# Characteristic of wood durability and wood destroyer organism in oil palm plantation, rubber plantation, and natural forest in Jambi province

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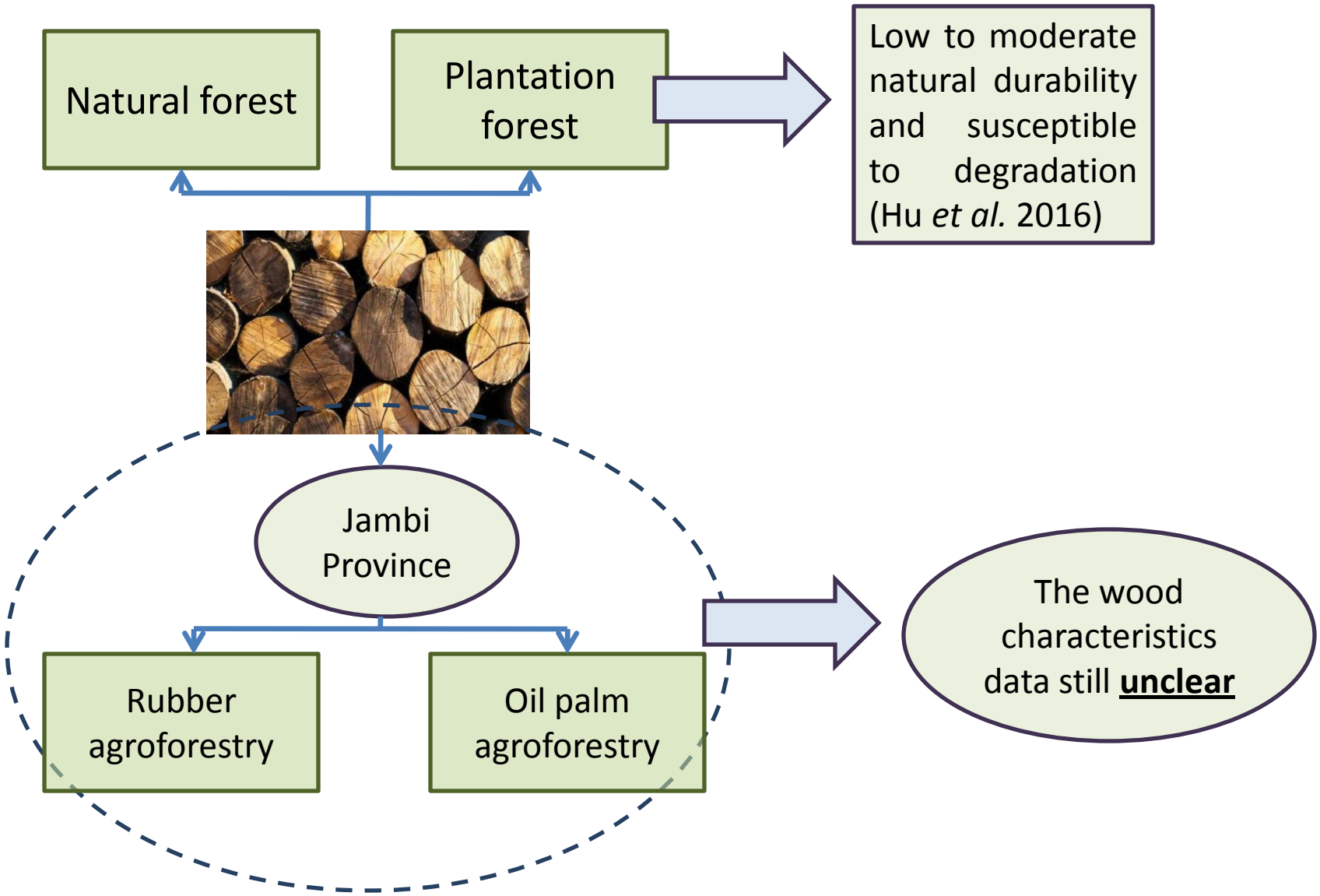
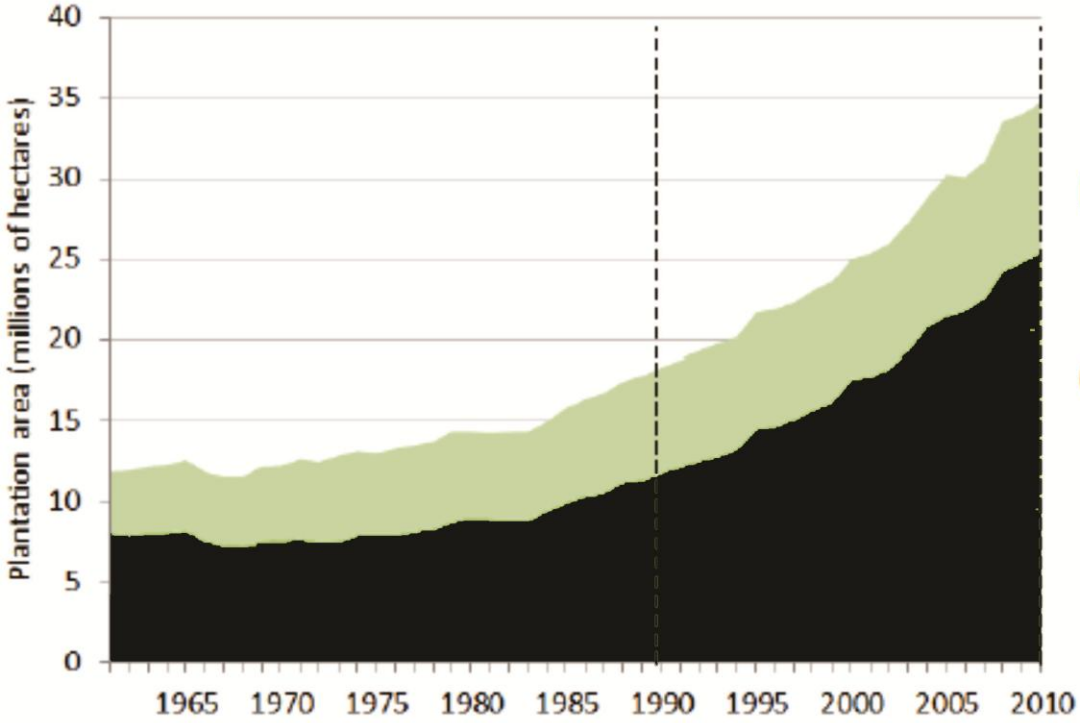
# Background


Natural forest
Plantation forest
Low to moderate natural durability and susceptible to degradation (Hu *et al.* 2016)
Jambi Province
Rubber agroforestry
Oil palm agroforestry
The wood characteristics data still **unclear**

# Background

Tree cash-crop plantation areas are growing rapidly as demand for biofuels and other commodities

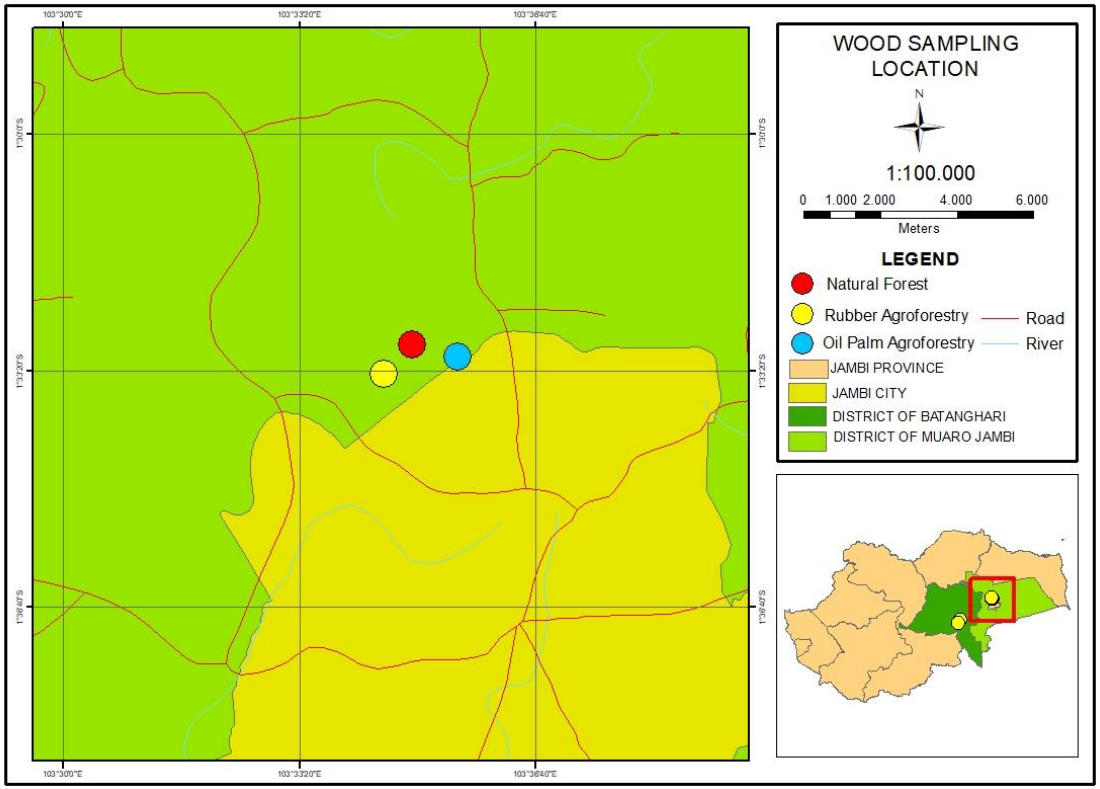



Rubber (143% increase since 1990)

Oil palm (260%)

Source: FAOStat (http://faostat.fao.org/))

# Methods




## Materials

*Fagraea fragrans* Roxb. wood has been collected from District of Muaro Jambi, Jambi Province from 3 different ecosystems:

(1) Secondary natural forest

(2) Oil palm agroforestry

(3) Rubber agroforestry

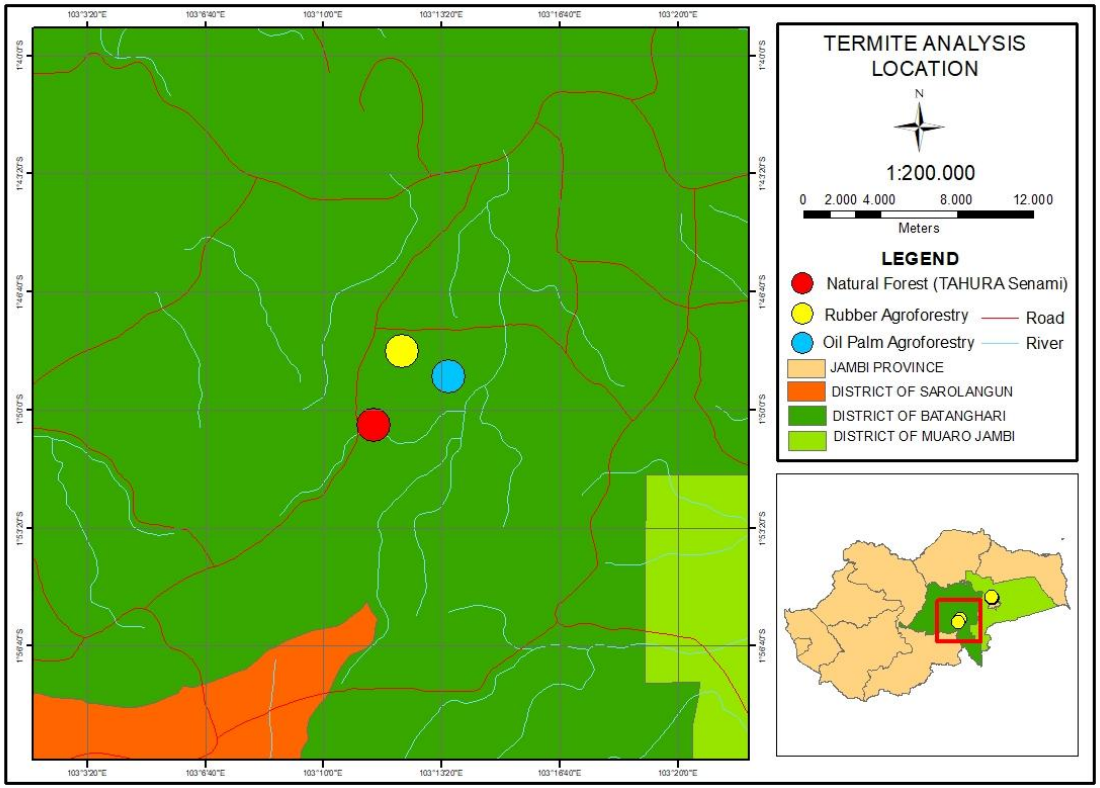
## Solubility of wood

The solubility of the wood sample was analyzed using 4 parameters, hot water, cold water, ethanol-benzene (1:2), and NaOH 1% (TAPPI T 264 om-88 1988).

## Proximate analysis

This proximate analysis, including the moisture content (TAPPI T 264 om-88 1988), volatile matter (ASTM E872-82 1998), ash content (TAPPI T211 om-02 2002), and fixed carbon (Cordero *et al.* 2001).

# Termite analysis location




## Termite analysis

Wood destroyer organism has been collected from District of Batanghari, Jambi Province from 3 different ecosystems:

(1) Secondary natural forest

(2) Oil palm plantation

(3) Rubber plantation

## Transect protocol

This transect-based protocol rapidly assesses composition of the local termite assemblage (Jones and Eggleton 2000)

| | | |
|---|---|---|
| Plot 1…….. | | Plot 3 |
| | | 5m x 2m |

→

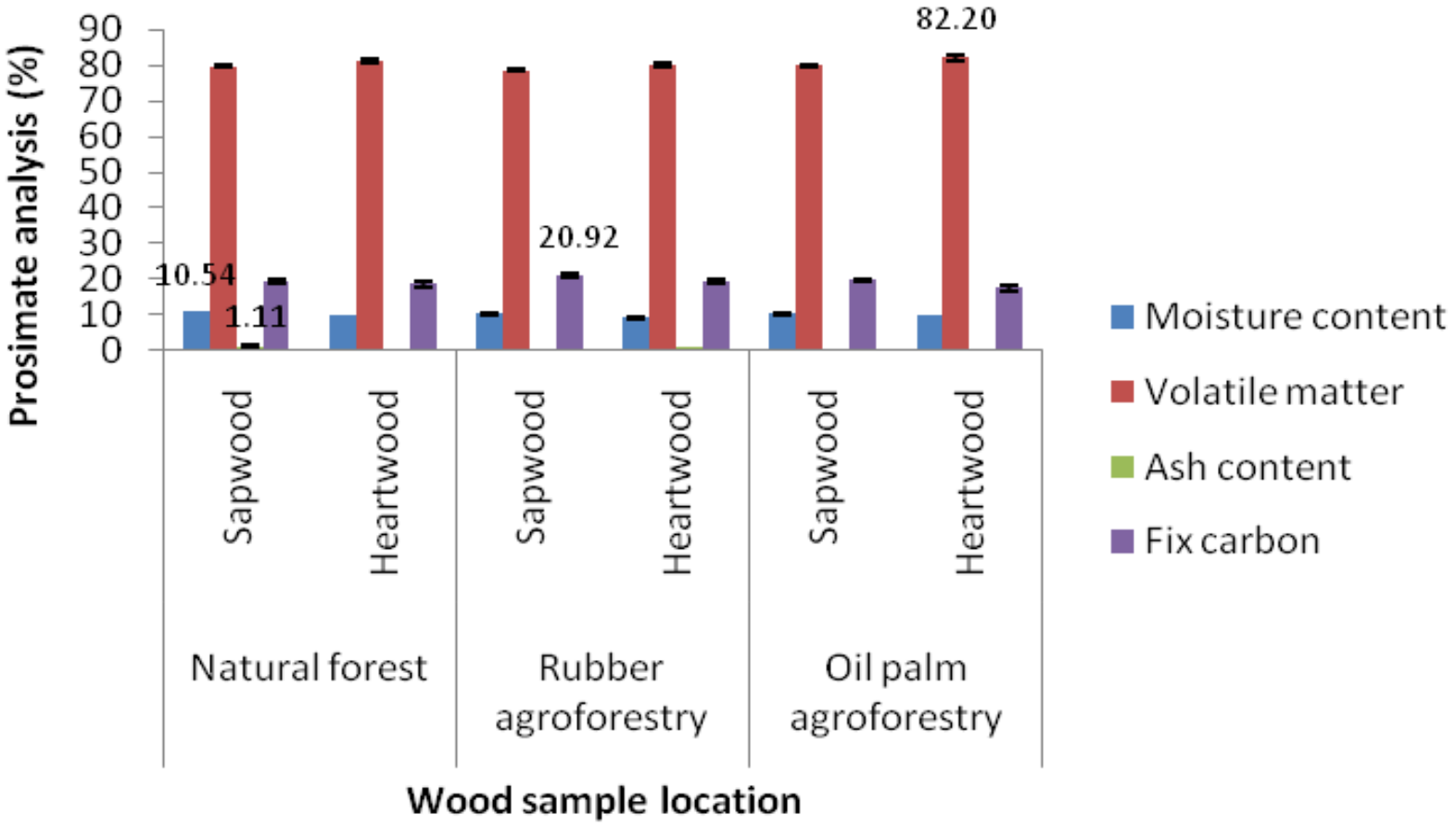
## Transect size

The transect is 100 m long and 2 m wide, and devided into 20 contigous section (5m x 2m).

# Solubility of wood

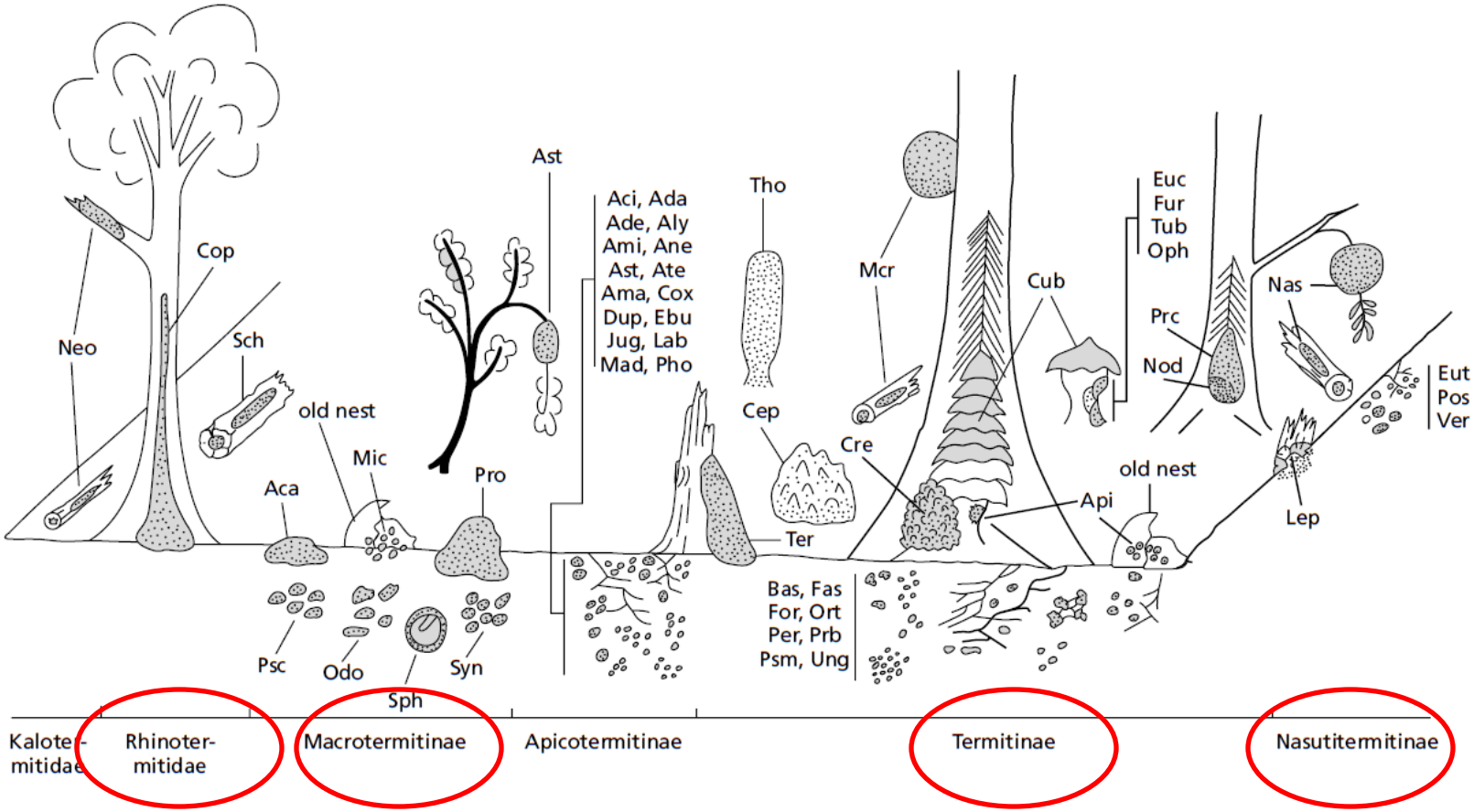

Wood solubility from three different sites

# Proximate analysis



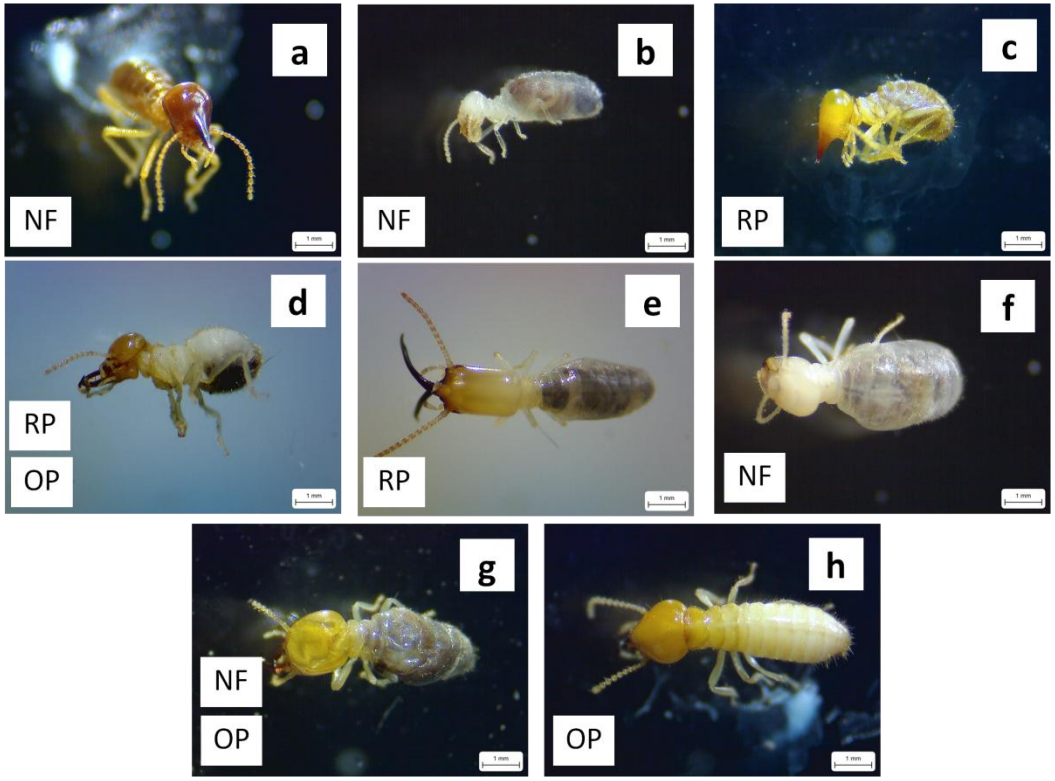

Wood proximate analysis from three different sites

# Termite nests




Source: (Leather, 2005)

# Termite analysis




Diversity of termites in oil palm plantation (OP), rubber plantation (RP) and natural forest (NF), a. Bulbitermes, b. Hirtitermes, c. Nasutitermes, d. Globitermes, e. Termes, f. Macrotermes, g. Microtermes, h. Coptotermes.

# Conclusion

- *F. fragrans* wood from the natural forest has the higher solubility than the others.
- The proximate analysis shows F. fragrans wood from the natural forest has highest ash content, and the wood from rubber agroforestry has the highest fixed carbon. The wood from oil palm agroforestry has the higher volatile matter.
- The natural forest has more termite diversity than oil palm plantation and rubber plantation.




# Thank you