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Improving Production and Quality of Tomato Yield under Saline Conditions by using Grafting Technology

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Abstract: Salinity is the biggest challenge facing horizontal expansion of vegetable cultivation especially in the new reclaimed lands. So that, this investigation was carried out in greenhouse at the experiment farm of Faculty during two growth seasons of 2010 and 2011 of Agriculture, Benha University. This experiment was carried out to investigate the possibility of utilizing tomato grafting in high salinity tolerance by using tolerant rootstocks. One commercial cultivar *"Reem"* was used on its own roots or grafted on four rootstocks (*Heman, 1G-48-6031, 1G-48-6032* and *Edkawy*). Cleft grafting method was used, then seedlings were cultivated under four salinity levels [448 (normal Nile water), 2000, 4000 and 6000 ppm] compared to non-grafted plants. The results showed that increasing salinity levels reduced vegetative growth, nutrient status, and total yield. Meanwhile grafting treatments reversed these results as they increased values of all recoded items over non-grafted plants under all salinity levels. Finally, the combination of *Reem cv.* grafted onto *Heman* rootstock resulted in best results of vegetative growth, nutrient status, fruit quality and total yield. Whereas, this combination increased total yield by 42.0, 70.8, 74.1 and 119.1 % when irrigated by salinity levels 448, 2000, 4000 and 6000 ppm, respectively compared to non-grafted plants (control treatment) under the same salinity levels. Moreover, this treatment improved tomato plant growth and total yield when irrigated with 6000 ppm over non grafted *cv. "Reem*" plant irrigated with non-saline water (448 ppm) by about 10% and 33% based on plant fresh weight and total fruit yield/ plant.
Keywords: Tomato, Salinity, Grafting, Rootstock, Yield, Quality.

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