



**CALIFORNIA STATE SCIENCE FAIR
2008 PROJECT SUMMARY**

Name(s) Eric P. Fuller	Project Number J1711
Project Title Do Carbon Dioxide Levels Affect the Germination and Growth of Plants?	
Objectives/Goals I am interested as to whether increased carbon dioxide levels (due to natural or man made causes) will affect germination and growth of plants. Because plants naturally use carbon dioxide through photosynthesis, my hypothesis is that seeds planted in containers with elevated atmospheric carbon dioxide will germinate sooner and grow better than seeds planted in containers open to the air.	
Abstract Methods/Materials I selected four rapidly growing seeds (radishes, alfalfa, wheat grass, and soybeans) to grow in containers to which commercial potting soil was added. I added 0.2gm and 0.4gm of "dry ice" to test containers which when evaporated, give 1.0 and 2.0 liters of carbon dioxide gas respectively. I compared growth of seeds to those grown in an open and a closed atmospheric air container. My constants were potting soil, container size, temperature, length of sunlight and seed type. My controls were containers open to the atmosphere and containers closed with no added carbon dioxide. My independent variables were the addition of 1.0 and 2.0 liters of carbon dioxide. My dependent variables were length of germination and rate of growth, measured by plant height, over 14 days.	
Results My results demonstrated that the length of germination was not affected for any seed type. Elevated carbon dioxide levels had a positive effect on the growth of radishes and soybeans. Elevated carbon dioxide levels had a negative effect on the growth of alfalfa and wheat grass.	
Conclusions/Discussion Because there are concerns raised regarding whether increased carbon dioxide levels are occurring around the world, it is important to understand how they may affect the ability of mankind to grow food. My hypothesis that seeds exposed to elevated carbon dioxide levels would germinate faster was incorrect. My hypothesis that elevated carbon dioxide levels would increase plant growth was only partially supported. I would need to carry out the experiment several more times to make sure this is not a random result. If my results were repeated, I could then assess why this occurred.	
Summary Statement To see if elevated Carbon Dioxide levels helped or hindered germination and growth of plants.	
Help Received My father helped take pictures and set up the computer generated graphs.	