



**CALIFORNIA STATE SCIENCE FAIR  
2012 PROJECT SUMMARY**

<b>Name(s)</b> Hannah T.M. Contreras	<b>Project Number</b> <b>S1997</b>
<b>Project Title</b> <b>The Effects of Pesticides on Plant DNA (Deoxyribonucleic Acid)</b>	
<p style="text-align: center;"><b>Abstract</b></p> <p><b>Objectives/Goals</b> The objective of this experiment is to measure the amount of DNA extracted from organic and nonorganic carrots (<i>Daucus carota</i>), raspberries (<i>Rubus idaeis</i>), and spinach (<i>Spinacia oleracea</i>) and determine whether or not pesticides has an effect on the amount of DNA extracted.</p> <p><b>Methods/Materials</b> Using the method of cell lyses, purification, and precipitation I was able to successfully measure the amount of DNA extracted. DNA was extracted from carrots (<i>Daucus carota</i>), raspberries (<i>Rubus idaeis</i>), and spinach (<i>Spinacia oleracea</i>) and measured by the amount extracted.</p> <p><b>Results</b> I came to the conclusion that although nonorganic produce is available at local markets, that does not mean that the produce is safe to eat. The DNA extraction experiment showed that pesticides have a negative impact on the quality of various fruits and vegetables such as carrot (<i>Daucus carota</i>), raspberry (<i>Rubus idaeis</i>), and spinach (<i>Spinacia oleracea</i>). I found that the nonorganic produce held the least amount of DNA while the organic produce had the most amount of DNA.</p> <p><b>Conclusions/Discussion</b> After finding that all three non-organic subjects held less DNA extraction, it was conclusive that the application of pesticides had a negative effect on the produce. Studies have shown that pesticides have been found inside produce and animals and we as humans are susceptible to consuming small intervals of pesticides that will consequently build up over time and cause various health issues. As a result of the various disease-causing factors, I suspect that the reason for the lesser amount of DNA in non-organic produce is due to the pesticides# DNA damaging factors. Furthermore, the only way to protect the body from the adverse effects of pesticides is to either raise home-grown plants or buy organic from select markets and grocery stores. In terms of the DNA, the organic produce held the most DNA.</p>	
<b>Summary Statement</b> The Effects of Pesticides on Plant DNA.	
<b>Help Received</b> --	