



**CALIFORNIA STATE SCIENCE FAIR
2012 PROJECT SUMMARY**

Name(s) Guadalupe Melgarejo	Project Number S1722
Project Title Effect of Exhaust Fumes on Plants	
<p style="text-align: center;">Abstract</p> <p>Objectives/Goals Exhaust fumes come from automobiles and factories; they are not only harmful to the atmosphere, but also plants and ecosystems. In fact, exhaust fumes are one of the reasons global warming exists. To find the ways exhaust fumes affect plants, I decided to expose five different types of plants to exhaust gas. The plants I observed were: corn, zinnias, sunflowers, lettuce, and collard greens. With these plants I would not only be able to observe in what ways they are affected, but also which plants are more capable of living in a highly polluted area.</p> <p>Methods/Materials For 21 days I exposed my experimental group of plants to exhaust fumes. I exposed them to the gas by putting them in a large plastic bag and attaching it to the exhaust pipe of my dad's car. After the bag was filled with the gas, I removed it and tied it tightly with a rubber band. I let the plants sit in the bag for 30 minutes every day at around 4 o'clock in the evening. Every morning I recorded the heights of my all my control and experimental groups of plants.</p> <p>Results Within a week I noticed that my control groups had much bigger and stronger plants, while the experimental groups had small and weak plants. At day 17 my experimental group of lettuce and zinnias died. At day 20 my experimental group of corn died, and the next day my experimental group of collard greens followed in the same direction. The only group of plants that survived were the sunflowers. However, they were much smaller than the control group of sunflowers and their leaves did not have much texture.</p> <p>Conclusions/Discussion From my results I am able to conclude that most plants are affected by exhaust gas. However, some plants can resist exhaust gas longer than others and are more capable of growing in polluted cities. Sunflowers for example will most likely be able to grow in cities like New York, Beijing, China, and Istanbul, Turkey because they were not affected as severely as the corn, zinnias, sunflowers, lettuce, and collard greens.</p>	
Summary Statement What plants are more capable of living in highly polluted areas and how are they affected by exhaust fumes.	
Help Received My biology teacher Mr. Callaway gave me some materials for my project.	