CALIFORNIA STATE SCIENCE FAIR
2008 PROJECT SUMMARY

Name(s)
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Project Number
J0117

Project Title
Gone With the Wind: How Windbreaks Affect Wind Flow

Abstract

Objectives/Goals
I tested how the type of windbreak affects wind flow. Windbreaks are purposefully built blockades against the wind. Although those are usually used for farms and crops, they are also used in windy areas on roads. High-speed winds are quite dangerous, especially for high profile vehicles. So, I found out which of these windbreaks was the most effective.

Methods/Materials
Basically, for my procedure I built a rig in which there is a fan mounted at one end. At the other end there was a flat surface glued around an axel, which is mounted to the rig. There is a weight on this surface, forcing it upright. I then replaced different windbreaks between the two and then record the angle degree the surface was at. So, the independent variable in the test is the different windbreaks while the dependent variable is the angle degree the sail is at. I am keeping this test as controlled as possible by having a steady wind source, and by screwing everything in place on the rig.

Results
The outcome of my testing resulted with the wall windbreak being the most effective. The slope windbreak came second with the screen, trees, and metal fence following it. The wall came to a 82.05º average while the slope came to 69.15º, the screen at 68.85º, the trees at 64.95º, and the fence at 65.55º.

Conclusions/Discussion
The overall result was that the wall was the best windbreak followed by the slope, the screen, the trees, and then the metal fence. My hypothesis was proven correct with the wall windbreak neing the most effective.

Summary Statement
I tested how different windbreaks affect the wind flow from a fan.

Help Received
My parents helped with the initial ideas about my project; my father, more specifically, helped build my rig.