



**CALIFORNIA STATE SCIENCE FAIR  
2009 PROJECT SUMMARY**

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<b>Project Title</b> Reduced Irrigation Affects Citrus Fruit Size	
<b>Objectives/Goals</b> <b>Abstract</b> A field experiment on 12 four year old Minneola citrus trees was conducted using a completely randomized experimental design. The experiment compared the farmer's practice of 10 GPH (gallons per hour) application to 3 reduced irrigation treatments: 1 GPH, 1.5 GPH, and 2 GPH. The irrigation season for this project was from June to November 2008. Water was applied every third day for a total of 367 hours over 43 applications. All treatments received the same frequency and time of water application. The hypothesis stated that the 2 GPH treatment would save water, produce a profitable crop in fruit size and number while having acceptable tree growth. Tree growth and crop yield variables were evaluated. Tree height, trunk circumference, canopy width and density, and new shoot counts were measured. Fruit size development, harvest fruit size and number, and fruit maturity were measured. Irrigations were recorded as to date and hours of application. The results showed that the 10 GPH control performed the best. The performance of the 1 GPH and 1.5 GPH treatments was so poor as to be not profitable to the farmer. The 2 GPH treatment of the hypothesis performed well in some parameters, but not as well as the control. It saved water, but did not have as much high value sized fruit as the control. Tree growth seemed adequate, but a second year of growing under this reduced irrigation treatment would be needed to clearly determine if acceptable growth can be achieved at this irrigation rate. Fruit size was found to be significantly different between the control and all treatments. The conclusion was that the farmer's current practice is applying more water than needed and he can benefit from reduced irrigation, but how much to cut back was not revealed by the experiment. The experiment showed that the 2 GPH treatment may be close to the desirable farming practice of making a profit and conserving water. Thus, further investigation would be useful to find the best irrigation rate.	
<b>Summary Statement</b> Reduced irrigations affected tree growth and fruit size in minneola citrus.	
<b>Help Received</b> Science teacher advised and encouraged; father supplied trees and materials; mother assisted in data recording, editing tables, and helping with statistical analysis.	