



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 Influence on Legume Residue on Soil Nitrogen and Corn Growth

Finalist's Name: Harley Vaughn

School and City: Liberty school Joes co

Sponsor's Name: Linda Fogale

Category: Earth & Environmental Sciences

Division: Junior (grades 6 - 8)

Abstract (250 words or less):

The purpose of this project was to determine if residue from a legume crop increases Nitrogen levels in soil and promotes corn growth. The hypothesis was that even though legumes are able to fix nitrogen while growing, most of it is removed from the field during harvest (Flynn, Idowu, 2015); therefore, legume residue should not increase the amount of nitrogen in the soil, nor increase the growth of the corn seeds planted.

To test this, soil, legume residue, and corn seeds were collected. The control was soil without legume residue. Sample 1 was plus 25g legume residue. Sample 2 contained 50g and sample 3 had 75g. The legume residue was mixed into the soil. And every day after the second day after planting the corn seeds, the seeds roots were measured. Then once the seeds were above the soil they were measured above the soil. But the Sample that showed the most growth in both nitrogen and corn growth was sample 3. And how the nitrogen was tested was every week for four weeks, the amount of available N in each soil sample found using the Hach soil test kit. And at the end of the 4 week mark sample 1 had 19.66 mg/L nitrogen, sample 2 had 19.26 mg/L, then sample 3 with 22.60 mg/L. The data collected, does support the hypothesis, the data collected says that the amount of nitrogen in the soil influences the growth of the corn plant. And based on the data collected the legume residue did influence the nitrogen content in the soil.

The data collected did support the hypothesis that added legume residue will increase the soil nitrogen and corn growth.

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.**