

## RATTAN PRODUCTION AND TRADE

BLAŽKOVÁ L., JENÍČEK V.

### Abstract

*The forests are a significant economic renewable natural resource. They play an important role in protecting the environment, and are of great importance for socio-economic development of the rural areas of the least developed countries. In addition to wood products, they are a major source of fodder, protein, fruits, gums, resins, dyes, bamboo, rattans, mushrooms, medicinal plants and many other non-wood forest products (NWFP).*

*FAO estimates that 80% of the developing world relies on NWFPs for some purpose in their everyday life. NWFPs also play an important role in the international marketplace with over US\$1.1 billion in trade. Although many NWFPs are collected on a local level by peasants, some NWFPs have been successfully domesticated for large scale production. In this text are discussed importance of rattans in regions of South and South East Asia and problems with sustainable forest management.*

**Key words:** non wood forest products, rattans, sustainability, international trade, forest conservation, rural development.

### INTRODUCTION

Rattans or canes are the stems of climbing palms (subfamily Calamoideae) which grow throughout the Southeast Asian region, forming a characteristic component of many forest types. More than 600 species belonging to 13 genera are recognized, out of which 8 genera and some 300 species are recorded in Indonesia. (FAO, 1993)

Rattan is collected almost exclusively from wild populations and market demand for cane is strong. Indonesia supplies over 90% of the world's commercial rattan cane and the majority is gathered from forests in which management has been largely absent or ineffective. There has been little or no monitoring or management of wild rattan harvesting and virtually

nothing is known about ecological effects associated with extraction. Sustainable harvesting of NWFPs has been advocated as a means to simultaneously conserve forests and encourage economic development and is now an integral component of most tropical forest conservation and management efforts. However, many ecologists contend that NWFP harvesting is neither ecologically sustainable nor economically viable.

In the main producing countries – Indonesia, Malaysia, Thailand, Philippines, Vietnam and China – are established plantations of rattans. But the production from these plantations has no economic importance for the international trade. The main branch of rattan harvesting still remain harvesting wild rattans. (Siebert, 2001)

Next table is an example of rattan species variability:

**Tab. 1. :** The rattan genera: number of species and their distribution  
(Modified from Uhl and Dransfield, 1987)

Genus	Number of species	Distribution
<i>Calamus</i> L.	ca. 370-400	Tropical Africa, India and Sri Lanka, China, south and east to Fiji, Vanuatu and eastern Australia
<i>Calospatha</i> Becc.	1	Endemic to Peninsular Malaysia
<i>Ceratolobus</i> Bl.	6	Malay Peninsula, Sumatra, Borneo, Java
<i>Daemonorops</i> Bl.	ca. 115	India and China to westernmost New Guinea
<i>Eremospatha</i> (Mann & Wendl.) Wendl.	10	Humid tropical Africa
<i>Korthalsia</i> Bl.	ca. 26	Indo-China and Burma to New Guinea
<i>Laccosperma</i> (Mann & Wendl.) Drude	5	Humid tropical Africa
<i>Myrialepis</i> Becc.	1	Indo-China, Thailand, Burma, Peninsular Malaysia and Sumatra
<i>Oncocalamus</i> (Wendl.) Wendl.	4	Humid tropical Africa
<i>Plectocomia</i> Mart.	ca. 16	Himalayas and south China to western Malaysia
<i>Plectocomiopsis</i> Becc.	ca. 5	Laos, Thailand, Peninsular Malaysia, Borneo,

		Sumatra
<i>Pogonotium</i> J. Dransf.	3	Two species endemic to Borneo, one species in both Peninsular Malaysia and Borneo
<i>Retispatha</i> J. Dransf.	1	Endemic to Borneo

Source:., Dransfield, Sunderland, 2002

**Monitoring problems of harvesting wild rattans:**

Forests throughout Southeast Asia have been under formal state jurisdiction since colonial times, and both colonial and post-independence states have attempted to control and manage forest resources with great difficulty and limited success. In the case of rattan, efforts to control, regulate and manage cane harvesting have been largely absent or ineffective. Local

governments try to control rattan harvesting, but a considerable deal of harvested cane is collected illegally. It is mainly caused by the plant habitat type – the tropical forest. (Siebert, 2001)

The following table shows World Trade in rattans differences. These differences are caused mostly by the illegal harvesting.

**Tab. 2.:** World Trade in Rattan and Rattan Products (1000 USD)

Years	Import	Export	Difference in %
1988	62820	22640	63,96
1989	75540	75040	0,66
1990	57290	56080	2,11
1991	52470	49140	6,35
1992	88230	40140	54,51
Average values	67270	48608	27,74
2000	75923	49548	34,74

Source data from COMTRADE database

Unfortunately the exact world trade value in continuing time series is unavailable.

**Commercially important rattan species:**

From the commercial point of view rattans can be divided into two main groups: rattans with large diameter cane and with small diameter cane.

Large-diameter canes are mainly used for making furniture frames while small canes are used for tying and other parts of furniture. The most important commercial canes come from the genus *Calamus*.

***Calamus manan* (rotan manau)** is the best large-diameter (>18mm) cane and is usually confined to the steep slopes of hill dipterocarp forests. It was once abundant at 600-1000 m altitude and grows well when planted on flat lowlands. It is a solitary and high climbing rattan reaching 100 m or more. For optimum growth, the species requires about 60 percent of light. It grows well under rubber trees, with growth rates around 0.3-3.0 m/a.

***Calamus tumidus* (rotan manau tikus)** is classed under the large-diameter group but its canes are always

smaller than those of *Calamus manan*. The cane is used locally in a way similar to that of *C. manan*. The habit is solitary, high-climbing and it is a rather rare rattan of freshwater swamp forest, peat swamp forest and on alluvial flats.

***Calamus scipionum* (rotan semambu)** is a widespread lowland species growing up to 200 m altitude. It is found on alluvial soils in flood plains of rivers and in secondary forests but not in primary dipterocarp forests. The cane is used for making walking sticks and umbrella handles because it has long internodes. The species is a clustering type with 5-10 stems per clump, climbing high up to 50 m or more. The growth rate of the cane is slower than that of *C. manan*, about 0.15-1.5 m/a.

***Calamus caesius* (rotan sega)** is the best smaller diameter (<18mm) cane. It is used for all types of binding and weaving in the furniture industry, and in the finest basket ware. The habit is clustering, with more than 100 stems per cluster, and high-climbing reaching about 100 m or more in length. The species is found in the lowlands such as alluvial flats, freshwater swamps, margins of peat swamp forests to hill slopes up to 800 m

altitude. The clump tends to be rather close and dense. The advantage is its multiple-stem habit, which allows repeated harvests to be carried out without the need of replanting.

*Calamus trachycoleus* (**rotan irit**) is a small-diameter cane (<18 mm). It is a clustering dioecious species with a more open type of clumping, producing additional stems via long stolons, which have the potential of increasing the number of aerial stems exponentially. It grows on seasonally flooded riverbanks on alluvial clays and margins of peat swamp forests. In general, the canes of this species have shorter internodes, smaller diameter and thinner layer of silica than *C. caesius*. However, there is more demand for it for weaving purposes because its cane is softer, more pliable and easier to work with. Its habit is multiple-stem like sega, and needs no replanting. (Razak Mohd, Raja Barizan, 2001)

#### **Resource management :**

The richest rattan habitats - the lowland dipterocarp forests - have mostly been converted to oil palm and rubber plantations. Furthermore, the remaining commercial forest areas are now highly accessible as a result of the construction of logging roads. This has resulted in heavy and unsustainable exploitation of rattans. In order to maintain the resource, large-scale rattan plantations offer a solution. Land identified as suitable for establishing rattan plantations is logged forests (newly logged or old logged forest) and existing plantations (tree forest, abandoned or commercial rubber plantations and oil palm plantations).

Virgin forests with heavy canopy and low light levels on the floor are not recommended for rattan cultivation. The choice of species for commercial cultivation will have to take into account numerous factors, of which profitability is probably the most important one. The quality of the cane must be acceptable to the industry either as raw cane or semi-processed or finished product. Other important factors are the gestation period, and whether the species is single or multiple-stemmed. This will determine whether single or multiple harvests can be obtained. Sufficient knowledge of the silviculture of the species chosen is crucial. (Razak Mohd, Raja Barizan, 2001)

#### **Rattan collection :**

Rattan collection is simple: the collector needs a machete for cutting the rattan and removing the sheath, plus the strength to pull it down from the treetops. Collectors use a hook-like knife tied to the end of a long straight cane or piece of bamboo to isolate climbing rattan and tug on them until they fall. These techniques are the same, whether collection takes place in the forest or in plantations. Plantations require seed stocks which are available from their own plants or wild seeds collected in the forest. The knowledge required for collecting and cultivating rattan has traditionally been passed from generation to generation.

Until it reaches a first-stage processing center, the only treatment given cut rattan by collectors is bundling (i.e., folding 4-6 meter lengths in half) in packs approximately 28 kilograms each, air-drying, and for some varieties in some locales, removal of the outer coating on the stems. This is done by wrapping the rattan around a tree trunk and rubbing it back and forth, or by washing the canes with sand at the river's edge.

The bundled rattan is then sold to a trader who takes it down river by boat to a first stage processing center or to an exporter (FAO, 1991)

#### **Resource processing :**

The steps in processing rattan are as follow:

- **Washing.**

Washing entails the removal of still intact inner epidermis of the leaf sheath adhering to the cane and the silicified epidermis of the cane as well as dirt encrusted on the stem. The removal of the remaining part of the leaf sheath is a tedious and slow process. There are several methods of cleaning rattan applied in Indonesia. What was observed was the use of a metal ring through which the canes are passed. While it is claimed that a person can wash 200 to 250 pieces a day, observation indicates that it would be physically difficult to attain this. This would mean washing a sega piece.

- **Drying.**

The primary aim of drying rattan is to reduce its moisture content to less than 20% to prevent the attack of stain fungi and wood boring insects especially during storage. Staining can occur within 24 hours after cutting. It is important to wash the rattan soonest and subject them to drying before staining occurs.

The rattan is dried on platforms raised about 50 cm from the ground. The platform is made of wooden poles or with bamboo stingers or entirely of lumber. The usual material used is iron wood or ulin wood (5 cm x 8 cm) which is said to last for over 20 years. One such platform can contain as much as 2 tons. Drying the rattan can take from 7-10 years when sunny and can extend to 15 days or more when cloudy. When it rains the materials are covered with plastics. The drying stock is turned 2-3 times a day to improve uniformity of drying by allowing the materials at the middle and bottom better exposure. In some instances village processors contract the labor for sulfurizing and drying. A person can work on an average of 2mt per day.

- **Sorting**

Sorting which is done after drying is done to segregate the rattan according to diameter classes and quality. In practice, however, rattan is sold as a lot of mixed grades. Grade classification indicates that on the average, 20% falls under the first class, 55% under the second class and 25% under the third class. Sorting also includes the culling out of defective canes such as those infested with stain as well as those with cuts and bruises. Immature portions of the cane are also removed. An estimated percentage weight loss of 3% occurs in sorting.

- Bundling

Rattan is bundled in weights of 50 kg or 100 kg with the latter s the more predominant practice. Bundling sometimes include the trimming of the ends immediately before trying up the materials

The rattan is also straightened for easier processing in the succeeding steps of production. In some instances the rattan is placed over a charcoal stove to heat it a little before is straightened while in other factories it is done without pre-heating. It is estimated that one person on the average would be able to straighten the equivalent of 300 kg per day.

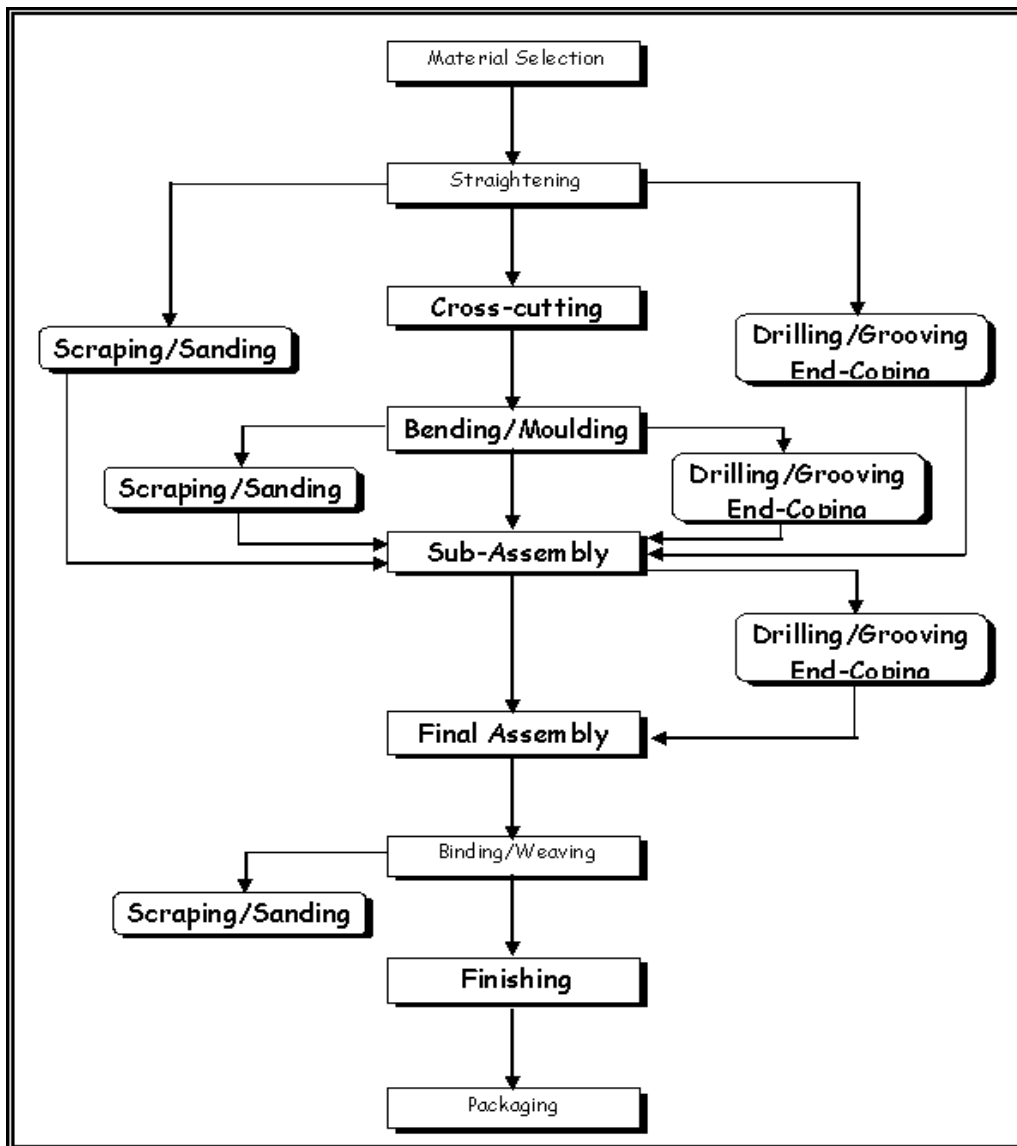
Orders for peels (skins) and cores (wickers) are usually made for particular lengths. It is, therefore, necessary to

the culling out of defective portions of the cane where there are cuts and bruises and other defects. The material cut are also shorted out according to length and diameter. In this step, it is estimated that bout 10 percent of the original weight is lost.

Production of skin is done by passing the rattan through a peeling machine that peels off the skin leaving a central portion called core which becomes the raw material for the production of wickers and other side cores. For the smaller diameter rattan the material is peeled on 4 sides leaving a square core. The larger ones allow the peeling off of 5.6 oer sometimes 8 peels. If narrow skin is required the resulting core assumes a multi-pointed-stanshape . Usually 3 persons man one peeling machina. The waste generated is about 9 percent of the original weight.(Kartohidardjo, 2003)

**Scheme 1. :** Rattan furniture making process

cut the rattan to these lengths. This step likewise allows



Source: (Abdul Razak, Raja Barizan, 2001)

**Rattan trade :**

Rattan furniture trade probably represents less than 4 percent of world trade of all furniture. However, in Asia the rattan furniture industry represents substantially more than 25 percent in value of all furniture industry output, and it is growing.

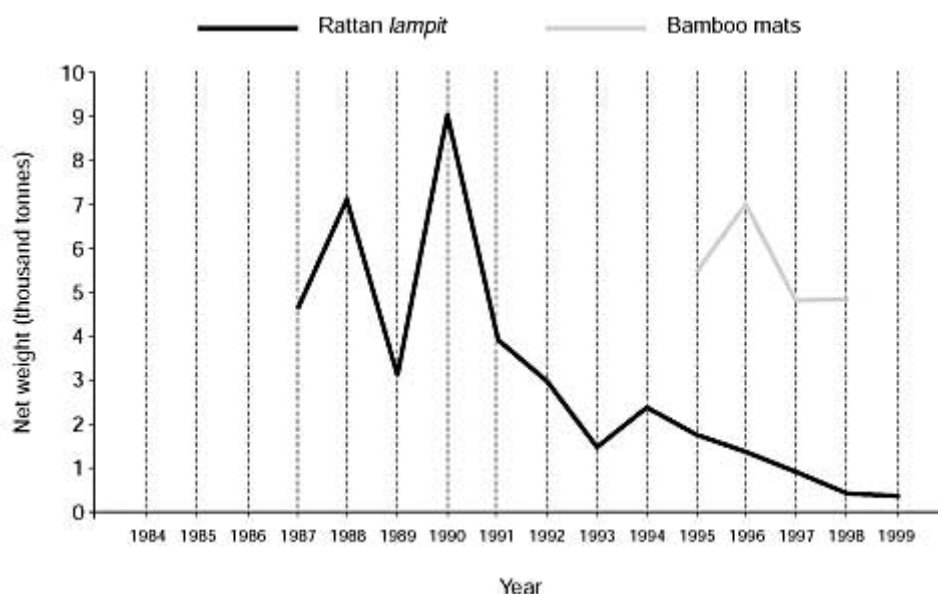
The markets for rattan consumption in Europe, North America, Japan and other industrialized nations seem to be growing steadily. However, there is an urgent need for studies of the marketing and future prospects of rattan in those countries. (Sastry, 2001)

Indonesia provides a majority of the world's rattan. Approximately 60% of this goes to processing and manufacturing industries in Hong Kong and a further 20% is shipped to Singapore. Entrepreneurs in both these countries make massive profits re-exporting raw rattan or assembling and exporting furniture and handicrafts. The value of Indonesian raw rattan cleaned, sulfur-treated, and re-exported from Hong Kong in 1970

was 24 to 28 times the amount received by the Indonesian exporter of washed, dried, and sulfur-treated whole rattan. In 1979 the Indonesian government sought to limit the export of low value-added raw rattan through an official ban on the export of unwashed and unsulfured rattan. However, Hong Kong continues to bring in higher profits by recleaning, re-sorting and manufacturing rattan peel and pith for re-export.

Part of Indonesia's problem in securing higher profits from international rattan trade is its higher shipping costs when compared to other countries in Southeast Asia. Attention also needs to be given to the low level of value-added manufacturing which has characterized Indonesia's rattan production. Indonesia has great deal to gain from value-added manufacturing of forest products within the country. (FAO, 1991) The main branch of Indonesian rattan based industry is making mats from rattan – lampits. There are popular for foreign importers, mainly for the Japanese centre.

**Chart 1** - Japanese imports of rattan lampit from Indonesia and bamboo mats from China, 1984 to 1999



Source: Belcher, 2001

**Socioeconomic challenges to rattan harvesting and cultivation :**

Rattan is widely recognized as an important domestic and internationally-traded commodity. Indeed, rattan can be considered the "flagship" NWFP due to its unsurpassed importance in household, village, provincial and national economies. Rattan collection, trade, processing and manufacturing operate with a complex and dynamic socio-economic, political and

ecological context. Crucial components include decentralized and dispersed cane collection; geographic centralization of manufacturing capacity; poor communications and infrastructure; ethnic, religious and social differences among collectors, traders and manufacturers; and the low priority of rattan among national governments. (Siebert, 2002)

As a means of social development in rural areas, full-time cultivation of rattan canes is a good option. It is

labour-intensive and offers full employment for the family. Processing of rattan canes employs a much larger workforce than rattan growing. The rattan furniture manufacturing industry could provide good sources of income to many people, regardless of age, gender, and educational background. (Razak Mohd, Raja Barizan, 2001)

**Rattans in South Asia region :**

Although the rattan products of South Asian countries have lower market value than those of Southeast Asia, rattan is recognized as an extremely useful forest product in countries throughout the region.

In India, rattan has an important role in the rural economy; many people in remote areas earn their living through extraction and cleaning of rattans. Urban people are employed in small-scale rattan industries. Rattan is not only important as a commodity for the furniture and handicraft industries, but also has a great many other traditional uses: Ancient books report medicinal uses; rattans are used for raft making, house construction, baskets and poles for carrying goods; and rattan leaves are used extensively as a thatching material. In the Nicobar Islands, India, the spiny sheath is used for scraping coconut, while the tribal people of northeastern India make extensive use of long canes in bridge construction. Some species of rattans are used in tribal rituals and festivals.

In Nepal, besides local uses, rattans have great cultural value. The Tharu people (an ethnic group) use rattan sticks in temples, believing them to be holy and capable of warding off evil spirits. Priests keep rattan sticks with them while attending religious functions. Rattans within the temple compounds are well protected and cannot be harvested.

Some indigenous people in Bangladesh use young leaves, roots and shoot tips of rattans as medicines and as a vegetable. Rattans are among the most important natural resources of forests in Bangladesh, but cane-based industries are beginning to close because resource depletion has resulted in shortages of raw materials; the industry currently uses imported raw materials. The closures are expected to have a direct effect on socio-economic conditions, particularly for the workers in rattan industries - mostly women who depend on the work to meet their basic needs.(Renuka, 2001)

**SUMMARY**

1. Non-timber forest products, particularly rattan, have played important roles in household subsistence economies of indigenous forest dwellers and traders for centuries in the region of South and South East Asia.
2. Rattan is a main source of cash income for tens of thousands of forest-dwelling people throughout these regions.
3. Rattan trade is realised on two levels: the local and the foreign trade.

4. Main exporting countries are: Indonesia, Malaysia, Vietnam, Thailand, Philippines and China.
5. Main importing countries are from three regions: European Union, the USA and Japan.
6. Main problems and inexactnesses in international statistical databases are caused by illegal extraction of wild rattans.
7. Importancy of monitoring methods of rattan harvesting.
8. The rattan furniture manufacturing industry could provide good sources of income to many people.

**REFERENCES**

BELCHER B. (2001) : *Rattan cultivation and livelihoods, the changing scenario in Kalimantan*. Unasylya 205-Rattan. vol. 52. FAO 2001 on-line. Dostupné z: [http://www.fao.org/documents/show\\_cdr.asp?url\\_file=/docrep/003/x9923e/x9923e00.htm](http://www.fao.org/documents/show_cdr.asp?url_file=/docrep/003/x9923e/x9923e00.htm)

DRANSFIELD J., SUNDERLAND T.C.H. (2002) : *Species Profiles Rattans*. Non-Wood Forest Products 14. FAO 2002. ISSN 1020-3370.

FAO CF Case Study 4: Case Studies in Forest Based Small Scale Enterprises in Asia. *Rattan, Matchmaking and Handicrafts*. FAO Bangkok. 1991.

FAO: *International trade in Non-Wood Forest Products: an Overview*. FO: Misc/93/11 - Working Paper. Rome.1993.on-line. Dostupné z: [http://www.fao.org/documents/show\\_cdr.asp?url\\_file=/docrep/x5326e/x5326e0b.htm](http://www.fao.org/documents/show_cdr.asp?url_file=/docrep/x5326e/x5326e0b.htm)

KARTODIHARDJO S. (2003) : *The State of Bamboo and Rattan Development in Indonesia*. The Ministry of Forestry and Estate Crops.Indonesia 2003 – on-line. Dostupné:<http://www.inbar.int/documents/country%20report/INDONESIA.htm>

RAZAK MOHD, A., RAJA BARIZAN, R. S. (2001) : *Important Rattan Species of Malaysia*. Unasylya 205-Rattan. vol. 52. FAO 2001 on-line. Dostupné z: [http://www.fao.org/documents/show\\_cdr.asp?url\\_file=/docrep/003/x9923e/x9923e00.htm](http://www.fao.org/documents/show_cdr.asp?url_file=/docrep/003/x9923e/x9923e00.htm)

RENUKA C. (2001): *Use of Rattan in South Asia*. Unasylya 205-Rattan, vol. 52. FAO 2001.on-line. Dostupné z: [http://www.fao.org/documents/show\\_cdr.asp?url\\_file=/docrep/003/x9923e/x9923e04.htm](http://www.fao.org/documents/show_cdr.asp?url_file=/docrep/003/x9923e/x9923e04.htm)

SASTRY C.B. (2001) : *Rattan in the twenty-first century - an overview*. Unasylya 205-Rattan, vol. 52. FAO 2001.on-line.Dostupné z: [http://www.fao.org/documents/show\\_cdr.asp?url\\_file=/docrep/003/x9923e/x9923e04.htm](http://www.fao.org/documents/show_cdr.asp?url_file=/docrep/003/x9923e/x9923e04.htm)

SIEBERT S.F. (2002) : *Harvesting wild rattan*. Non-Wood Forest Products 14. FAO 2002. ISSN 1020-3370.

**Recommended Literature:**

DRANSFIELD J., MANOKARAN N. (1993): *Rattans*. Plant Resources of South-East Asia. No. 6. Wageningen: Pudoc Scientific Publishers 1993. ISBN 90-220-1057-0.

DRANSFIEL, J., RAO A. N., DRANSFIELD S., WIDJAJA E.,

- RENUKA C. & MOHAMAD A. (1994): *Priority species of bamboo and rattan*. INBAR and IBPGR Technical Report No. 1. New Delhi, India 1994.
- JOHNSON D.V., SUNDERLAND T.C.H. (2004) : *Rattan glossary and Compendium glossary with emphasis on Africa*. Non-wood forest products. No16. FAO 2004. ISBN 92-5-105095-3.
- SUNDERLAND T.C.H., NKEFOR J.P. (2000) : *Technology transfer between Asia and Africa rattan cultivation and processing*. Technical Note No.5. Richmond: ARRP 2000.
- TAYLOR D.A. (1996) : *Income generation from non-wood forest products in upland conservation*. FAO 1996. ISSN 0259-2452.

*Received for publication on February 9 , 2006*  
*Accepted for publication on March 23 , 2006*

---

*Corresponding author:*

**Ing. Blažková L.**  
Czech University of Agriculture Prague,  
Institute of Tropics and Subtropics  
165 21 Prague 6 - Suchbát, Czech Republic

