Planting Science – Agronomy Feeds the World
Key Concept #5: Plant Measurements

A. Plant Observation

- Observe plants and note general health and symptoms of deficiency, toxicity and disease, such as color differences, marginal burning, etc. (**perhaps take a picture**)
- Consult local/state materials about your local plants to understand health problems
- Measure four (4) plant characteristics:
  - stem width (ie diameter) at 1 inch above the soil surface
  - height (from stem width location to top stem - not to top leaf length)
  - maximum leaf width (using the biggest 2 leaves side-by-side and gently pulling them apart)
  - length between 2nd and 3rd internodes (or maybe 1st and 2nd internodes if few leaves)
- Calculate Growth Index (GI) measurements (make sure to use same units):
  - GI1 = (height + stem width) / 2
  - GI2 = (maximum leaf width + internode length) / 2
- Take several [chlorophyll] readings using the SPAD meter (if available)

B. Harvest

1. Weigh each empty paper bag.
2. Cut the plants 0.5 inches above the soil surface (you don't want soil to impact the plant weight). Separate the leaves/stems from the fruits if you're looking at different parts of the plant.
3. Place the plant material in separate paper bags and re-weigh.
4. Dry at 65°C (150°F) for at least 3 days. Dry at room temperature for 5 days otherwise.
5. Re-weigh the bag and plants after drying.
6. Remove the plant material and re-weigh the empty bag.
7. Calculate % plant moisture and % plant dry matter:

$$\% \text{ plant moisture} = [(\text{wet weight} - \text{dry weight}) / \text{wet weight}] \times 100$$

$$\% \text{ plant dry matter} = [\text{dry weight} / \text{wet weight}] \times 100$$

	Sample 1	Sample 2
original bag weight	_____	_____
bag + wet plant weight	_____	_____
net wet plant weight	_____	_____
dry bag + plant weight	_____	_____
dry bag weight	_____	_____
net dry plant weight	_____	_____
% plant moisture	_____	_____
% plant dry matter	_____	_____