



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: The Effects of Soil Texture on Growth of *S. tuberosum*, *M. sativa*, and *Z. mays*

Finalist's Name: Ernesto Ochoa-Marquez

School and City: Monte Vista High School, Monte Vista CO

Sponsor's Name: Loree' Harvey

Category: Plant Sciences

Division: Senior (grades 9 - 12)

Abstract (250 words or less):

With an understanding of how soil texture affects plant growth and germination, farmers can either find a way to fix the soil texture they have in their fields or find a plant that benefits from the soil texture they currently have. A 4:1 liter ratio was mixed in buckets and added to germination trays, composed of common gardening soil and three textures of interest (clay, sand, or gravel). An additional mixture combining all three textures was also used to determine additive effects. Fifteen potato, 25 corn, and 50 alfalfa seeds were planted in each soil texture combination and were grown for five weeks total. Plant number and height were tracked every week, and at the end of the study, the plants were pulled, rinsed from soil, and dried on countertops. Biomass was obtained for each plant, and statistical analysis was conducted. The plants augmented with clay showed signs of stunted germination and growth. Potatoes grown in just potting soil with no additives showed the best height, but soil with gravel added yielded the greatest biomass in potatoes. For corn, sandy soil helped them grow tallest, but regular potting soil yielded the highest biomass. For alfalfa, soil with gravel grew the tallest plants, and plain potting soil yielded the greatest biomass. These results show that soil texture has a significant effect on the growth of plants, and farmers or anyone who is attempting to grow these specific crops should take soil texture into consideration.

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.**