The influence of nine dwarf apple rootstocks on vegetative and reproductive characteristics, yield, yield efficiency and fruit quality was evaluated on 'Granny Smith' apple variety. The experimental orchard was established in 2004, with a planting distance 3.5 m x 1.5 m. The study has been performed during three consecutive years (2008-2010). Among the common major characteristics, the fruit quality was investigated as well. For that purpose, some macro and micro elements were analyzed in soil, leaves and apple fruits.

The results showed that the influence of the evaluated rootstocks on fruit quality parameters was insignificant. But, behind that insignificance, the results showed different behavior in distribution of phosphorus, potassium, calcium, magnesium, boron, zinc, copper, iron and aluminium. Namely, trees grafted on rootstock Mark 9 have higher concentration of the previously mentioned elements.

The correlation between the concentrations of micro elements in soil, leaves and apple fruits were also analyzed. The obtained results showed that Mg, B, Zn, Cu, Al and Fe in leaves, negatively relate with the Ca concentration in the fruits. In contrary, N, P and K concentrations positively relate with the Ca concentration, which is very important for the firmness of the fruits.

KEYWORDS: apple, rootstocks, macro elements, micro elements, firmness