

Plant Propagation Lab Exercise

Module 2



PROPAGATION OF PLANTS FROM SEED

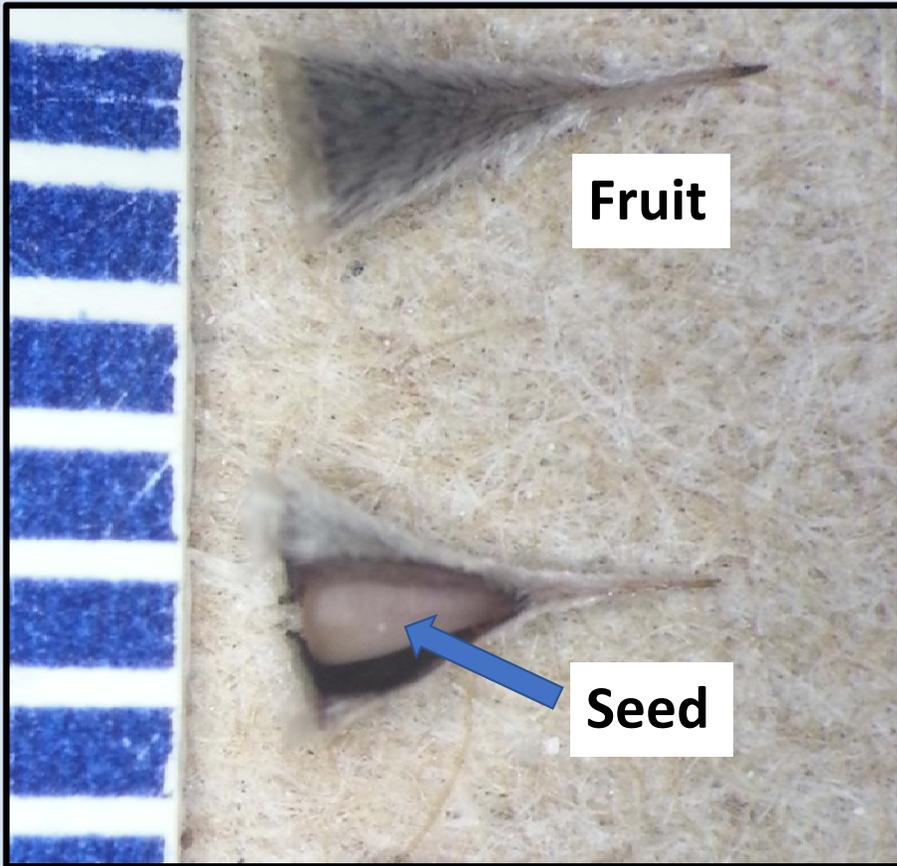
IMBIBITION AND SCARIFICATION

An introduction to plant propagation laboratory exercises by:
Gabriel Campbell-Martinez and Dr. Mack Thetford

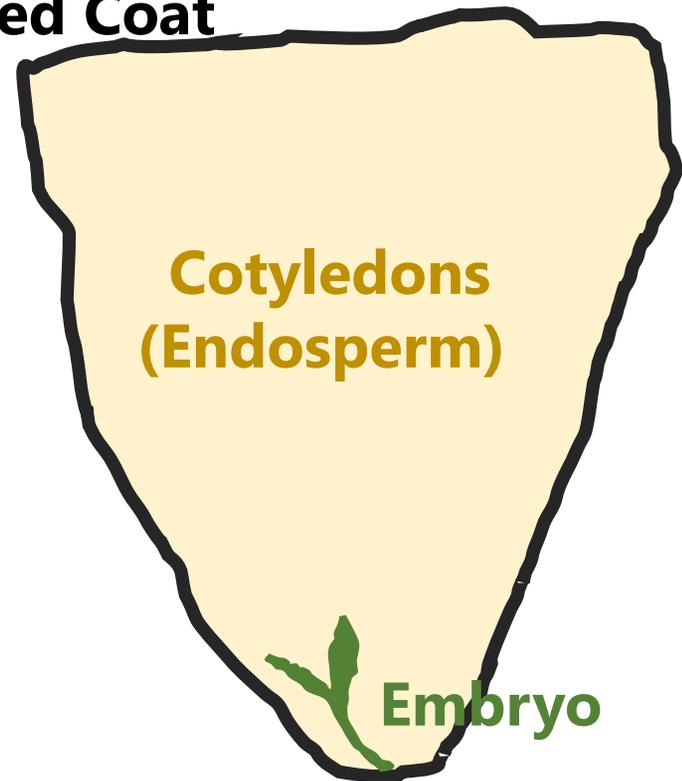
LAB OBJECTIVES_GC

- Review the basic structure of a seed.
- Review the process of imbibition and describe a basic imbibition test.
- Introduce methods of seed scarification
- Review photos of seeds to evaluate effects of scarification and the presence of imbibition.
- Evaluate imbibition and compare scarification treatments of a controlled experiment.

FRUITS AND SEEDS



Seed Coat



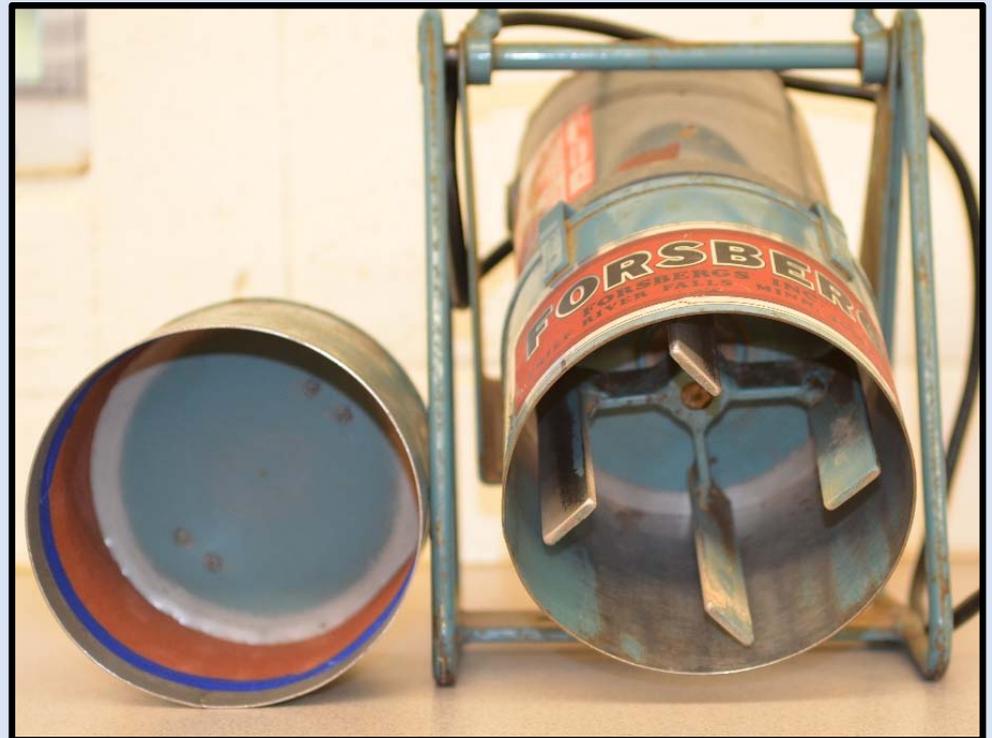
SEED IMBIBITION

- Movement of water into seed
- First step of germination
- Some dormant seeds do not imbibe until scarified

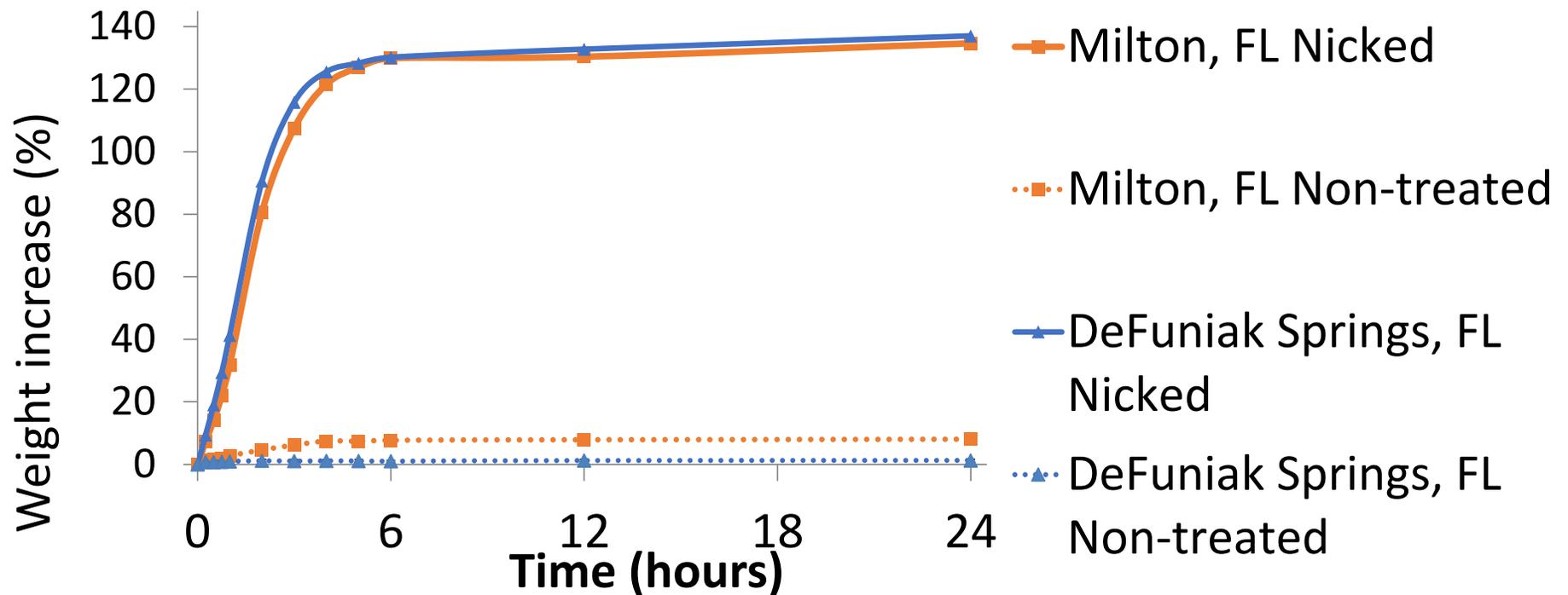


SCARIFICATION

- Process of physical or chemical alteration of seed coat
 - Mechanical
 - Chemical
 - High-temperature

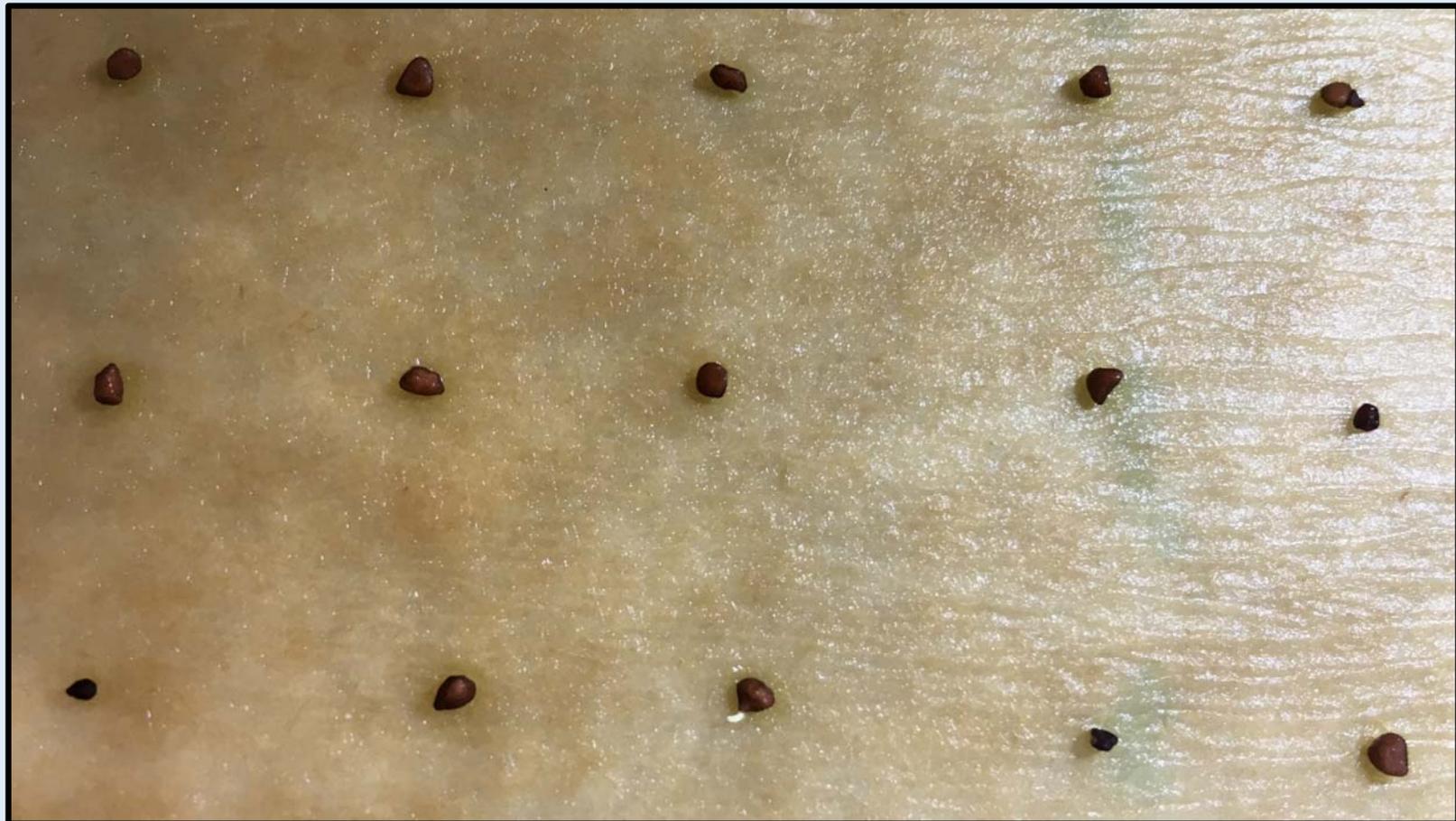


SEED IMBIBITION CURVES

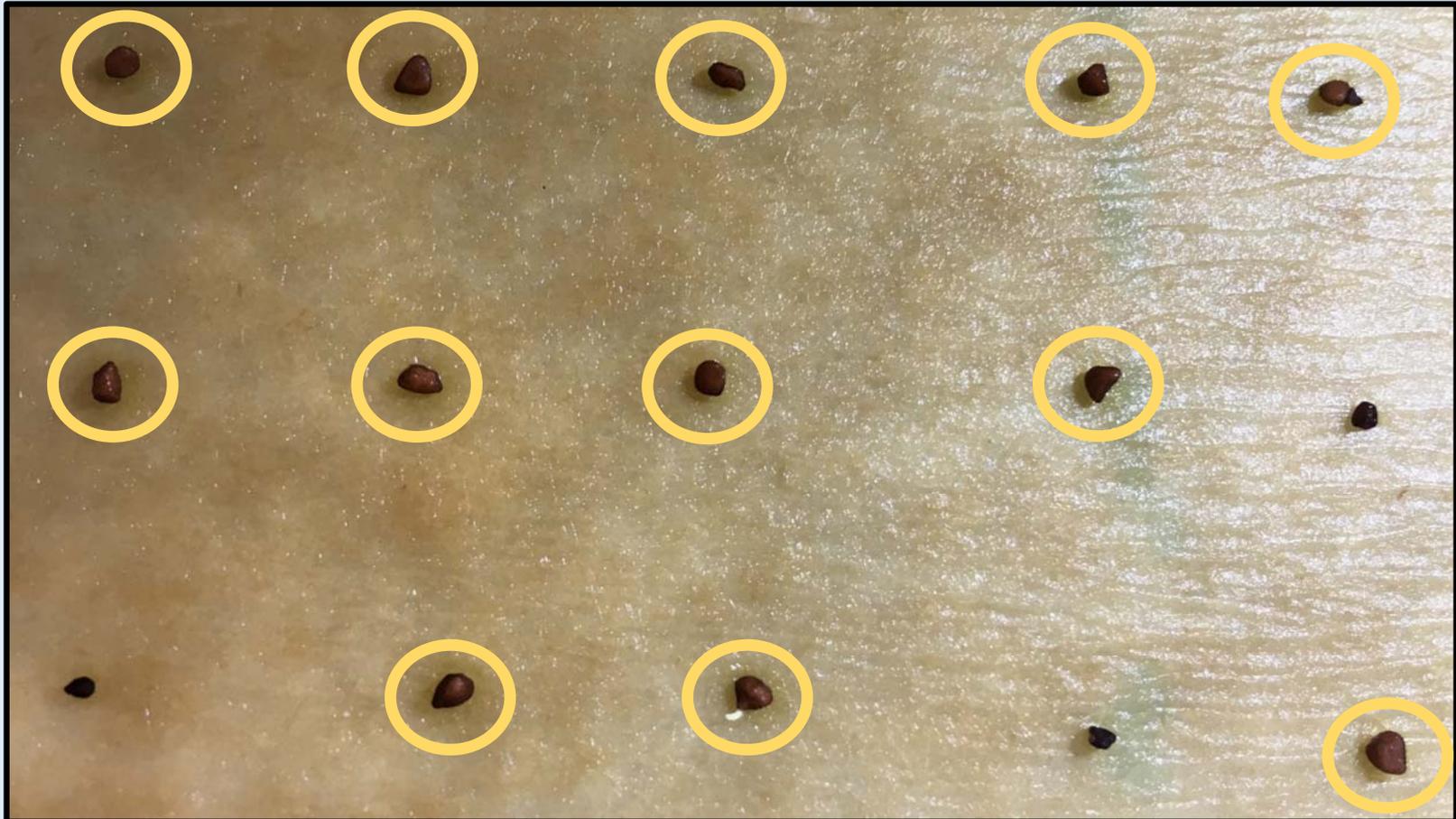


Weight increase = $100 * (\text{original weight} - \text{new weight}) / \text{original weight}$

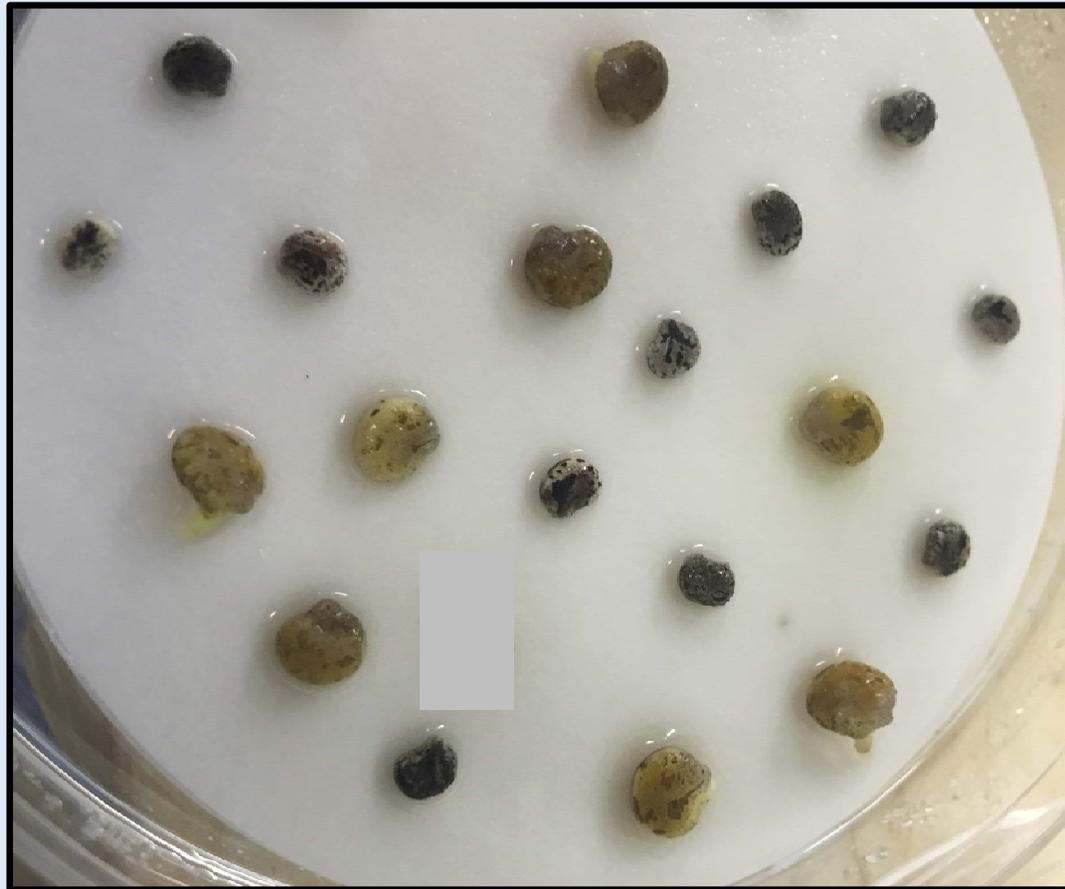
VISUAL ASSESSMENT OF IMBIBITION



CALCULATING IMBIBITION PERCENTAGES



CALCULATE THE INHIBITION PERCENTAGE



CALCULATE THE INHIBITION PERCENTAGE



Fungi, bacteria, etc. contamination



Lab Exercise

Evaluation of imbibition in response to scarification

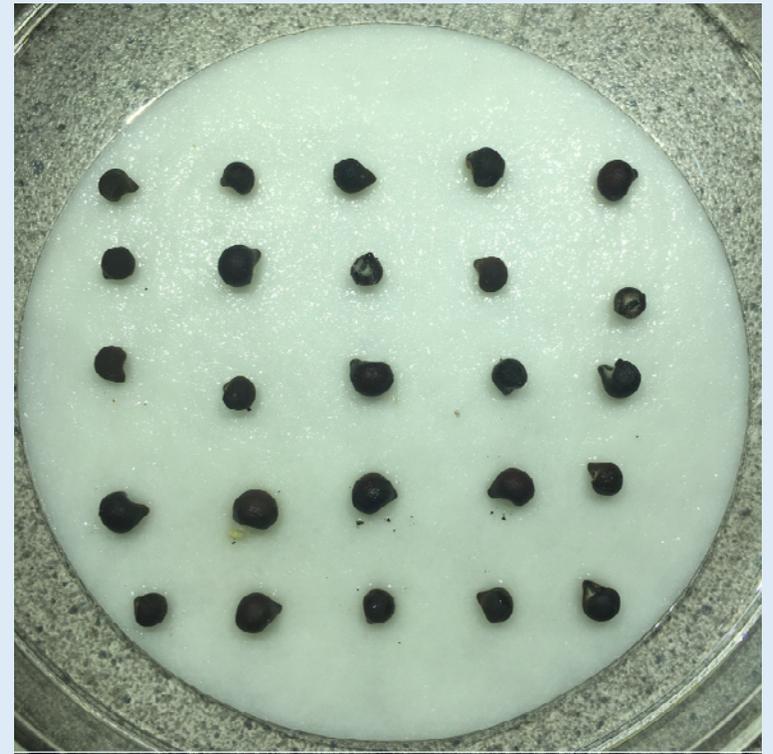


- Seeds of Virginia Saltmarsh Mallow (*Kosteletzkya pentacarpos* (L.)Ledeb.) were subjected to 4 scarification treatments.
 - Non scarified control
 - Sandpaper abrasion – seeds rubbed between two pieces of sandpaper
 - Razor blade seed coat penetration – seeds nicked on the distal end with a razor
 - Submersion in hot water – seeds submerged in boiled water for a period of 10 min after removal from heat
- Seeds were placed in petri dishes on moist paper towels and allowed to imbibe. Each treatment is presented in comparison to the non scarified control seeds.
- Evaluate the seeds for imbibition and calculate the imbibition percentage.
- Prepare a short lab report and discuss your results. Also provide your impression of the ease or difficulty of evaluating the imbibition of this species.

Virginia Saltmarsh Mallow (*Kosteletzkya pentacarpos* (L.)Ledeb.)
Treatment – Sandpaper scarification



Non scarified control

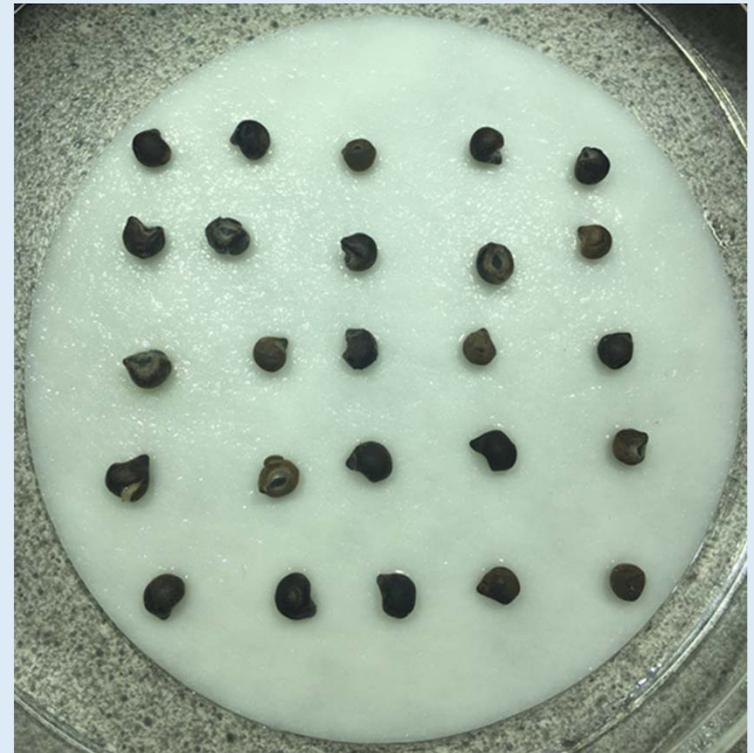


Scarification with sandpaper

Virginia Saltmarsh Mallow (*Kosteletzkya pentacarpos* (L.) Ledeb.)
Treatment – Razor blade – nick of distal end



Non scarified control

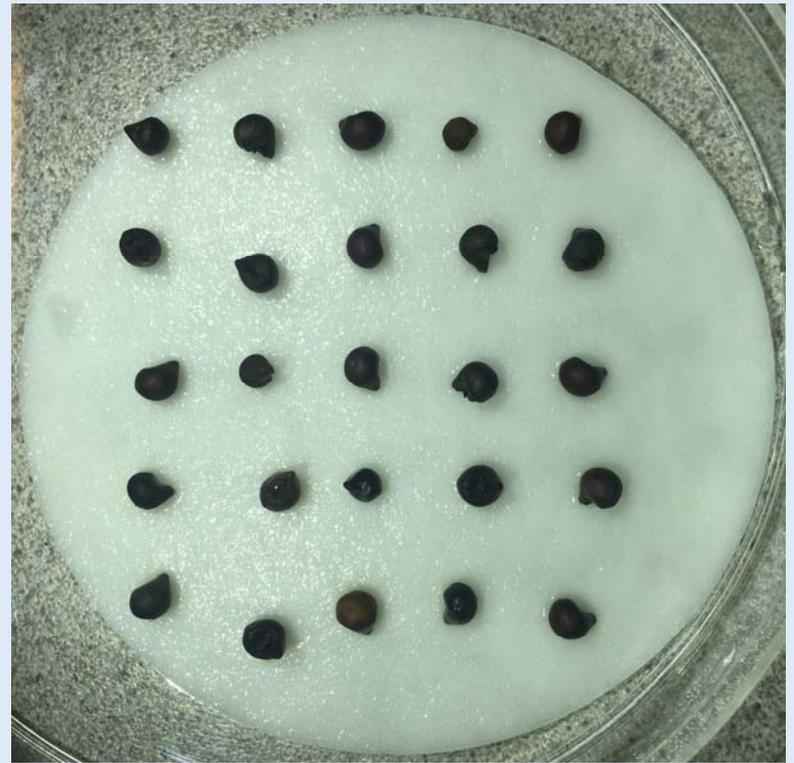


Scarification with a razor

Virginia Saltmarsh Mallow (*Kosteletzkya pentacarpos* (L.) Ledeb.)
Treatment – Hot water scarification



Non scarified control



Scarification with Hot Water