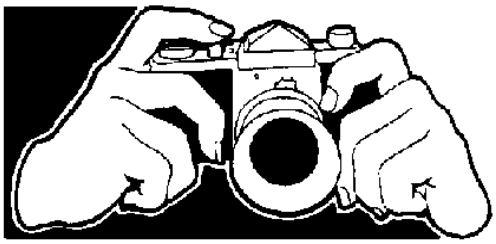
MONITORING FOREST RECOVERY

Monitoring is a fun and educational activity for people of all ages.
It helps to find out if planted trees survive, grow well and accelerate natural forest regeneration.
Monitoring also helps to identify problems with species selection, planting techniques and/or the methods use to care for planted trees.

Photo points: *The simplest way to monitor. Take photos of planted and control plots from the same points every few months.*

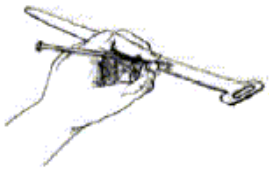


Control Plots: are as similar as possible to planted plots (in altitude, slope, aspect, previous land use etc.) except that they are not planted with trees. They provide a comparison to determine if tree planting does result in a denser, more diverse forest than that developed by natural regeneration (if it doesn't, direct your energy away from tree production and planting and towards assisted natural regeneration techniques). Locate control plots a few hundred metres from planted plots for fire prevention and effective animal monitoring.

Tree sampling: At least 50 individuals of each species should be monitored as a sample – the larger the sample size the better. Randomly selected the sample plants and label them before planting. Plant them randomly across the site and mark with a coloured bamboo pole that has the ID number written onto it. A sketch map of the plot may help to locate them for future monitoring.

Labelling: Find soft metal strips used to bind electrical cables (available from builders' supply stores) or make similar labels from soft drink cans. ID numbers can be punched in or engraved. Bend the ring around the stem, above the lowest branch. More permanent metal labels can be nailed at 1.3m above ground (breast height) to the trunks of trees with a girth of over 10cm.

Before planting, place metal labels around the tree stems. Make sure they do not get buried during planting.



Label numbers could include information on species, year of planting, plot number and tree number. Keep a record of your numbering system.

1. Count surviving trees and dead trees

Measure the height of planted trees from the root collar to the highest meristem (growing point).

2. Measure the height

The most important monitoring events:
- Measure at 2 weeks after planting to get baseline data for growth calculations and to assess immediate losses.
- Measure at the end of the second rainy season after planting, to compare plantings with their framework species standards.

Additional monitoring can take place at the end of each rainy season, and also at the end of the dry season (provides more detailed information about when and why plants die).

How to measure trees:
Work in pairs, with one partner taking measurements and the other recording data on record sheets. Have the tree ID numbers already written out, take the sketch map and the data collected in previous monitoring sessions.

3. Measure the crown width

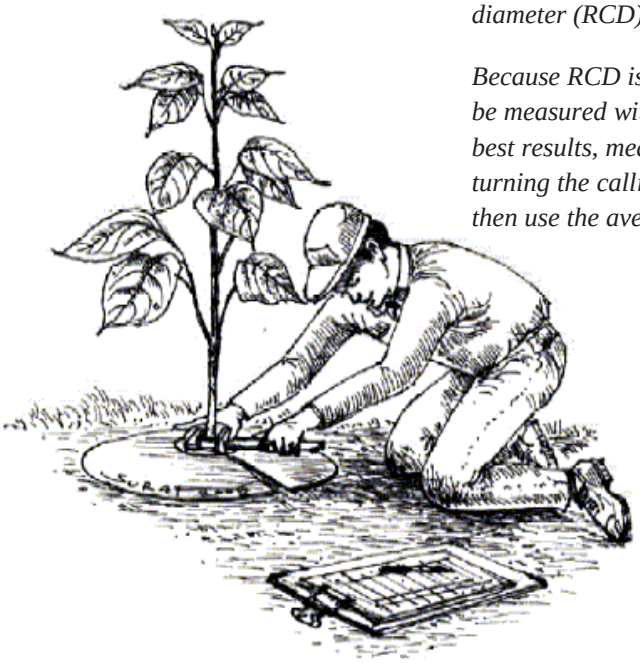
Measure crown width at the widest point, to assess canopy closure and site "recapture".

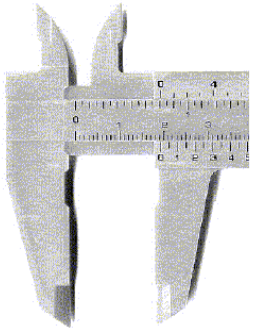
4. Measure the root collar diameter

Callipers with a Vernier scale are available in most stationery stores.

Use them to measure root collar diameter (RCD), at the widest point.

Because RCD is a small value, it must be measured with high accuracy. For best results, measure RCD twice by turning the callipers at right angles and then use the average reading.





5. Record the weed cover

Measuring crown width and using a scoring system for weed cover can help determine site "recapture". Imagine a circle about 1 metre in diameter around the base of each tree.

SCORES

3	Weed cover is dense over the whole circle
2	Weed and leaf litter cover are both moderate
1	Only a few weeds grow in the circle
0	No (or almost no) weeds

Do this before weeding is due to be carried out.

6. Record the tree health

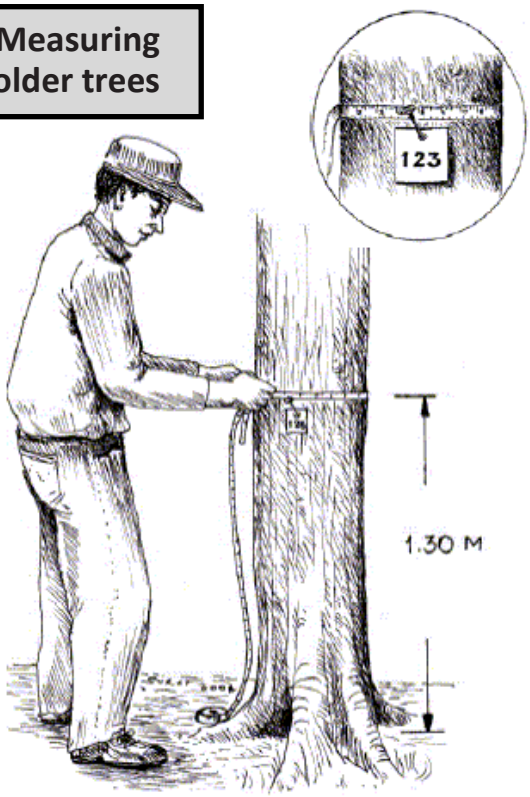
This can help to assess the vigour and resilience of each species to damaging factors such as fire or cattle browsing. Score health and record descriptions of any particular health problems.

SCORES

3	Tree in perfect or near perfect health
2	Some signs of damage but retaining some healthy foliage.
1	Tree is nearly dead (most leaves discoloured, severe insect attack etc.).
0	Tree appears to be dead.

Don't confuse a deciduous tree in the dry season with a dead one. Some trees may appear to be dead but may resprout new shoots

7. Measuring older trees



Once trees have grown large, subsequent performance monitoring can be based on increases in girth at breast height (GBH).

Other forest restoration monitoring you can do:

- Record the ages at which species start to flower, fruit or provide other wildlife resources (e.g. nesting sites).
- Record animals seen (or their signs), especially seed-dispersers.
- Once canopy-closure occurs, survey both sites for natural regeneration – identify and monitor them.

This sheet was summarised from 'How to Plant a Forest' Part 7, Section 5. A monitoring coordinator should have access to the book for more detailed information on data collection and analysis. The book can be downloaded at www.forru.org