

PROMOTING SUSTAINABLE USE OF THE TIMBERS OF TROPICAL AFRICA (THROUGH PROTA 7)

A.A. Oteng Amoako

M. Brink



Content

- Importance of timber industry on socio-economic development in tropical Africa
- The effect of deforestation on timber industry
- Interventions needed to arrest deforestation and boost timber production
- Contribution of PROTA to the interventions
- Compilation of PROTA Timbers 7(1)
 - What is involved
 - What has been done
 - What is left to be done
 - What happens after
- PROTA Timbers 7(2)



Production, exports and consumption of timber in African ITTO countries* in 2006 (Source: ITTO).

	Production (million m ³)	Exports (million m ³)	Consumption (million m ³)
Logs	17.9	2.9	14.9
Sawnwood	4.3	1.9	2.4
Veneer	0.7	0.5	0.2
Plywood	0.3	0.2	0.1

* Cameroon, Central African Republic, Congo, Côte d'Ivoire, D.R. Congo, Gabon, Ghana, Liberia, Nigeria and Togo



Timber industry in tropical Africa

- Timber is a major resource for industrialization
- A major foreign exchange earner in tropical Africa.
- Contributes about 2 to 10% of GDP.
- 2% of total work force in Tropical Africa and 5% of the population depends on timber related industries.
- More than 100 million m³ are harvested and processed annually.
- Total gross income estimated to be in excess of 7-10 billion dollars which accounts for about 10% of total export from tropical Africa.

Timber industry has to be sustained for economic and industrial growth.



Forests in Africa



- Only 22% of the land area of Africa is forested from a previous high of more than 50% (FAO, 2002).
- Deforestation rate Africa > 1% per year (entire tropics: 0.8%).
- Consequences:
 - scarcity of timber and non-timber forest products;
 - diminishing timber export revenues;
 - overexploitation of ‘premium commercial timber species’.

The consequences of forest degradation spell a doom to sustainable timber industry and socio-economic growth in tropical Africa.



Forests in Africa



For increased economic and industrial growth interventions are needed to

- halt to the decline of African forests;
- manage natural stands and plant more trees;
- sustain use of what is left by:
 - preserving the vulnerable and threatened species;
 - increasing use of abundant minor species
 - efficient processing and utilization of available timbers



PROTA TIMBERS PROJECT offers interventions needed in the timber industry.....

- Bring the world literature on 1000 Tropical African Timber Species into public domain .
- Contribute to awareness creation and sustained use of the timber.
- Protect traditional knowledge and intellectual property rights.
- Identified research needs, knowledge gaps to enhance their efficient processing and utilization.
- Identify candidate technologies for use by especially rural stakeholders to reduce poverty.
- Identify species conservation status and implement appropriate policy.



PROTA Timbers Outputs

- A review articles on about 1100 tropical African timber species in english and french .
- Published on Internet, in books and on CDROM.
- Books: 2 volumes: 7(1) and 7(2), with about 500 and 600 species, respectively.
- Each volume describes more important ‘major’ as well as currently less important ‘minor’ timbers.



PROTA Timbers

	Major (contracted out)	Minor (internal authors)	Total
PROTA 7(1)	120	380	500
PROTA 7(2)	100	500	600
Total	220	880	1100



PROTA 7(1)



- Funded by International Tropical Timber Organization (ITTO), PROTA and Dutch Government (DGIS).
- Started in 2006 to be completed in 2008.
- Editorial team: A. A. Oteng-Amoako (Editor), D. Louppe (Editor), M. Brink (Coordinator), R.H.M.J. Lemmens (General Editor), L.P.A. Oyen (General Editor), J.R. Cobbinah (General Editor).
- English articles and French translations are published in the Webdatabase, books and CD-ROM.



PROTA 7(1)

Editors' Meeting 29–30 November 2005

ushered in the project:

- selection of the species to be treated;
- provisional list of authors;
- discussion of the format of the articles, especially with respect to anatomy and technological properties;
- planning of workshop in wood anatomy.



PROTA 7(1) Editors' Meeting



PROTA 7(1)

Treats the most important timber producing families, including:

- **Meliaceae**, e.g. sapelli (*Entandrophragma cylindricum*);
- **Mimosaceae**, e.g. okan (*Cylicodiscus gabunensis*);
- **Moraceae**, e.g. iroko (*Milicia* spp.);
- **Papilionaceae**, e.g. African blackwood (*Dalbergia melanoxylon*), wenge (*Millettia laurentii*);
- **Sterculiaceae**, e.g. African whitewood (*Triplochiton scleroxylon*);
- **Verbenaceae**, e.g. teak (*Tectona grandis*).



Review articles

Includes information on:

- distribution;
- ethno-botanical and commercial uses;
- production and export volumes;
- botany and taxonomy;
- wood anatomy;
- technological properties;
- ecology;
- propagation and management;
- genetic variability and conservation status.



Olivier Monteuis

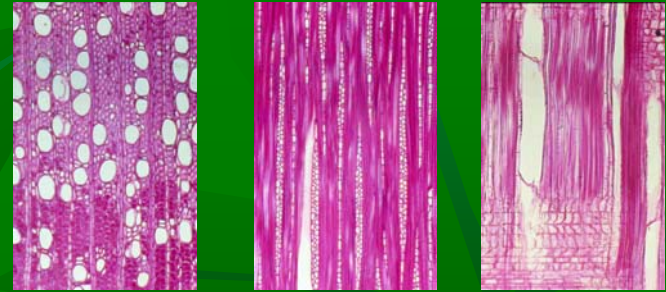
PROTA Timbers

put special emphasis on:



- Wood anatomy
- Wood properties

Anatomy



- Wood anatomy:
 - highly important for the identification of species.
 - key indicator of wood quality and therefore important for effective wood utilization;
- Adequate anatomical data not available for many African timbers.
- In framework of PROTA 7(1) a **Wood Anatomy Workshop** was organized to train young African scientists in wood anatomy and to compile data on the wood anatomical properties of African timbers.

PROTA Wood Anatomy Workshop

- CIRAD Forêt, Montpellier, France, 15-25 May 2007
- Instructors: 6 eminent wood anatomists from Belgium, Britain, France, Ghana, Netherlands and United States.
- Results:
 - compilation of anatomical data on nearly 200 African species;
 - boosted capacity of 7 African scientists (from Ghana, Tanzania, Gabon, Zambia, Uganda, Senegal and Mozambique) in wood anatomy.
- Possible Ph. D. wood anatomy training for the trainee from Ghana!!



PROTA Wood Anatomy Workshop



PROTA

What Properties



- **Wood appearance:** e.g. width and colour of heartwood and sapwood, grain, texture, lustre.
- **Physical properties:** e.g. density, seasoning and kiln-drying, rates of shrinkage, movement in service.
- **Mechanical properties:** e.g. modulus of rupture, modulus of elasticity, compression parallel to grain, shear, cleavage, hardness.
- **Working properties:** e.g. workability (sawing, planing, nailing, blunting, gluing, steam bending; polishing/varnishing, painting, sanding), stability.
- **Durability:** durability, permeability and treatability with preservatives.
- **Other miscellaneous properties.**



Properties (*Acacia galpinii*)

- **Appearance:** The heartwood is reddish brown to dark brown and distinctly demarcated from the creamy sapwood. The grain is often irregular, texture moderately coarse. The density of the wood is about 800 kg/m³ at 11% moisture content. Shrinkage during drying is medium.
- **Physical:** At 11% moisture content, the modulus of rupture is 112 N/mm², modulus of elasticity 13,140 N/mm², compression parallel to grain 61 N/mm², shear 15.9 N/mm², Janka side hardness 9070 N and Janka end hardness 10,100 N.
- **Mechanical:** Although the wood is tough and resilient, it works well with sharp tools, but sawing requires considerable strength. A good finish can be obtained with waxes and oil.
- **Durability:** The wood has good natural durability, being fairly resistant to decay and termite attack, but the sapwood is susceptible to attack by *Lyctus* borers and blue stain fungi.
- **Miscellaneous:** The wood is almost free of tannins, but contains a range of flavonoids and melacacidin. A number of proteracacinidins (proanthocyanidins) have been isolated from the heartwood.



PROTA 7(1)



What has been done:

- about 33,000 international and nearly 1000 grey literature references on timbers have been compiled;
- about 180 review articles, treating 330 species, have been written, edited and translated into French;
- about 100 of these are already available in the PROTA webdatabase (www.prota.org).





Protabase Record display

www.prota.org

- ▶ [PROTA homepage](#)
- ▶ [questionner Protabase \(version française\)](#)

Acacia galpinii Burt Davy

Protologue

Bull. Misc. Inform. Kew 1922(10): 326 (1922).

Family

Mimosaceae (Leguminosae - Mimosoideae)

Chromosome number

$2n = 40$

Vernacular names

Monkey thorn (En).

Origin and geographic distribution

Acacia galpinii occurs in Tanzania, Malawi, Zambia, Botswana, Zimbabwe, Mozambique and northern South Africa.

Experimental plantations exist in Madagascar.

Uses

The wood is used for interior and exterior joinery, fences, wagons, railway sleepers and as mining timber. It is suitable for flooring, shipbuilding, sporting goods and implements. *Acacia galpinii* is occasionally planted as ornamental or roadside tree.

Production and international trade

The wood is only used locally and not traded on the international market.

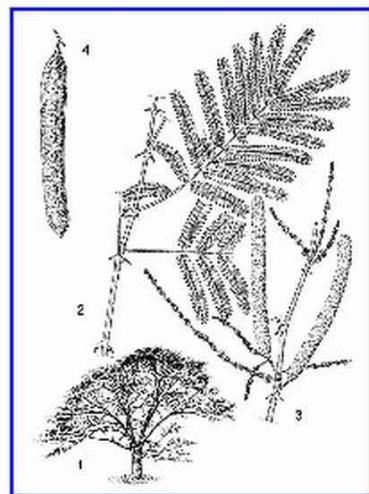
Properties

The heartwood is reddish brown to dark brown and distinctly demarcated from the creamy sapwood. The grain is often irregular, texture moderately coarse. The density of the wood is about 800 kg/m^3 at 11% moisture content. Shrinkage during drying is medium. At 11% moisture content, the modulus of rupture is 112 N/mm^2 , modulus of elasticity $13,140 \text{ N/mm}^2$, compression parallel to grain 61 N/mm^2 , shear 15.9 N/mm^2 , Janka side hardness 9070 N and Janka end hardness $10,100 \text{ N}$. Although the wood is tough and resilient, it works well with sharp tools, but sawing requires considerable strength. A good finish can be obtained with waxes and oil. The wood has good natural durability, being fairly resistant to decay and termite attack, but the sapwood is susceptible to attack by *Lyctus* borers and blue stain fungi. The wood is almost free of tannins, but contains a range of flavonoids and melacacidin. A number of proteracacinidins (proanthocyanidins) have been isolated from the heartwood.

Description



wild



1, tree habit; 2, leafy twig; 3,

PROTA 7(1)

What is to be done:

- compilation and editorial review to be completed by mid 2008;
- production of books and CD-ROM by September/October 2008;
- special products with conclusions and recommendations: December 2008;
- Project completed: 31 December 2008.



What about PROTA 7(2)



Project proposal for PROTA 7(2) to be submitted to ITTO is far advanced.

It is hoped that 2009 will see the start of PROTA 7(2) which is expected to be completed by the end of 2011.



Thank You
Danke schon
Merci

