TREE MANAGEMENT SUPPORT

Objective of the support

To support farmers to produce good and quality firewood and poles hence protecting the trees through good tree management.

As the target of this support is the farmers with already grown-up trees, the main focus is the pollarding of the trees. In case the upper part of the tree is already damaged or the trunk is needed for timber, coppicing can also be considered. Also the removal of branches and the removal of shootings is an important part of the training.

A. Pollarding of Senna spectabilis

Pollarding is the technique of regularly pruning trees back to a trunk to form a head of branches. After the branches get cut, new shoots will appear and will grow back to branches that can be cut again. In case of pollarding the head at the top of the trunk is at least 1.5 m high.
It has several advantages:

- Stimulate the tree growth (higher wooden biomass compared to a non-pruned *Senna spectabilis*)
- Avoid damages by animals and children due to trunk height (in comparison to coppicing)
- Timber production because of the growth of the full trunk
- Long and straight poles
- Avoid shade and competition with crops nearby
- Simplified pruning work when branches are all cut at the same height

The following illustration shows the location of a good cut technique that allows the tree to heal after pruning. Branches have to be cut in bevel to prevent rainwater from entering the trunk. The use of a panga knife can make it more difficult to get a clear cut in comparison to the use of a pruning saw, dedicated to green wood cutting.

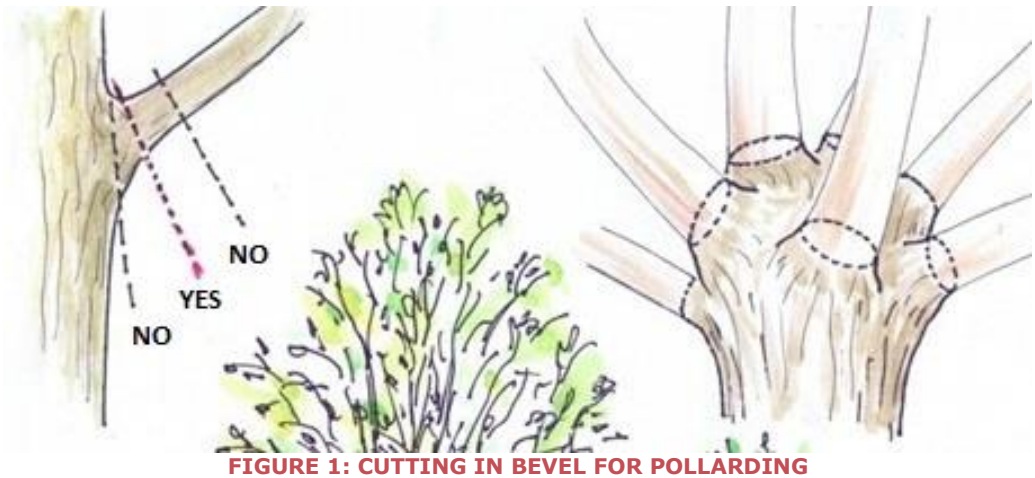


FIGURE 1: CUTTING IN BEVEL FOR POLLARDING

A good cut is the source of new wood which, year after year, forms a **circular bead** at the top of the trunk that covers the wound, created through the cutting of the branches.

B. Coppicing of Senna Spectabilis

Coppicing consists in cutting down a tree at 30 to 50 cm height. It is also an option to produce poles.

This technique is needed when the tree is already damaged at the upper side of the tree such as bark teared out or a part of the tree is already rotten. Also the tree owner may need to sell the tree trunk for timber and the bottom part of the trunk remains and can produce poles again.

Here are some examples where trees have been coppiced and have brought advantages to their owners:
Example 1: Elder people
⇒ Harvest of firewood is easier when branches are at 30 to 50 cm from ground level.

Example 2: Household needing immediate cash
⇒ The farmer can cut his trees to sell timber while keeping a source of firewood for the next years.

Remarks: Be sure to protect the trees as their height makes them accessible to goats and children. They may break young shoots, which could prevent regrowth.

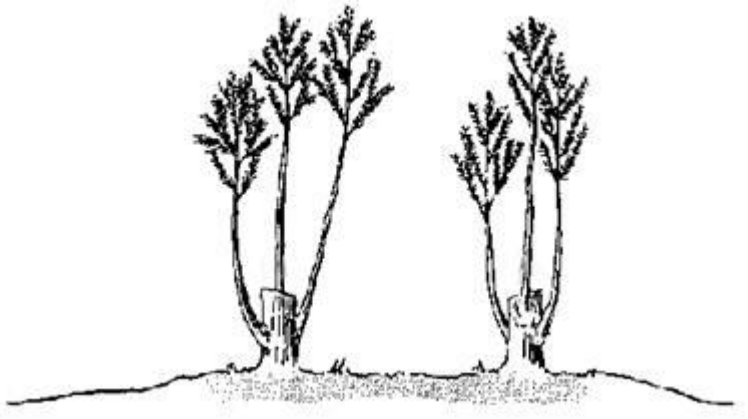


FIGURE 2: COPPICED TREE. FIGURE ADAPTED FROM TENGNAS B. (1994)

PHOTO 1: ROW OF *SENNA SPECTABILIS* COPPICED ONE YEAR EARLIER, ABADIA (2016)

(A) (B)

PHOTO 2: SENNA SPECTABILIS IN CHIDAMBAYILA. (A) FRESHLY COPPICED. (B) 6 MONTHS AFTER COPPICING.

2 months after the pollarding and coppicing, smaller and twisted branches need to be removed to avoid competition for nutrients and water. Keep a good amount of shoots according to the desired size of branches.

c. Removal of branches and lateral shoots

Senna spectabilis is typically a multi-trunked tree. The removal of branches and lateral shoots is a necessary step to reach a straight trunk. Only one or two of the healthiest shoots at the top of the tree need to be kept.

The removal has to be done starting from one year after planting and as soon as new shoots appear. In the following picture we can see a tree still having small branches and the one which have been pruned.

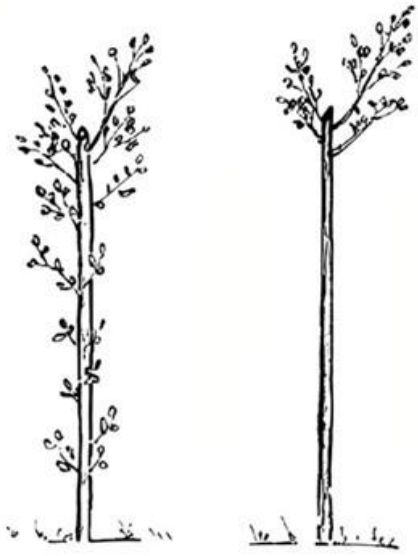


FIGURE 3: REMOVAL OF SHOOTS FOR A STRAIGHT TRUNK

Here below, there is an example where the tree has been left unpruned. In that case the trees does not have a single trunk but is made of many branches coming up from the ground. It has been decided to select two main branches, the healthiest two and cut out the rest of the trees.

PHOTO 3: PRUNING A SENNA SPECTABILITS LEAVING TWO BRANCHES ONLY

For *Acacia polyacantha* and *Faidherbia albida* pruning should be done also during the first year to limit side branches. Additionally some seedling stakes may be needed to maintain the tree straight.

Senna siamea will also need pruning of side branches meanwhile cutting the trunk may lead to the tree death. *Albizia lebbeck* will first have to grow before any action is taken because the lateral shoots might become the canopy. The lateral shoots can be cut if the trunk is continuing its growth higher than those lateral shoots. In case of a damage of the top part of the tree (by children or animals) lateral shoots are developing, bottom ones can be removed

ANNEX

COMMON MISTAKES THAT WE NEED TO AVOID WHEN DOING PRUNNING

1. LEAVING A TRUNK WHEN PRUNNING

- ✓ **The trunk starts to rot due to water and soil that stay on the top of the trunk.**
  (Termites attack, drying of the trunk)
- ✓ **Less branch development**
  (Because the rotten trunk/ dry trunk is still there, shoots cannot develop well since it is a dead tree therefore it takes space out)

2. PRUNNING USING BLUNT TOOL

- ✓ **Damaging the bark of the trunk.**
  (Make a wound to the stem, delay in growth due to healing of the stem)
- ✓ **Less branch development**
  (More space has been covered with dry/dead stem)

3. PRUNNING TOO LOW

- ✓ **Allow soil from splashed rain water and soil to stay on top of the trunk.**
  (The trunk can easily rot, the trunk is prone to diseases)
- ✓ **Less branch development**
  (More space has been covered with dry/ dead stem)
- ✓ **Animal and children attack**
  (Children and livestock can easily access to the trunk)

4. DAMAGING THE BARK WHEN PRUNNING

- ✓ **Less branch development**
  (More space has been covered with damaged bark, unhealthy branches)
- ✓ **Termite attack**

5. LEAVING BRANCHES AND USE OF BLUNT TOOL

- ✓ **LESS BRANCH DEVELOPMENT**
  (All the branch that can be develop will shoot behind the dry branch/stem)

6. REMOVING OF BARK TO A PRUNNED /FULL GROWN TREE

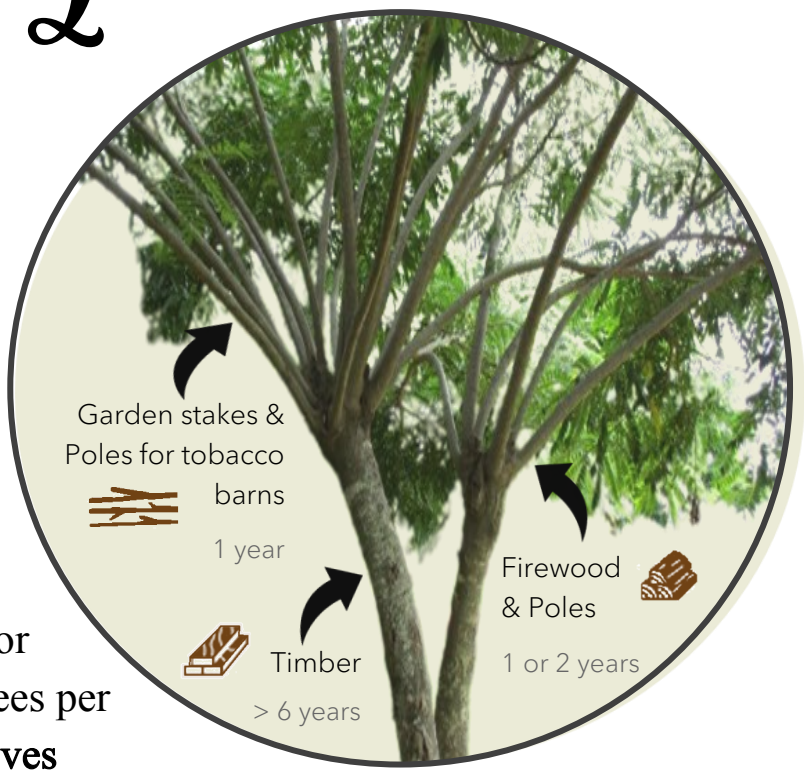
- ✓ **Less branch development**
  (All the branch that can be develop will shoot behind the dry branch/stem
- ✓ **Drying of the tree**
- ✓ **Termite attack**
- ✓ **Unhealthy branches**

Tree management guidelines

1 Set **objectives**

- Windbreak
- Soil fertility
- Sell products
- Use at home: Firewood, maintain roof, etc.

2 Choose **products**



3 Select **tree species**, the **place** for planting, and the **number** of trees per specie **according to the objectives and selected products**.

Examples of :

Indigenous species

- *Acacia polyacantha* (Mthethe) ➔ Firewood, timber, soil fertility. Fast grow.
- *Faidherbia albida* (Msangu) ➔ Firewood, timber, fodder, soil fertility / Slow grow.
- *Khaya nyasica* (Mbawa, protected) ➔ Timber / Slow grow.
- *Trichilia emetica* (Msikidzi) ➔ Firewood, timber / Fast grow.

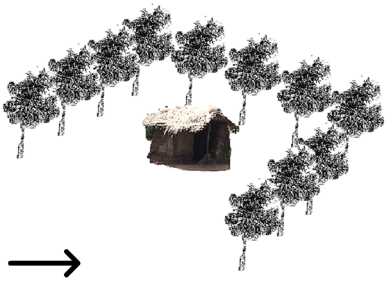
Exotic species

- *Senna spectabilis* (Kesha) ➔Firewood, poles / Fast grow.
- *Senna siamea* (Kesiyasi)➔ Firewood. Fast grow.
- *Albizia lebbeck* (Mtangatanga) ➔ Firewood, fodder, timber / Slow grow.
- *Gliricidia sepium* ➔ Firewood, fodder / Fast grow.

Fruit trees

- Pawpaw ➔ Fast growing
- Grafted trees

WHERE TO PLANT?

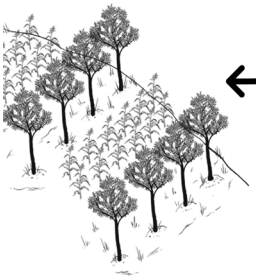


Pruning season:
Dry ☀ Rainy 🌧

Homestead ⟶

Leave always a minimum of 2 meters between each planting station.

Field



Rows

Pruning season: ☀ Dry

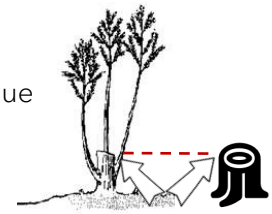
Boundaries

4 Select **pruning technique** and **frequency.**

A mix of techniques can be selected: choose a group of trees to coppice and another group to pollard, or one technique for all the trees.

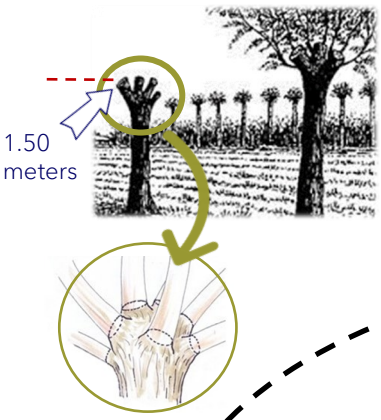
Technique

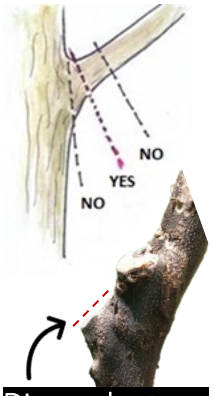
Coppicing



30 to 50 centimeters

Pollarding

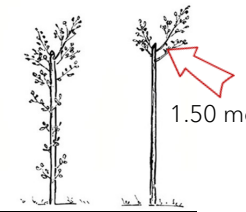




Diagonal cut

Frequency

- ☑ Tree formation and side branches removal: First year.
- ☑ First pruning (pollarding or coppicing): From the third year, depending on the tree's growth.
- ☑ Subsequent pruning: depending on the product, every one or two years (pollarding or coppicing).



Tree formation

Tool

- Pruning saw
- Panga knife (sharp)

Shifting a tree from coppicing to pollarding technique takes approximately <u>three years</u>:
1) In the first year, remove all branches except one or two; **2)** Do the first pollarding to the selected branches in the second year; and **3)** the first production from pollarded branches will be in the third or fourth year.

5 Select **targeted markets,** the best time to sell products, and update **seasonal prices.**

Market opportunities → for wood products from agroforestry identified in Lilongwe District.

Plan wisely to prune the trees to sell the product at the right time. Trees can be grouped and pruned in different seasons to reach diverse markets.

Tip: A storage facility can help to keep wood pruned before rains dry and available for sale in the rainy season.

For example, one group of 50 trees was pollarded in October and sold as firewood from November to April, while another group of 20 trees was pollarded in May and sold as firewood to tearooms in June and July.

Product	Market	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Firewood	Village households	H	H	H	H							H	H
	Food businesses	L	L	L	L	H	H	H	H	L	L	L	L
	Local aggregators	H	H	H	H	H	H	H	H	H	H	H	H
	Urban households					H	H	H	H	H	H		
Barns	Tobacco producers (barns)			H	H								
Logs	Brick makers (logs)						H	H	H	L	L	L	
Poles	Construction (poles)					H	H	H	H	H	H		

Color code: No demand · Low demand · High demand

6 **Review** the objectives and management plan to adapt or improve it **every season.**

Keep planting more trees if desired and needed.

Contact the local forest authorities for information regarding the legal framework and regulations.

For more information on the agroforestry project, contact Manuel Milz, Area Manager for Malawi at manuel.milz@interaide.org

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Tree management guidelines

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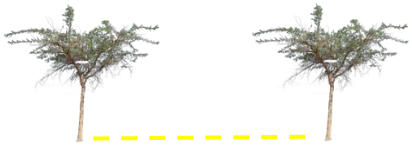
Lancement et suivi de programmes concrets de développement

Good practices vs Bad practices

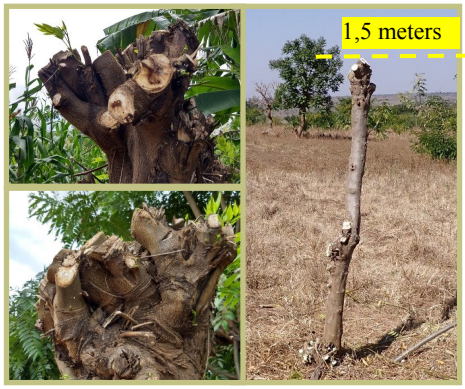
Spacing



Pruning techniques:

Clean & Diagonal cut— use the pruning saw. Poor cuts lead to tree decline.

Remove smaller shoots, and keep only a few to get thicker branches.



Pollarding

1.5 meters in height unless the trunk is used for timber.

Coppicing

30-50 centimeters in height.