Potassium nitrate effect of salinity in tomato

The objective of this study was to investigate salinity tolerance in five tomato (*Lycopersicon esculentum* Mill.) cultivars in response to increasing levels of potassium nitrate.

Tomato seedlings were transplanted in pots filled with washed sand and grown in a greenhouse in the Sultanate of Oman and fed by half-strength Hoagland solution. The treatments were: control (EC of 1,3 mS/cm), 50 mM NaCl (EC of 5,5 mS/cm), 50 mM NaCl + 4 mM KNO_3 (EC of 6,8 mS/cm), 50 mM NaCl + 8 mM KNO_3 (EC of 7,5 mS/cm) and 50 mM NaCl + 16 mM KNO_3 (EC of 8,0 mS/cm).

Fertigation was applied three times per week and treatments were arranged in a randomized block design with four replicates per treatment.

Stem height of tomato was reduced under salinity conditions (50 mM NaCl) by 11% but was increased by 6% with the application of 4 mM KNO_3 to 50 mM NaCl compared to the untreated control. Percent fruit set was not significantly affected by the salinity treatment, but when 4 or 8 mM KNO_3 was added to the nutrient solution the percent fruit set was statistically significantly increased over control plants (Figure 1).

Addition of 4 and 8 mM KNO_3also resulted in a statistically significant improvement of number of fruits, fruit quality (total soluble solids) and yield compared to the control (Figure 1). The addition of 16 mM KNO_3 to the saline solution was found to be detrimental as indicated by lower plant dry weight as compared to the control, possibly due to the high level of salinity.

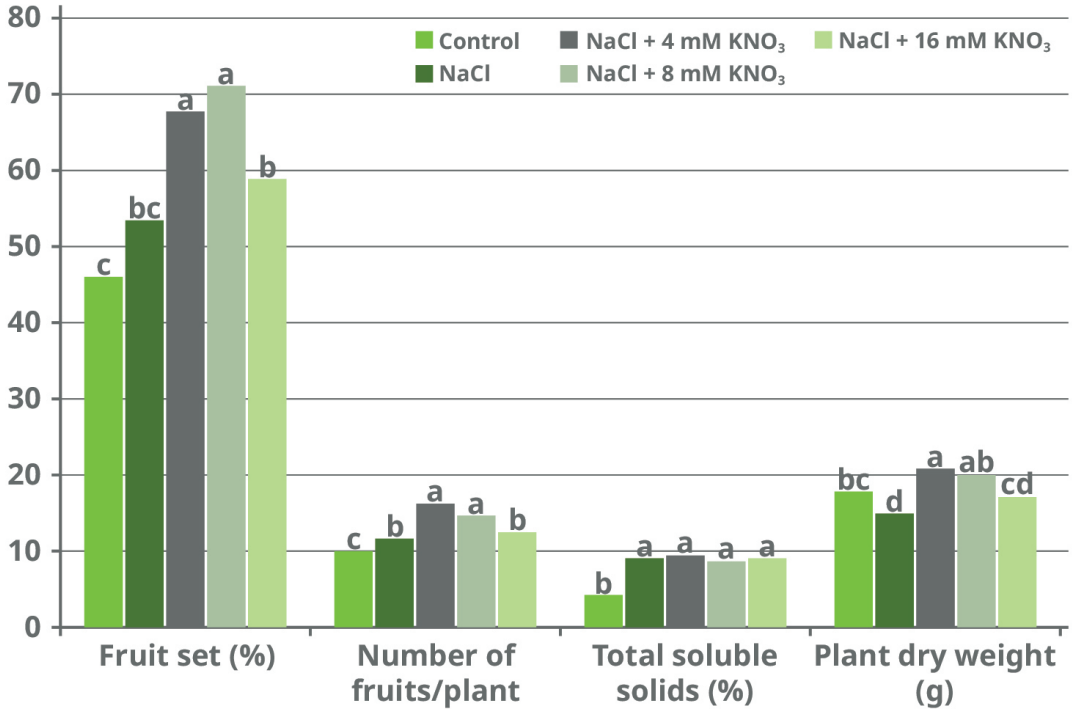

Figure 1. The effect of salinity and potassium nitrate on plant performance characteristics in greenhouse tomatoes. Means within categories having the same letter are not significantly different from each other at 5% level.