**Effects of Population Density on Plant Growth** (50 points)

Full-Value Lab Report for Chapter 6 Population and Community Ecology

Students will complete a “Full Value” lab report. In addition to turning in a full lab report, students will turn in their “notebook” with notes taken throughout the experiment. We will not take specific measurements until the end of the experiment, but students will document qualitative observations and water their plants daily. Also, they will create an appropriate data table to record the quantitative data.

**Methods**

APES students will craft a meticulous methods section that will allow someone to replicate the experiment at a different time and place.

Hints: Ms Leigh will measure the soil for each cup. Cups should have the following number of seeds 1, 2, 4, 8, 16, 32. Be sure to number the cups and keep track in your notebook. Take note of how much water you give the plants everyday and take any qualitative observations.

**Background Information**

This should be 5 sources (one can be your text book). You should build on this as we progress through the next to weeks. What are the factors that influence plant growth? What is known about density affecting plant and animal distribution. If you want to turn in a draft of the purpose, question, hypothesis, methods, and background research sections for feedback do so by Friday 10/17. I highly recommend this option to get an excellent final grade on this.

**Analysis**

Questions that must be specifically addressed in your analysis (not a list, but included in your analysis section):

1. What effect did population density have on the height and biomass of the radish plants?
2. What are some factors that can limit a plant’s growth? Which were tested in this lab?
3. Which do you think is more of a controlling factor in the radish plant’s growth: the genetic make-up of the plant, or the environment in which the plant lives?
4. Due to the time and equipment constraints, this lab activity measured the plant’s wet biomass, not its dry biomass. Why would it be better to measure dry biomass?
5. Make a graph of average plant height vs. population density using the average height data from the data worksheet. Be accurate and label your axes.
6. Make a graph of average biomass vs. population density using the average wet biomass from the data you collected. Be accurate and label your axes.
7. Discuss your results using the graphs and data from your group. A complete discussion includes an analysis of the data.
8. What are the possible sources of error in this lab?
9. Write a comprehensive summary and conclusion of your lab results.

**Due the Fridayday (10/24) before Fall Break.**