

## **COLLECTING WEIGHING AND DRYING LEAVES PROTOCOL**

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### **Collecting & transporting leaves:**

1. Whenever leaves are collected from a plant, the following data should be recorded:
  - 1.1. Date
  - 1.2. Time
  - 1.3. Location- GPS coordinate are ideal, but not necessary if collected at FTBG, UM or other local institution. Generally, this information should follow criteria for herbarium labels.
  - 1.4. Unique identifier of the plant (or accession number)
  - 1.5. Genus, species, and Family names
  - 1.6. The exposure of the plant's canopy to sunlight (preferably using the crown illumination index, see Jennings et al. 1999 for details and table/figure below)
  - 1.7. Growth habit: Tree, shrub, liana, herb, grass, succulent, vine, fern, palm, etc.
2. After leaves are collected, they are to be placed in a plastic bag with their accession number printed on it. It is preferable to keep moist paper towel inside the bag with the leaves to prevent them from drying out.
3. Store leaves in a refrigerator or unless they are to be used immediately in the lab.

### **Preparing leaves for lab work & fresh mass of leaves:**

4. Remove leaves from bags and blot dry with paper towels if necessary.
5. Determine the number of leaves you need for your sample, and number each leaf.
6. Remove the petiole from each leaf (if performing  $g_{\min}$  measurement do not remove the petiole).
7. Weigh and record the mass of each leaf in the appropriate place

### **Drying and Weighing leaves:**

8. When leaves are ready to be dried, place them into an appropriately-sized envelope. Use sharpie to label the envelope with the date, plant's accession number, the first three letters of the plant's genus, and the first three letters of the plant's species name.
  - 8.1. Labels should be clearly written in the top-left corner of the envelope.
  - 8.2. If your envelope has another tag written on it, cross it out with a line using a Sharpie.
  - 8.3. All leaves from one individuals can usually be paced in the same envelope.
  - 8.4. Do not fold leaves together – remember these leaves will be drying out and getting very brittle. If you have to fold leaves to fit them into an envelope, do so one at a time so they can be separated after drying and have their numbers clearly visible.
9. Place the envelop in the drying oven at  $\sim 60^{\circ}\text{C}$  until the leaves are no longer losing water. It is to sequentially dry and weigh leaves until no leaf mass becomes constant indicating no more water loss from the leaf.
10. Once leaves are completely dry, they can be weighed on the scale one at a time.
11. Record dry mass for each leaf where appropriate.

**Fresh mass and dry mass, along with leaf area, will be used to determine SLA and LDMC (see below for calculations):**

12. **Specific leaf area (SLA)**= fresh leaf area/ dried leaf mass

47 13. Leaf dry mass content (LDMC)= dry leaf mass/fresh leaf mass of fully-hydrated leaf  
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49 **References:**

50 JENNINGS, S. B., N. D. BROWN, AND D. SHEIL. 1999. ASSESSING FOREST CANOPIES AND  
 51 UNDERSTOREY ILLUMINATION: CANOPY CLOSURE, CANOPY COVER AND OTHER MEASURES.  
 52 FORESTRY 72: 59–73.

53 N. PÉREZ-HARGUINDEGUY *ET AL.*. 2013. NEW HANDBOOK FOR STANDARDIZED MEASUREMENT OF  
 54 PLANT FUNCTIONAL TRAITS WORLDWIDE. *AUST. J. BOT.* 61, 167–234.

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59 **Illumination classes:**

Crown illumination (Clark and Clark)	
Class	Definition
1.0	No direct light (crown not lit directly either vertically or laterally)
1.5	Low lateral light (crown lit only from side: no large or medium openings)
2.0	Medium lateral light (crown lit only from side: several small or one medium opening)
2.5	High lateral light (crown lit only from side: exposed to at least one major or several medium openings)
3.0	Some overhead light (10–90 per cent of the vertical projection of the crown exposed to vertical illumination)
4.0	Full overhead light (≥90 per cent of the vertical projection of the crown exposed to vertical light, lateral light blocked within some or all of the 90° inverted cone encompassing the crown)
5.0	Crown fully exposed to vertical and lateral illumination within the 90° inverted cone encompassing the crown

