



## **Stakeholder Awareness and Market Promotion Programme on the Sustainable Utilization, Management and the Trade of CITES Timber Species**

Report prepared a part of ITTO Project:

Prepared for the Guyana Forestry Commission within the framework of the ITTO-project "Enhancing the Sustainable Management and Commercial Utilisation of the CITES-Listed Species *Cedrela Odorata* (Red Cedar) In Guyana", TMT-SPD 014/13 Rev. 1 (M)

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## List of Abbreviations

AVL	- Amerindian Village (& Community) Land
CITES	- Convention on International Trade in Endangered Species of Wild Fauna and Flora
DBH	- Diameter at breast height (1.3 m)
FMD	- Forest Monitoring Division of the Guyana Forestry Commission
FPDMC	- Forest Products Development & Marketing Council of Guyana
FTCI	- Forestry Training Centre Incorporated
GFC	- Guyana Forestry Commission
ITTO	- International Tropical Timber Organization
IUCN	- International Union for Conservation of Nature
MCDL	- Minimum Cutting Diameter Limit
MIS	- Management Information System
SFA	- State Forest Authorisation
TMT	- ITTO thematic programme on trade and market transparency
TSA	- Timber Sales Agreement
WCL	- Wood cutting lease

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# 1 Introduction

## 1.1 Terms of Reference

The consultant was contracted to work with GFC to enhance the sustainable management and commercial utilisation of the CITES-listed species *Cedrela odorata* (red cedar) in Guyana, a small project within the ITTO thematic programme on trade and market transparency (TMT). The ITTO thematic programme on trade and market transparency supports among others the ITTO-CITES programme. The project number of this small project is TMT-SPD 014/13 Rev.1 (M).

The Specific Objective is to “*Strengthen forest planning and marketing of CITES listed, current and potential timber species from Guyana*”. Among the main expected outcomes of the project are completion of a resource assessment of red cedar in Guyana’s forest estate to establish the status of the species; informing a decision on the status of conservation and/or utilization of red cedar; development of capacity in Guyana for managing red cedar; development of a strategy for developing and commercializing CITES listed species in Guyana including statistical database; and developing markets for red cedar both locally and internationally in areas of value added products.

The Terms of Reference for this work can be summarized as involving the following objectives:

1. Produce a resource assessment and forest management plan for red cedar
2. A reporting framework for CITES timber exports
3. Support capacity building on CITES and its implication for the forest sector in Guyana

The first objective concerns:

- a) the design and execution of a resource assessment for red cedar in Guyana; and
- b) developing a forest management plan for red cedar

The second objective concerns:

- a) developing a protocol framework for international trade of red cedar;
- b) developing markets for red cedar locally and internationally; and
- c) compiling market information and trade statistics on red cedar.

The third objective concerns:

- a) supporting the Training Consultant in developing and executing a stakeholder awareness programme and a training programme on CITES and its implication for the forest sector in Guyana;
- b) assist the GFC in consolidating information on timber utilization; and
- c) supporting interactions between local partners and international contacts at level of US, EU and CITES.

## 1.2 Background

The ITTO-CITES programme provides specific assistance to countries throughout the tropics to design forest management plans, forest inventories, provide guidelines and case studies for making “Non Detriment Findings” (NDFs) for CITES listed tree species, and to develop and disseminate tools for timber identification with the overall objective to ensure that international trade in CITES-listed timber species is consistent with their sustainable management and conservation<sup>1</sup>.

Red cedar (*Cedrela odorata*) is the only CITES listed species in Guyana at the moment. Historically, red cedar has been a valuable timber, with a natural range covering Latin America, the Caribbean and South America. In 1998, the species was assessed as globally Vulnerable in the IUCN Red List and it has been listed in Appendix III of CITES since 2001. Brazil (2011) and Bolivia (2010) have listed the whole species in Appendix III of CITES, implying that all populations everywhere in the world are included, whilst Columbia (2001), Guatemala (2008), and Peru (2001) have also included their national populations. The current listing of red cedar implies for Guyana that a CITES certificate of origin should be issued by the Management Authority of Guyana before logs, sawn wood, and veneer sheets of the species may be exported.

The species was proposed for listing in Appendix II of CITES in 2007. Appendix II listing would require non-detriment findings (NDF) to ensure that export will not be detrimental to the survival of the species being traded. NDFs should be based on a comprehensive review of available information on the population status, distribution, population trend, harvest, and other biological and ecological factors, as appropriate, and trade information relating to the species concerned. Because such information was lacking for nearly all range states, CITES adopted an Action Plan in 2007 to complete knowledge on the status of conservation of, trade in and sustainable use of *Cedrela odorata*. Although the proposal to list the species in CITES Appendix II was unanimously opposed by all 30 Range States and subsequently withdrawn in 2013, Range states were urged to consider the inclusion of their populations of *Cedrela odorata* in Appendix III and to ensure the implementation and enforcement of CITES rules with regard to that Appendix. It is against this background that this project was conceived and executed.

## 1.3 Diversification of Commercial Timber Species in Guyana

Historically, the focus of Guyana’s wood products sector has been on a few key primary species, principally greenheart (*Chlorocardium rodiei*) and purpleheart (*Peltogyne venosa*), because of their inherent physical properties of natural durability and strength, as well as suitability as structural and appearance grade timber. Over the past five to ten years, in collaboration with the industry and assistance from the ITTO, the Guyana Forestry Commission (GFC) and the Forest Products Development and Marketing Council (FPDMC) have been diversifying the range of commercial species that the industry is able to offer both domestic and international markets, focusing specifically on the development, promotion and marketing of lesser used species.

In Guyana, red cedar has not been used commercially to the same extent as in other range countries. The main reason for the limited use is the scarcity of the species in Guyana forest and limited information on its incidence. Additionally, the end use applications for this species are not widely known locally.

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<sup>1</sup> [http://www.itto.int/cites\\_programme/](http://www.itto.int/cites_programme/)

Other species than red cedar that are internationally increasingly being perceived as becoming rare and/or vulnerable (Schulze *et al.* 2008a; Schulze *et al.* 2008b) and might be proposed for CITES or IUCN Red List listings in future include; e.g.:

- Greenheart (*Chlorocardium rodiei* - IUCN Red List ver. 3.1 (2007): Data Deficient),
- Locust (*Hymenaea courbaril* – jatobá – IUCN Red List ver. 3.1 (2012): Least Concern),
- Purpleheart (*Peltogyne venosa* – amaranth – IUCN Red List Not Assessed),
- Tatabu (*Diploptropis purpurea* – sucupira – IUCN Red List Not Assessed) and
- Washiba (*Tabebuia serratifolia* – ipê – IUCN Red List Not Assessed)

All these five species and their marketing potential are well-known in Guyana. It is however recommended to conduct similar resource assessments and market information reviews of these five timber species, which are among the most important species that are exported from Guyana.

#### **1.4 Outline of the Report**

The first section provides a review of Resource Assessment, Market Information, Trade Statistics and Reporting Framework for the CITES-Listed Species *Cedrela Odorata* (red cedar) in Guyana as reported in Van der Hout (2015a, 2015b)

The second section proposes three training workshops and two training courses.

## **2 Review of Resource Assessment, Market Information, Trade Statistics and Reporting Framework for the CITES-Listed Species *Cedrela Odorata* (red cedar) in Guyana**

### **2.1 Resource Assessment of Red Cedar in Guyana**

The first report of this project “Resource Assessment and Forest Management Plan for the CITES-Listed Species *Cedrela Odorata* (red cedar) In Guyana” (Van der Hout 2015a) provided an overview of the population size, distribution, stand density, size structure, regeneration dynamics and possible strategy for the sustainable management of the timber species *Cedrela odorata* L. in Guyana.

#### **2.1.1 Incidence of red cedar in Guyana**

Red cedar appears to be rare in Guyana (< 1 tree/ha), and according to examined stock survey data the species is even very rare (< 1 tree per 100 ha). According to three nation-wide inventories the estimated density of red cedar trees  $\geq 10$  cm dbh varies from 1.7 to 8.5 trees per 100 ha, while the estimated density of harvestable trees ( $\geq 35$  cm dbh) ranges from 0.9 trees to 2.0 trees per 100 ha. According to 100% pre-harvest inventories in large concessions, however, the average density amounts to 0.3 tree  $\geq 40$  cm dbh per 100 ha.

The estimated volume of red cedar  $\geq 35$  cm dbh is estimated at 2.4 - 6.0 m<sup>3</sup> per 100 ha according to the national forest inventories. An average volume of 1.5 m<sup>3</sup> per 100-ha block was reported for the 2,728 100-ha blocks that were surveyed by large concessionaires during 2010-14.

Red cedar was only reported in 8% of the blocks that were surveyed during 2010-2014, but the fact that a species is not recorded in a certain concession does not necessarily mean that the species does not occur in that concession. Neither concessionaires nor their inventory teams appear to be familiar with the species. Not all concessionaires include the species on their species list for 100% pre-harvest inventory, while some inventory crews do not recognize the species.

#### **2.1.2 Site preference**

In Guyana, red cedar occurs widely from the North West to the South East of the country. Its potential geographic distribution covers about three quarters of Guyana’s territory based on the geographic distribution of the forest types in which it appears to occur.

At a local scale, the species appears to occur mainly in mixed or *mora* forest along watercourses; particularly gullies and seasonal streams, but also along larger creeks. This has crucial implications for the management of the species because trees may not be harvested within riparian buffer zones along creeks according to Guyana’s Code of Practice (2014) and an estimated 20% of the red cedar population would therefore be excluded from harvesting.

#### **2.1.3 Sustained yield**

Stand table projection of harvested stands, applying a 25-year cutting cycle, a minimum cutting diameter limit of 40 cm and excluding trees in buffer zones, suggests sustained yield levels of around 0.3 m<sup>3</sup> per 100 hectare.

Based on the observation that the species occurs in all forest types along watercourses; particularly along gullies and seasonal streams it is assumed that the species occurs in all forest concessions. The



annual coupe of all large concessions (TSAs and WCLs) amounts to roughly 140,000 ha and the long-term sustained yield for these concessions is estimated at 350-450 m<sup>3</sup> per year. Small concessions (SFPs) are managed by log quota and not by an annual coupe. For the purpose of assessing sustained yield levels, the annual coupe for small concessions is estimated at roughly 64,000 ha in lieu of log quota and their long-term sustained yield is estimated at 150-200 m<sup>3</sup> per year. Produce stemming from Amerindian Reservations and Private Properties is not subject to maximum cut restrictions because these lands do not form part of the State Forest Estate and are not managed by the GFC, but sustained yield for the Amerindian Reservations is estimated at 200-250 m<sup>3</sup> per year. This implies that the total long-term sustained yield can be estimated at 700-900 m<sup>3</sup> per year.

#### **2.1.4 Species Identification**

The incidence of red cedar in large concessions as determined through stock surveys was reported to be lower than the estimates provided by the national forest inventories. Verification of red cedar specimens in five blocks in four concessions revealed that red cedar is not well-known among tree spotters. In three concessions other species such as *Apeiba petoumo* (duru), *Bombax* sp. (kamakuti), *Calophyllum lucidum* (kurahara), *Humiria balsamifera* var. *balsamifera* (tauroniro), or *Tabebuia insignis* var. *monophylla* (white cedar) trees had been mistakenly identified as red cedar. In four blocks in two other concessions the species was correctly identified but it was also shown that harvestable red cedar trees were overlooked during stock surveys in each concession.

#### **2.1.5 Conclusions related to the resource**

- Although red cedar is very rare in Guyana, current harvesting regimes (and export levels) do not appear to be detrimental to the survival of the species; a considerable proportion of the population (20%) occurs in streamside buffer zones, where logging is prohibited in Guyana, and trees are protected. Secondly, harvest levels, about 640 m<sup>3</sup> per year on average, are below the estimated national sustained yield level, which is estimated at around 800 m<sup>3</sup> per year.
- Under the current forest management regulations and harvesting practice there appear to be no grounds for including Guyana's red cedar population in CITES Appendix III.
- Current harvesting practices in small concessions possibly exceed long-term sustained yield levels for red cedar. It is important that forest regulations and Code of Practice prescriptions, particularly the minimum cutting diameter limit and restriction on felling within streamside buffer zones, are strictly enforced in small concessions. Once these measures remain in place, harvest levels will automatically contract in future and will stay within sustained yield limits.
- Red cedar is reported to attain maximum diameter increment rates through the diameter class 40-60 cm dbh. Sustainable yield levels can therefore be increased by raising the minimum cutting diameter limit (MCDL) to 60 cm dbh; an increase in sustained yield from around 800 m<sup>3</sup> per year to around 1,150 m<sup>3</sup> per year seems achievable this way.

#### **2.1.6 Stakeholder awareness and training programme on red cedar resources and sustainable yields**

In order to make stakeholders aware of red cedar resources and sustainable yields two actions need to be undertaken:

1. Many tree spotters appear to be unfamiliar with the species which has consequences for the assessment of the resource and as a consequence for the marketing potential of the species. During a verification exercise that was carried out as part of the project it appeared that staff of GFC's Inventory Unit were not familiar with the species either. A training course in species identification (dendrology) would therefore be required for both inventory teams of large concessionaires and GFC Inventory Unit staffs.
2. Red cedar producers and exporters need to be made aware of the estimated sustainable red cedar yield levels from large concessions, small concessions and private properties.

## **2.2 Market Information and Trade Statistics on Red Cedar**

The second report of this project "Reporting Framework for CITES timber exports" (Van der Hout 2015b) included a review of the red cedar production in Guyana over the period 2007-14 and of export of red cedar from Guyana by product type over the period 2009-14.

### **2.2.1 Red Cedar Production**

Since red cedar is scarce in Guyana, production levels have been low; on average red cedar production from State Forest (industrial roundwood equivalent) was estimated at 568 m<sup>3</sup>/yr. for the period 2007-14. In terms of national timber production red cedar plays a very minor role, contributing less than 0.11% of total national timber production. Most red cedar produce originated from small concessions in the form of primary (chainsaw) lumber (converted in-forest). SFA's produced on average 513 m<sup>3</sup> per year, TSA's 54 m<sup>3</sup> per year and Private Properties (mainly Amerindian Village Lands) 113 m<sup>3</sup> per year. In SFA's, about 71% of red cedar production was converted in the forest. Both log and lumber production peaked in 2007 and declined afterwards in reaction to the global economic downturn in 2008. Production started to recover in 2011 and again in 2013 but both times recovery was not sustained.

Production of red cedar from large concessions is low and there appears to be an opportunity to expand production from these concessions. This is likely related to poor knowledge of and interest in the species among concessionaires and inventory teams. Large concessionaires do not seek specialty markets for red cedar but are reported to sell the species as logs or as mixed hardwood; i.e. below its intrinsic value.

### **2.2.2 Domestic market**

Red cedar is mainly produced for the export market and there is virtually no demand on the domestic market. Nevertheless, the species is domestically regarded to be of high quality and high value suitable for cabinet making, cupboards and furniture and sells at a high price; about double the price of substitute timber species. Large concession holders may sell red cedar as mixed hardwood at the domestic market or export the species as logs because of the scarce supplies.

### **2.2.3 Export of red cedar produce from Guyana**

Export of red cedar produce has declined strongly since 2008 keeping pace with the global economic downturn (Table 1). Export levels reached rock-bottom in 2012 and have been recuperating (very) slowly since then. Export prices were below average for red cedar logs at 122 US\$ per cubic metre for the period 2006-14 and above average for undressed and dressed red cedar lumber at 862 US\$

and 998 US\$ per cubic metre respectively. Red cedar does not appear to fetch a premium export price like it is reported to do on the domestic market.

**Table 1 Export of red cedar logs, lumber, building components, furniture and mouldings from Guyana for the period 2006–14**

	2006	2007	2008	2009	2010	2011	2012	2013	2014
Logs (m <sup>3</sup> )	2	2	55		4	3			
Undressed Lumber (m <sup>3</sup> )	42	390	656	264	101	10	20	19	37
Dressed Lumber (m <sup>3</sup> )		195	276	30	14	60			1
Doors (pcs)		1,050	740	156	350	144	20		
Windows (pcs)				270				20	
Furniture (pcs)		2	40				14		3
Mouldings (m)		21,942			208				244

The majority of Guyana’s red cedar lumber and building componentry exports have had the Caribbean as destination; in particular Barbados, while log exports had the Far East, mainly China, as destination. In terms of total product value, Barbados (85% of total product value) was by far the most important market for red cedar over the 2006-14 period followed by the USA (8%), Trinidad & Tobago (3%) and Bermuda (2%). Other destinations included in order of importance: Saint Vincent and the Grenadines, Grenada, Antigua and Barbuda, China, Taiwan, Saint Lucia, the British Virgin Islands and India.

#### **2.2.4 Prospects for developing markets for red cedar locally and internationally**

Development of markets essentially requires a steady and reliable supply. Under the current forest management regulations sustainable yield is expected to lie close to 800 m<sup>3</sup> per year. The sustainable yield for small concessions is estimated to lie between 150 and 200 m<sup>3</sup> per year and for large concessions to be close to 400 m<sup>3</sup> per year. The remaining 150 m<sup>3</sup> is sourced from Amerindian Village Lands.

Production from small concessions amounted to about 500 m<sup>3</sup> per year on average over the period 2007-14 and thus appears to have exceeded sustainable yield. Expansion of the production from small concessions (and Amerindian Village Lands) is therefore not plausible. Large concessions have been producing about 50 m<sup>3</sup> per year and there appears to be scope to expand production from these concessions. In order to encourage utilization it is recommended that the Forest Products Development & Marketing Council of Guyana (FPDMC) encourage trade links between large concessionaires and red cedar exporters.

Export levels have dropped substantially since 2008, but exporters have not actively pursued to restore export markets for red cedar. An important factor in this is a poor awareness of the available stocks of the species. Once exporters have a better picture of the extent of trustworthy, stable supplies they could be encouraged to pro-actively approach potential buyers, particularly in the Caribbean. Again here is a role for the FPDMC.

#### **2.2.5 Stakeholder awareness and training programme promoting markets for red cedar**

In order to promote the marketing of red cedar exports from Guyana, four actions need to be undertaken:

1. First, large concession holders should be made aware by either the GFC or the FPDMC of their low utilization rate of red cedar resources and the fact that they are selling the species below its intrinsic value when they are selling it as mixed hardwood or export the species as logs and that they can fetch higher prices by exporting red cedar lumber and building componentry instead.
2. Secondly, large concessionaires need to conscientiously assess their red cedar stocks. The latter will require training of their tree spotters in red cedar dendrology (see above).

The third and fourth step need to be taken by the FPDMC by:

3. bringing together large concessionaires and red cedar exporters; particularly those exporters that have been exporting to the Caribbean on a regular basis in recent years, and by
4. contacting potential buyers in the Caribbean and making them aware of available supplies from Guyana and the quantities that can be supplied on a steady basis.

### **2.3 Reporting Framework for CITES timber exports**

The second report of this project “Reporting Framework for CITES timber exports” (Van der Hout 2015b) included a review of Guyana’s forest and supply chain monitoring and reporting system, including perceived limitations in the production data management system and supply chain monitoring.

#### ***2.3.1 Monitoring and Reporting Framework***

Guyana has a strong system of forest permitting and monitoring that includes most elements of an effective chain of custody management system of forest produce from the point of harvest to point of export, and allow for verification of legal origin of forest produce. Monitoring tools include the permitting system, the national log tracking system, the Codes of Practice, and concession level and range monitoring. Monitoring occurs at four main levels: forest concession monitoring, monitoring through the transportation network, monitoring of sawmills and lumber yards, and monitoring ports of export.

Formal declaration of legality of timber is confirmed at the first point of primary processing, which may be in the forest (in case of conversion by chainsaw or portable mill) or at a static sawmill. All sawmills and lumber yards are required to keep records of logs or lumber they receive, which record must include the origin of the produce. In addition, each facility must record sales and must monthly submit its returns of logs or lumber sawn and lumber produced to assess conversion rates.

Exporters must apply to export forest produce by completing an Application for Export of Forest Produce, which should include the origin of the produce and verify that the produce was legally obtained and declared to the GFC. Subsequently, the exporter must have the produce to be exported graded in accordance with the Guyana Grading Rules for Hardwood and apply for a Timber Marketing Certificate. A GFC Grading Inspector verifies the grades, after which the exporter applies for an Export Certificate and completes a customs declaration form for the Customs and Trade Administration. The GFC will verify all documents and collect Export Commission, after which the exporter can proceed to the Customs and Trade Administration, which will perform the final examinations and seal the shipment.

The current CITES Appendix III listing of red cedar implies that a CITES certificate of origin should be issued by the Management Authority of Guyana before logs, sawn wood, and veneer sheets of the species may be exported. The Wildlife Division of the Ministry of Natural Resources is the CITES Management Authority in Guyana.

CITES listed species are specifically dealt with in the 1999 Species Protection Regulations which is subsidiary to the Environmental Protection Act of 1996. Red cedar is listed in Schedule III of the Regulations. The Species Protection Regulations do not specifically treat the requirement and issuing of certificates of origin in accordance with Article V, paragraph 3, of the CITES Convention and such certificate has only been very occasionally issued for red cedar exports by request of the overseas buyer.

### ***2.3.2 Improvements to the Production Data Management System***

The GFC's production database was originally built around the Removal Permit with the aim to verify royalty assessment and payment. Royalty rates are expressed per hoppus measurement and Removal Permits therefore state hoppus measurements; albeit it in cubic metres. At a later stage, a Production Register was introduced which provides true metric volumes for each harvested log.

A number of discrepancies were observed in the Production Data Management System and it appears that there is scope to:

- Computerize assessment of royalty based on the Production Register data instead of manual calculation by forest stations;
- Improve the Production Data Management System by including automated reconciliation of the Removal Permit data with the Production Register data;
- Distribute a list of official species names among producers (and sawmills and lumber yards) to help stakeholders to become familiar with the correct species names;
- Train forest officers in the correct formal species names; and
- Validate species names during data entry (software controlled) - restricted to the formal species names list.

### ***2.3.3 Improvements to Supply Chain Monitoring***

Supply chains vary in Guyana with some companies exporting logs directly, some companies being vertically integrated – having their own concession that supplies their sawmill or plywood factory - whereas others are more complex with timber dealers sourcing material from various sawmills or chainsaw lumber converted in-forest from various forest sites including Amerindian reservations and concessions. The first stage in the supply chain from forest to sawmill is covered by the permitting and log tracking system and allows identification of the origin (concession or private property) of the produce. The longer the supply chain becomes between first processing and export the more complex the supply chain becomes, because material from different sources may result in an output from mixed origins (different forest concessions/private properties).

The GFC maintains a License and Wood Processing Database that tracks goods received and sold, and Sawmill/Lumber Yard Return of Lumber Sawn and Lumber Produced databases for both logs and for lumber. The Sawmill and Lumber Yard Record of Produce Receipts database includes references to incoming invoice (or removal permit or log tag number) and is suited as part of a true chain of

custody. The Wood Product Sales database, however, does not (always) provide references to outgoing invoices or buyers. There is therefore scope to:

- Require sawmills and lumber yards to provide references to out-going invoices and buyers by claim period or job order (batch) when submitting sales records;
- Upgrade the Return of Lumber Sawn and Lumber Produced forms and databases to a true Material Accounting Record by including removal document / incoming invoice and outgoing invoice references by job order (batch) or claim period (e.g. month).

#### ***2.3.4 Improvements to Monitoring of Exports of Forest Produce***

For tracing export logs the GFC tag number provides a robust means to verify legal source of the asset via the Removal Permit or the tag issuance range. For processed wood products the Application for Export of Forest Produce in principle provides the means to identify relevant Removal Permits and/or sales receipts to track to a batch of potential source logs because the applicant is required to state the origin of the produce on the form. However, a number of discrepancies were observed in the Monitoring of Exports of Forest Produce and it appears that there is scope to:

- Require each sawmill and lumber yard to keep a Material Accounting Record by including removal document / incoming sales receipt numbers and outgoing invoice numbers by job order (batch) or claim period (e.g. month) on their returns forms;
- Strictly enforce the requirement that the source of the export product be indicated when applying for export of forest produce by means of the Removal Permit and/or receipt number references.

#### ***2.3.5 Recommendations for a Reporting Framework for CITES Timber Exports***

In summary, in order to arrive at a proper Reporting Framework for CITES Timber Exports; it is recommended:

- To improve the production database by including automated reconciliation of the Removal Permit data with the Production Register data;
- To computerize the assessment of royalty based on the associated Production Register data instead of manual computation at the forest station;
- To upgrade the Return of Lumber Sawn and Lumber Produced forms and databases to a true Material Accounting Record by including removal document / incoming invoice and outgoing invoice references by job order (batch) or claim period (e.g. month);
- To strictly enforce the requirement to confirm the source of the export product when applying for export of timber produce by means of the Removal Permit and/or receipt numbers;
- To adapt export procedures by requiring the exporter to apply for a CITES certificate of origin with the Wildlife Division of the Ministry of Natural Resources at some stage during the preparation for export;
- To draw up a Memorandum of Understanding or similar formal arrangement between the GFC, the Customs and Trade Administration and the Wildlife Division of the Ministry of Natural Resources that stipulates the reporting framework for CITES listed timber species

and the role of each agency therein, particularly to signal the Management Authority that red cedar produce is to be exported.

### ***2.3.6 Stakeholder awareness and training programme regarding Reporting Requirements for CITES Timber Exports***

A stakeholder awareness and training programme concerning the requirements related to CITES timber exports goes beyond the requirements based on CITES listings, because certified CITES imports into the European Union qualify for green lane entry according to the EU Timber Regulation. This implies that an adequate, effective chain of custody is required to confirm legality of exported CITES listed produce.

A number of awareness and training programmes are required for different target groups; i.e. an internal awareness and training programme for staff of GFC's export division and an external awareness and training programme for large concessionaires, small concessionaires, private property holders and timber dealers, exporters and lumber yards.

1. The first programme intended for GFC staff should focus on the requirements for an adequate, effective Chain of Custody system, which includes proper Material Accounting Records to be kept at all stages of the Supply Chain and upgrading of the Return of Lumber Sawn and Lumber Produced forms and databases. Secondly, the CITES requirement to issue a certificate of origin should be part of the programme.
2. The second programme is intended for large concessionaires, small concessionaires, private property holders and timber dealers, exporters and lumber yards and should also focus on an adequate Chain of custody system including effective Material Accounting Records and CITES certificate of origin requirements as well as the implications for doing business as a concessionaire, timber dealer, lumber yard or exporter under this Reporting Framework.
3. In addition, an awareness and training programme is required for the CITES Management Authority, the Guyana Customs and Trade Administration and timber graders.
4. Finally, it is recommended to organise a training programme on identification of red cedar lumber (wood anatomy) intended for GFC FMD staff, timber graders, Guyana Customs and Trade Administration, sawmillers, timber dealers, exporters and lumber yards.

### 3 Proposed Workshops and Training Courses

#### 3.1 Proposed Workshop on Reporting Framework for CITES listed species for GFC staff

##### Organiser

Guyana Forestry Commission

##### Target group

Senior staff of the Forest Monitoring Division (FMD) of the GFC, staff of FMD's export section and senior staff of the Management Information System (MIS) of the GFC, Forest Products Development & Marketing Council of Guyana (FPDMC)

##### Objective

GFC staff is made knowledgeable of 1) the required elements of an effective Chain of Custody system; including adequate Material Accounting Records, 2) the required elements of an upgraded the Return of Lumber Sawn and Lumber Produced form and database, and 3) the CITES requirement to issue a certificate of origin should be part of the programme.

##### Contents

- Elements of a Chain of Custody<sup>2</sup> system; conforming to e.g. the FSC Standard for Chain of Custody Certification (FSC-STD-40-004)
- Elements of a Material Accounting Record (see e.g. FSC Standard for Chain of Custody Certification section 5.2)
- Required upgrade to Return of Lumber Sawn and Lumber Produced form and database
- CITES requirement that a certificate of origin must be issued by the Management Authority of Guyana before logs, sawn wood, and veneer sheets of the species may be exported , in accordance with Article V, paragraph 3, of the CITES Convention

##### Form of training

1-day training workshop

##### Elements of Material Accounting:

##### A licence holder must:

1. Maintain a product / volume accounting record that records all eligible inputs and outputs
2. Ensure that the accounting record includes **Purchase** details that links the sourced product to purchase paperwork:
  - a) Supplier name
  - b) Date of supply/receipt
  - c) Concessionaire / sawmill / timber dealer / lumber yard licence number
  - d) Unique reference to supply paperwork (i.e. purchase order, delivery or transport reference, sales invoice reference), capable of linking supply documents

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<sup>2</sup> The path taken by raw materials, processed materials, finished products, and co-products from the forest to the consumer, including each stage of processing, transformation, manufacturing, storage and transport where progress to the next stage of the supply chain involves a change of ownership (independent custodianship) of the materials or the products.



- e) Purchase quantity (meter cubes or tonnage) defined by licence holder for each product
  - f) Product category
3. Ensure that the accounting record includes applicable Sales details:
- a) Customer name
  - b) Date of sale
  - c) Unique reference to sale paperwork i.e. sales order/customer purchase order, delivery or transport reference, sales invoice reference), capable of linking to sale documents)
  - d) Sale quantity for each product
  - e) Product category

### **3.2 Proposed Workshop on Reporting Framework for CITES listed species for stakeholders**

#### **Organiser**

Guyana Forestry Commission and Forest Products Development & Marketing Council of Guyana

#### **Target group**

Large concessionaires (TSA-holders), small concessionaires (SFA-holders), private property holders (if the produce is moved/sold outside the boundaries of the area), independent sawmills, timber dealers, lumber yards, exporters of forest produce.

#### **Objective**

Stakeholders are made knowledgeable of 1) the required elements of an effective Chain of Custody system; including adequate Material Accounting Records, 2) the required elements of an upgraded the Return of Lumber Sawn and Lumber Produced form and database, and 3) the CITES requirement to issue a certificate of origin should be part of the programme.

#### **Contents**

- Elements of a Chain of Custody system; conforming to e.g. the FSC Standard for Chain of Custody Certification (FSC-STD-40-004)
- Elements of a Material Accounting Record (see e.g. FSC Standard for Chain of Custody Certification section 5.2)
- Upgraded Return of Lumber Sawn and Lumber Produced form and database
- CITES requirement that a certificate of origin must be issued by the Management Authority of Guyana before logs, sawn wood, and veneer sheets of the species may be exported , in accordance with Article V, paragraph 3, of the CITES Convention

#### **Form of training**

1-day training workshop

#### **Elements of Material Accounting:**

##### A licence holder must:

1. Maintain a product / volume accounting record that records all eligible inputs and outputs
2. Ensure that the accounting record includes **Purchase** details that links the sourced product to purchase paperwork:
  - a) Supplier name
  - b) Date of supply/receipt

- c) Concessionaire / sawmill / timber dealer / lumber yard licence number
  - d) Unique reference to supply paperwork (i.e. purchase order, delivery or transport reference, sales invoice reference), capable of linking supply documents
  - e) Purchase quantity (meter cubes or tonnage) defined by licence holder for each product
  - f) Product category
3. Ensure that the accounting record includes applicable Sales details:
- a) Customer name
  - b) Date of sale
  - c) Unique reference to sale paperwork i.e. sales order/customer purchase order, delivery or transport reference, sales invoice reference), capable of linking to sale documents)
  - d) Sale quantity for each product
  - e) Product category

### **3.3 Proposed Workshop on Availability, Sustainable Yield and Marketing of the CITES listed species Red Cedar for stakeholders**

#### **Organiser**

Guyana Forestry Commission and Forest Products Development & Marketing Council of Guyana

#### **Target group**

Large concessionaires (TSA-holders), small concessionaires (SFA-holders), private property holders (if the produce is moved/sold outside the boundaries of the area), independent sawmills, timber dealers, lumber yards, exporters of forest produce.

#### **Objective**

Stakeholders are made aware of 1) available red cedar stocks in large and small concessions and Amerindian Village Lands, 2) perceived sustainable red cedar yield of 800 m<sup>3</sup> per year (small concessions between 150 and 200 m<sup>3</sup> per year, large concessions 400 m<sup>3</sup> per year and 150 m<sup>3</sup> from Amerindian Village Lands), 3) the opportunity to expand red cedar production from large concessions, 4) that large concession holders are selling the species below its intrinsic value and that they can fetch higher prices by exporting red cedar lumber and building componentry instead, 5) that tree spotter are unfamiliar with red cedar which has consequences for the assessment of the resource and as a consequence for the marketing potential of the species, 6) pro-active approaching potential buyers in the Caribbean may be warranted when available stocks are known.

#### **Contents**

- Overview of the population size, distribution, stand density, size structure, regeneration dynamics and possible strategy for the sustainable management of the timber species *Cedrela odorata* L. in Guyana
- Historical red cedar production levels in large and small concessions and Amerindian Village Lands
- Evaluation of 100% pre-harvest inventories and the need for training in species identification.

#### **Form of training**

1-day training workshop

### **3.4 Training in identification of red cedar in the field for forest inventory teams of large concessionaires and staff of GFC's Inventory Unit**

#### **Organiser**

Forestry Training Centre Inc. and Forest Products Development & Marketing Council of Guyana

#### **Target group**

Senior tree spotters of large concessionaires and GFC Forest Resource Inventory Unit (FRIU) field staff.

#### **Objective**

Improved red cedar resource assessment through correct identification of red cedar trees in large concessions

#### **Contents**

Training in identification of red cedar in the field is best delivered by training of senior tree spotters (trainers) and GFC FRIU tree spotters. Training should be carried out in the field in one of the concessions with known occurrence of red cedar and in unharvested blocks where the species has been reported (e.g. Barama Co.Ltd.).

Adult red cedar trees are relatively easy to recognize by their characteristic fissured bark, slash, garlic smell of the slash and characteristic composite leaves. Further characteristics are given in Appendix I.

#### **Form of training**

3-day field training

### **3.5 Training in identification of red cedar lumber for sawmills, timber dealers, lumber yards, exporters, GFC graders and Guyana Customs and Trade Administration officers**

#### **Organiser**

Forestry Training Centre Inc. and Forest Products Development & Marketing Council of Guyana

#### **Target group**

Sawmillers, timber dealers, lumber yards, exporters, GFC graders and Guyana Customs and Trade Administration officers.

#### **Objective**

Improved recognition of red cedar lumber

#### **Contents**

Training in identification of red cedar lumber. Training can be based on Tropenbos publication "Major Timber Trees of Guyana – a Lens Key" by Brunner *et al* (1994); proposed trainer Ben J.H. ter Welle (Wood anatomist resident in Guyana). Training materials are also provided by CITES:

CITESwoodID<sup>3</sup> – a software identification tool. The program is available as a CD-ROM. Contact: Gerald Koch of Thünen Institute of Wood Research, Germany; gerald.koch@ti.bund.de

Wood characteristics are also given in Appendix II.

**Form of training**

1-day training at FTCI

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<sup>3</sup> <https://cites.org/sites/default/files/eng/cop/16/inf/E-CoP16i-27.pdf>  
[http://www.iaws-web.org/files/file/IAWS2010\\_Koch1.pdf](http://www.iaws-web.org/files/file/IAWS2010_Koch1.pdf); <https://www.ti.bund.de/index.php?id=3243&L=1>

## Appendix I

### Field characteristics

*Cedrela odorata* is a (semi-)deciduous, monoecious, medium-sized to large tree up to 30-40(-45) m tall (in Guyana/Suriname) with a straight, cylindrical, branchless bole for up to 20(-25) m, 50-90 (-180) cm in diameter (in Guyana/Suriname), with low, blunt, fairly straight buttresses, 1.5-2.5(-3) x 1-2 x 0.2-0.3 m, branched at base. Bark (dark) reddish-brown especially near the base of the bole, greyish brown higher up, longitudinally fissured or ribbed in a diamond-shaped pattern. Fissures 10-60 x 2-4 x 1-2 cm, 5-8 cm apart. Dead bark 4-10 mm thick, (dark) brown, layered, with some lighter brown layers. Living bark 8-10 mm thick, pink or purplish-red (inner half off-white, when exposed to air discolouring to rusty brown), layered, soft, fibrous, with typical cedar-like, offensive garlic scent. Crown flat or rounded, light, branches erect to spreading; branchlets finely to conspicuously lenticellate (Lindeman & Mennega, 1963; Polak, 1992; Lemmens, 2008). See Figures 1-3.

Seedlings with epigeal germination and short taproot. Cotyledons are leaf-like, opposite, ovate, c. 3 x 1.5 cm, apex and base rounded. Two first leaves opposite, trifoliolate with entire leaflets; blades of lateral leaflets narrowly elliptic, c. 0.2 x 0.5 cm; blade at middle leaflet rhombic, c. 3 x 1 cm (Polak, 1992; Lemmens, 2008).

### Leaves

Twigs round, lenticellate, glabrous. Leaves alternate, paripinnately compound with (5-)6-14(-15) pairs of leaflets; stipules absent; rachis slightly hairy or glabrous, petiolules puberulous when young; petiole 2.5-7.5 cm long, round; rachis 18-38 cm long, grooved above; petiolules to 2 cm long; leaflets more or less opposite; blades papery or thin-leathery, (narrowly) ovate, often falcate, 5-14 cm long x 3-6 cm wide, glabrous, margin flat, apex slightly acuminate, with obtuse tip, base rounded; primary vein plane above, slightly prominent below; secondary veins 7-12 pairs, loop-forming, with some smaller ones in between, prominent above, moderately prominent below; tertiary venation dense (Polak, 1992; Lemmens, 2008).

### Flowers

As a monoecious tree, *C. odorata* has flowers of both sexes in the same inflorescence. The inflorescence is a terminal, much-branched, pendulous panicle, 10-40 (50) cm long, glabrous or puberulous; peduncle 0.5-8 cm long; pedicels 1-2 mm long. Flowers functionally unisexual, but with well-developed vestiges of the opposite sex, male and female flowers very similar in appearance, actinomorphic, pentamerous, greenish-white, subsessile, 6-9 mm long, smelling of garlic; calyx cup-shaped, 2-3 mm long, with 5 short teeth; petals 5 free, imbricate and adnate for  $\frac{1}{3}$  of their length, forming into a long, columnar androgynophore by a medium carina (therefore preventing their spreading in open flowers); stamens 5, free, 2-3 mm long; ; anthers dorsifixed, opening by longitudinal slits; ovary 5-locular, pubescent; each loculus with 10-14 ovules; style short, stigma discoid (Polak, 1992; Lemmens, 2008; Orwa et al, 2009).

## Fruits and seeds

The fruit is a pendulous, woody, oblong-ellipsoid to obovoid capsule, at first green, finally brown-black with numerous lenticels, 3-5 cm long and 2-4 cm in diameter, glabrous, dehiscent with 5 valves, central column with 5 broad wings (Polak, 1992; Lemmens, 2008).

Each fruit contains 13 to 34 developed seeds. The seeds are samaroid, bulky at their apex, 2 to 3 cm long and 5 mm wide (including the wing). The bulky part is oblong, slightly comose, laterally flattened, 7 to 8 mm long, 3.5 to 5 mm wide, and 1.2 to 1.5 mm thick. The seed-coat is light brown to red-brown, rugose, opaque, chartaceous, and expanded at the base on a thin and brittle lateral wing (Rocas, 2003).



Figure 1 a. habit; b. flower; c. flower, longitudinal section; d. dehiscent fruit; e. seed; f. trunk base; g. seedling. Source: Polak (1992)



**Figure 2** Bark of red cedar. Source: Polak (1992)



**Figure 3** Leaf and dry fruits of red cedar. Source: Lemmens (2008)

## Appendix II

### Wood Properties

#### *Colour and Appearance*

*C. odorata* has Lustrous wood of medium density. The heartwood is pale cream in colour immediately after sawing, turning pinkish brown upon exposure; clearly demarcated from the narrow creamy yellow or pale brown sapwood (3-5 cm). The grain is usually straight, sometimes interlocked, sometimes woolly indicating the presence of tension wood, texture moderately fine to moderately coarse; the figure is attractive in flat-sawn hoards. Fresh wood has a distinct, lingering, cedar-like scent; this characteristic of the wood makes it a favourite for cigar boxes. It has a bitter, spice-like taste. Sometimes the wood has important resin marks. Growth ring boundaries are distinct, marked by differences in pore size and initial parenchyma (Brunner et al, 1994; Gérard et al, 1996; Miller & Détienne, 2001; Lemmens, 2008). Heartwood is rated as moderately durable and moderately resistant to termites, but the sapwood is susceptible to staining and powder post beetles and is not durable (Orwa et al 2009). Basic specific gravity is low to medium; variable, ranging from 0.25-0.50 (Miller & Détienne, 2001).



Figure 4 wood (Source: Lemmens 2008)

#### *Wood anatomy*

Growth rings are usually distinct, marked by early-wood vessels and initial, marginal parenchyma. Wood is diffuse porous to weakly semi-ring porous. vessels uniformly distributed, solitary (35-90%)



or in multiples of 2-3(-8), generally oval; 2-4/mm<sup>2</sup>; (115-)160-235(-350) µm in tangential diameter; 305-575 µm in element length, gradually reducing in size through growth ring, average tangential and radial diameter 130-160 µm and 160-200 µm, respectively, and maximum tangential and radial diameter 200-305 µm and 290-355 µm, respectively, walls 3-6 µm thick (Chung et al, 1995).

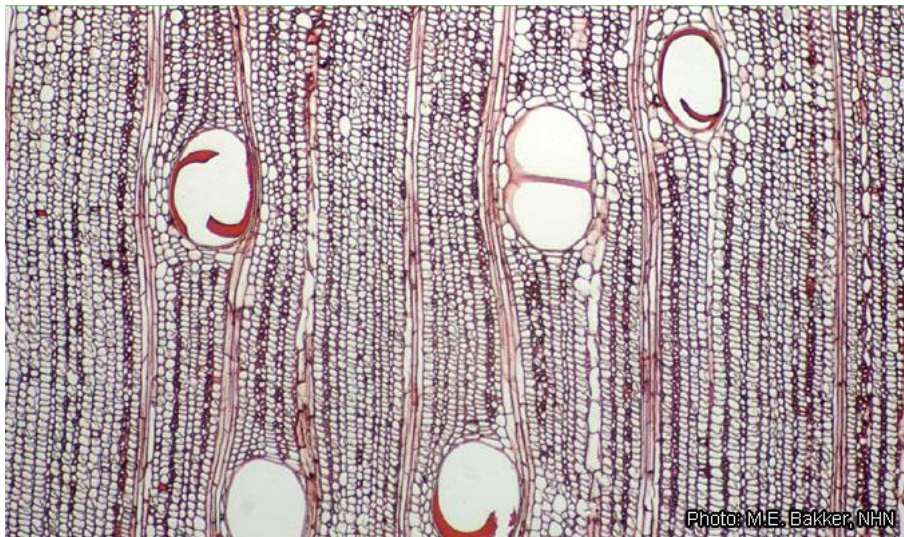
Perforation plates are simple; intervascular pits alternate; circular or oval; 6-8 µm in diameter; vessel-ray pitting with distinct borders, similar to intervascular pits in size and shape; non-vestured. Deposits in heartwood vessels as seen with the light microscope are frequent and red brown in colour (Miller & Détienne, 2001). Vessels are distinct to the naked eye (Brunner et al, 1994).

Fibres are 0.8-1.5 mm long and non-septate; tangential diameter 8-40 µm, thin-walled to thick-walled (c. 2 µm), with sparse slit-like pits mainly in the radial walls; pits simple to minutely bordered; brown deposits occasionally present (Chung et al, 1995; Miller & Détienne, 2001).

Paratracheal parenchyma are scanty to vasicentric. Marginal banded parenchyma present (bands 3-8 cells wide). Axial parenchyma mostly 3-4 cells per parenchyma strand (Miller & Détienne, 2001). Axial parenchyma are distinct to the naked eye; parenchyma bands are smaller than the fibre tissue bands (Brunner et al, 1994).

Rays are heterocellular, one row of upright and/or square cells (sometimes two rows); (3-)4-5 per mm; mostly 2-3 cells wide; 255-400 µm in height. Storied structure was not observed (Miller & Détienne, 2001). The proportion of ground tissue fibres is large. Rays are usually visible without lens. The width compared to the vessels is ¼ of vessel-size to smaller than half of vessel-size (Brunner et al, 1994).

Prismatic crystals are rare in procumbent cells; sometimes in upright and/or square ray cells, or in non-chambered axial parenchyma cells, or in chambered axial parenchyma (generally in short (2-4) chains); one crystal per cell or chamber (Miller & Détienne, 2001). Horizontal intercellular canals and axial gum canals are absent (Chung et al, 1995).



**Figure 5 Wood in transverse section (Source: Lemmens 2008)**



Figure 6 Wood in tangential section (Source: Lemmens 2008)

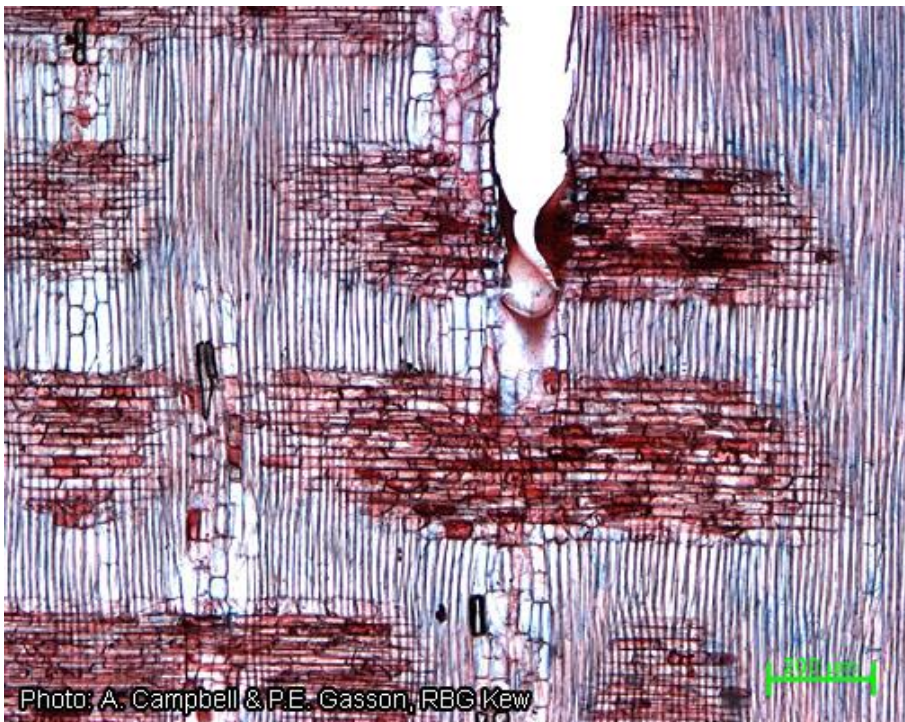


Figure 7 Wood in radial section (Source: Lemmens 2008)

## Technological characteristics

### *Physical properties*

The wood is light- to medium-weight, with a green density of density of  $0.80 \text{ g/cm}^3$ , while air-dry density at 12% moisture content varies according to origin from  $0.35$  to  $0.55 \text{ g/cm}^3$ , average  $0.44 \text{ g/cm}^3$ . Basic specific gravity is low to medium; variable, ranging from  $0.25$ - $0.50$ , on average  $0.38$ . The rates of shrinkage may be low: total tangential shrinkage  $6.1 \%$ , total radial shrinkage  $3.8 \%$  and total volumetric shrinkage  $10.0 \%$ , T/R Ratio:  $1.5$ . (Gérard et al, 1996).

### ***Mechanical properties***

The wood is weak. At 12% moisture content, the bending strength (modulus of rupture) is 54-67 N/mm<sup>2</sup>, modulus of elasticity 5950-8100 N/mm<sup>2</sup>, compression parallel (crushing strength) to grain 27.5-35 N/mm<sup>2</sup>, compression perpendicular to grain: 3.5-4 N/mm<sup>2</sup>, shear 6.5-8.5 N/mm<sup>2</sup>, cleavage 49 N/mm radial and 56 N/mm tangential, Janka side hardness 1765-2050 N and Janka end hardness 2490-2740 N. (Chung et al, 1995; Gérard et al, 1996 ; Lemmens, 2008).

### **Processing**

#### ***Workability***

The wood is easy to work with both hand and machine tools. It saws, bores, turns and sands without problems and produces a good finish. However, growth stresses may cause severe end splitting of logs and warping and splitting of the central cant during saw milling (Chung et al, 1995). Due to its low density and softness, the wood has a tendency to woolliness, if not machined with sharp cutters; extra sanding up to finer grits may be required to obtain a smooth wood surface. Also, natural gum pockets can remain wet and may ooze out onto the surrounding surface, which can clog and gum up saw blades, and make finishing the wood a challenge. (Gérard et al, 1996; The Wood Database, no date). The wood is easy to glue and nails easily with good nail-holding power. Rotary peeling and slicing give good results without pre-treatment, producing attractively figured veneer, but with some tendency for woolly surfaces. (Gérard et al, 1996; Lemmens, 2008).

#### ***Drying***

The wood dries moderately fast with a very slight risk of checking and deformation. Boards 25 mm thick take about 8 weeks to air dry and boards 50 mm thick 14 weeks. Air drying to about 30% is recommended prior to kiln drying. In general, a temperature of 65-75°C is recommended for kiln drying. U.S. kiln schedule T10-D4S is recommended for 25-38 mm stock and T8-D3S for 50 mm stock or British schedule H (25 mm) heating to 93°C (200°F) for 8 to 17 hours at a relative humidity of 60% is suggested to control oil and gum exudates in service. (Chung et al, 1995; Gérard et al, 1996).



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