



**CALIFORNIA STATE SCIENCE FAIR
2012 PROJECT SUMMARY**

Name(s) Emma C. Williams	Project Number J1727
Project Title How Will Vinegar Damage Vinca major in a Wild Environment?	
<p style="text-align: center;">Abstract</p> <p>Objectives/Goals The goal of my project was to find out if the invasive species Vinca major (V. major) can be damaged in a wild environment using vinegar. Vinca major poses a threat to native plants, it leaches important nutrients out of the soil. Many people are trying to kill V. major, but they are using harmful herbicides such as 2-4D and Round-Up. These herbicides are harmful to the people who use them and are very harmful to the surrounding environment, especially nearby aquatic life. I hypothesized that when I sprayed vinegar on the V. major they will become damaged.</p> <p>Methods/Materials Three equal sized plots of V. major were sectioned off and split into thirty-six cells each. Cells were randomly chosen, three were designated vinegar, three water, and three plain V. major controls, per plot. The nine chosen cells were then photographed; all water and vinegar cells were then sprayed with 350mL. A week later the cells were photographed again and re-sprayed with water and vinegar. The photographs were printed out and assigned random numbers, a person without knowledge of the cells true number counted the amount of damaged and undamaged leaves. The results were then averaged according to treatments and plot, and the standard deviation of treatments was also calculated.</p> <p>Results After counting all the leaves, both damaged and undamaged, I used the numbers to figure out the mean for each treatment in each plot and I used standard deviation to describe the variation. The control average was a percentile of 0.410 with a standard deviation of 0.354; Plot A had a percentile of 0.557, Plot B, 0.599, Plot C, 0.073. Treatment group water had an average of 0.210 and a standard deviation of 0.161. Plot A's average was 0.207, Plot B, 0.338, Plot C 0.086. The plots that were sprayed with vinegar had an average damage of 0.715 with a standard deviation of 0.268, Plot A was an average of 0.715, Plot B had an average of 8.46, and Plot C, 0.274. These damage percentiles show how vinegar affects V. major.</p> <p>Conclusions/Discussion My hypothesis was correct, the vinegar did damage the V. major. I conclude that spraying V. major with vinegar will damage the plant and cause a higher percentile of damaged leaves.</p>	
Summary Statement My project is about using vinegar to damage Vinca major, an invasive species, in a wild environment, instead of using harmful herbicides.	
Help Received My mother edited my text, my father drove me to Big Creek and assisted me with my experiment, and Mark Readdie, the Landels-Hill Big Creek Reserve Director, provided guidance.	