



<http://www.handsontv.info>

Series 5: Programme 2 (of 9) - 'Source to Sale'

Rattan to Grow - Cameroon

Rattan is one of the most important non-timber forest products (NTFPs) in Cameroon. The gathering, selling and processing of rattan has many advantages and can help forest-dependent people lift themselves from the margins of poverty. Recently, many research organisations have turned to rattan for forest conservation and sustainable development projects, and have developed processing and harvesting techniques that are designed to improve sustainability and income generation for the forest people.

What is Rattan?

Rattan is a spiny, climbing palm prevalent in tropical and sub-tropical forests and can attain lengths of over 185 metres. Ecologically, rattan is very important. It grows in degraded forests and in marginal soil. It can be introduced artificially in natural forests without disturbing the existing ecological balance. As it 'hugs' the trees it may save them from being logged by providing equal or more benefit than a felled tree.



The stem, or cane, of rattan is strong and flexible. This makes it ideal for use in the manufacture of furniture, baskets, and other woven products. It is easy to work with, requiring only simple tools and low-cost machines.

South-east Asia has dominated the international rattan trade that is currently worth some US\$6.5 million per annum. By comparison, rattan in Africa is part of subsistence livelihood strategies for rural people, and its potential as an international commodity has been neglected.

© Courtesy of Dr Terry Sunderland

Rattan Research

The sustainable harvesting and management of the African rattan resource is hindered by a lack of baseline information on its growth, yield and harvest frequency. Research has now been undertaken by the African Rattan Research Programme (ARRP), in collaboration with other bodies, to gain an overview of the biological, ecological and socio-economic importance of rattan within local communities.

Cameroon rattan is considered an 'open-access' resource that can be collected from wild forests. There are very few traditional laws regulating its harvest, and state control often does not adequately monitor the exploitation of these resources. Increasing urban growth has placed greater pressure on native forests and high demand for cane products has led to the threat of over-harvesting, poor quality raw rattan stems, and inconsistent quality of rattan products.

Rattan is important at many levels in local communities. Its exploitation, through the cutting and trading of raw cane for transformation into goods, occupies about 35 per cent of household resource management, and makes up an important component of farmers' time. As rattan can be harvested year round, it provides valuable cash income for much-needed school fees and medical expenses.

Rattan Trials

Eighteen species of rattan occur in Cameroon. However, there are only three species which, having the required diameter, fibre wall thickness and proportion of fibrous tissue, form the basis of trade:

- *Laccosperma secundiflorum* (large diameter cane);
- *L. robustum* (large diameter cane);
- *Eremospatha macrocarpa* (juvenile stems).

ARRP has explored aspects of seed storage and pre-treatments. Recently an experimental silvicultural trial has been undertaken in collaboration with the Cameroon Development Corporation (CDC). The rattan seeds are brought from the wild and planted in seed beds. They take from nine months to a year to germinate and then they are transplanted into the forest where they are tended for 10 to 12 years until mature.

Annual growth rates as well as the economic viability of these cultivation systems are now being monitored and assessed.

Rattan Harvesting



To provide supplementary income, harvesting is undertaken by individuals, usually farmers or hunters. They tend to work in the same forest area, and return each time they need to cut cane. In general, the quality of the cane is dependent on its age and maturity. The species with small-diameter canes mature at a younger age than the large-diameter canes.

The criteria for selecting rattan for harvesting are as follows:

- Leaves and leaf sheaths about to dry and peel or already having done so.
- Basal portion of stem turns dirty-green or yellowish, and increasingly free of thorns (where present).

In clustering species, the mature stems selected for harvest are those without lower leaves and usually only the lower 10 to 20 metres of cane is harvested. But in many instances all the stems in a cluster may be cut in order to obtain access to the mature stems - even those that are not yet mature enough for exploitation and sale. The use of young or immature rattan may lead to low-quality end products due to the effects of shrinkage, cracking, discoloration or coarse surfaces.

Unsustainable practices, such as cutting down the support tree in order to extract a good portion of rattan, push farmers further into the forest to look for new supplies. As well as impacting on the forest ecosystem this affects the profitability of rattan exploitation and reduces the time farmers can devote to agricultural activities. If conservation measures are not undertaken, it may lead to degradation of the natural stands.

Village-based harvesters often transport the rattan to urban markets themselves. Alternatively, they sell the rattan to a local trader who then transports it for sale to urban artisans. Some urban-based artisans harvest rattan themselves, although this is often only the case where there is close proximity to the wild resource and a lack of supply from forest-dependent people.

Processing

Traditional processing of raw cane requires the removal of the epidermis (skin) from the stem and the drying of the raw cane prior to its use. This is undertaken manually, with the stems being scraped with kitchen knives to remove the skin. Drying is usually undertaken in the open air. This simple means of processing is not only labour intensive, but also results in inferior quality cane and hence limits the value of the finished products. It has led to speculation that the cane in Africa is inherently poor in quality. This has not been supported by thorough studies and it is possible that if processed and transformed more efficiently cane from Africa could, in terms of quality, rival that of Asia.



© Courtesy of Dr Terry Sunderland

Support from the Malaysian Forest Research Institute (FRIM) has led to the transfer of new technological processes that are being trialled in the Cameroons. A model processing unit has recently been constructed in Limbe, Cameroon, that is used primarily for training and demonstration.

For improved processing some additional equipment is required:

- Boiling tank made of steel, capacity 400 litres
- Steamer (can be made from an oil drum) on a concrete base
- Wood for heating.

The quality of cane depends on how well it has been treated. Initial treatment of raw cane entails boiling the stems in diesel or palm oil (palm oil turns the cane orange, which is considered unattractive) at an average temperature of 150°C for 20 minutes for large-diameter cane, and 10 minutes for small-diameter cane. This boiling process is beneficial for the following reasons:

- The boiling process kills any pests and diseases that might be present in the raw cane.
- The latent moisture content of the cane is reduced dramatically, facilitating the subsequent drying process and reducing the risk of deterioration during storage.
- Boiled rattan is more durable during storage and is less prone to borer damage and fungal attack.
- Rattan boiled in diesel oil gains a rich tan colour and a glossy surface, which can reduce the need to varnish after transformation.

After boiling, the cane is 'cooked' on racks in a steamer for 10 minutes. The stems are then stacked in the open and allowed to dry. When the stems are reduced to

15 per cent moisture content, they are ready for decorticating (stripping the skin from the cane) and sanding. In the case of small-diameter canes that are used for weaving, they are also ready for splitting. Straightening of large-diameter canes is also sometimes necessary, particularly at the nodes. These procedures are undertaken using machines specially designed for rattan processing.

Shaping the Cane

The manipulation of raw cane into a finished product is also extremely low-tech. However, with the acquisition of simple skills and knowledge of the limits of the raw materials, coupled with basic improvements in processing, the high quality of the finished product can be maintained. Again technology from Asia has been introduced. Basic differences between the process in Asia and that of Africa include the following:

- Bending of the cane is undertaken using steam, rather than a blowgun, which reduces discoloration and tarnishing through scorch marks. If a blowgun is used, the heat of flame is such (bluish) that scorch marks are negligible and if they do occur, they are immediately sanded off.
- Nails are hardly used. Staples, 10-65 mm or 0.5-2.5 inches long, driven by compressed air staple guns, are the more common means of attaching cane sections. Joints are then sealed using binding or weaving.
- The use of dowels and intricate jointing is also a common means of attachment and avoids the use of metal fasteners at all.
- After completion, finished products may be bleached to obtain uniformity of colour, especially when different species of cane are used.
- Dipping in kerosene is also common; this provides yet more protection against insect attack.
- Varnish is applied in two coats; the first coat is applied and then lightly sanded before the application of the second coat. This ensures an even and long-lasting finish.



© Courtesy of Dr Terry Sunderland

The Future for Rattan

These improved methods of processing and transformation will assist in the long-term conservation of rattan because more durable and longer-lasting products mean less cane needs to be continually harvested from the wild. Longer-lasting products also enhance the reputation of Rattan-derived products from Cameroon, thereby attracting potential customers and securing an income for Rattan producers. If resource tenure is more certain, younger stems are not removed and

are left to regenerate and provide future sources of cane, usually on a two or three year rotation. Currently there is community-based forestry management that could provide rattan on a sustainable basis.

Recently, the community management of forest lands has been written into the forest codes of many African countries. This means that the benefits of forest management will go to the communities concerned, rather than to the national state and large corporations. Now that African rattan has a proven cultivation potential, it is also possible to enrich forests with rattan through under-planting and subsequent management. The benefits of such community-managed forest-enrichment systems, coupled with better management of the wild resource, include:

- Increased revenues from high value forest products, such as rattan, which will benefit the local communities;
- Continued, and guaranteed, supply of raw material to rattan artisans while alleviating pressure on the wild resource;
- Diversification of forest lands;
- Maintenance of a forest canopy and multi-strata cultivation system (high species diversity and retention of ecological integrity).

In short the economic and social conditions in Africa make low-impact, enrichment-based, cultivation of indigenous rattan a viable proposition, particularly if combined with coherent social forestry programmes.

Acknowledgements

ITDG would like to thank Dr Terrance Sunderland of the African Rattan Research Project for providing information and helping in this case study.

TVE/ITDG gratefully acknowledge support for *Hands On* programmes from the UK's Department for International Development (DFID).

Further Information

References

Jayasree, V.K., Sujatha, M.P., Renuka, C. and Rugmini, P. (2004). 'Root morphology and development in rattans. 3: Root system development in *Calamus thwaitesii* Becc. and *Calamus rotang* L. in relation to the physical properties of a degraded lateritic soil'. *Journal of Bamboo and Rattan*. 3(2):81-90.

Lucas, E.B. and Dahunsi, B.I.O. (2004). 'Characteristics of three western Nigerian rattan species in relation to their utilisation as construction material'. *Journal of Bamboo and Rattan*. 3(1):45-56.

Relevant Organisations

African Rattan Research Programme

The African Rattan Research Programme (ARRP), a multi-disciplinary initiative of the Royal Botanic Gardens, Kew, and University College London, is based at Limbe Botanic Garden.

Limbe Botanic Garden

African Rattan Research Programme

BP 437

Limbe

Cameroon

E-mail: Afirattan@aol.com

International Network for Bamboo and Rattan (INBAR)

The International Network for Bamboo and Rattan (INBAR) is an international organization established by treaty in November 1997, dedicated to improving the social, economic, and environmental benefits of bamboo and rattan.

No. 8, Fu Tong Dong Da Jie,

Wang Jing Area

Chaoyang District

Beijing 100102

P.R. China

Postal Address: PO Box 100102-86, Beijing 100102, P. R. China

Tel: +86-10-6470 6161

Fax: +86-10-6470 2166/ 3166

E-mail: info@inbar.int

Website: <http://www.inbar.int/>

Further reading related to this subject from ITDG Development Bookshop

Facing Kirinyaga: A social history of forest commons in southern Mount Kenya

Alfonso Peter Castro

Examines the management and use of common-property forests, groves and trees on southern Mount Kenya, demonstrating the long-standing relationships between Kenyans and their forest resources - and the connections between anthropology and forestry. This book is published in the IT Studies in Indigenous Knowledge and Development series.

166pp ISBN 1 853392537 1995 (ITP)

Nature is Culture: Indigenous knowledge and socio-cultural aspects of trees and forests in non-European cultures

Edited by Klaus Seeland

The startling message of this book is that the so-called virgin forests of the world owe much to their symbiotic relationship with the indigenous peoples who live in and on the margins of the forests. Human activities have for millennia 'managed' (consciously or unconsciously) the world's forests, resulting in a greatly enriched biodiversity. The contributors to the book come from many different scientific disciplines, national and cultural backgrounds. Examples of forests are taken from Asia, Africa and South America, thus reflecting the global nature of the phenomenon. The book's conclusions will have far-reaching implications for all who are concerned with the conservation of forests and their indigenous human population. This book is published in the IT Studies in Indigenous Knowledge and Development Series.

152pp ISBN 1 853394106 Paperback 1997 (ITP)

The New Forester

Berry van Gelder and Phil O'Keefe

This book will challenge foresters, and other rural development professionals, to build new landscapes which provide a range of biomass products to local users. The authors encourage professionals to work with, rather than against, local people. 128pp ISBN 1 853392324 Paperback 1995 (ITP)

To order any of these books from ITDG Development Bookshop, send a Sterling Cheque (adding 15% for postage and packing to European addresses, 25% elsewhere), or credit card details (American Express, Visa or MasterCard) to: ITDG Publishing, Shumacher Centre for Technology Development, Bourton Hall, Bourton on Dunsmore, Warwickshire. CV23 9QZ. United Kingdom. Tel: +44 171 436 9761; Fax: +44 171 436 2013; E-mail: orders@itpubs.org.uk; Website www.developmentbookshop.com

Other Relevant *Hands On* Case Studies

Babassu Breakers – Brazil

<http://info.tve.org/ho/doc.cfm?aid=912>

Going, Going, Gum! – Guatemala

<http://info.tve.org/ho/doc.cfm?aid=890>

Coconuts to Cars – Brazil

<http://info.tve.org/ho/doc.cfm?aid=947>

Dollars from Scents – Brazil

<http://info.tve.org/ho/doc.cfm?aid=886>

DFID



**European
Commission**

**UNITED NATIONS
FOUNDATION**



Equator
Initiative

PRACTICAL ACTION



www.tve.org

EARTH REPORT

www.tve.org/earthreport