



**CALIFORNIA STATE SCIENCE FAIR  
2016 PROJECT SUMMARY**

<b>Name(s)</b> <b>Christopher D. Raney</b>	<b>Project Number</b>  36113
<b>Project Title</b> <b>Can Mealworms Fix Our Plastic Waste Problem?</b>	
<b>Abstract</b> <b>Objectives/Goals</b> The objective of this study is to see if mealworms can eat plastics. Plastics are a huge environmental problem. The world produces enough Styrofoam cups every day to circle the earth and they take 500 years to decompose. The average American throws away about 185 pounds of plastic per year and only 5% of plastic is recycled. It would be great if we could find a solution to this problem. <b>Methods/Materials</b> I tested seven plastic and two paper samples by putting each sample in its own jar, and then adding 21 mealworms per jar and left them there for 8 days. The first test was just observations to see if they had eaten anything. The second test included weighing the materials before and after the 8 days. <b>Results</b> I made observations of how many mealworms died and if there was visible evidence of mealworms eating plastic. It was obvious they ate the hard Styrofoam, the Styrofoam ball, paper towel, the produce bag, the plastic wrap, the Noah's Bagels paper bag and even the Lego. In test 2 when I looked at the weight difference, it became clear that they actually ate everything! <b>Conclusions/Discussion</b> The results indicated that the mealworms ate everything, which is great. They ate more types of plastics than what I thought they would in my hypothesis. They were able to eat an average of 15.62% of what I gave them in 8 days. This could be a big breakthrough, but we should do further testing on if the plastic digested impacts the health of mealworms, our soil and the food chain. I'm also curious if the darkling beetle will also eat plastic.	
<b>Summary Statement</b> My project investigates whether mealworms can eat different types of plastics and paper with the hope of finding a potential solution to our plastic waste problem.	
<b>Help Received</b> I designed and performed the research myself. I used the scientific scale at the CVS pharmacy because I needed to be able to weigh to centigram accuracy.	