



**CALIFORNIA STATE SCIENCE FAIR
2003 PROJECT SUMMARY**

Name(s) Morgan Ivens-Duran	Project Number J1612
Project Title Which Soil Amendment, Wood Ash, Coffee Grounds, or Leaves, Best Enhances the Development of Pea and Radish Plants?	
<p style="text-align: center;">Abstract</p> <p>Objectives/Goals My experiment was to test how pea and radish plants react to different soil amendments, specifically coffee grounds, wood ash, and fresh green avocado leaves.</p> <p>Methods/Materials To do my experiment, I first prepared my planting area. Next, I divided my planting area into 4 quadrants, collected the soil amendments (coffee grounds, wood ash, and shredded green avocado leaves), and placed them in the quadrants, leaving one with no added amendment as a control. I mixed the soil amendments in, then planted my radish and pea seeds in the prepared furrows. After planting, I watered my seeds. Finally, I made daily observations in my log book of how the plants grew, and watered when necessary. At the conclusion of the experiment, I took measurements of the plants.</p> <p>Results My hypothesis that coffee grounds would perform the best was only partially proved true. Fresh leaves and coffee grounds both performed well. The leaves performed well, I think, because my planting area had been amended with manure in previous years. Wood ash didn't perform well, I think, because it dramatically increased the soil salinity.</p> <p>Conclusions/Discussion My conclusion is that coffee grounds and leaves are good soil amendments in generally healthy soil and that ash can be toxic to plants. It was clear from my experiment that the soil was already healthy and full of essential nutrients because the plants in the un-amended soil did very well. Coffee grounds and leaves, however, did produce more abundant and larger plants than the un-amended soil, demonstrating that even healthy soil can use additional nitrogen and other nutrients. My hypothesis about the leaves, which was based on the information I learned in my research, was disproved. Perhaps because the fresh green leaf mulch was added to previously amended soil, the leaves benefitted rather than harmed the plants. Overall, the data demonstrated that green avocado leaves are a better soil amendmend for radishes and coffee grounds are a better soil amendment for peas. In addition, either one performed better than nothing at all.</p>	
Summary Statement The impact of specific soil amendments (wood ash, coffee grounds, green leaves) on plant development (peas and radishes).	
Help Received My mother typed my report and shredded the avocado leaves in the chipper-shredder.	