



**CALIFORNIA STATE SCIENCE FAIR
2011 PROJECT SUMMARY**

Name(s) Kerris Lassley	Project Number 31189
Project Title Which Household Substance Will Slow Down the Ice Nucleation Process of Water?	
Abstract Objectives/Goals The purpose of my science project is to determine which household substance will slow down the ice nucleation process of water. The reason I'm investigating this is because farmers lose millions of dollars every year due to droplets of dew freezing on fruit and damaging the crop. Methods/Materials For my control I will be placing 10 plain droplets of water on a piece of foil in the freezer and timing it to see how long it takes for the droplets to freeze. I will repeat this test with all of my test groups. My test groups are: 1/2cup of water with 1/2 teaspoon of salt, 1/2cup of water with 1/2 teaspoon of sugar, 1/2cup of water with 1/2 teaspoon of orange juice, and 1/2cup of water with 1/2 teaspoon of white vinegar. I will record my results in my data log. Results The results of my investigation showed that all control droplets were frozen in 8 minutes. My orange juice mixture was the most effective at slowing down the process of ice nucleation because only 8 droplets were frozen after 8 minutes. After just 6 minutes 9 out of 10 droplets for the salt mixture were frozen and after 6 minutes all of the droplets for the sugar and white vinegar mixtures were frozen. These results prove that a mixture of orange juice and water will slow down the process of ice nucleation. Conclusions/Discussion After completing my investigation I found that the orange juice mixture was the most effective test substance at slowing down the process of ice nucleation. I feel that further testing is needed to determine if this could be a cost effective and eco friendly way to slow down the ice nucleation process which would help farmers save crops during times of freeze.	
Summary Statement The objective of my project is to find a substance that will help slow down the ice nucleation process thereby helping farmers lower the negative impact of the freezing temperatures they face before crops go to market.	
Help Received Mr. Carl Gong helped me determine a testing process for my theory, Marshall Farms helped me with research information on fruit damage due to ice nucleation, Mom helped type.	