



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: Can These Tiny Gels Save Agriculture's Water Crisis?

Finalist's Name: Luciana Dougherty

School and City: Sacred Heart of Jesus , Boulder CO

Sponsor's Name: Laura McGinn

Category: Earth & Environmental Sciences

Division: Junior (grades 6 - 8)

Abstract (250 words or less):

My experiment tested different types of hydrogels to find the best formula for retaining water. Hydrogels are superabsorbent, jelly-like substances that retain moisture during drought and slowly release it to plants over time. These materials are vital as the planet warms, offering potential solutions for water conservation in agriculture.

I created three types of hydrogels and tested them in air and soil. One hydrogel used agar powder, another used HEC powder, and the third combined agar and HEC. Each day, I measured water loss to evaluate retention.

Results showed that in the air test, HEC powder was most effective by day 10, with the HEC + agar combination in second place. Surprisingly, in the soil test, the control (no hydrogel) retained the most moisture. This unexpected result could be due to various factors. My hypothesis was partially correct, though results differed from expectations.

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.**