

LEAF SAMPLING. FIELD PROTOCOL 2012 CRC- 207 FIELD CAMPAIGNS

Objectives for the leaf samples:

- Measure specific leaf area= weight/area
- Water content and dry matter.
- Obtain representative leaf hemispherical reflectance and transmittance spectra
- Destructive sampling of leaf chemical components: pigments (Chlorophyll a, chlorophyll b, tannins, total carotenoids), N, available N, digestible dry matter, P, K, C. Possibility of getting genetic information.

For every sample tree, obtain extra structural information (height, DBH, approximate crown diameter, crown fractional cover), species, crown position and xy coordinates.

Equipment needed:

- Flagging tape and tree tags
- Hammer
- Nails
- Tru pulse
- DBH tape
- GPS
- Datasheets (see annex)
- Pencil
- 2 Plastic zip bags per sample, both labelled with waterproof marker
 - o 1st zip bag (freezer resistant) with a waterproof paper inside indicating the tree identification code.
 - o 2nd zip bag with an absorbent tissue/cloth soaked in water (to keep at fridge temperature)
- Extra plastic zip bags in case the species cannot be identify
- Spring scale
- 1 cooling box half filled with dry ice (-50 deg temperature).
- 1 cooling box with ice cubes (fridge temperature)

Selection of sampling trees:

- Try to get a representation of all the species that are dominant in the area
- Big crown diameter (at least 6-7 m if possible)
- Emergent crowns (easy to find in the imagery)
- At least 50 m far from sampled trees of the same species (requisite for genomics analysis)
- Having a dominant participation on the overall crown signal, meaning not having any tree underneath/overlapping the crown of the selected tree.

Leaf sampling procedure:

- Get branches from the uppermost third of the crown (in case the trees height is over 15 m, a shooter will be needed).
- Take mature, full, healthy leaves with petiole off the branch.
- Fill the freezer zip bag with 50 g of leaves and keep it in the dry ice cooling box.
- Fill the other zip bag with around 25 g and place it in the cooling box with ice blocks.
- In case the species is not identified, get an extra sample bag with mature, immature leaves and some stems or butts if possible.
- Tag and flag the tree. In case the tree is on a road side, hang approx 70 cm flagging tape from the tag nailing point facing the road. If the tree is off the road, use the flagging tape surrounding the trunk at a chest height.
- Get tree coordinates, in case the tree is leaning over, get the approximate coordinates of the centre of the crown projection.
- Measure height, DBH and estimate crown leaf cover percentage and diameter.
- Fill in the field data sheet (see annex)

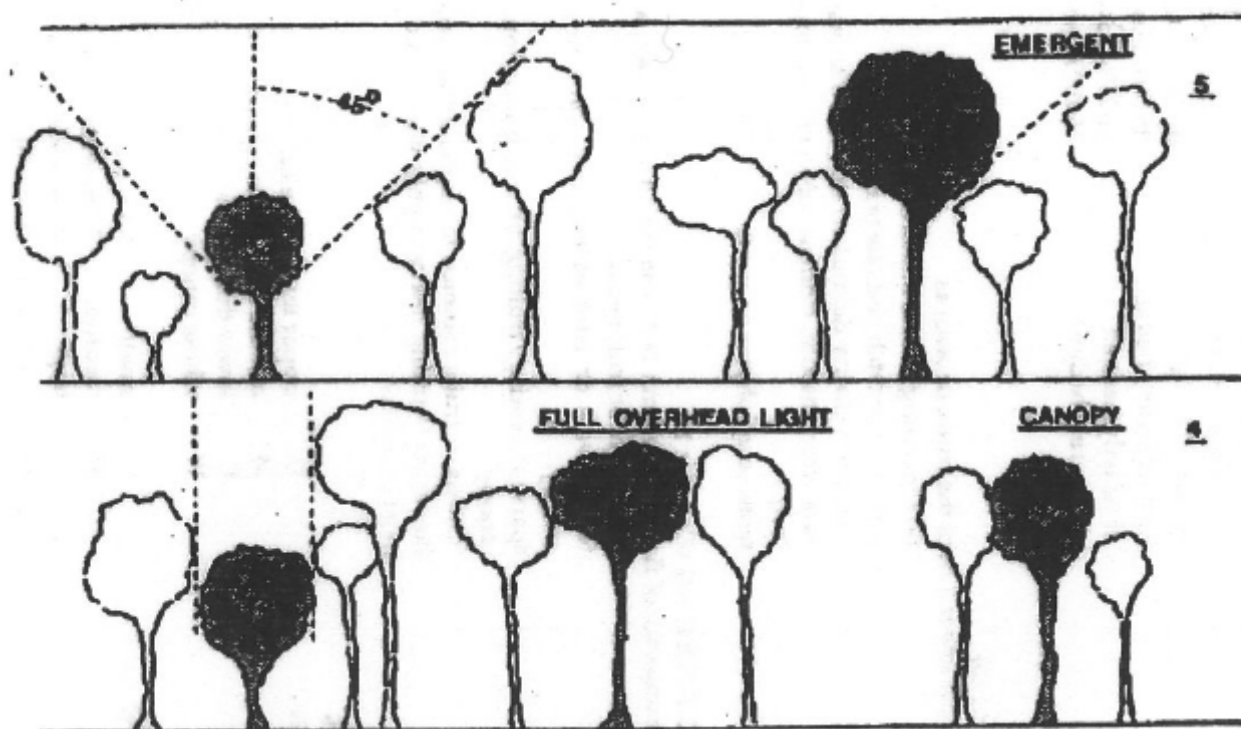
ANNEX. FIELD DATA SHEET

Date:			Site:				
Tree ID	Species	DBH (cm)	Height	Approx crown diameter	E=emergent C= canopy I= isolated	% cover	Comments

The tree ID is the same used in the leaf sampling bags and in the tree tag, the GPS point location will be defined with the same name and all posterior files created during leaf analysis will be named the same. The species field will only be filled if we can recognise the species, if not, an extra bag with mature, immature leaves and some butts and stems is needed.

Emergent/Canopy/Isolated crown definition

A crown is considered emergent when it is positioned completely over the surrounding crowns, or in the case of having direct illumination up to a zenith angle of 45 deg. A crown within the canopy is surrounded is the one that does not have any other crown covering its zenithal projection (see figure below). Finally, an isolated crown is the one that does not have any other tree around.



Canopy cover estimation

These examples for different leaf size can be used:

