



CALIFORNIA STATE SCIENCE FAIR

2015 PROJECT SUMMARY

Name(s)

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Project Number

35033

Project Title

The Coolest Place in Town: Does a Greenwall Affect the Surrounding Urban Environment?

Abstract

Objectives/Goals

My goal was to find out whether a greenwall would affect the environment surrounding it. Most research deals with the effects on the inside of the building, so it would be interesting to find out whether the temperature of a sidewalk under a greenwall was different than a control.

Methods/Materials

My family had decided to install a greenwall on the back of our house, which measured 6'w x 8'h, and consisted of 60 plants. I set up pavers on the ground under the wall and a control area on the same wall to represent the sidewalk. I set two digital thermometers on the sidewalk, and measured the two temperatures every day at 7am and 3pm for 42 days.

Results

After my trial, we put the data into a statistics program, and figured out that the average temperature increase between 7am and 3pm was .54 degrees higher for the control wall than the green wall. The sidewalk in front of the green wall was also .44% cooler on average at 3pm.

Conclusions/Discussion

While the effect isn't large, it was statistically significant. The greenwall sidewalk was slightly cooler, and the temperature increase was smaller. This was likely because the greenwall cools the air around it, and this cooler air sinks towards the ground.

I also found that the sidewalk in front of the control wall was cooler in the morning than the sidewalk in front of the greenwall, which was a surprise. The greenwall plants and soil seem to absorb and retain the heat over the day, and moderate the cooling through the night.

Greenwalls may be used to cool streets and parking lots in cities, especially if on the side of a big building.

Summary Statement

My project attempted to find out whether a greenwall affects the surrounding urban environment.

Help Received

My father's company manufactures products used in greenwalls, and we decided to install one in our back yard.