CALIFORNIA STATE SCIENCE FAIR
2012 PROJECT SUMMARY

Name(s)
Charlie N. Hunt

Project Number
J1313

Project Title
The Insulative Qualities of Home Roof Types

Abstract

Objectives/Goals
The objective of this experiment is to measure the insulaltive qualities of home roof types and foundations relative to maintaining constant interior temperatures in homes.

Methods/Materials
Six model houses, of identical size and shape: 20 inches wide, 21 inches tall, and 22 inches deep, with 3 different roof types: Living roof (sod), solar roof (reflective aluminum sheeting), and standard composite shingle roof. For each roof type we tested flat foundation on soil against 6-inch deep basement. I put a thermometer in each of the 6 houses and recorded temperature inside the house every 2 hours.

Results
Living roofs had the best insulative qualities, and kept the average temperature between 1 and 2 degrees cooler than the other roof types. Solar proved to have the second most effective insulative qualities. However, the difference between solar and composite shingle was only .45 degrees. That was a much smaller differential than between the living roof and second place aluminum reflective sheeting.

Conclusions/Discussion
My conclusion is that the living roofs are the most effective insulative roofing material. Basements contribute insulative qualities, but to a substantially lesser degree than the differential between roofing types.

Summary Statement
This project measured insulaltive qualities of home roof types, and foundations relative to maintaining constant interior temperatures in homes.

Help Received
I received help from a friend with the correct tools to build the houses.