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Conservation Horticulture for Dipterocarpaceae

Section 4: Seedling selection, site preparation and planting

Adapted from presentations by: Tropical Rainforest Conservation & Research Centre & Mr. Randi Agusti

SEABG
Southeast Asia Botanic Gardens Network

NATIONAL GEOGRAPHIC

Planting ‘Tropical Rainforest Living Collections’

Tropical Rainforest Conservation & Research Centre (TRCRC) has established conservation sites, known as Tropical Rainforest Living Collections (TRLCs), to safeguard tropical plant species across Malaysia. At the TRLCs, seeds from threatened plants are collected, germinated and planted on established sites to produce seeds and planting material for restoration projects. See more: www.trcrc.org.

The following section is guidance primarily based on TRCRCs experience in creating the TRLCs.

Site preparation

- Site established according to the given coordinate point boundaries of the plot.
- Within 3-5 meters of the line boundary, undesirable existing vegetation (shrubs and grasses) with diameter breast height (dbh) < 10 cm will be removed and all vines and climbers will be cut.
- Along the cleared line, all trees that existing in the boundary and poles will be marked in colored yellow as acknowledging there is a planting plot boundary established

Inventory / Survey of planting plot

- It is important to acknowledge the availability and capacity of land area for planting
- Survey and record forest composition such as canopy gaps (classified in canopy class), slope, watercourse, rocks etc.

Table 1: A guideline to characterize the canopy class and level of degradation in restoration area.

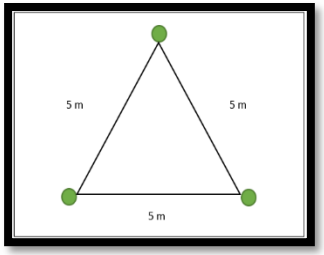
Class	Level of degradation	Descriptions
1	Low	High canopy cover and tall emergent trees
2	Moderate	Moderate or less canopy cover and short trees
3	High	Lack of tree cover and dominated by shrubs
4	Extreme	No existing trees and dominated by grasses and herbs

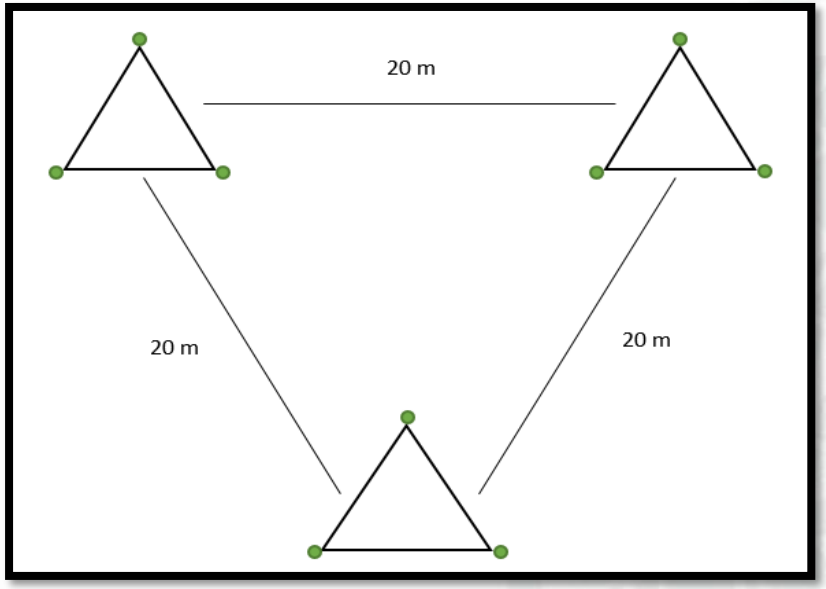
Class 2

Class 4

Shade Tree Establishment

- The areas that require restoration based on the level of degradation, or canopy class classified are **Class 3-4**.
- Cluster planting will be carried out (refer to Figure below).
- The nursing canopy will be established with native (to Malaysia) fast-growing or fruit species such as Binuang / *Octomeles sumatrana*, Laran / *Anthocephalus sp*., and Talisai paya / *Terminalia copelandii*.





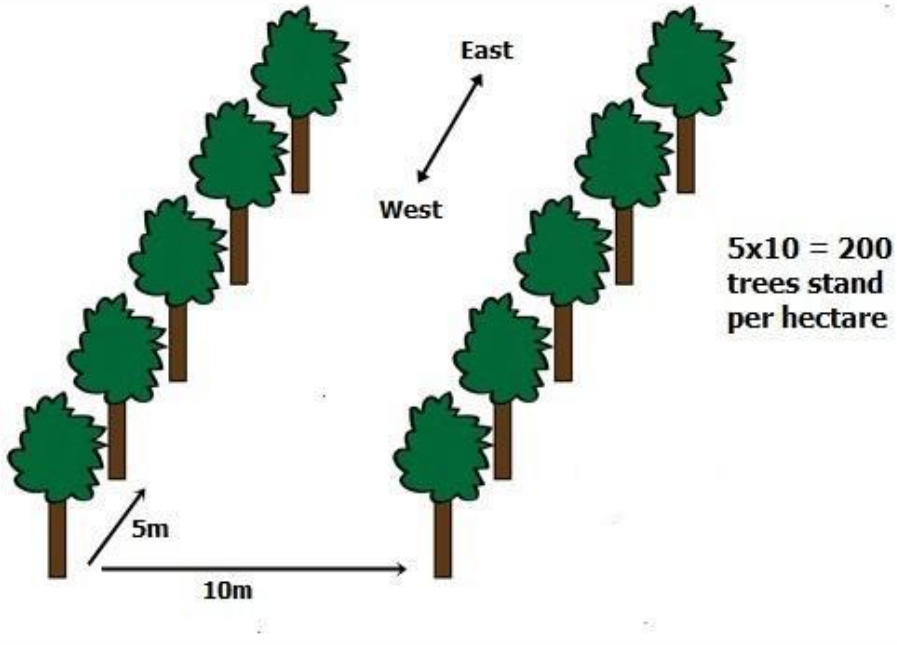
Why establish shade trees?

To rehabilitate the degraded area and enhance diversity in the ecosystem by adding trees to create canopy cover.

Consider the existing environment by minimizing the removal of trees that damages watersheds through erosion and further impact on the carbon cycle.

Plot establishment

Line planting procedures



- Tree spacing is very important in forest restoration because it is correlated to the success of the forest plantation regarding maintenance, stand stability, and growth performance (Camirand, R. 2002).
- **Silviculture treatment** - Within the line, 2 meters (6.6 feet) removal of undesired existing vegetation (shrubs and grasses) and shade adjustment (climber cutting).
- Ensure light penetrates to the forest floor – enhanced light requirement of the planted seedlings and to attain rapid growth.

1. Compassing and lining activity

2. Bark and poles are marked with bright color paint

3. Silviculture treatment

4. Completed line

Seedling Selection

- Identify seedlings of suitable height for planting site
- Choose healthy seedling for planting: good trunk size, height, number of branches
- Choose suitable size of polybag suit for the planting location

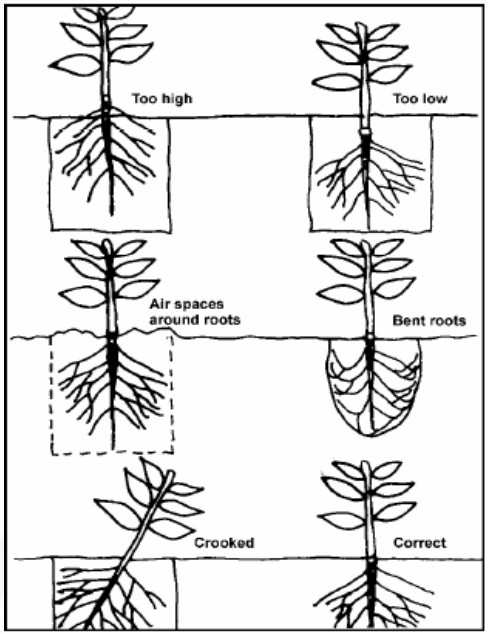
Seedling Selection

Aged approximately 18-24 months (2 year old), hardened and healthy (not infected by any disease).

3 different sizes of polybag " S, M and L"

Planting

Transferring process from the quarantine spot



Correct position of the seedling and seedling roots in planting hole (source from Camirand, R. 2002).

Appropriate way to removing polybag

Aluminium tag for planted seedling

Post Planting Treatment

- If possible, flush 1-2 times a day for the first 1-2 months, fertilizer can be added
- Always clear weeds surrounding of plants at least for first year

Post Planting Treatment

- Prune old twigs/leaves to accelerate upward growth
- Pile up litters at the base of the stem for the possibility of developing mycorrhizae that are good for growth

Maintenance and Census

Maintenance including:

a) Circle weeding.
b) Cutting and removal climber.
c) Clearing line.
d) Replanting.

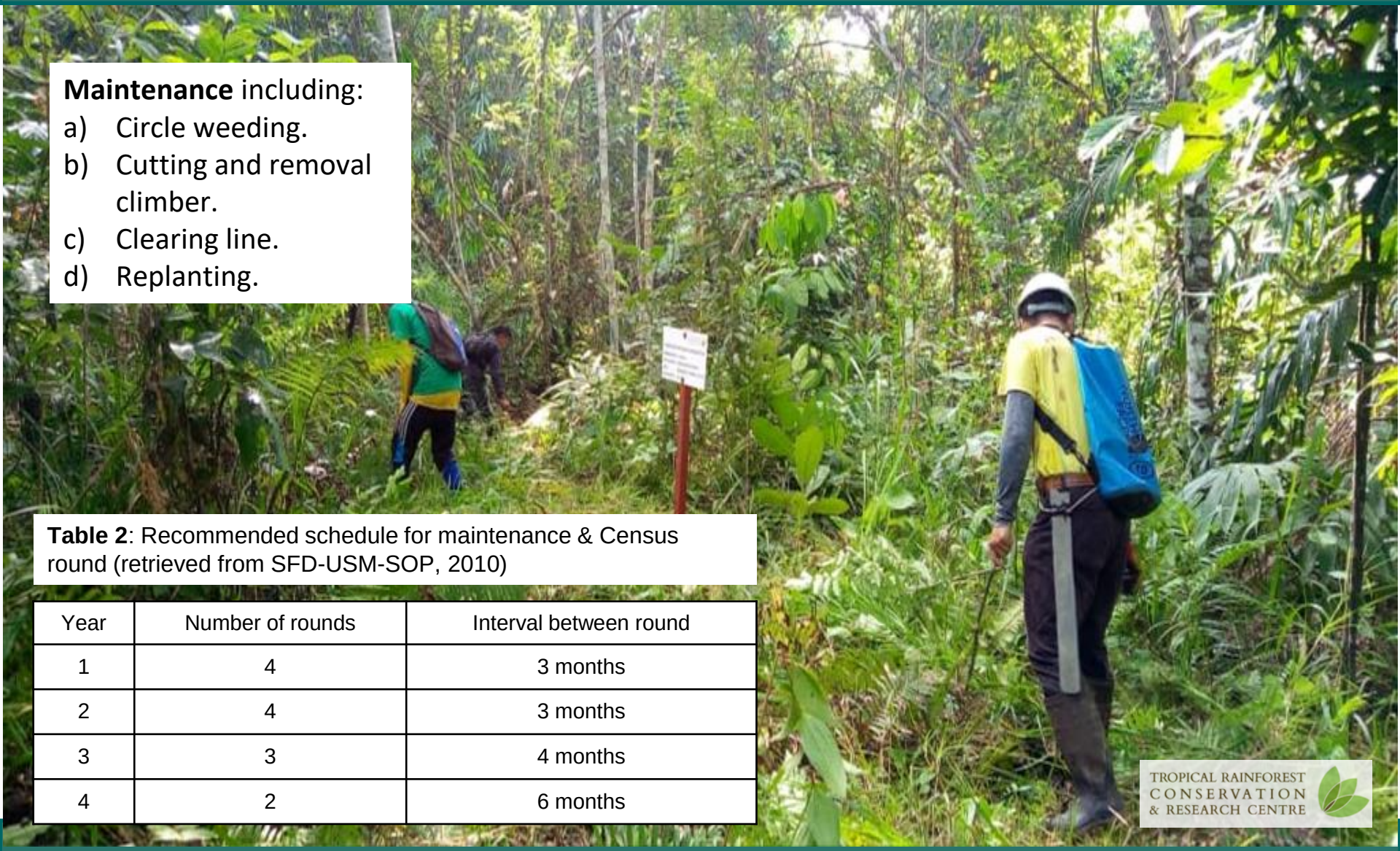


Table 2: Recommended schedule for maintenance & Census round (retrieved from SFD-USM-SOP, 2010)

Year	Number of rounds	Interval between round
1	4	3 months
2	4	3 months
3	3	4 months
4	2	6 months

Maintenance and Census

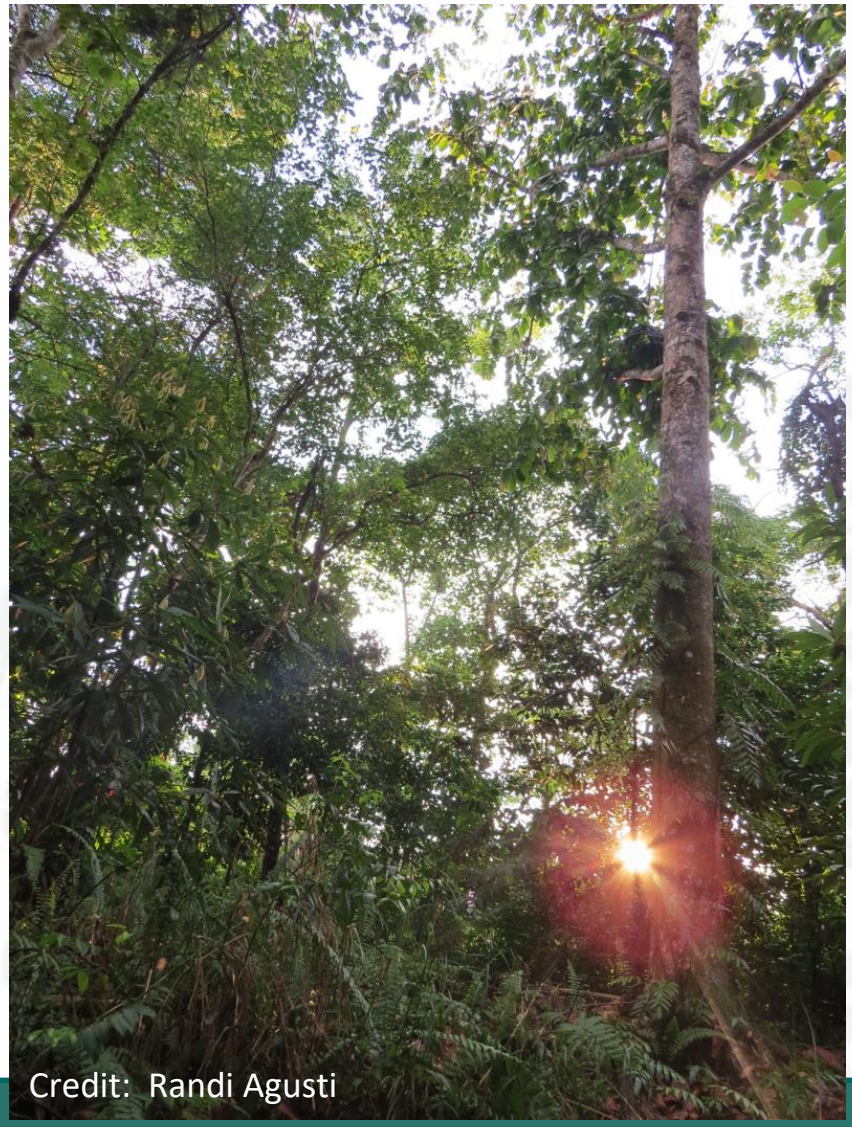
Census – can be carried out once in a year to monitor growth performance, to keep a record survival and for evaluation purposes.

Measuring DBH of the planted seedling (taken at the collar section).

Measuring height of the seedling


Credit: OFI

- Maintain good records for future planting
- Intensive treatment is usually only done in the first year or when the seedling has reached 2 m high
- Then, let them grow naturally!


Credit: Randi Agusti

References

Camirand R. 2002. Trees for Tomorrow Project; Guidelines for forest plantation establishment and management in Jamaica, p 13.

Global Trees Campaign, 2014. How to plant and establish threatened trees in the wild.

SFD et al., 2008. Forest Management Plan January 1 2008 to December 31 2017 for Ulu Segama – Malua (USM) Sustainable Forest Management Project Area. Sabah Forestry Department, Yayasan Sabah, WWF and Hutan.

End of Section 4

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Or email globaltrees@bgci.org

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