**Mung Bean Salinization Lab**

**Introduction**:

Farmers in the Central Valley of California, as well as farmers many other areas around the globe, have become increasingly concerned about the build-up of salt(s) in the soil. Salinization, defined as the loss of soil fertility (by 10% or more), can dramatically reduce crop yields and potentially increase food prices.

**Purpose**:

The purpose of this lab experiment is to involve students in a real world investigation in which you design an experiment to explore the influence of various salt solutions on seed growth.

**Materials**:

* salt
* water
* 4petri dishes
* graduated cylinders
* beakers
* 40 Seeds (mung beans)
* paper towels
* Plain white paper
* electronic balance

**Procedure**:

Design a controlled experiment which will quantitatively display the relationship between salt concentration and seed growth. Your group will decide which NaCl concentrations you will make, how many dishes you will use for each concentration, etc. Here are a few things to consider before beginning:

* There will be 10 mung beans in each of your 4 petri dishes
* Mung beans are a freshwater plant
* The salt levels in ocean water is roughly 30,000 ppm (30,000 parts salt for every million parts water)
* Mung beans tend to thrive when there are 10-15 mL of water in the petri dish.
* The density of water is 1.00 g/mL. This means that for every milliliter of water you use, it is equal to 1 gram of it. Keep this in mind when measuring out the amount of salt for each petri dish.
* The experiment will be occurring for a 5-day timespan.

**Hypothesis:**

Formulate a hypothesis on what concentration of salt will be the point at which mung beans will no longer be able to germinate/grow.

**Data and Observations**:

You are expected to make both a data table and a graph of your results over the course of the 5-day experiment. How you decide to formulate your data table and graph are up to you. Additionally, include visual aids of what your petri dishes (describing the contents of each dish. Finally, include any/all relevant information (controlled group, experimental groups, controls, independent variable, dependent variable, etc).

**Pre-Laboratory Questions**:

1. Why would food prices increase as a result of crop yields declining?
2. Calculate the percentage of salt in ocean water, given that it is 30,000 ppm (parts per million).
3. Why is it important to know the concentration of salt water in this experiment, given the species of plant you are working with?
4. If you wanted to make a 2% salt solution in 10 mL of water. How much salt (in grams) would you use? Show work.