

B05 – Compiling the values of wood specific gravity published for the tree species / genus present in the CRC core plots + B05 inventory plots



Edwine Setia Purnama¹, César Pérez-Cruzado², Dian Melati², Katja Rembold², I Nengah Surati Jaya¹, Tatang Tiryana¹, Lutz Fehrmann², Christoph Kleinn²



¹Bogor Agricultural University, ²University of Göttingen

Contact: edwine.setia@live.com, cperez@gwdg.de

Project Summary

Wood specific gravity (WSG) varies considerably with species and taxonomic groups of trees and is thus a very relevant input variable for estimating aboveground biomass of forests, particularly in tropical forests because with their high diversity in tree species. The value of wood specific gravity is known to considerably affect biomass estimation. The use of gross average values might introduce an additional uncertainty component into the estimations. While it is not practical to take wood samples from each and every specimen observed from the forest stand, it is generally accepted that the use of specific wood gravity values per species or taxonomic group may considerably reduce uncertainty during forest biomass estimation. Although there are numerous researches on species-specific wood specific gravity, many of them are not internationally published and hardly accessible. Therefore, this project has been implemented by the Lab. of Remote Sensing and GIS, Forest Resource Inventory, Faculty of Forestry IPB in collaboration with the Chair of Forest Inventory and Remote Sensing, Faculty of Forest Sciences and Forest Ecology, Göttingen University. The compiled values of wood specific gravity, bibliographic reference, and related information will be uploaded to the central CRC database and will be available for all sub-projects.

Study Objective

The objective of the study is to identify and compile the published wood specific gravity values for the tree species found in CRC 990 core plots and B05 inventory plots which are mainly used to reduce uncertainty on biomass estimation coming from three levels of information by using 1) a gross average value of WSG per forest type, 2) the average values per species or genus or species group and 3) the results of the detailed penetrability study conducted by B04.

Methods

The species botanical name lists were obtained from CRC 990 core plots and B05 inventory plots collected from secondary forests, jungle rubber, rubber plantation, and permanent plots of PT. REKI (mostly in vernacular names). In brief, the whole research processes are depicted in Figure 1.

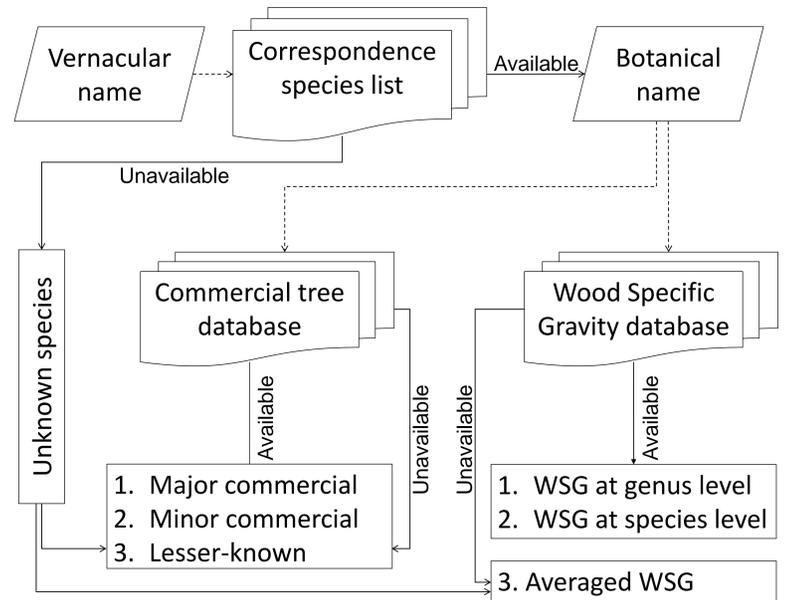


Figure 1. Research flowchart

Current Progress and Results

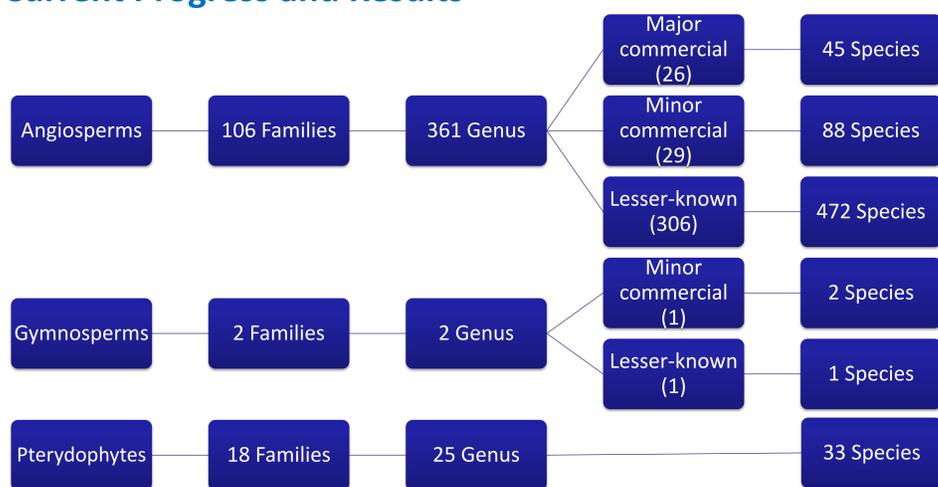


Figure 2. Species identification result

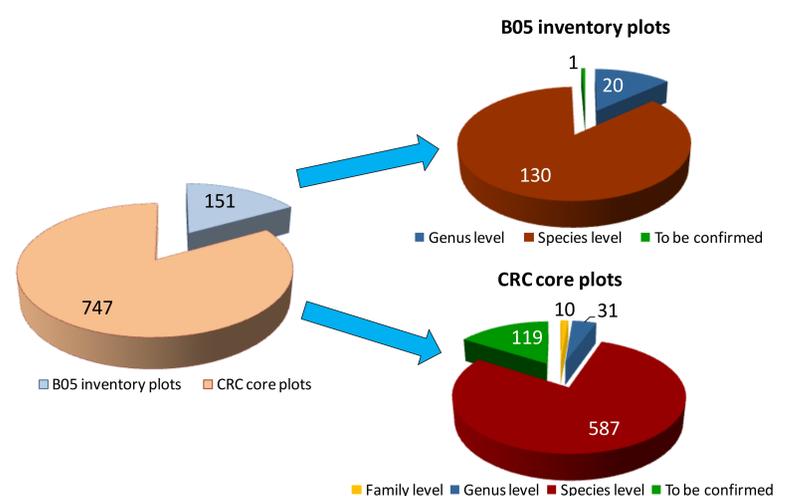


Figure 3. Number of species over CRC core plots and B05 inventory plots

Of the 898 total recorded tree species, most of them have been identified either at species level, genus level, or family level (Figure 2 and 3). The identified trees (not including Pteridophytes) were grouped into three commercial status (Figure 4). Wood specific gravity for those identified species were also obtained (Figure 5 and 6).

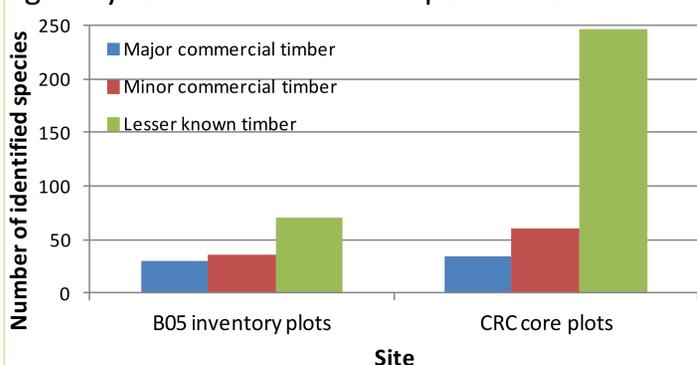


Figure 4. Commercial status of identified species

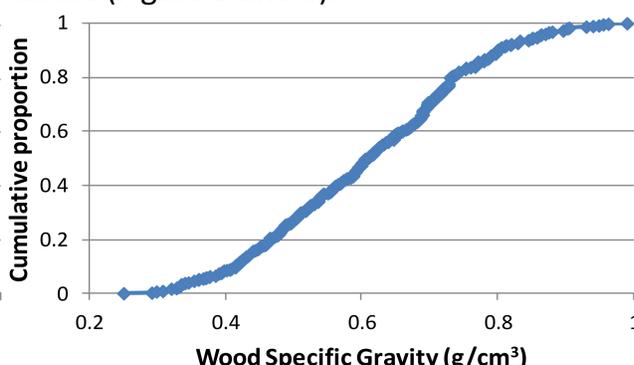


Figure 5. Cumulative proportion of WSG of all sites

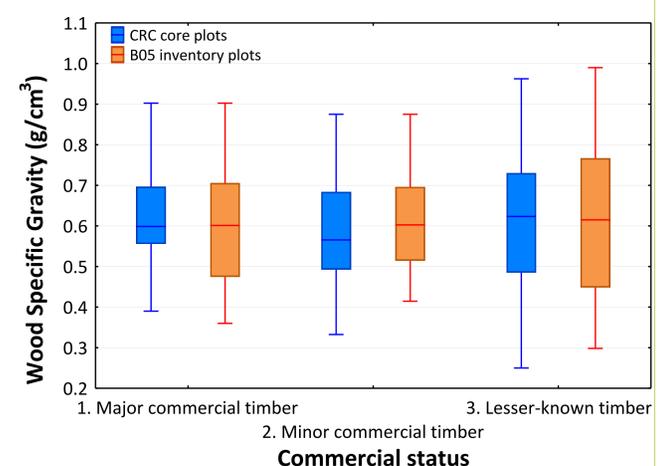


Figure 6. WSG over commercial species