

## Stat 445/545 Spring 2023, Midterm Project Due Mar 30 Thursday

- The data is available at canvas under Files—Datasets—potato.txt
- You can work with other students (up to 3 students per group) or you can work on your own.

This dataset is from an experiment on how plants adapt to cold climates. The investigators decided to study this problem after observing that plants that have been conditioned to cold previously appear to suffer less damage from the cold.

Two species of potato were studied (species 1 and 2). Each plant was exposed to one of two acclimatization regimes (1= plant was kept in cold room; 0= plant was kept at room temperature) for several days. Later, plants were subjected to one of two cold temperatures (-4 degrees C is coded as 1; -8 degrees C is coded as 2). Two responses were measured: damage score for photosynthesis (photo), and damage score for ion leakage (leak).

In this project, you will use ion leakage to be the response variable. Some of the 80 plants originally assigned to the treatment combinations were lost during the experiment. Your task is to analyze the data from the plants that made it through, and assess the effects of the three experimental factors species, regime, and temperature on the response leakage.

Make sure that your analysis includes appropriate displays such as profile plots, that you mention any unusual features of the data, and that you suggest a final (reduced) model and necessary results of your analysis. Be sure to have your analysis account for the unequal sample sizes in the different cells. Be sure to check the model assumptions such as constant variance, independence, normality and also check for outliers. Use the handout of writing instruction as a reference.