

Tropism Experiment Design

Your assigned tropism: _____

Stimulus that a plant will respond to with this tropism: _____

Question: How will a plant grow in response to _____ ?

Hypothesis:

I think that the plant will _____

in response to _____ because of _____.

Experiment:

Materials needed:

Procedure:

1. _____

2. _____

3. _____

4. _____

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5. _____

6. _____

7. _____

8. _____

9. _____

10. _____

Conclusions:

Our control plant(s) _____

Our variable plant(s) _____

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Publish:

The results of our experiment _____ (*did* or *did not*) support my hypothesis.

Before doing the experiment, I thought that the plant would _____

in response to _____ because of _____.

The control plant(s) in our experiment actually _____

However, the variable plant(s) _____

I _____ (*do* or *do not*) think that our experiment was valid because _____

Some difficulties that we had while performing the experiment were _____

In fact, we had to make the following changes to our procedure to make the experiment work well: _____

The best thing about our experiment was _____

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Things to consider when planning your tropism experiment:

You will need one or more “control” plants. For this experiment, the “control” plant(s) will be treated “normally”. You will give plants in this pot light, soil, and water, and set it right-side-up.

You will also need one or more “variable” plants. For this experiment, you will need to change only one of the variables (the stimulus that your plant should respond to based on your assigned tropism) when you plant the “variable” plants. Remember to keep all other variables that you do not plan to test as part of your experiment identical to the “control” plant.

Example: If you were testing a plant’s growth response to water (hydrotropism), you would plant the control and variable plants in the same size pot, with the same amount of soil, set them in the same place for light purposes, and give them the same amount of water. The variable you are testing should be the only difference. In this sample experiment, that would be the placement of the water. You might pour the water on the “control” plant at its base, while always pouring the water for the “variable” plant(s) in a designated spot off to one side of the plant. When the experiment is over, you should compare the plants’ roots to see if the variable plant grew more roots toward the place where you poured the water.

*Note: No group will be assigned hydrotropism. Do not use this as your experiment plan!

For best results, plant 3 to 5 seeds in each pot. Have one “control” pot, and one or two “variable” pots.

You will need to be very specific in your procedure step directions. Other scientists should be able to follow your directions and have the same set-up and results your group experienced. Be sure to tell what you do that is the same for all of the plants, and what changes you make to the “variable” plants’ pot(s). Tell how often to observe the plants’ growth. Tell how many days or weeks the plants should be allowed to grow to complete the experiment. When deciding on the length of your experiment, consider your experiences with the time it took to see growth with our corn seeds. Also make sure to write your procedure steps in the order that they should be followed. Pretend that your experiment will be submitted to the science fair (It really could be one you decide to use later!) and do your very best!

You will be required to submit a materials list to your teacher before carrying out your experiment. Be certain that you have included exact amounts and complete descriptions of your needs (list “3 pots of the same size”, not just “pots”). If you do not put a supply on your list, you probably will not have it available to you on the day that we set up our experiments.

Group members will be graded on their individual participation in helping the group to design and carry out an experiment that will help to answer the assigned question. If changes need to be made along the way, or if your plants do not grow as you expected, that is okay! Just be able to explain what changes you made (or would make if you did this again later) to make the experiment work better. If your plants do not grow as you expect, be able to offer possible reasons for their unexpected growth. Every experiment is a learning experience. Your experiment is not a “failure” as long as you have gained knowledge from the attempt!

Each member will be expected to keep his or her own copy of the group’s experiment plan, as well as observation records of the plants’ growth (and other things you notice) throughout the experiment. Each person is responsible for turning in all experiment forms. Do not throw away or lose them!