



# CALIFORNIA STATE SCIENCE FAIR 2016 PROJECT SUMMARY

<b>Name(s)</b> <b>Dina Mirbabaei</b>	<b>Project Number</b>          <b>36843</b>
<b>Project Title</b> <b>The Effect of the Number of Stomata on the Transpiration Rate of Plants</b>	
<b>Objectives/Goals</b> <b>Abstract</b> The purpose of this project was to discover whether the transpiration rate of a plant is affected by the number of stomates contained on the leaves. In my experiment, I collected 200 leaves from two species of citrus plants. Citrus limon and Citrus sinensis. According to my research, orange trees have higher transpiration rate than lemon trees. Transpiration is the evaporation of water through the stomates so my hypothesis states that the higher the rate of transpiration, the more stomata is found on the leaves of a plant. For further proof, I estimated the stomatal density from various orange and lemon trees. <b>Methods/Materials</b> I collected 100 leaves from the plant C. limon (Lemon), and 100 leaves from C. sinensis (Orange). Next, I used nail polish and clear tape to take the stomata off the surface of the leaf. Following, I taped the specimen on a slide and Viewed it under high power of magnification. I took pictures of the image under the microscope and used them to count the stomates of the leaves. Then, collected 90 more leaves from various trees and counted the number of stomata. Knowing the diameter of high power field of view, I Calculated the area of the field of view under high power using the formula for area of a circle and divided the number of stomata in each leaf by the area of the field of view under high power. <b>Results</b> The results of the data tables and graphs show that orange leaves have greater number of stomata and larger stomatal density than lemon leaves. As a result, because orange leaves have more stomata; therefore, they will have a greater transpiration rate than lemon leaves. Consequently, more water evaporates from the surface of orange leaves which makes Lemon trees more drought tolerant compared to orange trees in dry areas such as Southern California. <b>Conclusions/Discussion</b> Based on my data and graphs, I approve my hypothesis which states that the greater is the number of stomata on the leaves of a plant, the higher is its# transpiration rate. This is because my results show that orange leaves have greater number of stomata and stomatal density than lemon leaves. Additionally, according to the research from the International Journal of Applied Science and Technology, Orange tree has higher transpiration rate than lemon tree. In conclusion, this proves that number of stomata affects the transpiration rate of plants.	
<b>Summary Statement</b> I showed that the transpiration rate of a plant is affected by the number of stomata the leaves contain which consequently proved that lemon trees are more drought tolerant than orange trees.	
<b>Help Received</b> My biology Teacher Introduced me to the idea of taking the stomata off the surface of the leaves using clear nail polish and tape. Then, I conducted and performed my own experiment related to counting the number of stomata and measuring the stomatal density of lemon and orange leaves.	