The Potato Lab

Purpose: To measure understanding of metric measurement, table/graph formation, and the scientific method. To quantitatively measure the influence of sugar solutions on the living cells in potatoes.

Discussion:

1. The difference between a qualitative and quantitate observation is that qualitative observations consist of traits and other things that can be observed such as color and taste, whereas quantitative observations are numbers that are usually found through using tools and taking measurements. In the experiment we made a lot of qualitative observations including how the color of the potato got significantly lighter when we dropped the liquid on it before putting it in the test tube. A quantitate observation we made was how the potato in the 20% sugar tube decreased in weight by -18% in grams.
2. The most accurate data we received in our experiment was the weight of the potato before and after being in the solution and this was because it was measured using an electronic balance instead of a ruler which eliminates almost any possibility of human error.
3. The straight line from the year average represents the most accurate data because it includes the largest amount of data that was pooled into the average. The large sample size also makes bad measurements less relevant since the abundant amount data almost cancels it out when calculating the average.
4. Using all the data provided by the combined classes I think that at around 8.5% sugar the weight of the potato will not change.
5. According to the data, when left in just plain water a potato increases in size whereas when left in a solution of at least 10% sugar mixed with water the potato actually shrinks. This shows that sugar actually has a negative effect on the weight of a potato when in quantities of 10% or more.

Conclusion: The potato lab was used to see if the amount of sugar in a water and sugar solution had an effect on the weight of a potato that it was soaking in. What it found was that not only did sugar have an effect but it was a negative effect and decreased the weight of the potato. This was confirmed by the data of multiple classes and it also showed that when a potato is soaked in just normal water it actually absorbs some of the water and increases in size. It also stands to reason that there is a certain amount of sugar that would actually cause no increase or decrease because the weight of the potato in 20% sugar averaged -19% and 10% sugar averaged –2%. The lab was successful because it proved that sugar does the affect weight of a potato that is soaking in it.