



**CALIFORNIA STATE SCIENCE FAIR
2008 PROJECT SUMMARY**

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Project Title
The Effects of Elevated Levels of Carbon Dioxide on Plant Growth

Abstract

Objectives/Goals
Over the past many years, scientists have discovered that the concentration of carbon dioxide has been growing drastically since the Industrial Revolution. Some scientists, such as Sherwood B. Idso, believe that the raised concentrations of CO(2) will be favorable for plant life, increasing growth. In this experiment, I will test the effects of concentration of CO(2) on plant growth.

Methods/Materials
I dropped Alka-Seltzers into root beer bottles filled with water to produce carbon dioxide, which I then captured in balloons. This carbon dioxide was than infused into a jar holding a common bean plant. This was repeated for each jar that was testing for the effects of low levels of carbon dioxide (4 jars). I used the carbon dioxide from two Alka-Seltzers to simulate the effects of high concentrations of carbon dioxide (4 jars). There was a control set of plants without extra carbon dioxide as well (4 jars).
Materials: 12 glass canning jars; 12 Common beans (*Phaseolus vulgaris*); 12 bendy straws; Enough clay to cover the second hole in each jar. 2 boxes of "Alka-Seltzer Gold"; 12 oz glass bottle; Balloons; Water (in significant quantity); Potting soil; A south-facing window; Paper clips for every straw.

Results

	Percentage growth of plants		
	No CO2	Low CO(2)	High CO2
Jar # 1	1,900 %	7,300 %	13 %
Jar # 2	0 %	3,980 %	7,900 %
Jar # 3	125 %	257 %	191 %
Jar # 4	110 %	104 %	145 %
Average	533.75 %	2910 %	2,062.25 %

Conclusions/Discussion
The jars with low CO2 grew the most (2910 % growth), while the jars with high CO2 grew the tallest (avg. height of 16.4 cm). However, the fact that the low CO2 plants grew more than the high CO2 plants reveals that the effects of CO2 on plant growth is not a linear function, but rather more of a curve. The idea that higher CO2 concentrations make for healthier plants is only partly true, from what I have demonstrated in this experiment. Idso insists that higher CO2 means a better environment, but this is not altogether true. If the trend shown by my Graph 1 continues with higher concentrations of carbon dioxide, plants will begin to grow worse than they would have under normal atmospheric conditions. From what I#ve found in this experiment, higher concentration of CO2 does not equal healthier plants.

Summary Statement
A study on the effects of elevated concentrations of carbon dioxide on the growth of bean plants.

Help Received
none.