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| [**Home**](http://docs.google.com/home.htm)  [**Abstract**](http://docs.google.com/abstract.htm)  [**Introduction**](http://docs.google.com/introduction.htm)  [**Review of Literature**](http://docs.google.com/literature_review.htm)  [**Procedure**](http://docs.google.com/procedure.htm)  [**Data**](http://docs.google.com/data.htm)  [**Conclusion**](http://docs.google.com/conclusion.htm)  [**Cross Sections**](http://docs.google.com/cross_sections.htm)  [**Journal**](http://docs.google.com/journal.htm)  [**References**](http://docs.google.com/references.htm)  [**bonus..**](http://docs.google.com/bonus.htm)**.** |  | Set-up   1. purchase soil and plants. Use Radishes due to the fast growth rate. Purchase at least 400 seeds to obtain a large sample size. 2. Purchase flats with individual cells to grow plants. In addition watering trays will be needed. Flats come with 8 blocks of 6 cells each, use 8 flats to obtain sample size. 3. Fill the trays with soil, leave 1-2 cm below the rim. Tap soil to compact it. 4. Place 1 radish seed in each of the cells. 5. Cover the seeds with 1/8" of soil and set in watering tray. Water.   Growing the plants   1. Germinating radishes need a constant supply of water. Refill the watering trays every other day so that the water is 1 cm high. Check on water daily. 2. Make sure that the plants are in an area with constant sunlight. A greenhouse is optimum because there is no outside wind. This reduces the variable of outside sources of wind 3. Separate the flats into 4 groups. Since there are 8 flats, 2 flats per group and label as control, Low, Medium, and High. 4. Place fans behind each group. 5. Once a day, (6-7pm) place large dividers between the groups of plants and run the fans at their designated speed for 1 hour. 6. Fertilize the plants once every 4 days with the same amount of fertilizer in each cell so that no variables are added. 7. Since the greenhouse has glass panels on the side, rotate the plants to a new location every two days to make sure that each group is exposed to the same amount of light   Measuring the plants   1. Each plant is measure every two days. The measurement is the length between the beginning of the stem and the tip of the leaf. Record measurements in cm. 2. Using a micrometer, measure the diameter of the stem of random plants. Use a random number generator to select 1 plant from each block to measure Measurements are taken right below the split of the leaves. 3. Take the pH level of the soil to check for variable. 4. Make cross sections of plant stems to examine under microscope   Making the cross sections   1. using the random number generator on a calculator, perform a stratified random sample and select 4 plants from each group 2. melt clear candles 3. Take a nut and bolt and twist up to revel a space 4. Cut the roots off of the plant sample 5. Pour melted wax into the hole made by the nut 6. Place the stem of the plant into the hot wax as straight as possible. 7. When the wax hardens, use a very sharp razor to shave off slices of the wax with the stem embedded. 8. Place the wax in petri dishes and add alcohol to dissolve the wax. 9. Add blue dye – tuloidine, to stain the stem cross sections 10. . After at least 10 minutes rinse the cross sections with distilled water 11. . Examine under microscope   [images...](http://docs.google.com/images.htm)  [materials...](http://docs.google.com/materials.htm) |