

# Comparing Apples to Applies

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With our experiment, we aim to determine if the orientation in which an apple is kept on a counter impacts its longevity.

We believe we will have time to run this experiment multiple times. Each run of the experiment will work like this:

Every group member will buy 12 apples. We will record each apple's weight in grams, and give it an ID. Next, we will randomly place  $\frac{1}{2}$  of the apples in (i) upside-up position and the other half in (ii) upside-down position. Control will be having the apples upside-down, and treatment will be upside-up.



Figure 1: Treatment and control

Fruits will be placed at a room temperature. Every day, at a consistent time after sundown (to control for daylight variations), we will take pictures of all the apples. We will also record temperature and humidity in the room at the time of the photographs, using the same model/brand of thermometer.

In effect, each group member is running a block of the experiment simultaneously. We will also attempt a clustered design, where we assign treatment and control based on apple type.

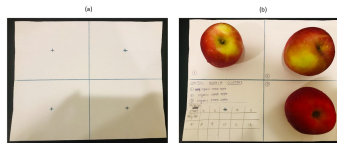


Figure 2: Four quadrant setup

We will use some computational tools to measure the ‘spoiledness’ of the apples. Pictures for a given apple will be processed by an algorithm that measures the visible changes between two images of the same fruit. Essentially, we will be tracking how quickly brown spots begin to form over the course of a 10 day period. The amount of change becomes our outcome variable. We already have a prototype of this algorithm that has been tested on some synthetically marked pictures of an apple.

We do not have any particular questions for the instructors at this time – we received some good early feedback from Micah after teams were first created. We are interested in requesting grant money to cover the purchase of apples, thermometers and scales if possible.