Influence of salinity stress (NaCl) on changes of chlorophyll, water potential,soluble sugars and mineral elements in leaves of olive plant

A.Mousavi[1], H.Lessani[2]

1- Agricultural Research Center of Chaharmahal Va Bakhtiari, Shahrekord

2- Dept. of Horticulture, College of Agriculture , University of Tehran , Karaj

In order to study effects of salinity stress (NaCl) on olive plant , one year-old plants of to olive cultivars "Roghani" and "Zard" cultured in plastic pots, contained with equal ratio of sand-perlite mixture(1:1) and were treated with differnt concentrations(0,40,80,120 and 160 mM) of sodium chloride plus Hoagland,s solution during the 150 days.

The results showed that by increasing salinity more than 40 mM/NaCl , the amount of chlorophylls a,b and (a+b) were reduced significantly. There is no difference between cultivars for chlorophylls b and (a+b) but cultivar "Roghani" showed more decrease in amount of chlorophyll a than cultivar "Zard". By increasing the salinity to 80 mM/NaCl, the amount of soluble sugars increased but with more excesses of salinity , this amount decreased. Under influence of salinity stress significantly reduced leaf water potential but there is no difference between cultivars. With increasing the salinity to 80 mM/NaCl gradually the amounts of Na,Cl and Na/K ratio were increased and amount of K was decreased but with more excess of salinity the amounts of Na,Cl and Na/K ratio increased severly and the amount of K decreased. By increasing the salinity , the amount of Mg in leaf was reduced significantly. Under conditions salinity stress cultivar "Roghani" showed more increase in amounts of Na and Cl and more decrease in the amounts of Mg and K in the leaf when compared with cultivar "Zard".