



**CALIFORNIA STATE SCIENCE FAIR  
2017 PROJECT SUMMARY**

<b>Name(s)</b> <b>Annika N. Garza</b>	<b>Project Number</b> <b>J1116</b>
<b>Project Title</b> <b>Measuring the Biodegradability of Starch Based Bioplastics</b>	
<b>Abstract</b> <b>Objectives/Goals</b> The objective of this experiment is to determine how the type of starch that is integrated into a starch-based bioplastic affects its ability to biodegrade, or break down into organic compounds, in a natural environment. <b>Methods/Materials</b> Four different starch-based bioplastics, a scale, and a compost pile were used to complete the trials. I measured the weight of the bioplastics at consecutive intervals of time to determine their biodegradability. I did this by allowing them to decompose over a span of three months in the compost pile. <b>Results</b> Four different starch-based bioplastics were allowed to biodegrade over three months, and the tapioca starch bioplastic lost the largest amount of weight during this period. This shows that this bioplastic has the highest biodegradability rate in comparison to the others. <b>Conclusions/Discussion</b> The tapioca starch bioplastic's performance showed to have the highest biodegradability amongst the bioplastics, and therefore, in order to determine the material to incorporate for a starch-based bioplastic with an effective biodegradability rate the tapioca starch bioplastic should be utilized. This demonstration can allow for the tapioca starch bioplastic to become a more significant alternative to petroleum-based (also known as synthetic) plastic, environmentally speaking.	
<b>Summary Statement</b> I discovered that using tapioca starch in starch-based bioplastics allows for the most effective biodegradability.	
<b>Help Received</b> None. I planned, constructed, and performed all trials, materials (with the exception of commercial materials), and experiments myself.	