

Elemental analysis and soil speciation of citrus plant of Khanpur (Pakistan)

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Citrus trees are demanding feeders as nutrient dense food. On the other hand, citrus are sensitive to excess of certain elements in soil. The present study is undertaken to determine uptake of eight elements by different parts of *Citrus sinensis* (orange) and *Citrus paradisi* (grapefruit) grown in Khanpur, District Haripur.

Two composite soil samples from three random spots of each citrus plant was characterized for its organic matter, phosphorus and elemental concentration by methods described by Nelson & Sommers (1996), Blakemore et. al. (1987) and flame atomic absorption spectrophotometer, respectively. Sequential extraction procedure (Tessier et. al, 1979) was used to analyze the extent of elements in exchangeable, carbonate bound, Fe-Mn oxide and organic bound fraction. The results showed that macro and micronutrients are more concentrated in fruit part of both plants. The study concludes that both citrus fruit can be safely consumed to fulfill the RDA for Ca, K, Cu, Zn & Cr. On the other hand, Ca, K and Pb is found more in carbonate bound, Cu, Zn and Ni in organic bound and Cd and Cr in exchangeable form. The study also concludes that soil of Khanpur is supportive to the agriculture of citrus plants. The exchangeable (available) Cadmium transforms into unavailable form due to excessive calcium carbonate in the soil (Chen et. al., 1997). This is a very effective way of reducing the cadmium and lead uptake by crops.

Orange and grapefruit showed higher accumulation potential for nickel showing in dry plant matter.

Keywords: citrus plant, macronutrients, micronutrients, recommended dietary allowance (RDA), soil speciation.