Abstract—This study was aimed to determine seasonal variations of leaf nutrient concentrations to define nutrient needs related to growing period and to compare irrigation programs in terms of nutrient uptake. In this study, ‘Starkrimson Delicious’ variety grafted onto seedling rootstock was used during 2009-2010 growing seasons. The study was conducted at Eğirdir Fruit Growing Research Station. Leaf samples were taken in five different sample seasons (May, June, July, August and September). Four different pan coefficients (0.50, 0.75, 1.0, 1.25) were applied during drip irrigation treatments in 7 days irrigation interval. Leaf K, Mg, Ca, P, Fe, Zn, Mn and Cu concentrations were determined. The results showed that among the seasonal changes, the highest concentrations of K, Mg, P and Mn in leaves were recorded in May, followed by a decrease in the other months, while in contrast Ca and Fe showed the lowest concentration in May. Results of the study demonstrate that among irrigation programs K and Cu concentration in plants was significantly influenced. Cu concentrations decreased with seasonal variations and different irrigation programs. Thus, nutrient needs of ‘Starkrimson Delicious’ apple trees at different growth stages should be taken into consideration before making effective fertilization program.

Keywords—Apple orchard, irrigation programs, seasonal variations, nutrient concentrations