



**CALIFORNIA STATE SCIENCE FAIR  
2014 PROJECT SUMMARY**

<b>Name(s)</b> <b>Callum E. Day Ham</b>	<b>Project Number</b> <b>J1008</b>
<b>Project Title</b> <b>The Effect of Elevated CO(2) Concentration on Plant Growth</b>	
<b>Abstract</b> <b>Objectives/Goals</b> If the percentage of CO <sub>2</sub> in a plant's environment affects how fast the plant will grow, then - considering that plants require CO <sub>2</sub> for photosynthesis and the production of carbonic acid is slow - the higher the percentage of CO <sub>2</sub> , the faster the plant will grow. <b>Methods/Materials</b> Four healthy dwarf pea sprouts were placed in each of four clear glass jars and the concentration of Co <sub>2</sub> in each jar was adjusted to normal air, 10%, 50%, and 100% respectively. The accurate adjustment of the Co <sub>2</sub> concentration was achieved using a technique where each jar was filled with water, then blown out and replaced by Co <sub>2</sub> until the respective percentage of Co <sub>2</sub> was fulfilled, then blow the rest of the water with normal air. This set up was placed under a grow light so that each plant had the same amount of #sunlight#, then the plant's were measured every day for eight days and their gain or loss in height was recorded. Repeat this procedure four times to eliminate as much uncontrollable error as possible. <b>Results</b> All plants started at approximately the same height. In the 100% Co <sub>2</sub> the average height reduced to 42% of its original height over eight days. In the 50% Co <sub>2</sub> the average height reduced to 62% of its original height over eight days. In the 10% Co <sub>2</sub> the average height increased to 114% of its original height over eight days. In the normal air the average height increased to 115.5% of its original height over eight days. A significant amount of water vapor was found on the 100% Co <sub>2</sub> and it seemed as if the water vapor corresponded to the percentage of Co <sub>2</sub> in that jar. <b>Conclusions/Discussion</b> The data proves my hypothesis wrong, but even though I was wrong the data displays a clear pattern. As the Co <sub>2</sub> levels rise the plants seem to keel over and die faster or their growth was slowed. There was two noticeable groups though. One which grew from its original point and the other that dramatically died from its original point.	
<b>Summary Statement</b> My project is designed to measure the impact of significantly increased concentrations of CO <sub>2</sub> on plant growth and health.	
<b>Help Received</b> Father helped design CO <sub>2</sub> supply; Mother helped review written materials	