ACIAR projects

FST 2004/054: Improving value and marketability of coconut wood - 2007-2010

FST/2009/062: Development of advanced veneer and other products from coconut wood to enhance livelihoods in South Pacific communities – 2012-16

Projects summary

Two projects:
1. *CocoWood: 2007-2010*
   provided the science to underpin coconut wood production, engineering and marketing initiatives for high quality flooring and address gaps in understanding of cocowood properties and suitable processing technologies.

2. *CocoVeneer: 2012-2016*
   aims to develop the technologies, processes and expertise to produce veneer and veneer-based products from senile coconut stems. Residues from the processes will be used to develop soil conditioning products.
CocoVeneer Project Objectives

Objective 1 – Identify Markets

Objective 1 – Identify the most promising product options for the veneer from coconut stem
**Objective 2 – Forestry**

**Objective 2** - Develop protocols and capacity for sustainable low-impact coconut wood harvesting, plantation rehabilitation, and log grading, handling and transport.

**Obj. 3 – Veneer peeling in S. Pacific**

**Objective 3** – Establish experimental veneer-peeling capacity in the South Pacific.
Spindle-less lathes

- A spindle-less lathe uses periphery drive rollers to push the log against the blade for peeling.
- This increases recovery over spindled lathes as small diameter logs can be peeled efficiently down to a small residual core.

Objective 4 – Peeling trials

**Objective 4** – Determine the optimum processing parameters & protocols for peeling coconut stems & the properties of the recovered veneer.
**Objective 5 – Products**

**Objective 5** – Assemble the product suite and establish its characteristics and in-service performance

**Objective 6 – By-product utilisation**

**Objective 6** - Determine the costs and benefits of using the residual cortex and soft, central cores for bio-char and other agricultural products
Cocowood.net contains:

- Videos
- Project notes
- Research reports
and more ...

Information: Cocowood.net

Coconut stems can be used for a wide range of applications:

- Flooring: The softest density may be used for floors requiring a hard 'wood'.
- Furniture: The innermost core and outlying bark are suitable for furniture, joinery, panelling, pallets, plywood, and value flooring.
- Charcoal and Firewood: Freshly harvested stems can be used for charcoal and firewood. Stems can also be peeled for compost or fuelwood.
- Insulation: Dried at 60°C, high density, dry cocowood is not susceptible to fungi and is suitable for use as insulation.
- Pallets: The outer material to light and pale brown for numerous traditional products. Untreated cocowood has the physical, mechanical and chemical properties of hardwood timbers and boards sawn from it can be processed rapidly after harvest. High density, dry cocowood is not susceptible to fungi and is suitable for use as insulation.

**Properties of coconut wood**

Coconut Wood Properties

- **Appearance**
  - Colour: From medium to dark brown with a potting substrate for plants
  - Grain pattern: Observable for higher density

- **Strength**
  - **Hardness**: 280-310 kg/mm² (limited spring, twist or bow).
  - **Density**: 0.40-0.75 g/cm³
  - **Resistance to Termite Attack**: Untreated cocowood has natural durability, suggesting it cannot be used in exposed conditions. Untreated and kiln dried, untreated cocowood has natural resistance to Lyctus beetles.
  - **Durability**
    - **Key grading parameters**: The innermost core and outer peripheral area of the stem have lower density, while the inner zone is much lower in density. The stem can also be peeled with the density of the recovered veneer reducing towards the centre of the log.
    - **Important aspects include**: High speed steel blades or tipped blades and regular sharpening are needed. High speed steel blades or tipped blades and regular sharpening are needed. High speed steel blades or tipped blades and regular sharpening are needed.

- **Processing**
  - Screwed: Recommended for breaking down the logs.
  - Stellite (vascular bundle structure)
  - Sawing: Large variation in grain angle (caused by the outer periphery of the stem and is suitable for many handicrafts, joinery, panelling, pallets, plywood and insulation, charcoal and firewood. Freshly harvested stems can be used for charcoal and firewood. Stems can also be peeled for compost or fuelwood.
  - Rotary peeling
  - Peeling recommended for breaking down the logs.

- **Insulation**
  - **Density**: 0.40-0.75 g/cm³
  - **Moisture content and must be processed quickly to prevent, treated, untreated cocowood has natural resistance to Lyctus beetles. Untreated and kiln dried, untreated cocowood has natural resistance to Lyctus beetles.

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Questions