**Lesson Plan: Leaf Phenotype**

**Rational:** Phenotyping and measuring important traits is key to being able to make any reliable inference. In this lesson we will go understand how to process samples so that useful measurement can be taken.

**Student Learning Objectives**

Students will….

1. Understand that the process of taking leaf samples
2. Understand measurement techniques
3. Understand how to record measurements

**Materials Needed for Lesson**

* Leaf Phenotyping protocol
* Plants at the right growth stage
* Student Activity 1
  + Extracting leaves from plants
* Student Activity 2
  + Analyzing leaf

**Anticipatory Set up time** (5 min)

Gauge how comfortable students are with the material with a series of warm-up questions, for example:

1. What is a plant?
2. What is a leaf?
3. What is a growth rate?
4. Why do we use a specific leaf?

**Direct instruction and guided practice**

Activity 1: Measuring leaves

1. Divide students into groups and pass out protocol
2. Bring in a practice set of plants
   1. Measure the leaf
   2. Record the data

Activity 2: Play with the data

* 1. Create a plot with the data

**Independent Practice**

List places where the protocol was easy for you and what was difficult.

**Output:** Students should start a datasheet that allows them to collect leaf data for the rest of the term.

**Follow up / Homework**

At the beginning of the next class, have students share their thoughts and what they learned during the lesson and some of the opinions on how to optimize the protocol (3 min).