



**CALIFORNIA STATE SCIENCE FAIR  
2012 PROJECT SUMMARY**

<b>Name(s)</b> <b>Kerris L. Lassley</b>	<b>Project Number</b> <b>J2013</b>
<b>Project Title</b> <b>Which Household Substance Will Slow Down the Ice Nucleation Process of Dew on Orange Trees?</b>	
<b>Abstract</b> <b>Objectives/Goals</b> The reason I am doing this investigation is to find out how to slow down the freezing process of dew on orange trees. By doing this I will find a method for farmers to protect their crops from frost damage, which causes farmers to loose thousands of dollars each year. <b>Methods/Materials</b> I am using water droplets in my investigation to determine how to slow down the freezing process of dew on orange trees. In the first group for my control I will be spraying plain droplets of water on orange leaves and placing the tree in the freezer and timing it to see how long it takes for frost damage to occur. Then I will record results in a data book. In my first group I will mix water with salt. I will spray droplets on orange leaves and place the tree in freezer and timing it to see how long it takes for frost damage to occur. Then I will record results in the data book. Repeat with salt, dish soap, orange juice, and honey. <b>Results</b> *Using water as my control showed that 77% of the leaves were damaged in a 24 hour time frame. *Water with salt Froze quickly, showing that 74% of the leaves were damaged in a 24 hour time frame. *Water with orange juice did have an affect on slowing the freezing process, showing that 32% of the leaves were damaged in a 24 hour time frame. *Water with dish soap did have an affect on slowing the freezing process, showing that 22% of the leaves were damaged in a 24 hour time frame. *Water with honey had the best affect on slowing the freezing process, showing that 16% of the leaves were damaged in a 24 hour time frame. <b>Conclusions/Discussion</b> In conclusion, I have learned that by adding honey to water it will slow down the ice nucleation process of dew on orange trees. Still not clear if it was the thickness of the droplets or the honey that slowed down the freezing process, by coating the leaves. With more research and testing, I am sure I can find a method to slow down the ice nucleation process of dew on orange trees to help our farmers with protecting their crops from frost damage.	
<b>Summary Statement</b> I have tried to slow down the freezing process by adding household substances to water to see if it slows down the ice nucleation process of dew on orange trees.	
<b>Help Received</b> Parents helped with photos, supplies, and typing.	