



**CALIFORNIA STATE SCIENCE FAIR
2007 PROJECT SUMMARY**

Name(s) Johannah R. Fernandes	Project Number J1907
Project Title Crackin' Down on Eggshell Thickness	
Objectives/Goals The goal of my project was to try to increase eggshell thickness by adding parsley (Solanum malacoxylon) to my hens diet.	
Abstract Methods/Materials 24 laying hens, all 14 months old, the same breed and genetically nearly identical were used in this project. This represents a 10% sample from our flock. The hens were housed 3 per cage as to monitor the amount of parsley fed per bird and the eggs collected. The thickness of the eggshells were measured for 5 days prior to any addition of parsley. Calipers were used to determine the thickness at the mid-point of the egg post-cracking. Dried parsley flakes (Solanum malacoxylon) was then fed to all hens at one-fourth cup per pen of 3 hens for 10 days. This was in addition to the hens regular lay-mash feed and water. Eggs were then collected and measured with calipers to the nearest 0.01mm from day 1 through day 30 after the addition of parsley to the hens diet.	
Results The eggshells were thicker by an average of 0.13 mm. Prior to adding parsley the average was 0.41 mm . After adding the parsley the average was 0.54 mm, an increase of 32%. Solanum malacoxylon has plenty of vitamin D, which helps the binding proteins so that calcium will make stronger eggshells. The results were consistent for all of the days of the experiment.	
Conclusions/Discussion Adding parsley to my hens feed increased the thickness of their eggshells. Parsley contains vitamin D which helps with the calcium binding proteins. Eggshells are made up of CaCO ₃ (calcium carbonate) but need sufficient Vit. D. to bind the calcium. Eggshells that are too thin will break easily and not be sellable. I believe adding parsley to the diet will only work when the hens are being depleted of calcium .. when they are getting older. I would recommend that huge farms that have hens laying eggs in buildings add parsley to the hens diet when the shells become thin. Farmers already add extra calcium to the feed, but if there is not enough vitamin D in the diet, the calcium binding proteins can not work properly. Vitamin D is plentiful from the sunlight, but hens in caged operations do not see the sunlight. I am eager to discuss my ideas for future projects and inform you of an interesting benefit from the parsley that I had not considered.	
Summary Statement Adding parsley (Solanum malacoxylon) to laying hens diet will increase eggshell thickness.	
Help Received Dad helped me put up cages and move the hens. Mom helped with graphs.	