

Investigation Instruments: Densimeter

B. Densimeter

A densimeter is an instrument used for taking measurements of canopy cover as part of the biometry measurements described in the [Biometry Protocol](#). The following includes directions to construct and use the densimeter.

Required Materials

- 4 cm diameter by 7.5 cm long tube (toilet paper tubes, construction paper, PCV pipe)
- 34 cm of thread or dental floss
- metal nut or washer
- tape

Construction

1. Gather the required materials for each densimeter.
2. Attach (with tape) two threads at right angles across the diameter of one end of the tube to form a crosshair. Leave a slight end hanging at the bottom of the tape so you can tighten the threads if they loosen.
3. Attach (with tape) an 18 cm piece of thread with a metal nut or washer hanging loosely from it across the diameter of the other end of the tube (opposite the crosshairs).

Directions for Use

1. Look up through the densimeter, making sure the densimeter is vertical and the metal nut/washer is directly below the intersection of the crosshairs at the top of the tube. See Figure BIO-D-2 and Figure LAND-SS-6. **Note:** Only use the densimeter for looking UP at the canopy cover. Do not use it for looking DOWN at ground cover.

Figure BIO-D-1: Homemade Densimeter

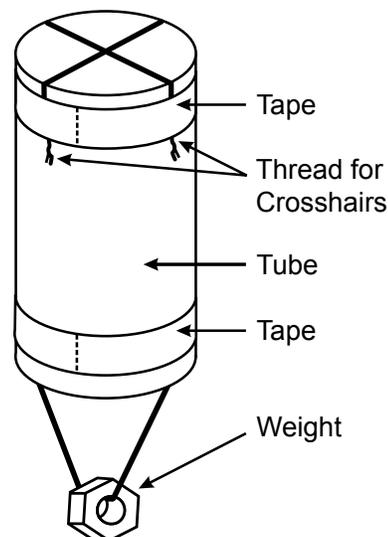
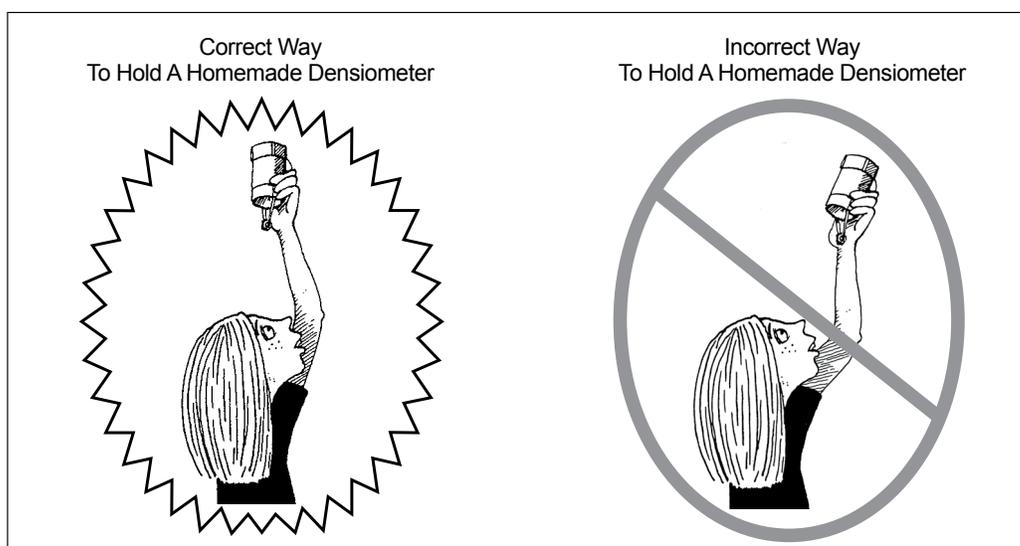


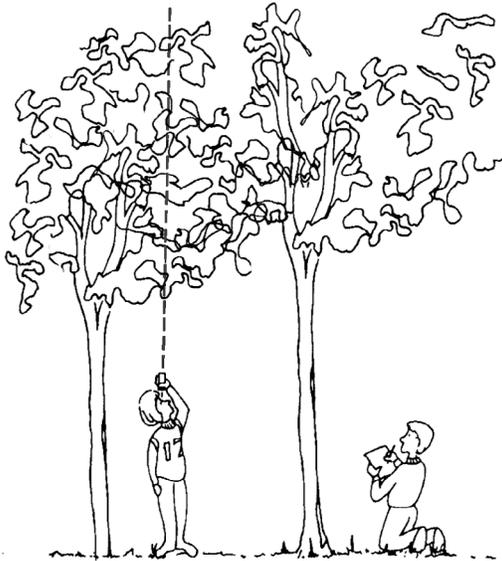
Figure BIO-D-2: Correct and Incorrect Way to Hold a Homemade Densimeter



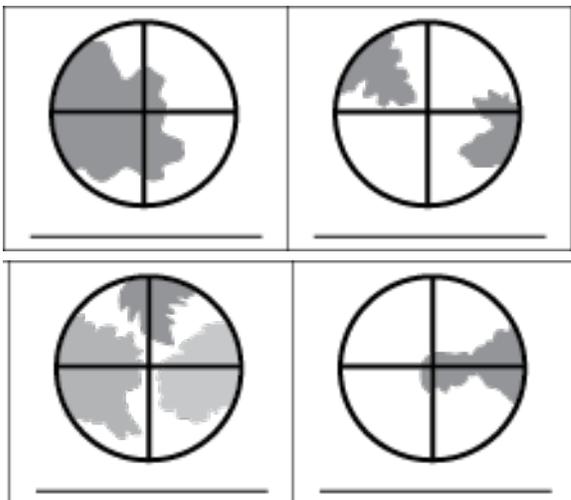
Modified from TEREZA, Association for Environmental Education, Czech Republic (1996).

- If you see vegetation, twigs, or branches **touching the crosshair intersection**, you would call this “T” meaning that there is tree canopy or “SB” meaning that there is shrub canopy.
- If you **do not** see vegetation, twigs, or branches **touch the crosshair intersection**, you would call this minus “-” meaning that you saw the sky above the intersection of the crosshairs.

Figure BIO-D-3: Using a Homemade Densiometer in Multi-Story Canopy



Below are several examples of what you might see when looking up through a densiometer. Label each diagram with a “T” or minus “-”.



Frequently Asked Questions



1. What should we do if there is a multi-storied canopy?

If there is a multi-story canopy, try to identify the highest level of the canopy without changing your position. If the vegetation touches the intersection of the crosshairs, mark a “T” or an “SB”. See BIO-SS-6.

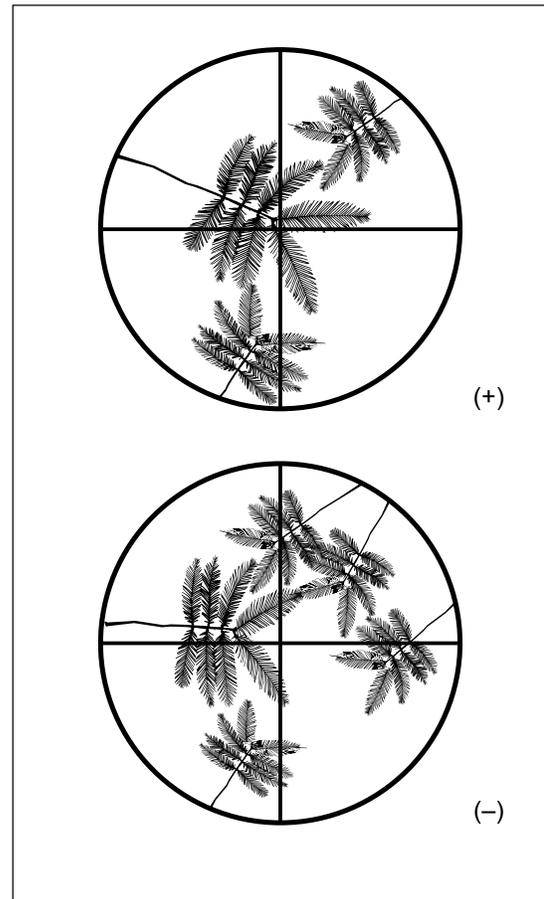
2. What if the entire circle I see through the densiometer is full of vegetation, but there is no vegetation at the crosshairs?

This is a sampling question. The Land Cover/Biology Team has chosen the intersection of the crosshairs as the sample. Therefore, this would be a (-).

3. What if we can't get to our site during peak vegetation (full leaf-on) conditions?

If you cannot get to your site during peak growth (leaf-on), measure your site during the leaf-off period and try your best to get the peak growth (leaf-on) data, when you can.

Figure BIO-D-4: Densiometer Sampling



Answers to densiometer examples:
First row: +, -, -, + ; Second row: -, -, +