



**CALIFORNIA STATE SCIENCE FAIR
2015 PROJECT SUMMARY**

Name(s) Denico M. Nieves	Project Number 35561
Project Title Effects of Produce Washes on Pesticide Residue and Brine Shrimp Mortality	
Objectives/Goals This project investigated pesticide residues from produce with fruit waxes and without fruit waxes effects on non-target organisms and explored if fruit and vegetable wash helped to eliminate pesticides. I hypothesized that the samples with commercial produce and no produce wash would have the highest pesticide residue levels, resulting in the highest brine shrimp mortality rates, while the samples with organic produce would have the lowest concentration of pesticide residues and the lowest brine shrimp mortality rate. Abstract Methods/Materials I used a digital gram scale and 144 samples tested for seven types of produce, both organic and commercial. The produce was weighed, and some washed with produce wash, then soaked in 2% salt water. The organic produce was my negative control and unwashed commercial produce was my positive control. 30 ml. of the produce water was placed in a Petri dish along with five brine shrimp each. The Petri dishes were monitored for five hours. The three produce washes tested were "Veggie Wash", "Trader Joe's Wash" and "Fit All Natural Wash". Results In two trials of the experiment, I tested 144 Petri dishes, and 720 brine shrimp. The two trials involved 21 hours of preparation and washing, 68 hours of produce soaking, and 10 hours of observation and tabulation. "Veggie Wash" had the highest mortality rate, averaging 30% brine shrimp mortality. "Trader Joe's Wash" averaged 27% mortality. "Fit All Natural Wash" averaged a 24% mortality rate. The commercial produce had an average of 19% brine shrimp mortality rate. The organic produce water averaged a 3% mortality rate. The neutral control of 2% NaCl with no produce water had no brine shrimp mortality. Conclusions/Discussion The commercial produce had a lower mortality rate than all of the produce washes. Since pesticides are not very water soluble, the washes may have loosened the pesticide molecules and attached the pesticides to the wash molecules. The produce may need to be rinsed multiple times. Produce with fruit waxes appeared to have higher mortality compared to the other produce tested.	
Summary Statement My project tested the effectiveness of produce washes in removing pesticide residues from commercial produce.	
Help Received My parents purchased the Brine Shrimp for me.	