CALIFORNIA STATE SCIENCE FAIR
2010 PROJECT SUMMARY

Name(s)

Celine Payne; Denise Tien

Project Number

J2024

Project Title

Survival of the Dragons

Abstract

Objectives/Goals

We chose to do this project because it addresses whether carbon monoxide emissions have an effect on plants. Carbon monoxide can sometimes be trapped under a layer of warm air close to the ground where plants may grow. By doing this experiment, we hope to find out whether plants can survive when carbon monoxide to learn more about our environment.

Methods/Materials

Materials:12 Snapdragon plants, La Bella Yellow;Tap Water;2 Clear Plastic Storage Boxes, With Lids;Carbon Monoxide Cylinder;Fluorescent Light (longer than double the size of 1 plastic storage box);Tube;Needle Valve;Table;Drill+Bit;Carbon Monoxide Sensor;Regulator;Crescent Wrench;Swagelok

Methods: Turn the clear plastic storage boxes over (upside-down). Label one "Experiment," one "Control." Divide the plants into 2 groups.;Drill holes into "Control" box.;Drill a hole ontop of "Experiment" box, seal it with glue.;Fill the bottom of lids with water with a light hanging over.;Strap the CO cylinder to a wall.;Use a crescent wrench, to attach the 2 stage regulator. Attach the needle valve to the output of the second stage.;Using Swagelok fittings, connect tube to the output side of the needle valve.;Close the needle valve and second stage output valve.;Open the cylinder valve. Pressure on regulator first stage should be around 1500 psi.;Rotate regulator knob until pressure on second-stage is 10 p.s.i.;Open second stage valve to allow gas to flow into needle valve.;Turn the needle valve so there are about 45 bubbles per minute.;Every two days record plant height and number of leaves, and take observations.;Before taking any heights or observations, turn the needle valve off and the knob next to it.

Results

In our project, the #Control# group of plants began shorter than the #Experiment# group. However, they grew taller than the #Experiment# group of plants towards the end. For the layers of leaves, when averaged, both groups had the same layer count at the beginning. At the end, both of the groups# averaged layers of leaves were the same.

Conclusions/Discussion

There was no significant difference between the heights of the plants in the two groups. Therefore, our experimental hypothesis was incorrect. The #Experiment# group that had received CO survived. Our null hypothesis was correct. According to graphs we created, in an environment of concentrated carbon monoxide, plants are able to grow, only slightly slower than normal circumstances.

Summary Statement

"Survival of the Dragons" tested whether Snapdragon plants could live in conditions where Carbon Dioxide was replaced with Carbon Monoxide.

Help Received

Alexander Payne (Father of Celine) helped work with Carbon Monoxide; Teacher helped with formatting and some editing of document