

Guyana Forestry Commission

Guyana Woods



21






















Species

**Revised
September 2004**







CONTENTS

List of hardwood species in this book.....	3
Introduction	4
Overview of the forestry sector.....	5
Species.....	7-33
References.....	34
Appendix 1-Practical uses of Guyana's hardwoods.....	35
Appendix 2- Dimensions of Wallaba poles (imperial).....	36
Appendix 3- Estimated average weights of Wallaba poles.....	37
Appendix 4-Metric conversions.....	38

List of hard wood species found in this booklet

	GREENHEART	: (<i>Chlorocardium rodiei</i>).....	7
	PURPLEHEART	: (<i>Peltogyne spp.</i>).....	8
	KABUKALLI	: (<i>Goupia glabra</i>).....	9
	MANNI	: (<i>Symphonia globulifera</i>).....	10
	MORA	: (<i>Mora excelsa</i>).....	11
	SHIBADAN	: (<i>Aspidosperma album</i>).....	12
	CRABWOOD	: (<i>Carapa spp.</i>).....	13
	KUROKAI	: (<i>Protium decandrum</i>).....	14
	AROMATA	: (<i>Clathrotropis spp.</i>).....	15
	TATABU	: (<i>Diploptropis purpurea</i>).....	16
	LOCUST	: (<i>Hymenaea courbaril</i>).....	17
	SIMARUPA	: (<i>Quassia simarouba</i>).....	18
	TAURONIRO	: (<i>Humiria balsamifera var balsamifera</i>).....	19
	WAMARA	: (<i>Swartzia leiocalycina</i>).....	20
	DETERMA	: (<i>Sextonia rubra</i>).....	21
	HUBUBALLI	: (<i>Loxopterygium sagotii</i>).....	22
	RED CEDAR	: (<i>Cedrela odorata</i>).....	23
	SILVERBALLI (GROUP)	: (<i>Ocotea, Licaria, Aniba</i>).....	24
	SOFT WALLABA	: (<i>Eperua falcata</i>).....	25
	BAROMALLI	: (<i>Catostemma spp.</i>)	26
	DUKALI	: (<i>Parahancornia fasciculata</i>)	27

Lesser Used Species

	BLACK KAKARALLI	: (<i>Eschweilera spp.</i>).....	28
	LIMONABALLI	: (<i>Chrysophyllum pomiferum</i>).....	29
	HURUASA	: (<i>Abarema jupunba</i>).....	30
	KAUTABALLI	: (<i>Licania spp.</i>)	31
	SUYA	: (<i>Pouteria speciosa</i>).....	32
	SAREBEBEBALLI	: (<i>Vouacapoua macropetala</i>).....	33

INTRODUCTION

This booklet is an introduction to the commercial and potential commercial timber species of Guyana. It includes a selection of species but is by no means a complete list of the many woods that may offer commercial possibilities in the future. The technical information is sufficient to provide only a general sense of the nature and uses of particular species. The primary aim is to utilise more of the many species growing in Guyana's forest. This book also contains information about six additional species of which utilization is currently being encouraged and these species are known as "**Lesser Used Species**".

This publication has been compiled from listed data on Guyanese timbers by various international research groups. It brings together concise technical particulars pertaining to twenty-one (21) tropical hardwood timbers of Guyana, and shows each species':

- a) trade, botanical and other names
- b) wood description
- c) physical and mechanical properties
- d) physical and end use
- e) availability for export

Additional information is provided on six (6) 'Lesser Used Species' which the Guyana Forestry Commission is currently promoting.

The species included in this booklet are readily available for export. It is our hope that they will become just as popular as Greenheart, Purpleheart and Wallaba in the world timber markets.

OVERVIEW OF THE FORESTRY SECTOR

THE FOREST RESOURCES

The forest of Guyana covers some 16.45 million hectares or 76.6% of the total land area. Of this area only about half (8.7 million hectares) is considered accessible for economic exploitation. This forest is generally considered tropical moist evergreen rainforest, though represented by various forest types.

The permanent State Forest Estate, which covers some 13.58 million hectares, is administered by the Guyana Forestry Commission. The remaining forest areas are either Private Property, Community Titled Area or State Lands administered by the Guyana Lands and Surveys Commission.

The forests are heterogeneous in nature. About 70 species of timber are regularly extracted with another forty (40) species being extracted in more irregular manner.

The forestland is dissected by many large rivers that provide a means of transporting forest produce to the processing centers. Some of these rivers, however, are very difficult to navigate due to masses of rock outcrops in their channels and periodic low water patterns.

ADMINISTRATION OF FOREST AREAS

Forests are allocated to loggers under a three-tiered system. Firstly, there is the State Forest Permission (SFP), which is granted for small, short-term operations (two years) and where no heavy investment is required. The SFP does not give exclusive rights to the area it covers. Holders of State Forest Permissions generally concentrate on the production of fuelwood (charcoal and firewood), posts and timber. Where the area exceeds 400 hectares, an acreage fee is payable.

Secondly, there is the Wood Cutting Lease (WCL) which grants rights to extract timber and other forest produce for periods between 3-8 years. Simple forms of Management Plans are required and a stipulated minimum royalty level is a vital obligation under this system. The areas granted are much larger than those under the State Forest Permission.

Thirdly, there is the Timber Sales Agreement (TSA), which is considered the major wood cutting license currently being granted to large operators. This level of operation requires large investment and sufficiently large areas (over 25,000 ha) to amortize the investments. These licenses (agreements) grant harvesting rights to the grantee for the period of 15-25 years. Under this system, it is essential that a detailed forest inventory and Management Plan be prepared and submitted to the Guyana Forestry Commission for approval.

To date, approximately six (6) million hectares of accessible forest have been allocated, of which about 3.7 million hectares are under TSAs.

In Guyana emphasis is placed on formulation and implementation of Forest Management Plans not only for exploitation, but to apply appropriate systems to ensure forest conservation, forest protection, forest for multiple benefits and long-term sustained supplies of wood for industrial and energy needs.

WOOD PROCESSING OPERATIONS

Supporting the 305 registered loggers are 48 sawmilling firms (GFC 2004 data), many of which are also engaged in logging. These sawmills have an installed capacity of approximately 310,000m³.

The secondary and tertiary operations comprise of one plywood plant (with an annual production of about 100,000m³ of standard plywood sheets), one Manicole (Heart of Palm) factory, two hundred and twenty (220) large-to-medium sized furniture factories, and a multiplicity of small workshops engaged in the production of case furniture, turnery products and other wooden artifacts.

EXPORTS

There are approximately ten producers with the capacity to supply large volumes of forest products. Exporters are free to secure and produce their own orders. The Guyana Forestry Commission monitors to ensure conformity to fair prices as compared with the international market. The terms of contracts negotiated must be made known to the Guyana Forestry Commission. All timber destined for the export market must be graded by a Certified Timber Grader and inspected by an officer of the Commission acting in the capacity of Grading Inspector.

A number of other individuals are allowed to export. They concentrate mainly on small items such as furniture pieces, turnery and other profiled goods, which are sent mainly to the Caribbean.

Our forest products are traded in several areas of the world, but mainly to the Caribbean, North America and Europe (United Kingdom, Holland, Portugal, Italy, West Germany). Shipments have also been made to some Asian countries (India, Thailand, Malaysia, China, Japan) and Iraq.

TIMBER PRODUCTS CURRENTLY EXPORTED

The following products are available for export by producers:

- Logs
- Sawn and Dressed Timber
- Hewn Squares (mainly Greenheart)
- Piling (Greenheart, Kakaralli)
- Poles and Posts (Wallaba)
- Shingles (Wallaba)
- Railway Sleepers
- Charcoal
- Plywood and Veneer
- Furniture
- Non-Timber Forest Products

MARKETING OBJECTIVES OF THE GUYANA FORESTRY COMMISSION

The Guyana Forestry Commission aims to:

- Monitor the marketing and export of timber and forest products
- Maintain quality standards of Guyana's timber exports
- Assist in the development of Guyana's timber industry
- Co-ordinate the international promotion of Guyana's tropical hardwood timber species
- Make information on production and export available to the public

TIMBERS OF GUYANA

GREENHEART

Scientific name: *Chlorocardium rodiei*

Family: Lauraceae

Standard name: Greenheart

Other name: Sipiri

Wood Appearance

Light greenish to dark olive-green, sometimes marked with brown or black stakes. Sapwood is pale yellow in colour, shading gradually into heartwood. The texture is fine and even and grain straight or interlocked. The bole is 15-23m in length with a diameter of 35-60 cm.

Physical and Mechanical Properties

Has exceptionally high strength properties even when its weight is taken into account:

- Air dried density (12%) - 970 kg/m³
- Bending strength (at 12%) - 240 N/mm²
- Modulus of elasticity (at 12%) - 24500 N/mm²
- Compression parallel to grain - 89.9 N/mm²
- Crushing strength (at 12%) - 98 N/mm²

Natural durability

Almost immune to decay and termites, highly resistant to marine organisms and fire. Extremely resistant to preservative treatment.

Timber Processing

Drying - Dries very slowly with minor degrade, particularly in the thicker sizes. Distortion is not serious, but checking and splitting may occur. Kiln schedule B.

Working - Power required with blunting effect being moderate to high. Turns well. Planing is not difficult despite the high density of the wood and interlocked grain.

Assembly - Easy gluing. Pre-boring is recommended for nails and screws. Good nail holding.

Finishing - Staining rarely necessary. Polishes satisfactorily.

Uses

A very heavy, hard timber, suitable for use under exacting conditions. Outstanding in most of its strength properties and of very high durability with excellent resistant to attack by marine borers.

Available in very large sizes and long length, and is suitable for piling, piers, lock gates, dock and harbor works. Useful for pier decking and hand rails, flooring and in the engineering industry as bearers for engines. Gives good service in chemical plants for vats, filter press plates and frames. Suitable for joinery in both exterior and interior situations, and used also for fishing rods and as centre laminar for longbows and general construction.

Supplies

Found in commercial quantities only in Guyana's forest.

● PURPLEHEART

Scientific name:	<i>Peltogyne spp.</i>
Family:	Caesalpinaceae (Leguminosae)
Standard name:	Amarante
Other names:	Amaranth Nazareno, Pau Roxo, Bois Violet, Barabu

Wood Appearance

Dull brown when freshly cut and rapidly oxidizes to violet-purple on exposure to light, gradually toning down in course of time to dark purplish-brown. The sapwood is whitish or cream coloured and grain is generally straight, sometimes wavy or interlocked. The texture is moderate to fine. The bole is 15-27m in length, cylindrical; diameter 45-90 (-150) cm.

Physical and Mechanical Properties

Wood is very tough, strong and resilient:

- Air dried density (12%) - 840 kg/m³
- Bending strength (at 12%) - 155 N/mm²
- Modulus of elasticity (at 12%) - 16860 N/mm²
- Compression parallel to grain - 78.5 N/mm²
- Crushing strength (at 12%) - 79 N/mm²
- Shock resistance- medium.

Natural Durability

Highly resistant to decay, termites and fire. The heartwood is very durable and extremely resistant to preservatives while the sapwood is permeable.

Timber Processing

Drying - Dries well and fairly rapidly with little degrade. Kiln Schedule E.

Working - Moderately difficult to work. There is a moderate blunting effect when sawing. Planes and turns well, finishes smoothly and takes a high polish.

Assembly - It takes glue well and holds nails and screws satisfactorily.

Finishing - Gives good results when lacquered or polished.

Uses

Possesses high strength and very good durability. It is an excellent structural timber suitable for heavy outdoor construction work such as bridges, docks work and park benches. As flooring, it has high wearing qualities and is suitable for most conditions of traffic. Has been used successfully in chemical plants for vats, filter press plates and frames. Also used for making billiard cue butts, tool handles, interior and exterior joinery and ship-building. A valuable wood for its attractive appearance and its strength.

Supplies

Regular average supplies are available.

● KABUKALLI

Scientific name:	<i>Goupia glabra</i>
Family:	Celastraceae
Standard name:	Goupi
Other names:	Cupluba, Kopi, Goupie, Copiura

Wood Appearance

The heartwood is light reddish-brown and of plain appearance, darkening on exposure. The sapwood is a distinct thick brownish or pinkish colour, and sharply demarcated. Grain is straight, sometimes interlocked and texture is medium to coarse and rather harsh. The freshly cut timber has an unpleasant scent which is lost on drying. The bole, cylindrical, is 14-21m in length with a diameter of 60-100(-150) cm.

Physical and Mechanical Properties

This is a tough, hard wood with satisfactory mechanical strength (stronger than European oak) and medium and dimensional stability.

- Air dried density (12%) - 840 kg/m³
- Bending strength (at 12%) - 122 N/mm²
- Modulus of elasticity (at 12%) - 14700 N/mm²
- Crushing strength (at 12%) - 62 N/mm²

Natural Durability

Good durability. Withstands both insect and fungal attack, even under unfavourable conditions of use.

Timber Processing

Drying - Generally drying is slow and difficult with high risk of distortion and checking. Kiln Schedule F.

Working - Generally easy to saw. Has a moderate blunting effect on cutting edges owing to wild grain. Care is required in machining and in planning to prevent tearing on quarter-sewn surfaces. In moulding there is a tendency for arises to chip.

Assembly - Does not glue well and tends to split when nailed. Pre-boring is necessary.

Finishing - Works easily to finish smoothly. Stains and polishes satisfactorily when filled.

Uses

Kabukalli is essentially an excellent general heavy and durable construction timber suitable for railway sleepers, paving blocks, furniture and decorative veneer, panelling, foundations, framing members, ship-building and flooring.

Supplies

Available in large quantities in Guyana. Supplies adequate to meet all likely requirements.

● MANNI

Scientific name:	<i>Symphonia globulifera</i>
Family:	Clusiaceae (former Guttiferae)
Standard name:	Manni
Other names:	Matakki, Yellow Mangua, Boardwood, Paletuvier Jaune, Vanani, Anani, Ossol, Waika Chewsticks

Wood Appearance

The heartwood is pale yellowish-brown and generally of plain appearance. Sapwood is paler in colour, about 4-5 cm wide and sharply defined from heartwood. Grains are straight or slightly interlocked and texture is rather coarse. The bole is 21-24m in length with diameter 30-55 (-120) cm.

Physical Mechanical Properties

A moderately hard and tough timber. Manni is strong for its weight and its strength properties is superior to the heavier White Oak and European Beech timber species. Manni is also similar in all respects to the heavier species Manniballi (*Moronobea coccinea*).

- Air dried density (12%) - 720kg/m³
- Bending strength (at 12%) - 113 N/mm²
- Modulus of elasticity (at 12%) - 12630 N/mm²
- Crushing strength (at 12%) - 58 N/mm²

Natural Durability

Resistant to decay and the heartwood is durable while the sapwood is prone to attack by powder-post beetles. Manni has good weathering characteristics.

Timber Processing

Drying - Should be dried slowly. There is high risk of distortion and checking. Movement is large. Kiln Schedule C.

Working - Saws, planes and turns easily; the surface may tend to roughen in planing and shaping, especially on irregular grain.

Assembly - Holds nails and screws well with some tendency to split. Glues satisfactorily.

Finishing - Polishes and takes stain well; paints and varnishes satisfactorily.

Uses

The timber is used for general construction, carpentry, housing construction i.e. farming members, exterior and interior work, flooring, furniture and cabinetwork. Packing cases, barrel staves and railway sleepers.

Supplies

Occurs frequently in the Guyana's forest. Regular supplies available in commercial quantities.

● MORA

Scientific name:	<i>Mora excelsa</i>
Family:	Caesalpinaceae
Standard name:	Mora
Other names:	Pato, Pracuuba

Wood Appearance

Mora (and Morabukea which is similar in structure) heartwood varies from chocolate-brown to reddish-brown. Sapwood is wide with yellowish to pale brown colour. The grain is straight and often interlocked and somewhat wavy or irregular. The texture is coarse and bole 15-24m in length, rounded or flattened. The diameter is 60-90 (-120) cm.

Physical and Mechanical Properties

A very heavy, hard wood. Outstanding strength properties:

- Air dried density (12%) - 990kg/m³
- Bending strength (at 12%) - 149 N/mm²
- Modulus of elasticity (at 12%) - 21020 N/mm²
- Crushing strength (at 12%) - 81 N/mm²

Natural Durability

The heartwood is durable and extremely resistant to preservatives. Mora is markedly fire resistant.

Timber Processing

Drying – Difficult i.e. it must be carried out carefully because of processing risk of distortion and checking. Kiln Schedule B.

Working - Difficult to saw, because of its density and interlocked grain. Blunting effect is moderate to high. With the same qualification, it can be planed, finishes smoothly, turns easily, splits with great difficulty.

Assembly - Difficult to nail but holds nails and rail spikes well. Pre-boring is necessary.

Finishing – Stains and polishes satisfactorily.

Uses

Best suited for heavy construction work, jetties and foreshore work. Particularly suitable for sleepers, wagon bottoms, and for both traditional and mosaic flooring and ship-building.

Supplies

Very common in Guyana. Abundant and regular supplies assured.

● SHIBADAN

Scientific name:	<i>Aspidosperma album</i>
Family:	Apocynaceae
Standard name:	Bois Macaque
Other names:	Red Peroba, Peroba Rosa, Kromanti Kipi

Wood Appearance

The wood is tan to rose-red, often streaked with purple or brown and becoming brownish-yellow to medium brown on exposure. The sapwood is yellowish, paler than the heartwood but not sharply demarcated. The grain is straight to irregular and the texture fine and uniform. The length of the bole is 18-21m and diameter, 50-80 cm.

Physical and Mechanical Properties

A hard and strong timber. Bending strength medium and crushing strength high:

- Air dried density (12%) - 910kg/m³
- Bending strength (at 12%) - 176 N/mm²
- Modulus of elasticity (at 12%) - 19560 N/mm²
- Crushing strength (at 12%) - 93 N/mm²

Natural Durability

The heartwood is durable and extremely resistant to preservative treatment. The sapwood is permeable.

Timber Processing

Drying - Dries without difficulty. Kiln Schedule E.

Working - Easy to work and finishes well.

Assembly - Gluing easy but hard to nail.

Finishing - Takes staining and polishing satisfactorily.

Uses

A good general all purpose wood suitable for construction works requiring strength and durability, and could also be useful for exterior joinery. Also suitable for panelling, turnery and furniture manufacture.

Supplies

Occurs frequently in Guyana's forest. Regular supplies are available.

● CRABWOOD

Scientific name:	<i>Carapa guianensis</i>
Family:	Meliaceae
Standard name:	Andiroba
Other names :	Krapa, Guino, Figueroa, Tangare, Carapa, Crappo

Wood Appearance

The heartwood varies from pale pink to rich red-brown when freshly sawn, darkening to a uniform dull reddish-brown. The sapwood is pale brown or oatmeal coloured, not always sharply defined. Wood resembles a plain mahogany in appearance but lacks its natural luster. The texture is medium to coarse; grain is generally straight but sometimes interlocked. The bole is 15-20m in length with a diameter of 65-95(-180) cm.

Physical and Mechanical Properties

Comparable in strength to European Beech. Small movement. Moderately hard with good mechanical properties and is fairly stable in use.

- Air dried density (12%) - 670kg/m³
- Bending strength (at 12%) - 111 N/mm²
- Modulus of elasticity (at 12%) - 11800 N/mm²
- Crushing strength (at 12%) - 59 N/mm²

Natural Durability

Heartwood is moderately durable and fire resistant. Logs prone to attack by ambrosia (pinhole-borer) beetles.

Timber Processing

Drying - Dries fairly well but rather slowly with a slight tendency to split in the initial stages. Kiln Schedule C.

Working - Saws without difficulty. Interlocked grain makes planing difficult. Works easily and turns well, finishing smoothly.

Assembly - Glues and holds nails well. Tendency to split on nailing.

Finishing - Takes stain and polish well.

Uses

Suitable for general carpentry, furniture, cabinet work, turnery and interior joinery.

Supplies

Occurs in reasonable quantities in Guyana. Regular supplies possible.

● KUROKAI

Scientific name:	<i>Protium decandrum</i>
Family:	Burseraceae
Standard name:	Kurokai
Other names:	Gommier Rouge, Sali, Tingimoni, Encens Gris

Wood Appearance

The sapwood is hardly differentiated from heartwood; the wood is red or pink-brown, changing to brown upon exposure. The luster is medium to high. The texture is rather fine and even and grain straight or shallowly interlocked. The wood secretes a fragrant resin. The bole reaches 18m in length with a diameter of 35-70(-100) cm.

Physical and Mechanical Properties

Medium movement. Strength comparable to European Beech.

- Air dried density (12%) - 640kg/m³
- Bending strength (at 12%) - 110 N/mm²
- Modulus of elasticity (at 12%) - 12890 N/mm²
- Crushing strength (at 12%) - 61 N/mm²

Natural Durability

Kurokai is little or non-resistant to insects and decay and can be impregnated.

Timber Processing

Drying – Difficult but dries fairly rapidly. Kiln Schedule C.

Working - Sawing of wood has a moderate blunting effect on cutting edges because of resin content.

Assembly - Difficult to nail and screw and tends to split. Its reaction to glue varies.

Finishing - Little filling is required and polishes well.

Uses

Suitable for general carpentry, boxes, crates, window sills and panes, millwork, interior work, furniture and cabinet making, plywood manufacturing and utility veneer.

Supplies

Available in quantity, but not in large dimensions.

● AROMATA

Scientific name:	<i>Clathrotropis spp.</i>
Family:	Papilionaceae
Standard name:	Aromata
Other name:	Acapu do jagapo

Wood Appearance

The wood is pinkish-brown to dark brown with lighter streaks. It has a waxy feel and the wood is well defined. The texture is moderately coarse and the grain straight. The bole is 12-15m in length (flattened) with a diameter of 40-50(-60) cm.

Physical and Mechanical Properties

Aromata is very hard, tough and strong. Moderate movement. Satisfactory mechanical strength:

- Air dried density (12%) - 960kg/m³
- Bending strength (at 12%) - 153 N/mm²
- Modulus of elasticity (at 12%) - 24120 N/mm²
- Crushing strength (at 12%) - 96 N/mm²

Natural Durability

Good. Resistant to insect attack and moderately durable under unfavorable conditions. As a rule it is not necessary to preservative treat for general use.

Timber Drying

Drying - Dries easily with little degrade but flat-sawn timber has a tendency to shell out.

Working - Power is required to saw and machining is difficult. Takes a fine finish and the wood is very smooth to touch.

Assembly - Easy to glue.

Finishing - Polishes, varnishes and paints without difficulty.

Uses

Suitable for flooring, interior and exterior joinery. Can also be used for cabinetwork and furniture making. It has adequate properties for use as railway sleepers and flooring.

Supplies

Species fairly common in Guyana. Adequate supplies to meet regular demand.

● TATABU

Scientific name:	<i>Diploporis purpurea</i>
Family:	Papilionaceae
Standard name:	Sucupira
Other names:	Sucupira, Alcoruoque, Zwarte Kabbes

Wood Appearance

The heartwood is dark chocolate-brown in colour with conspicuous paler markings, giving a decorative appearance which may be enhanced on quartered surface by a stripe figure. The sapwood is whitish, sharply demarcated from the heartwood. Grain is interlocked, sometimes irregular and the texture is moderately coarse. The bole is 18-21m in length and diameter 40-60(-100) cm.

Physical and Mechanical Properties

A heavy, strong, durable wood possessing high strength properties. Medium shrinkage, relatively stable once dry.

- Air dried density (12%) - 910kg/m³
- Bending strength (at 12%) - 156 N/mm²
- Modulus of elasticity (at 12%) - 18000 N/mm²
- Crushing strength (at 12%) - 88 N/mm²

Natural Durability

Very resistant to decay even under exacting conditions of use. Highly resistant to fungi and termite attacks.

Timber Processing

Drying - Dries readily but slowly, without distortion or checking.

Working - Difficult to work due of its high density and interlocked and irregular grain, but can be finished to a smooth surface. Turns well.

Assembly - Glues well and holds nails and screws hold well.

Finishing - Polishes satisfactorily after filling.

Uses

Has a decorative appearance and is of interest for turned work and as a veneer for inlays in high grade furniture. Suitable for exterior and interior joinery, turnery, paneling and tool handles. A very useful timber with many applications.

Supplies

Occurs widely but not abundantly in the Guyana forests. Regular supplies in modest quantities are available.

● LOCUST

Scientific name:	<i>Hymenaea courbaril</i>
Family:	Caesalpinaceae
Standard name:	Courbaril
Other names:	Copalier, Algarrob, Gaupinal, Jatoba

Wood Appearance

The heartwood is light brown to brown often with dark streaks and a subdued golden glow. The sapwood of whitish grey colour is sharply defined. Texture is medium to coarse with straight grain straight. There is medium luster and distinct uniform vessel lines. The bole is 18-25m in length, with diameter 50-120(-150) cm.

Physical and Mechanical Properties

Very hard and strong. Moderate shrinkage, relatively stable once dry. Good mechanical properties, especially elasticity:

- Air dried density (12%) - 880kg/m³
- Bending strength (at 12%) - 172N/mm²
- Modulus of elasticity (at 12%) - 18500 N/mm²
- Crushing strength (at 12%) - 84 N/mm²

Natural Durability

Very resistant to decay.

Timber Processing

Drying - Dries readily with slight risk of distortion or checking.

Working - Moderately difficult to work but finishes smoothly. Planes and turns without difficulty. Good bending to steaming process.

Assembly - Glues well, but difficult to nail. Fastenings are held well.

Finishing - Finishes smoothly and polishes and varnishes without difficulty.

Uses

A wood of decorative appearance suitable for use in the manufacture of high grade furniture, cabinet work, decorative joinery and veneer. Also used for shipbuilding, general construction, and the making of tool handles and croquet mallets.

Supplies

Occurs widely but not abundantly in the Guyana forests. Regular supplies in modest quantities are available.

● SIMARUPA

Scientific name:	<i>Quassia simarouba</i> (formerly <i>Simaruba amara</i>)
Family:	Simarubaceae
Standard name:	Marupa
Other names:	Aceituno, Acajou Blanc, Scemardepa, Bitterwood

Wood Appearance

The heartwood is whitish but not differentiated from the whitish or straw coloured sapwood. Wood has a slightly bitter taste, but is odourless. The grain is straight, texture is medium, uniform and lustrous. The bole is 15-30m in length with a diameter of 40-60cm.

Physical and Mechanical Properties

A very light, soft timber. In several respects very similar to Obeche (*Triplochiton scleroxylon*). The movement is small. It is low in bending strength, stiffness, crushing strength and shock resistance.

- Air dried density (12%) - 410kg/m³
- Bending strength (at 12%) - 66 N/mm²
- Modulus of elasticity (at 12%) - 8100 N/mm²
- Crushing strength (at 12%) - 34 N/mm²

Natural Durability

Timber of low durability, blue stains easily. Green converted timber can easily be treated by short dipping and diffusion.

Timber Processing

Drying - Dries very rapidly and very well but prone to blue stain. Kiln Schedule L.

Working - Easy to work with both manual and machine tools.

Assembly - Can be easily nailed with medium to good holding qualities.

Finishing - Easy to paint, stain and varnish.

Uses

Suitable for use where a light, easily worked hardwood is required and where its lack of durability and low strength are not important. Examples are in furniture for interior use, drawer slides, and some types of cabinet framing, interior joinery and shoe heels. Excellent qualities for model-making, utility wood ware and toy manufacture. Simarupa peels well and makes attractive plywood.

Supplies

Adequate supplies available in commercial quantities.

● TAURONIRO

Scientific name:	<i>Humiria balsamifera</i> var <i>balsamifera</i>
Family:	Humiriaceae
Standard name:	Umiri
Other names:	Bastran Bolletrie, Oloroso, Chanul, Tabaniro

Wood Appearance

Heartwood varies from fawn colour to reddish-brown. Sapwood is not well defined. There is lustre and texture is medium to fine. The grain is straight and often interlocked. The bole is cylindrical, 18-20m in length, 50-90(-120) cm in diameter.

Physical and Mechanical Properties

Very hard, strong dense and highly durable wood. Weighs approximately 900 kg/m³ (56/ft³) seasoned. Medium shrinkage, very stable once dry. Very good mechanical properties, good elasticity and impact resistance:

- Air dried density (12%) - 950kg/m³
- Bending strength (at 12%) - 168 N/mm²
- Modulus of elasticity (at 12%) - 18800 N/mm²
- Crushing strength (at 12%) - 86 N/mm²

Natural Durability

Highly durable. Resistant to fungal attack even under unfavorable conditions of use. Good resistance to termite attack

Timber Processing

Drying - Moderate rate recommended since risk of distortion is high.

Working - Power is required in sawing and machining. Blunting effect on saw is moderate. Prone to chipped grain when grain is highly interlocked. Finishes smoothly even on the end-grain when grain is straight.

Assembly - Glues well, nails and screws hold well.

Finishing - Varnishes and polishes without trouble.

Uses

Suitable for general house construction, panelling and flooring. Its attractive appearance makes it suitable for furniture and decorative purposes. It can also be used for wheelwright work, counters and work bench tops.

Supplies

Species abundant in Guyana. Adequate supplies to meet any regular demand.

● WAMARA

Scientific name:	<i>Swartzia leiocalycina</i>
Family:	Caesalpiniaceae
Standard name:	Wamara
Other names:	Montouchi, Panacoco, Saboarana, Brown Ebony

Wood Appearance

The heartwood is chocolate to purplish-brown with darker purple streaks, giving the wood an attractive appearance. The sapwood is pale in colour and sharply demarcated from heartwood; sapwood and heartwood are often used in furniture to give two toned effect. The grain is straight sometimes irregular and texture fine. The bole is 18-21m in length with a diameter of 40-75cm.

Physical and Mechanical Properties

A very hard, very heavy wood with medium movement. Excellent mechanical strength:

- Air dried density (12%) - 1060kg/m³
- Bending strength (at 12%) - 213 N/mm²
- Modulus of elasticity (at 12%) - 23630 N/mm²
- Crushing strength (at 12%) - 110N/mm²

Natural Durability

The heartwood is durable and extremely resistant to insects, decay and preservatives but not to marine borers. The sapwood is permeable.

Timber Processing

Drying - Dries slowly with appreciable surface checking. Kiln Schedule B.

Working - Difficult to work owing to hardness and interlocked grain. Easy to scrape and sand and gives a fine finish. There is a tendency for end splitting but distortion is not serious. Blunting effect is moderate to high. Suitable for bends of moderate radius of curvature if well supported with a metal strap.

Assembly - Difficult to nail and screw and tends to split, but fastenings are held well. Pre-boring is necessary.

Finishing - Finishes smoothly and polishes well. Stains will not penetrate the timber.

Uses

Suitable for interior decorative work and fittings. Can be used for cabinetwork, furniture making, flooring and panelling. Very suitable for inlay work and turnery.

Supplies

Occurs frequently in Guyana's forests. Reasonable supplies are available.

● DETERMA

Scientific name:	<i>Sextonia rubra</i>
Family:	Lauraceae
Standard name:	Louro Vermelho
Other names:	Wana, Grignon Franc, Red Louro

Wood Appearance

It is pale reddish-brown with a subdued golden lustre. The grain is straight to irregular and texture rather coarse. Bears some similarity to a dense grade of African mahogany. The bole is 18-25m in length with a diameter of 50-90cm

Physical and Mechanical Properties

Determa is a medium density wood. Its movement low to moderate and it responds extremely slowly to atmospheric changes and is, therefore very stable in use.

- Air dried density (12%) - 660kg/m³
- Bending strength (at 12%) - 90 N/mm²
- Modulus of elasticity (at 12%) - 11400 N/mm²
- Crushing strength (at 12%) - 51 N/mm²

Natural Durability

Determa's heartwood is rated durable in graveyard and pure culture tests. The wood equals Honduras Mahogany in its resistance to termites and is resistant to marine borers. Determa is highly resistant to moisture and has excellent weathering characteristics.

Timber Processing

Drying - Because of the slow diffusion rate of the moisture in the wood, Determa is difficult to season. Kiln Schedule E.

Working - Saws well, works easily with all tools; turns and carves well.

Finishing - Stains and polishes well after filling.

Uses

A general utility timber, used for interior and exterior work. Include-boat and shipbuilding (keel, frame, planking and decking); carriage and wagons building; interior and exterior building construction (framing, stairs, windows, sash frames, flooring strips, interior trim), cooperage, furniture and cabinet work. The wood is suitable for bending to a moderate radius of curvature.

Supplies

Available in considerable quantities. Supplies adequate to meet all likely requirements, both in quality and quantity. The timber is available in large sizes.

● HUBUBALLI

Scientific name:	<i>Loxopterygium sagotii</i>
Family:	Anacardiaceae
Standard name:	Siangenhout, Hububalli
Other names:	Koika, Onotillo, Ormata

Wood Appearance

The wood is brown to reddish-brown and attractively figured. It contains numerous narrow to rather wide darker stripes and streaks. It is of medium luster and texture. The grain is straight, sometimes interlocked or wavy. The bole is 15-20m in length with a diameter of 40-90cm.

Physical and Mechanical Properties

It is moderately hard and ranges from medium to very brittle. Movement is low. Air dry Hububalli compares closely with Burma Teak in all strength properties except compression and tension perpendicular to grain:

- Air dried density (12%) - 680kg/m³
- Bending strength (at 12%) - 94 N/mm²
- Modulus of elasticity (at 12%) - 12060 N/mm²
- Crushing strength (at 12%) - 51 N/mm²

Timber Processing

Drying - Easy

Working - Drying is slow and moderately difficult with moderate risk of distortion and checking. Owing to the presence of highly interlocked grain, it is also difficult to machine.

Assembly - Nailing is good but gluing needs care.

Finishing - Good. There may however be difficulties varnishing due to the presence of gum.

Natural Durability

Moderately resistant to decay and termites and highly resistant to moisture.

Uses

Because of its attractive figuring and relative scarcity the wood is best suited for panelling, high-grade furniture and cabinet work.

Supplies

The wood is frequently found in the far interior. Moderate quantities are available for export.

● RED CEDAR

Scientific name:	<i>Cedreta odorata</i>
Family:	Meliaceae
Standard name:	Cedro
Other names:	Cedro, Acajou Rouge, Ceder Rouge

Wood Appearance

The wood bears a general resemblance to the softer grades of Mahogany, but the heartwood varies from pale pinkish-brown to dark reddish brown, according to the locality of growth. Growing zones are distinct, as is its lustre. The grain is usually straight or shallowly interlocked. Its texture is moderately coarse and the wood is characterized by a distinct fragrant scent. The bole is 12-18m in length with a diameter of 50-90(-180) cm.

Physical and Mechanical Properties

The wood is soft but strong for its weight in both the green and the air dried state. Red Cedar was found to equal Honduras Mahogany (a denser species) in all strength properties except hardness, shear and tension. Movement is small:

- Air dried density (12%) - 440kg/m³
- Bending strength (at 12%) - 65 N/mm²
- Modulus of elasticity (at 12%) - 6880N/mm²
- Crushing strength (at 12%) - 35 N/mm²

Natural Durability

It is moderately durable and resistant to decay in grave yard and pure culture tests. The sapwood is reported to be permeable to preservatives. In its dry state, the wood is resistant to termites.

Timber Processing

Drying - Dries rapidly without marked distortion. Kiln Schedule J

Working - Works easily and finishes smoothly. For rip-sawing the recommended saw type is HR54 and for wide band-sawing, saw type A.

Assembly - Takes glue, nails and screws well. Peels cold.

Finishing - When free from gum it stains and polishes beautifully (after filling). A good finish is produced by reducing the cutting angle to 20°.

Uses

Red Cedar has many and varied uses. Suitable for high quality cabinet work, interior joinery and paneling, cigar boxes and sometimes for sound boards of organs. In boat-building it is employed for planking and for skirls of racing boats and decks of canoes as it combines durability and light weight. It is also used for coffins, drawers and shelves and suitable for sliced and rotary cut veneer.

Supplies

Moderate quantities are available for export orders.

● SILVERBALLI (GROUP)

Scientific names:	Brown: <i>Licaria canella</i> Sofá Kereti: <i>Ocotea oblonga</i> Hard Kereti- <i>Ocotea wachenheimii</i> ,, Kurahara: <i>Ocotea glomerata</i> White: <i>Ocotea kanaliculata</i> Yellow: <i>Aniba hypoglauca</i>
Family:	Lauraceae
Standard name:	Canelo
Other names:	Pisie, Caraiou, Caneio, Louro Branco, Inamui, Preto

Wood Appearance

In Guyana the Silverballi group is divided into "hard" and "soft", with the dividing line being put at an air-dried specific gravity of 37 lb/ft³. The heartwood ranges from greyish through yellowish-buff to light brown and darkens on exposure. The lustre is medium to high and the texture fine to moderately coarse. The grain is straight and occasionally interlocked and the wood usually has a pleasant aromatic scent. The bole is 15-21m in length and the diameter 50-60 (-120) cm.

Physical and Mechanical Properties

The "hard" Silverballi is rather light to heavy. Movement rather low; the lighter species shrink less than the heavier types.

Properties (at 12%)	<i>Licaria canella</i>	<i>Aniba hypoglauca</i>	<i>Ocotea glomerata</i>	<i>Ocotea oblonga</i>
Air dried density (kg/m ³)	1110	589-640	630	420
Bending strength (N/mm ²)	226	67	104	72
Modulus of elasticity (N/mm ²)	26000	9100	11569	9167
Crushing strength (N/mm ²)	120	40	60	39

Natural Durability

It is moderately resistant to insects and decay, highly resistant to marine borers but susceptible to termites. It is difficult to impregnate.

Timber Processing

Drying - Covering when air-drying is recommended. The risk of distortion is high but that of checking is very slight.

Working - Saws well and works easily.

Assembly - Holds nails, screws and glue well.

Finishing - Finishes smoothly unless grain is severely interlocked. Paints well.

Uses

"Hard" Silverballi is used for general carpentry and boat-building (planking), suitable for both interior and exterior work in house construction, furniture and cabinet work, veneer and plywood. "Soft" Silverballi is used in general carpentry, interior work, light weight furniture and suitable for utility plywood.

Supplies

Occurs frequently in the Guyana forests. Regular supplies are available.

● SOFT WALLABA

Scientific name:	<i>Eperua falcata</i>
Family:	Caesalpinaceae
Standard name:	Wallaba
Other names :	Bois, sabre, Wapa gris, Uapa, Apa.

Wood Appearance

The heartwood is reddish-brown in colour, with dark gum streaks which tend to spread over the surface. The sapwood is pale in colour and is sharply defined from the heartwood. The texture is coarse and the grain is typically straight. The bole is 15-20m in length and diameter is approximately 60cm and occasionally up to 100cm.

Physical and Mechanical Properties

Strength is mid-way between European Beech and Greenheart:

- Air dried density (12%) - 860kg/m³
- Bending strength (at 12%) - 128 N/mm²
- Modulus of elasticity (at 12%) - 14400N/mm²
- Crushing strength (at 12%) - 69 N/mm²

Natural Durability

Soft Wallaba heartwood is highly resistant to decay and subterranean termites, and is fairly resistant to dry wood termites. Its resistance is extremely high. Soft Wallaba is self-impregnated by nature thus creosoting is unnecessary.

Timber Processing

Drying - Dries very slowly. Air-drying before kiln drying is recommended. Kiln Schedule B.

Working - Fairly easy to work but difficult to saw because of the high gum content.

Assembly - Glues well. It holds nails well but pre-boring is recommended because of tendency to split.

Finishing - It weathers beautifully, is difficult to paint because of gum exudation, but stains and polishes satisfactorily.

Uses

Soft Wallaba has excellent properties for transmission poles, flagstaves, marine and bridge construction in non-teredo areas owing to its strength and durability. It is suitable for general heavy construction, utility and industrial floors and chemical vat staves. Additionally, the timber is used to make fence staves, fence posts and shingles for roofing.

Supplies

Occurs abundantly in the forest of Guyana. Regular supplies in large volumes are easily available.

Other

- As transmission poles it is extensively used in Caricom countries and has been known to be in service for over 40 years in some countries.
- With the inclusion of Soft Wallaba in the British standard, it is hoped that the market in the UK will once again be revived.
- Tests in Japan have shown that the wood has a likeness to Rosewood when used as a furniture timber (after extraction of gum and resin).
- As a roofing material (shingles) it is known for its lasting qualities and the coolness it lends to a house.

● BAROMALLI

Scientific names:	Common Baromalli- <i>Catostemma commune</i> Sand Baromalli - <i>Catostemma fragrans</i>
Family:	Bombacaceae
Standard name:	Baromalli
Other names:	Baramanni, Paku, Katama, Simaria.

Wood Appearance

The heartwood is dull yellowish to pinkish-brown but not sharply defined from the lighter coloured sapwood. Dark coloured resin streaks occur as arcs on the cross section and lines on the surface. The texture is coarse and the grain straight. The bole is 21-27m in length with a diameter of 60-90(-120) cm.

Physical and Mechanical Properties

It is a low to medium density timber.

Properties (at 12%)	<i>Catostemma commune</i>	<i>Catostemma fragrans</i>
Air dried density (kg/m ³)	600	590
Bending strength (N/mm ²)	77	79
Modulus of elasticity (N/mm ²)	12540	10700
Crushing strength (N/mm ²)	46	46

Natural Durability

It is not naturally durable with the sapwood susceptible to sap-staining fungi. It is, however, easily preserved by diffusion. Durability class 2.

Timber Processing

Drying - Drying is slow and risk of distortion and checking is slight to moderate.

Working - Sawing is easy with moderate blunting effect. Machining is moderately difficult.

Assembly - Glues and holds nails well.

Finishing - Filling is required. It can be easily cut into veneer.

Uses

The wood has been tested and found 'suitable' for plywood manufacture. It is used for general manufacturing and interior construction.

Supplies

Moderate quantities are available for export.

● DUKALI

Scientific name:	<i>Parahancornia fasciculata</i>
Family:	Apocynaceae
Standard name:	Amapa
Other names:	Amapa, Dokali, Mapa, Doekali, Amapa, Amargoso, Amapa branco

Wood Appearance

The heartwood is normally off-white (occasionally pale cream to pinkish) but not sharply defined from the sapwood. It is fairly lustrous, odorless and tasteless with moderately fine texture and straight grain. The bole goes up to 20m in length with a diameter of 25-45(-100) cm.

Physical and Mechanical Properties

It is a low density timber; air-dries easily with little degrade except for sap stain if improperly stacked. Works easily and finishes smoothly:

- Air dried density (12%) - 520kg/m³
- Bending strength (at 12%) - 89 N/mm²
- Modulus of elasticity (at 12%) - 10600N/mm²
- Crushing strength (at 12%) - 44 N/mm²

Timber Processing

Drying - Dries easily. Risk of distortion and checking is slight.

Working - Sawing and machining are easy. Blunting effect is slight.

Assembly - Glues well and holds nails satisfactorily.

Finishing - Good.

Natural Durability

It is not naturally durable but easily preserved. Durability class 2.

Uses

It is suitable for interior construction and general manufacturing.

Supplies

Moderate quantities are available for export.

Lesser-Used Species

● BLACK KAKARALLI/COMMON BLACK KAKARALLI

Scientific name: *Eschweilera subglandulosa, E. sagotiana*

Family: Lecythidaceae

International trade name: Black Kakaralli

Wood Appearance:

The sapwood is a light grayish-brown and the heartwood, a brown to dark brown colour. The grain is straight and the texture is fine to medium. The length of the bole is 12-20m while the diameter is 30-60cm.

Physical and Mechanical Properties

- Air dried density (12%) - 1070kg/m³
- Bending strength (at 12%) - 182 N/mm²
- Modulus of elasticity (at 12%) - 21635N/mm²
- Crushing strength (at 12%) - 77 N/mm²

Natural Durability

It is resistant to decay, termites and insects. Poor treatability.

Timber Processing

Drying - Moderately difficult to air-dry. There is slight risk of distortion, checking and case hardening.

Working - Power is required for sawing and blunting effect is high (due to silica). Special tools are needed due to hardness and silica content.

Assembly - Gluing is difficult and pre-boring is necessary.

Finishing - Good.

Uses

Suitable for heavy carpentry, industrial flooring, sleepers, ship-building, poles and posts, turnery, frame construction and marine construction.

Supplies

Abundant

Substitute

It can be substituted for Greenheart in marine conditions. It can also be used in the same capacity as Bulletwood.

● LIMONABALLI

Scientific name:	<i>Chrysophyllum pomiferum</i>
Family:	Sapotaceae
International trade name:	Limonaballi
Other names:	Aknon, Haimara-kushi, Kwikpa, Paripiballi

Wood Appearance

The sapwood is light brown but not clearly distinct from the heartwood which is pale, yellowish brown to dark brown. The grain is straight to interlocked and texture fine. The bole is 16-24m in length with a diameter of 60-90cm.

Physical and Mechanical Properties

- Air dried density (12%) - 950kg/m³
- Bending strength (at 12%) - 179 N/mm²
- Modulus of elasticity (at 12%) - 19515N/mm²
- Crushing strength (at 12%) -79 N/mm²

Natural Durability

Resistance to decay is slight to moderate and there is good treatability.

Timber Processing

Drying - Air-drying is easy to moderate with some checking.

Working - Power is required for sawing (blunting effect because of silica content). Machining is moderate to difficult due to silica content.

Assembly - Pre-boring necessary.

Uses

Suitable for heavy to light construction and posts.

Supplies

Available

Substitute

Can substitute for Kabukalli, Shibadan and Tauriuro. Used in the construction industry because of its high density.

● HURUASA

Scientific name:	<i>Abarema jupunba</i>
Family:	Legumiosae (Mimosaceae)
International trade name:	Limonaballi
Other names:	Klaipio, Kwatpain, Kwatupana, Soapwood

Wood Appearance

The sapwood is white to yellowish-white and the heartwood is pale brown to reddish brown. The grains are straight to interlocked and the texture is fine to moderately course.

Physical and Mechanical Properties

- Air dried density (12%) - 620kg/m³
- Bending strength (at 12%) - 102 N/mm²
- Modulus of elasticity (at 12%) - 13770N/mm²
- Crushing strength (at 12%) - 51 N/mm²

Natural Durability

It has moderate resistance to decay. Poor treatability.

Timber Processing

Drying - Drying is fast.

Working - Sawing is easy and machining is good.

Assembly - Gluing and nailing is good.

Finishing - Finishing is good.

Uses

Suitable for furniture, interior trim, veneer, utility plywood and light carpentry.

Supplies

Available

Substitute

Can substitute for Crabwood, Determa and Hububalli in construction and furniture.

● KAUTABALLI

Scientific name:	<i>Licania alba, L.majuscula</i>
Family:	Chrysobalanceae
International trade name:	Kautaballi
Other names:	Countaballi, Counter, Farsha (<i>L. majuscula</i>), Maiuaria (<i>L. alba</i>)

Wood Appearance

The sapwood is a distinct tan and the heartwood is yellowish-brown to dark brown. The grain is straight and texture is fine. The length of the bole is 15-18m with a diameter of 40-60cm.

Physical and Mechanical Properties - (*Licania majuscula*)

- Air dried density (12%) - 1030kg/m³
- Bending strength (at 12%) - 173 N/mm²
- Modulus of elasticity (at 12%) - 17400N/mm²
- Crushing strength (at 12%) - 84 N/mm²

Natural Durability

There is moderate resistance to decay and high resistance to dry wood termites, insects and marine borers. Treatability is moderate.

Timber Processing

Drying - Air-drying ranges from easy to moderately difficult with slight risk of distortion and checking.

Working - Power is required for sawing. The high silica content causes some blunting of saws and difficulty in machining. Special tools are required.

Assembly - Pre-boring is necessary.

Finishing - Good

Uses

Heavy construction (above ground), shingles, charcoal, underwater marine construction

Supplies

Abundant

Substitute

This species can substitute for Greenheart and Purpleheart in bridge construction and as beams.

● SUYA

Scientific name:	<i>Pouteria speciosa</i>
Family:	Sapotaceae
International trade name:	Suya
Other names:	Chuya, Durban Pine, Por

Wood Appearance

The sapwood is not distinct from the heartwood with the latter being light brown, occasionally flushed pale purple. The grain is straight and the texture fine. The bole is 21-24m in length with a diameter of 35-90(-120) cm.

Physical and Mechanical Properties

- Air dried density (12%) - 710kg/m³
- Bending strength (at 12%) - 126 N/mm²
- Modulus of elasticity (at 12%) - 20888 N/mm²

Natural Durability

Poor resistance to decay, termites and dry wood insects.

Timber Processing

Drying - Air-drying should be at a moderate rate.

Working - Sawing is moderately easy, with a moderate blunting effect. It is, however, moderately difficult to machine owing to the silica content and sometimes fuzzy grain.

Finishing - Good

Uses

Suitable for general construction, flooring, poles and posts, sleepers (treated) and plywood

Supplies

Relatively abundant

Substitute

It can be used for light construction and can be substituted for Crabwood; however, it may need to be stained.

● SAREBEBEBALLI

Scientific name:	<i>Vouacapoua macropetala</i>
Family:	Leguminosae (Caesalpineaceae)
International trade name:	Sarebebeballi

Wood Appearance

The sapwood is a distinct cream colour (2-4 cm) while the heartwood is dark yellowish brown. The texture is fine to medium and the grain straight. The bole is 15-20m in length with a diameter of 40-60(-100) cm.

Physical and Mechanical Properties

(for *V. americana*, a closely related species)

- Air dried density (12%) - 920kg/m³
- Bending strength (at 12%) - 164 N/mm²
- Modulus of elasticity (at 12%) - 15940N/mm²
- Crushing strength (at 12%) - 82 N/mm²

Natural Durability

Very good resistance to decay, termites and dry wood insects. It is resistant to marine borers in Panama waters. Poor treatability.

Timber Processing

Drying - Must be handled with care and slow initial air seasoning is recommended to reduce drying time.

Working - Power required for sawing and machining due to hardness of wood.

Assembly - Special precaution is needed when gluing and there is good holding of nails though pre-boring is necessary.

Finishing - Good.

Uses

Suitable for fine furniture, cabinet work, flooring, stairs, cutlery, decorative trim, turnery, brush backs, sleepers, poles and posts, heavy carpentry, harbour or naval construction and joinery.

Supplies

Abundant

Substitute

It can be used in the same capacity as Kabukalli and Purpleheart.

REFERENCES

Gerard, J; Miller, R. B. and ter Welle, B.J.H., 1996. *Major timber trees of Guyana: Timber characteristics and utilisation*. Tropenbos Series III. The Tropenbos Foundation. Wageningen.

Guyana Forestry Commission, *Guyana Woods: 21 Species*. Undated. Version 1. Guyana.

APPENDIX 1

SOME PRACTICAL USES OF CERTAIN SPECIES OF GUYANA HARDWOODS

GENERAL USE

Agricultural Implement
Transmission Poles etc.
Boat and Ship Construction(Keel &
Underwater structural parts)
Decking
Finish & Trim
Frames & Timbers
Carpentry & General Construction

Railroad Crossties
Flooring (including heavy duty)

Shingles
First Grade Furniture and
Cabinet Work

Utility Grade Furniture and Cabinet
Work:

Heavy Construction

Interior Trim & Finish

Above Water Marine
& Bridge Construction
Under Water Marine Piling
and Construction
Millwork

Musical Instruments
Sporting & Athletic Items
Tools Handles
Turning

Decorative Veneer& plywood

Utility Veneer& plywood

USABLE SPECIES

Mora, Kabukalli, Aromata, Tatabu
Shibadan, Manni, Wallaba

Greenheart, Mora, Kabukalli, Purpleheart
Cedar (Small boats), Determa, Silverballi
Cedar, Crabwood, Silverballi, Determa
Cedar (small boats), Determa, Silverballi
Greenheart, Purpleheart, Mora, Kabukalli, Tatabu,
Crabwood, Kurokai, Tauroniro, Shibadan, Locust,
Determa, Cedar, Manni
Greenheart, Mora, Manni, Kabukalli
Greenheart, Purpleheart, Tatabu, Aromata, Tauroniro,
Shibadan, Locust, Wanara, Mora, Kabukalli
Wallaba

Crabwood, Cedar, Tatabu, Purpleheart, Aromata,
Tauroniro, Locust, Wamara, Hububalli

Determa, Simarupa, Kurokai, Shibadan, Kabukalli, Mora,
Manni

Greenheart, Kabukalli, Mora, Manni, Shibadan

Crabwood, Cedar, Locust, Tatabu, Aromata, Hububalli,
Tauroniro

Tatabu, Determa, Mora, Manni, Wallaba.

Greenheart, Kakaralli
Crabwood, Cedar, Determa, Kurokai, Tauroniro,
Shibadan, Locust

Cedar, Silverballi, Letterwood
Cedar, Locust, Purpleheart, Wamara

Tatabu, Aromata, Purpleheart, Ulu
Crabwood Tatabu, Determa, Tauroniro, Locust,
Aromata, Purpleheart

Baromalli, Crabwood, Cedar, Tatabu Aromata,
Locust, Hububalli, Silverballi, Dukali

Baromalli, Crabwood, Haiariballi, Silverballi, Simarupa,
Dukali, Cedar

APPENDIX 2

DIMENISIONS OF WALLABA POLES (Imperial System)

The dimensions shown in this table were derived by the same method used in determining the ASA standard dimensions of poles.

Special Oversized Classes				Classes comparable with ASA Classes					
Classes and Breaking	00	0	1	2	3	4	5	6	7
Load Ratings in Pounds	6400	5400	4500	3700	3000	2400	1900	1500	1200
Minimum top circum (Inches)	29	28	27	25	23	21	19	17	15

Length of Pole (ft.)	Ground Line Dist. from Butt (Feet)	Minimum Circumferences at 6ft from Butt (Inches)								
16	3.5							19.0	17.5	16.5
18	3.5					23.5	22.0	20.5	18.5	17.5
20	4	32.0	30.0	28.5	26.5	25.0	23.0	21.0	19.5	18.0
22	4	33.5	31.5	29.5	28.0	26.0	24.0	22.0	20.5	19.0
25	5	35.0	33.0	31.0	29.0	27.0	25.5	23.5	21.5	20.0
30	5.5	38.0	36.0	33.5	31.5	29.5	27.5	25.5	23.5	21.5
35	6	40.5	38.0	36.0	33.5	31.5	29.0	27.0	25.0	23.0
40	6	42.5	40.5	38.0	35.5	33.5	31.0	28.5	26.5	24.5
45	6.5	45.0	42.5	40.0	37.5	35.0	32.5	30.0	27.5	26.0
50	7	46.5	44.0	41.5	39.0	36.5	34.0	31.5	29.0	27.0
55	7.5	48.5	46.5	43.0	40.5	38.0	35.0	32.5	30.0	
60	8	50.0	47.5	44.5	42.0	39.0	36.5	33.5	31.0	

APPENDIX 3

ESTIMATED AVERAGE WEIGHTS OF WALLABA POLES (Imperial System)

The weights were calculated by multiplying the volume by 72. The table shows the weight per cubic foot of green Wallaba poles.

Length of Pole (ft.)	SPECIAL OVERSIZED CLASSES			COMPARABLE WITH ASA CLASSES						
	00	0	1	2	3	4	5	6	7	
16							240	210	170	
18					400	350	290	240	190	
20	1120	930	750	600	500	410	350	300	250	
22	1260	1050	870	710	590	490	420	350	300	
25	1460	1240	1040	860	710	600	520	440	370	
30	1810	1560	1350	1140	970	820	690	580	480	
35	2180	1900	1660	1410	1220	1050	900	780	670	
40	2580	2260	1980	1710	1480	1270	1100	960	840	
45	3020	2660	2330	2000	1740	1510	1320	1170	1020	
50	3560	3110	2710	2330	2010	1760	1560	1380	1220	
55	4160	3620	3100	2680	2300	2020	1790	1620		
60	4830	4180	3610	3060	2620	2270	2020	1860		

Metric Conversions

Round Measurements (Logs etc.)

1 m³ (true volume) = 35.3145 ft³ (true volume)
 1 m³ (true volume) = 27.736 ft³ (hoppus volume)

Square Measurements (lumber etc.)

1 m³ = 423.7 Board Feet (BM)
 (1 ft³ = 12 BM)

Useful Conversion factors for Timber Products

to convert	into	multiply by
cubic feet (ft ³) hoppus	cubic metres (m ³)	0.0361
cubic feet (ft ³) hoppus	cubic metre hoppus	0.0283
cubic ft (ft ³)	m ³	0.0283
cubic ft (ft ³)	m ³ hoppus	0.0222
cubic metre (m ³)	m ³ hoppus	0.7852
board measure (BM)	m ³	0.002 358
linear ft	metres (m)	0.30 48
Pounds (lbs)	kg	0.453 592
cords	m ³	3.624 7

Source: GFC and FAO

Length

to convert	into	multiply by
inches (ins)	centimetres (cm)	2.540*
	metres (m)	2.540 x 10 ⁻²
	millimetres (mm)	25.4*
feet (ft)	centimetres (cm)	30.48*
	metres (m)	0.304 8*
	millimetres (mm)	304.8*
yards (yds)	centimetres (cm)	91.44*
	metres (m)	0.914 4*
miles	kilometres (km)	1.609 344*
	metres (m)	1 609.344*
international	kilometres (km)	1.852*
nautical miles	metres (m)	1 822*

* An asterisk denotes exact conversion