



**CALIFORNIA STATE SCIENCE FAIR
2005 PROJECT SUMMARY**

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Project Title Microbe Levels in Almonds	
<p style="text-align: center;">Abstract</p> <p>Objectives/Goals The objective of this project is to determine if there is a significant difference in the level of microorganisms in Field Meat almonds when compared to Huller Run almonds. Field Meat almonds are almonds that have fallen out of their shell prior to entering the almond hulling and shelling process. Huller Run almonds are almonds that are removed from the hull and shell at the processing facility.</p> <p>Methods/Materials Ten samples were taken from ten different lots. Each lot had two separate samples. The first sample was composed of Field Meat almonds and the second sample was composed of Huller Run almonds. All samples were clearly labeled by lot and type. I then took 90-gram samples of Field Meat and Huller Run almonds and placed them in separate plastic bags with buffer solution. I then shook each plastic bag in order to remove the microbes from the almonds. I then diluted the solution from each sample and put 1ml of the diluted solution on two different kinds of petrifilm. I used one type of petrifilm that detected aerobic plate count levels and a second type of petrifilm that detected E-coli-/coliform levels. The next step was to put the samples in the incubator for the proper period of time. 48 hours was required for aerobic plate count test and 24 hours for the e-coli/ coliform test. I then took the almonds out of the incubator and counted and recorded the colonies.</p> <p>Results The results indicated that in most cases the Field Meat almonds had more microorganisms than Huller Run almonds from the same lot.</p> <p>Conclusions/Discussion Statistical analysis of the data I collected indicates that Field Meat almonds have significantly more microorganisms when compared to Huller Run almonds. In general the almond industry does not make this separation. As a result, field meat almonds are mixed with Huller Run almonds. Separating Field Meat almonds from Huller Run almonds could be a new practice that is used in the almond industry. Improving good manufacturing practices is a goal of the almond industry and all food processors.</p>	
Summary Statement This project evaluates the different levels of microorganisms in Field Meat almonds and Huller Run almonds.	
Help Received Dr. Linda Harris, PhD. at UC Davis, was my mentor, providing guidance and the necessary supplies; Harris Woolf almond processing provided the incubator and almond samples. My parents Pat and Dean Nelson provided assistance. My dad is the quality control chairman for the Almond Board of California.	