



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: Soil Additives are Spud-Tacular

Finalist's Name: Emilio Ortiz

School and City: Monte Vista High School

Sponsor's Name: Loree Harvey

Category: Plant Sciences

Division: Senior (grades 9 - 12)

Abstract (250 words or less):

The purpose of this experiment was to show the effectiveness of adding soil additives to increase water-holding capacity. This experiment aims to show how soil additives could positively benefit the soil's water-holding capacity, soil pH, and soil health. To understand the science necessary for my project I did extensive research on soil additives that can break down after they serve their purpose. For this project, I had to learn how soil additives keep moisture in the soil for longer. I chose coco coir (which is ground-up coconut husk) because it is a sponge-like material that can break down and will leave nutrients such as potassium and sodium. Then I utilized mycorrhizal inoculant because of the symbiotic relationship it forms with root structure allowing the plant to absorb more water throughout the roots. Next was biochar (charcoaled wood) and I chose this because when activated it becomes porous and allows water to be absorbed and slowly released as it returns to its original state. My findings suggest that by comparison, mycorrhiza did the best at increasing soil water-holding capacity. However, the coco coir did the best at getting a slightly acidic pH. I believe that agriculturalists could benefit from my findings because they show that all of the additives are effective at increasing the water-holding capacity of the soil which would potentially save more water.

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.**