CALIFORNIA STATE SCIENCE FAIR
2016 PROJECT SUMMARY

Name(s)

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Project Number

36399

Project Title

Salinity Stress on Lycopersicon esculentum Associated with Drought Affected Ground Water

Abstract

Objectives/Goals

During times of drought the water table drops due to excessive groundwater pumping, this leads to an increase in water salinity. This study is to determine what level of salinity stresses a tomato plant and adversely affects its fruit production.

Methods/Materials

4 groups of 10 tomato plants were used with group 1 being the Control. Groups 2, 3, & 4 were watered with a mixture of magnesium sulfate and water (g/L) Group 2 test solution .08g MgSo to 1L H2O. Group 3 test solution .12g MgSo to 1L H2O. Group 4 test solution .25 MgSo to 1L H2O. Leachate was collected and EC measured; plant growth and production were measured.

Results

Early testing determined a reasonable level of salt tolerance from all tomato plants. Over the duration of testing the EC in the leachate increased with the increase in salt solution per test group. Along with these findings I found that fruit production decreased and plants in Group 4 showed signs of severe distress. Dry biomass decreased in each group as the salt solution was increased.

Conclusions/Discussion

I determined that plant sensitivity to high levels of salinity during growth negatively affect plant life due to abiotic stress. This means that irrigation water quality can have a profound impact on agricultural production.

Summary Statement

I determined which salintiy levels caused abiotic stress in tomato plants thereby adversely affecting fruit production.

Help Received

Dr. Leonard Fong from OLAM provided me with the data regarding salinity levels of several local agricultural wells.