MST AP Biology: Experimental Design Introduction

Speedy Sprouts

Experimental design and analysis are huge parts of AP Biology. To give you an introduction of this, you are going to design and perform your own experiment this summer and watch *speedy sprouts* grow. These plants are called "Wisconsin Fast Plants." They have been artificially selected by humans to use in plant research.

When you see Mrs. Tawney to pick up the AP Biology summer work, pick out 1 seed packet full of 4 seeds. These are the seeds you will plant and try to grow this summer! You will also be provided with compostable pots and potting soil. You will eventually share your results during the 1st week of school.

What do you need to do?

- Design your own experiment with the seeds. You need to make sure you have a control group and experimental group (research these if you forget what they mean). Plant 2 seeds in your control group and 2 in your experimental group. You only need to collect data on 1 plant from each group, but this way, you have a spare if one seed does not germinate! Collect data on as many seeds that germinate and grow!
- Record the materials you are using for this experiment (ex. type of dirt, type of water used, etc.).
- Plant each type of seed in your pots inside with a 24 hour light source if possible (if not, it is okay, they will still grow!). Record how often you plan to water the seeds and with how much water. You may want to do research on how much water these seeds need. Here is a growing guide if you need some suggestions!
- Every day for a minimum of 2 weeks, record data on your seed growth. I suggest measuring the sprouts in centimeters. Be sure to also record the conditions of the environment where the seeds are planted. If you record data for 3 weeks or more, there will be an extra credit bonus! The more data, the better! Take a photo of your plants as least 1 time per week. You can use these pictures when you explain your results.
- At the end of your data collection, your plants should flower. At this time, you can harvest them or simply see how long you can keep them alive!

{I realize that a lot of people travel over the summer. Do the best you can with planting these seeds during a 2 week chunk of time that you are home…or if you are up north for a month, maybe plant the seeds up there! If you leave for vacation, try to get someone to water your plants so your hard work doesn't go to waste. If you have any major concerns with this, please reach out to Mrs. Tawney on Remind.}

How will you present this all in class?

- In a Google Slides presentation (or another similar slide format), explain how you set up/performed your experiment.
- Do some research on Wisconsin Fast Plants and explain what they are, how they were developed, what they are used for, etc. The more detail, the better! Be sure to cite your sources.
- Create a properly labeled and scaled graph to show the height of your plants over time in your control and experimental groups. This graph can be hand drawn or computer generated.
- Include pictures of the growth of your plants over time (at least one picture per week).
- Include a final picture of your plants. Did they flower? If so, how long did they take?
- Discuss your results. Why do you think you saw the results that you did? Do some research to support what your findings were. Be sure to cite your sources.
- Answer these reflection questions: What did you learn from this project? What surprised you the most? Were there any errors? What would you do differently if you had to do it again?

Since this is your first lab, it will count as a lab grade, which is equivalent to a quiz grade.