# CALIFORNIA STATE SCIENCE FAIR
## 2006 PROJECT SUMMARY

**Name(s)**
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**Project Number**
**J1128**

**Project Title**
## Red! Red! Red! Colorful Plant Dyes

**Abstract**

**Objectives/Goals**
The purpose of this experiment was to determine which of three plant dyes would make the best red color on fabric. Up until about 150 years ago natural dyes were the only kinds of dyes used, so I was wondering what might have been used to make the color red. Would fabric type, afterbath, washing, or sun have an affect on the color?

**Methods/Materials**
1) Choose strawberries, beets, and tomatoes with the darkest red color and make dyes from each of them.
2) Choose three types of fabric (cotton, wool, polyester) and make four sets of fabric, each set with one piece of each type of fabric. One set is the control.
3) Dye one set of fabric with each of the three dye baths. Put the control in distilled water only. Observe color and intensity.
4) Soak each set (including control) in a vinegar afterbath. Observe color and intensity.
5) Wash each set (including control). Observe color and intensity.
6) Dry each piece of fabric in the sun. Observe color and intensity.
7) Compile the data and then draw conclusions.

**Results**
The strawberry dye solution was close to red in color, but the fabrics were dyed pink. The beet dye was very dark red, but the dyed fabric turned orange. The tomatoes made a light gold dye and dyed the fabric a gold color. Out of the three fabrics, the wool picked up the color the best, then the cotton. The polyester had only very pale coloring, with the most color on the polyester dyed with beets. The afterbath affected the color a lot. It took the color out of the fabric instead of helping the color attach. Washing and sun had little or no effect on color or intensity.

**Conclusions/Discussion**
Based on my experiment, neither strawberries, tomatoes, nor beets made a good red dye on any of the fabrics. The tomatoes made yellow, the strawberries made pink, and the beets made orange. My hypothesis was that strawberries would make the best red dye but, of the three, the beets on wool was closer to red than the others. Vinegar was not a good afterbath. These plant dyes may be better with an alkaline afterbath. Finally, polyester was not a good fabric choice for these plant dyes. The natural fabrics seem to work better with the natural dyes.

**Summary Statement**
My project was to determine which of three plant dyes would make the best red color on different fabrics.

**Help Received**
My mother helped with proofreading, formatting and scanning the photos.