

## **Graphical Analysis of Photosynthesis Leaf Disc Lab Data!**

1. Enter your data into the Excel spreadsheet on my website (inmanbiology.weebly.com). Be sure to change the Y1 and Y2 trial info and the title on the table to be specific to YOUR experiment. For example, if you tested spinach and lettuce, you would change the Y1 rows to "Spinach 1", "Spinach 2", and "Spinach 3" to represent your three trials.

To calculate the averages under each time you collected data, just add up the three trials at that time interval and divide by 3. Round your answer to the nearest whole leaf disc. For example, an average of 1.3 would round to 1

2. To fill in the "SD" rows, go to the link/info provided on my website for GraphPad QuickCalcs.

### **GRAPH 1:**

1. Highlight JUST the lower portion of the Excel sheet where you have just the averages.
2. Go to "Insert" and select the graph type "Scatter with straight lines and markers."
3. Click on the "+" next to the graph and select "Axes" and "More options." If you then click on the image of a bar graph in the side panel, you'll see where you can change the bounds to better scale your graph. Do this!
4. Click on the "+" and select "Axes Titles." Type in labels for your axes (with units!) and a detailed title that describes your experiment and what you measured.
5. Click on the "+" and hover over "Error bars," DON'T SELECT IT YET! Go to "More options" under Error bars. Select your first data set. Now, in the side panel, select "Custom" and "Specify value." For the Positive and Negative error value info that pops up, just click the little tiny table icon (with the red arrow on it) and go into your data sheet and highlight the row that corresponds with your SD numbers for that data set. Click that little tiny table icon and it will take you back to go select the Negative error value. Do the same thing with that, selecting the same SD value row. Click "OK". REPEAT THIS FOR YOUR OTHER LINE/DATA SET.

### **GRAPH 2:**

1. Repeat the basic steps above, but now to make a "Scatter" graph (no lines connecting) using ONLY a portion of your graph that shows a general increasing linear trend. You'll need to copy and paste this section of your smaller average data table at the bottom of your Excel sheet, labeling the two data rows so they show up in your legend. This is called "piecewise" analysis.
2. Label the axes and give it a detailed title (different from Graph 1 so you tell what section of the data you are using!
3. Put your error bars on the graph (see #5 above).
4. Click on one of the data set points in your graph. Then, go over to the "+" and hover over "Trendline." Select "More options." Select "Display equation on chart" and "Display R<sup>2</sup> value on chart". Repeat this for your other data set.

5. You are finished! Copy and paste these two graphs into the PowerPoint template on my website : )

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