 1100-1150 m (medium distance), 1500-1650 m (long distance) and ≥ 5000 m (ultra long distance) from the geothermal energy resource in “Alangüllü” area in Germencik, Aydın, two fig orchards containing Sarılop variety were determined and selected. From these orchards, leaf and dried fruit samples were taken in three terms during the fig production season in each of the two years that the experiment was conducted. In the leaf and the dried fruit samples taken from the orchards at different distances, in terms of nutrient elements; the analyses for nitrogen (N, %), phosphorus (P, %), potassium (K, %), calcium (Ca, %), magnesium (Mg, %), iron (Fe, ppm), copper (Cu, ppm), zinc (Zn, ppm), manganese (Mn, ppm), cadmium (Cd, ppm), nickel (Ni, ppm), chrome (Cr, ppm), lead (Pb, ppm), cobalt (Co), boron (B, ppm) and sulphur (S, %) elements were carried out. At the same time in the dried fig samples, regarding the quality of the fruit, the color of the peel of the fruit (L^* , a^* , b^* , hue $^\circ$ and the chroma value), the amount of the water soluble solids (%), the amount of titrable acid (%) and the pH values were determined. Related to the fig yield components, in the orchards at different distances, in the annual shoots of the trees, the length of the shoot (cm), the diameter of the shoot (cm) and the number of fruits on the shoot were determined. When the data obtained are considered according to the nutrient elements and the heavy metals, it was detected that the leaf and the dried fig samples from the fig orchards which are close to the geothermal energy plant (600-650 m), in general, have higher values and the heavy metals content of the fruit samples decreases as the distance to the plant increases. In addition, after considering the yield and the quality of the dried fig, it is determined that, similarly, the undesirable effect decreases as the distance to the plant increases.

KeyWords: dried fig, geothermal energy resource, heavy metal, quality criteria