



# CALIFORNIA SCIENCE & ENGINEERING FAIR 2018 PROJECT SUMMARY

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<b>Project Title</b> <b>Correlating Olive Quick Decline Syndrome Infections to the Presence of Sharpshooters</b>	
<b>Objectives/Goals</b> <b>Abstract</b> The idea for this project came when my parents, who own an olive tree business, were discussing a disease affecting their olive trees. I decided to test whether there was a correlation between the number of sharpshooter insects near an olive tree and how infected an olive tree might be with a disease called "Olive Quick Decline Syndrome". I attempted to find patterns of where concentrations of sharpshooters are located in San Diego North County. I predicted the correlation between the presence of sharpshooters and the magnitude of infection in an olive tree would be a log relationship. I also believed there would be greater numbers of sharpshooters in an area with more olive trees. <b>Methods/Materials</b> I used a ladder and traps to catch sharpshooters. I monitored 23 trees in North County San Diego. My methods included hanging traps at mid-height in the olive trees, recording locations of the olive trees, the magnitude of the infection (if any) on each tree, and counting how many sharpshooters I caught. <b>Results</b> In my experiment I performed two trials. The first trials encompassed 16 trees (Trees 1-16) and was of a duration of 4 weeks. Due to weather conditions, some traps were destroyed or damaged. I then began a second trial, adding 7 more trees for a total of 23 trees for the duration of Trial Two. The following results are from the 23 trees in Trial Two. According to my Grid Assessment, 35% of the test olive trees were fully healthy. Another 22% of the test olive trees were 15% infected. 4% of the olive trees were 25% infected while 22% of the test trees were 38% infected. Approximately 13% of the olive trees were 50% infected with Olive Quick Decline Syndrome. <b>Conclusions/Discussion</b> The results showed a strong correlation between the tree infection and the number of sharpshooters. The line of best fit appeared to be quadratic rather than a logarithmic function. There was a concentration of sharpshooters found on both coastal and inland area olive trees, but not between the two regions. The results did not show that elevation or number of nearby olive trees correlated to concentrations of sharpshooters. This project suggests that using traps may help reduce the numbers of sharpshooters and possibly help combat the spread of Olive Quick Decline Syndrome. I am continuing to test trees and increase my sample size to try and strengthen my project.	
<b>Summary Statement</b> I tested olive trees for a pathogenic disease infecting olive trees and cutting global olive oil productions for a correlation between the disease and the presence of an insect which transmits the disease.	
<b>Help Received</b> Thanks to my parents who drove me to my sites over many hours. Thanks to Alfred Alyeshmerni answered many questions I had on the project. I would like to thank all the olive tree owners who allowed me to hang traps in their trees. Thanks to my science teacher for her guidance.	