Colorado Science and Engineering Fair

2025 Individual Project Abstract Form

Please print 2 copies of the completed form. Sign both copies, keep 1 for your notebook and submit 1 copy to your Regional Fair Director with your other paperwork.

Title of Project: Ecosystem Showdown Turf V.S. Grass

Finalist's Name: Shelby Neal

School and City: Wiggins Middle School

Sponsor's Name: Peggie Neal

Category: Earth & Environmental Sciences

Division: Junior (grades 6 - 8)

Abstract (250 words or less):

Shelby Neal
Ecosystem Showdown Turf V.S. Grass

The purpose of this project was to simulate and explore how different ground cover affects the temperature of an ecosystem, specifically comparing artificial turf and solar panels to one with natural grass. I hypothesized that the ecosystem with artificial grass and solar would be warmer than a natural environment resulting in a shift of gases in the atmosphere.

The experiment involved setting up two ecosystems with 1 inch of soil and then ground covering one with artificial grass and one with natural grass. For realism each system had a small wooden house with solar panels and artificial trees. Each system was covered with two layers of saran wrap to help create a controlled environment where temperature, oxygen and carbon dioxide changes could be measured accurately. The probes/sensors were placed through the war to record every 5 minutes.

The data I collected did support the original hypothesis. The average increase in temperature for the turf was was 12.42*F hotter than the grass. Likewise, there was a 12% higher average of oxygen in the grass ecosystem and 23% less carbon dioxide compared to the turf ecosystem.

These findings in data collection lead me to believe that turf absorbed and emitted UV radiation at a greater rate than the grass. This suggests that the materials used in artificial turn may contribute to higher temperatures in ecosystems where they are used. Understanding these temperature differences can help in making decisions about landscaping and environmental management.

I hereby certify that the above statements are correct and the information provided in the Abstract is the result of one year's research. I also attest that the above properly reflects my own work.

Finalist's Signature: Date:

In addition, all students must complete the ISEF Student Checklist (1A), Research Plan, Approval Form (1B), and Checklist for Adult Sponsor (1), and any other ISEF forms required for this type of project. See the International Rules and Guidelines for form requirements. Return COPIES of all of these forms to your Regional Fair Director with you Finalist Verification/Permission Form. **A signed copy of this form must be included in your notebook.**