



**CALIFORNIA STATE SCIENCE FAIR
2009 PROJECT SUMMARY**

Name(s) James M. McCabe, III; Gregory M. Regan	Project Number J2021
Project Title Can Food By-Products Be Used as a Natural Supplement for Plant Growth?	
<p style="text-align: center;">Abstract</p> <p>Objectives/Goals We tested 20 Bright Yellow Swiss Chard plants to see if watering them with food by-products would affect their growth. We selected corn, rice, beans and eggs because they are abundantly available throughout the world. If our hypothesis proved true, then this could be a low-cost,eco-friendly and natural way to produce stronger, larger and healthier plants.</p> <p>Methods/Materials We watered 20 Swiss Chard plants over a period of 28 days. Four plants were watered with the water used to boil corn on the cob. Four plants were watered with rinsed rice water and another four with rinsed bean water. Four plants had crushed eggshells embedded in the soil and were given plain water. The last four plants, our control group, were given plain water. Every seven days, we measured the height of the plants and counted the number of leaves.</p> <p>Results When we started the experiment, all of the plants were comparable in size and health. However, by day 28, the plants that had eggshells embedded in the soil were significantly taller and had more leaves than our control group. All of the other groups of plants showed positive growth, but it was not significant enough to draw any conclusions.</p> <p>Conclusions/Discussion The results of our experiment demonstrated that eggshells can be used as a supplement to increase plant growth. Our research explained that eggshells contain calcium, trace minerals, and small amounts of nitrogen. These nutrients have been proven to boost plant growth. Thus, our research supported our results because the plants that were given eggshells showed a significant increase in height and number of leaves relative to the control group.</p>	
Summary Statement Our experiment examined whether food by-products, such as cracked eggshells, the water used to rinse rice and beans, and the water remaining from boiled corn, can be used as a natural plant supplement.	
Help Received A nursery manager provided guidance on plant selection; our moms helped with the registration, editing processes and cutting the materials for the board; and James' cousin helped with the photos.	