

**Assessing Utilization of Lesser Known Tree Species in Secondary
Tropical Semi-Deciduous Forests of Colombia**

**A Contribution to Ecosystem Rehabilitation and Sustainable Forest
Management**

by
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*Dedicated to all of you who get inspired by tropical forests.
Keep breathing nature*

Abstract

The secondary tropical semi-deciduous forests located at the lower slopes of the Sierra Nevada de Santa Marta, Colombia, have been developed in the last decades as a result of unsustainable forest management and a large emigration flux created by the internal conflicts in the country.

Today, the owners do not see profitability in using the forests resources and, therefore, the areas are rapidly being transformed into other land uses, creating imbalances in the ecosystem by losing the capacity to provide goods and services. This situation partially results from the unawareness of the stakeholders and institutions about the potentials and alternatives to include the forests in the economic portfolio of activities in the farms.

One alternative for the use of the secondary forests is the production of timber, but the traditionally commercialized species are overexploited and, as consequence, rare, partially also protected by law. Therefore, the actual potential is mainly concentrated in the utilization of lesser known species. Those species account for roughly 93 % of the forest species in the tropics, and their inclusion into the management activities is considered to be relevant for achievement of sustainable forestry. However, information about the species with respect to wood properties, potential uses or possibilities of introduction into the forest industries is missing.

The objectives of this research were focused on filling some gaps of information about the species for the study region and on evaluating the possibilities of utilization of lesser known species as a way to increase the forests value and by this mitigate its conversion to other land uses.

A consistent methodology was applied to create a baseline for linkages between the secondary forests resources and the forest industries. With interviews to the locals, a forest inventory and scientific information available, the secondary forests structure and composition of tropical semi-deciduous forests relicts in the Sierra Nevada de Santa Marta was evaluated. The results indicate the presence of 64 tree species with only 2 of them being available commercially today, giving evidence that the secondary forests have good potential for utilization of lesser known species.

Out of the pool of species found in the forests, eight lesser known species were methodologically selected as potentially usable for quality timber production, namely *Cordia* sp., *Gyrocarpus americanus*, *Pseudobombax maximum*, *Schizolobium parahybum*, *Acacia glomerosa*, *Machaerium capote*, *Platypodium elegans* and *Senna* sp.. Physical and mechanical properties of the selected LKS were tested on defect free samples and statistically analyzed. The assessment of the wood properties indicates that they are competitive with other species already commercialized.

In order to identify the possibilities of lesser known species inclusion in the local and regional markets, structured and non-structured interviews were carried out with the actors in the wood commercialization chain of the region, from landowner to sawmill. The results indicate that the lesser known species have good possibilities to be included in the local markets, especially in the cities of Fundacion and Santa Marta, however, in order to assure the implementation of them in the industries it would be recommended to generate strategies for their promotion.

Based on the outcomes of this research, it is concluded that the secondary forests have potential to contribute to the regional economy by the implementation of LKS, however, only under a sustainable forest management it will be possible to generate a long-term provision of timber and in this way assure an extra income for the land owners and develop interest for secondary forests preservation.

Keywords: *Lesser utilized species, wood properties, wood marketing, commercialization chain, Colombia, secondary forests.*

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Nomenclature

ASTM	American Society for Testing and Materials
AUC	Autodefensas Unidas de Colombia
CORPAMAG	Corporacion Autonoma Regional del Magdalena
DIN	German Institute for Standardization (Deutsches Institut fuer Normung)
EN	European Standards
FAC	Fuerzas Armadas de Colombia
FAO	Food and Agriculture Organization of the United Nations
FSP	Fiber Saturation Point
GDP	Gross Domestic Product
HDS	High Dense Species
IPPC	International Plant Protection Convention
ITCZ	Intertropical Converge Zone
ITTO	International Tropical Timber Organization
IVI	Importance Value Index
LDS	Low Dense Species
LKS	Lesser Known Species
MC	Moisture Content
MEA	Millennium Ecosystem Assessment
MOE	Modulus of Elasticity
MOR	Modulus of Rupture
REDD	Reducing Emissions from Deforestation and Forest Degradation
UNCCD	United Nations Convention to Combat Desertification
UNESCO	United Nations Educational, Scientific and Cultural Organization