CALIFORNIA STATE SCIENCE FAIR
2006 PROJECT SUMMARY

Name(s)
Brandon R. Johansen

Project Number
J1117

Project Title
The Flame Game II

Abstract

Objectives/Goals
My objective was to determine which kind of wood gives off the most heat when burned.

Methods/Materials
In my investigation I burned eight different types of shredded wood. When wood burns, it gives off heat to it's surroundings. In my investigation I measured the heat output of the burning wood by placing an aluminum pan full of shredded wood underneath a grate with a pan of water on top of the grate. I got the heat of the burning wood to transfer into the pan of water so I could safely measure the heat given off and compare the different types of wood. After lighting the wood on fire, I measured the water temperature every thirty seconds with a thermometer and recorded the temperature. I repeated the process several times for each type of wood and averaged the results.

Results
When the data I collected was presented graphically, it showed the rate at which the water heated up from the burning wood and allowed me to equally compare the different types of wood. In my data table I also calculated "Max Change", which was the maximum temperature change of the water during each trial. Since the same amount of each type of wood was burned for the same amount of time, Max Change was another way to determine which wood gave off the most heat. As a result of my project, I discovered that Olive gave off the most amount of heat when burned and Mulberry gave off the least amount of heat.

Conclusions/Discussion
I obtained my objective in determining which type of wood gives off the most heat, but my results did not support my hypothesis. My hypothesis stated that eucalyptus wood would give off the most heat when burned, but Olive wood was actually the one that gave off the most heat. I also discovered an interesting relationship when I compared this year's results to my project last year. My project last year was to determine which type of wood burned the fastest, and the results were that Mulberry burned the fastest while Olive burned the slowest. In comparing the two projects, Olive burned the slowest and gave off the most heat, while Mulberry burned the fastest and gave off the least amount of heat. This information could be useful in determining which type of wood has the most potential for use as biofuel.

Summary Statement
Which wood gives off the most heat when burned.

Help Received
My father helped obtain and shred the wood. My mother helped with layout of my display board.