

STEP-BY-STEP GUIDE TO HARVEST PLOTS

IMPORTANT: Sample from/harvest **ONLY Control plots** (sprayed + unsprayed) and **Weeded plots** (sprayed + unsprayed) – total **four plots** per garden.

- 1. Evaluate vegetation coverage of a plot.**
- 2. Collect DBH for bigger trees. Cover them with mosquito net and cut them down first.**
- 3. Collect insects from each tree. No need to collect separately from individual plant species.**
- 4. Cover parts of the remaining mixed vegetation with mosquito net and cut it down part by part.**
- 5. Collect insects from each batch of a mixed vegetation.**
- 6. Insect from a single plot can be pooled together.**
- 7. Label the insect container: the first label in the vial, and the second taped to the side.**
- 8. Sort all harvested vegetation into species.**
- 9. For woody plants take a stem and leaf weight separately.**
- 10. Fill biomass data-sheet with species ID and weight.**
- 11. Evaluate which species make up 80% of total LEAF BIOMASS (in case of woody plants) or TOTAL BIOMASS (in case of non-woody plants).**
- 12. For the selected species collect leaf frames (1 per species) and leaf disks (5 per species).**

DETAILED EXPLANATIONS

1. Evaluate vegetation coverage of a plot

- For a plot that is about to be harvested first make a standard cover sampling of vegetation.

2. Cover bigger trees with mosquito net and cut these first.

- Bigger trees need to be sampled first to allow for further sampling of mixed vegetation
- Collect DBH of all individuals that have DBH above 1 cm.

3. Cover parts of the remaining vegetation with mosquito net and cut it down in mixed batches.

- It's important to select a section of the vegetation so that during cutting, the rest of the vegetation isn't disturbed too much.

4. Collect insects from each woody plant and batch of mixed vegetation.

- Knock-down insects with MORTEIN and collect specimens.
- No need to sample separately from individual plant species (you can pool insects sampled from various plant species).

5. Label the insect container.

- The first label should go into the vial with ethanol. The second taped should be taped to the side of the vial.

6. Sort all harvested vegetation into species.

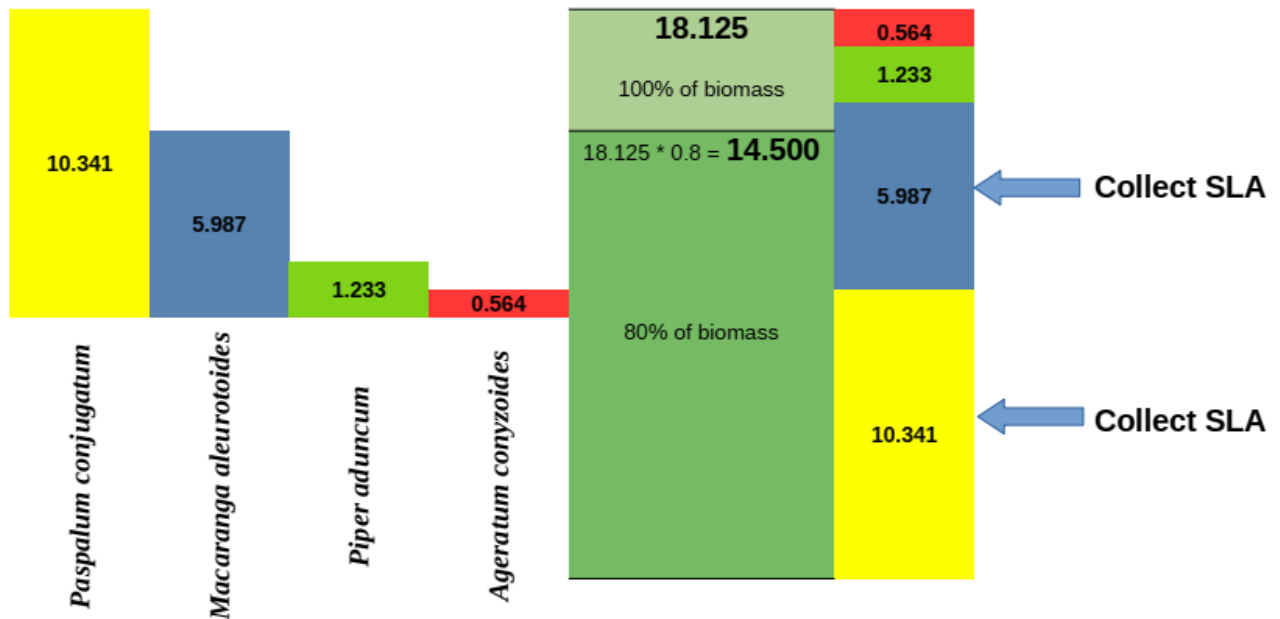
- Fill in the biomass data sheet.
- **FILL ALL BOXES FOR EACH SPECIES TRAITS!:** **Life forms:** tree, shrub, herb, fern etc.; **Pubescence:** 0 – no hairs, 1 – some hairs, 2 – abundant hairs; **Latex (sap):** 0 – no latex, 1 – latex present.

7. For woody plants weight stem and leaves separately.

- For woody plants separate stem from leaves and weigh each separately.

10. Evaluate which species make up 80% of total of LEAF biomass.

- Use provided spreadsheet to get species for leaf frames:
 - Clear out 'Species' and 'Biomass' columns.
 - Fill the 'Species' column with species name or code and 'Biomass' column with values in kilograms. **Order is not important.**
 - When you finish species for which a leaf frame is supposed to be taken displays in the green column: 'Species to include'.
- **In case of a problem with a computer here is an example how to perform this manually:**
 - write down species names and ONLY LEAF biomass in a separated data-sheet. For example:
 - *Macaranga aleurotoides* – 5.987 kg (leaf biomass)
 - *Piper aduncum* – 1.233 kg (leaf biomass)
 - *Paspalum conjugatum* – 10.341 kg (total biomass)
 - *Ageratum conyzoides* – 0.564 kg (total biomass)
 - Add all the weighs (18.125 kg in this example): $5.987 + 1.233 + 10.341 + 0.564 = 18.125$
 - calculate how much biomass makes up to 80%: multiply the value by 0.8: $18.125 \times 0.8 = 14.5$ kg.
 - Look for the highest weight. Here it would be *Paspalum conjugatum* 10.341.
 - If that value is smaller than 80% of biomass you add this species to a list of plants for the SLA sample and look for a next highest weight. That would be *Macaranga aleurotoides* with 5.987 kg.
 - Include that species in the list as well and add its weight to the previous one. The sum is: $10.341 + 5.987 = 16.328$ kg. This is now higher than 80% weight (14.5 kg). Therefore we end up with two species for the Leaf Frame analysis.



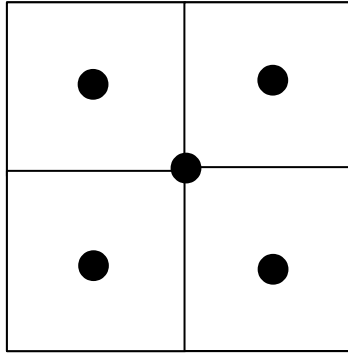
11. For the selected species collect leaf frames (1 per species) and leaf disks (5 per species).

- A leaf frame for feeding damage should be established for plant species whose biomass makes-up at least 80% of total biomass.
- The code for the frame should include the plot code, the first 4 letters of the genus, and two letters of the species name: O-G3-P1-MACAQU.
- Set up the camera and tripod so that the lens is just above the center of the board.
- The edges of the 50x50 cm square on the board should be visible on the screen and parallel to the edges of the screen.
- Remove all the leaves from the Zip Lock.
- Prepare the new paper label for the frame based on the label from the box.
- Take random sheets from the leaf sample and line them up on the board until all leaves are used or the 50x50 cm square on the board is filled.
- For extra large leaves, you can cut off the leaf blade and place the pieces on the board.
- Don't use leaves that have been damaged in any way other than by herbivores.
- For severely damaged leaves, place it as if it were an undamaged leaf.
- Choose a leaf of similar size to see how much space it'll take up.
- The leaves shouldn't overlap and should stay within the drawn 50x50 cm square and not cross the drawn line.
- After you have determined the weight of the leaves, take **5 leaf disks from the leaf sample**.
- Select only mature leaves that haven't been damaged in any other way than herbivory.
- Place the collected leaf disk sample in a separate zip-lock bag filled with silica gel. Label the bag with a field code and the name of the plant species.

12. Collect soil samples

- Put on latex gloves. At a given plot take 1 dm³ of soil from the control and fungicide plots using a small shovel.

- Take a sample from the center of the plot and one from the center of each quarter quadrant of the box, as shown in the figure below.
- Spread the soil on a piece of stretch plastic through a sterilized sieve, mix the sample, and take 3 soil samples.
- One sample is approximately equal to one spoonful of soil.
- Place each sample in a separate tea bag.
- Staple the tea bag together and put it in a zip-lock bag filled with 100 g of fresh silica gel.



- Label each bag with the location, garden number, plot type, date and the collector. The example code will look like this: W-G4-C-S1 (Wanang, garden number 4, control plot, first sample)