

The Use of Grafting for Improving Salinity Tolerance in Tomato Plants

ABSTRACT

Soil salinity is one of the major abiotic stresses, causing yield reductions in agriculture worldwide. Tomato is adapted to a wide variety of climates, but its cultivation is concentrated in warm and dry areas, where salinity is a problem. Grafting is one interesting technique proposed to improve salinity tolerance in tomato. Our preliminary results show a substantial genetic variation in the growth of 'Moneymaker' scion under salt stress depending on the rootstock used. Despite the research done on salinity tolerance, no research has tested whether the graft union affects salt transport to the shoot. Our objective is to test that hypothesis by measuring Na^+ and K^+ ion concentrations in the xylem stream below and above the graft union. In addition, salt ion concentrations in the shoot, stems and roots will be measured to test whether the rootstocks are excluding the salts from the roots, or if they are limiting their transport to the shoot. Results from this study will help us better understand of the role of grafting in improving salinity tolerance. Salt-tolerant rootstocks from this project can be used by farmers to improve tomato growth under saline conditions.