# Saw, sort, protect and stack

Boards must be sawn, dipped with an anti-stain solution (where necessary) and stacked in quick succession. This will minimise the risk of staining and twisting during drying.

**Steps**

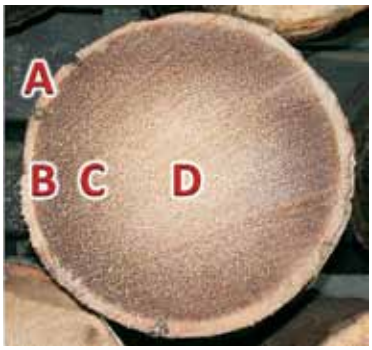
1. **Saw** to maximise recovery.
2. Use standard sawmilling **equipment** but high speed blades with tungsten-carbide or Stellite-tipped saw blade edges.
3. Cut **parallel** to the outer surface, by raising the thinner end of the log. Debark and recover the underlying layer of high density wood in 8 sequential cuts in 3, one-quarter turns of the log.
4. **Sort and separate** boards visually, using colour and bundle density as a guide to high density fibre.
5. **Dip** (if accelerated or kiln drying is not available) to protect against stains and moulds.
6. **Stack immediately**, using the recommended sticker-stack design.

## 1. Sawing recovery

The aim is to maximise recovery of high density cocowood fibre, which occurs towards the outer periphery of the logs. Usually, four high density boards can be cut from each palm stem billet. Boards that have a relatively homogenous density and straight grain are suitable for high value flooring products. Boards containing marked density gradients and spiral grain are prone to degrade, especially twist, during drying. Suitable material occurs up to about 12–13 metres in the senile palm stem.

## 2. Equipment

Coconut palm stems can be sawn using standard hardwood sawmilling equipment. The high mineral content (2–3%) and the variation in grain angle caused by the structure of the vascular bundles means that sharp, high speed steel (HSS) blades, tungsten-carbide or Stellite-tipped saw blade edges are most appropriate for processing cocowood. Regular sharpening intervals are recommended when breaking down logs.

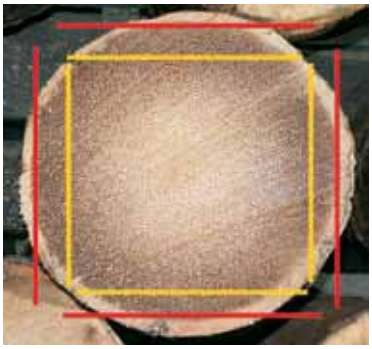


Distribution of fibre density

## 3. Cutting pattern

Remove the cortex ('bark') layer carefully to avoid wasting the narrow band of high density wood underneath. Unlike the bark tissue in normal timbers, the cortex of coconut palms is inter-grown with the outer, peripheral fibre, and it is relatively difficult to separate with hand tools. This means that it should be sawn off.

Set the saw to cut **parallel to the external surface** of the log to ensure that the board has a consistent density profile from one end to the other. If necessary, raise the small diameter end of the log so the cut remains parallel along its whole length.


Cutting pattern

If a board has high density fibre at one end, gradually changing along its length to low density at the other end, the board will be at high risk of distorting during drying and in service.

**A typical cutting pattern for maximum recovery:**

- **Cut 1** – de-bark
- **Cut 2** – cut parallel to cut 1, taking the high density wood, board 1.
  - **Turn** log one quarter turn.
- **Cut 3** – de-bark
- **Cut 4** – cut parallel to cut 3, taking the high density wood, board 2.
  - **Turn** log one quarter turn. Cut 5 – de-bark
- **Cut 6** – cut parallel to cut 3, taking the high density wood, board 3.
  - **Turn** log one quarter turn.
- **Cut 7** – de-bark
- **Cut 8** – cut parallel to cut 3, taking the high density wood, board 4.

Cut the next, medium density boards for local markets.

De-bark

Cut 2 to produce board 1


Board 2 removed, ready to turn

Cut 6, board 3

Cut 7, de-bark board 4

High density boards removed

Fixed band-saw; cut 3 completed

Fixed band-saw; high density boards removed

## 4. Sort green, off-saw

Green, off-saw sorting is done by a visual assessment of the colour and bundle density of the board. Separate the high density boards, which are suitable for flooring, from the medium and low density material.

## 5. Dip to protect sawn boards against stain and moulds

Will accelerated (kiln) drying immediately follow sawing?

- Yes – stack immediately, using the recommended sticker-stack design.
- No – boards must be treated with a stain control solution if accelerated drying facilities are not available, or if boards are cut far from processing facilities.

Rapid drying can prevent or minimise fungal staining. Leaving sawn boards in humid conditions will increase the risk.

### Stain control treatment

Boards should be dipped immediately after sawing for ten seconds in an appropriate treatment solution. Contact agricultural chemical suppliers and local regulatory authorities to determine which stain control treatments are approved. Research suggests a solution of a treatment containing chlorothalonil (450g/L) and carbendazim (100g/L) is effective for minimising staining.

Stain control treatments must be used safely and as prescribed by the manufacturer. Avoid environmental contamination.

**Note:** Boards should never be in contact with the ground or in direct sunlight, either before or after dipping.

### Making up fungicide solutions

| Water (litres) | 2% anti-stain (litres) |
|---|---|
| 1 | 0.02 (20 mL) |
| 4.9 | 0.1 (100 mL) |
| 9.8 | 0.2 (200 mL) |
| 14.7 | 0.3 (300 mL) |
| 19.6 | 0.4 (400 mL) |

**Safety first**

**Always** use and handle treatment solutions as directed by the manufacturer.

**Always** avoid direct contact with the treatment.

**Always wear** gloves, eye protection, foot protection and an apron.

**Always have nearby** a wash down station, a hose or a bucket of water in more remote areas.

Dipping a board in a fungicide solution

Draining boards before stacking

## 6. Stack

Stack immediately as described fully in Section 5.

**Sticker-stacking—a quick reference:**

- Stacks should be 400 mm clear off the ground on bearers.
- Full length boards are positioned on outside rows, and bottom and top layers.
- Board ends are supported.
- Dried rack sticks 20 mm (thick) x 30 mm (wide) must be vertically aligned and spaced 450 mm apart.
- Weights should be placed on top of the pack to minimise distortion during drying.
- Accelerated drying in a kiln is recommended to minimise the chance of staining and moulds growing in the wood.
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