An information bulletin on Non-Wood Forest Products

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EDITORIAL

The editorial for this issue of Non-Wood News *has been written by Maxim Lobovikov, Chief of the Forest Products Service.*

Non-wood forest products play a vital part in the livelihoods of many millions of people worldwide and are becoming increasingly important as a result of population growth, logging restrictions and environmental and health concerns. It is a paradox, therefore, that NWFP information – especially statistics on NWFPs – is still scarce, scattered and insufficient. Better and more consistent data are urgently needed for NWFP policy research and development.

Through *Non-Wood News*, FAO has been instrumental in highlighting the many facets of the world of NWFPs – from their role in food security and traditional medicines for the poor, to their growing importance in the multimillion dollar pharmaceutical and cosmetic business. Since its first issue in 1993, *Non-Wood News* has been collecting, systematizing and disseminating valuable information and data from around the world. The bulletin consequently serves as an excellent source of information and research ideas. Since it has always covered a broad range of products and issues, *Non-Wood News* has been able to monitor successfully global NWFP development trends, putting the subject into a historical perspective.

This 16th issue highlights some of these historical aspects in a Special Feature, "History of NWFPs", with articles ranging from "The forgotten heritage" and "Old glory", to others that demonstrate how NWFPs were useful and important for people in ancient times, and are still so today (e.g. edible insects, *Morinda citrifolia*). This traditional knowledge is an essential component of the NWFP world and has been underlined not only in "History of NWFPs", but also in "NWFPs in the Pacific Islands" (the first Special Feature in this issue), where we have highlighted the many different traditional uses of the trees of the Pacific Islands.

Non-Wood News is distinctive not only for its broad coverage of products and issues over a long period of time, but also for its readers and their willingness to contribute to its success by sharing their knowledge of *their* NWFP world, as is amply demonstrated in this issue. In addition, many authors have again generously permitted us to use extracts from their books.

Finally, we bring news that will sadden the forestry community: the death in September 2007 of Cherukat Chandrasekharan, the founder of *Non-Wood News*. Please see our obituary for him in this issue.

It is our intention to continue what Chandra started in 1993 – to bring to our readers the multifaceted and fascinating world of NWFPs. We hope that you will enjoy this volume and will continue to contribute to future issues.

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NON-WOOD NEWS

is compiled and coordinated by Tina Etherington, Forest Products Service of the FAO Forest Products and Industries Division. For this issue, editing support was provided by Regina Hansda; language editing by Roberta Mitchell, Josiane Bonomi and Deliana Fanego; design, graphics and desktop publishing by Claudia Tonini.

***Non-Wood News* is open to contributions by readers. Contributions are welcomed in English, French and Spanish and may be edited to fit the appropriate size and focus of the bulletin.**
If you have any material that could be included in the next issue of *Non-Wood News* for the benefit of other readers, kindly send it, before before 15 April 2008, to:
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A strong characteristic of *Non-Wood News* is that it is open to contributions from readers. Should you have any interesting material on any aspect of NWFPs that could be of benefit to all our readers, please do not hesitate to submit it. Articles are welcomed in English, French and Spanish and should be between 200 and 500 words. The deadline for contributions for *Non-Wood News* 17 is 15 April 2008.

For more information, please contact Tina Etherington at the address on the front page or by e-mail to non-wood-news@fao.org

Non-wood forest products (NWFPs) are goods of biological origin other than wood, derived from forests, other wooded land and trees outside forests. Non-timber forest products (NTFPs), another term frequently used to cover this vast array of animal and plant products, also includes small wood and fuelwood. However, these two terms are used synonymously throughout this bulletin. Other terms, such as "minor", "secondary" or "speciality" forest products, are sometimes used to keep original names and/or titles.

FOREST APICULTURE

Trees and bees. Their names sound well together, and so they should, for trees and bees are interdependent and have been perfecting their relationship over the last 50 million years, literally millions of years before humans appeared on the scene. When they did, early civilizations developed skills to harvest honey and beeswax from bees, and forest dwellers have continued harvesting from the stores of different bee species found worldwide.

All forest ecosystems contain indigenous species and races of bees, and some now contain introduced honey bee species such as the African honey bees present in forests of South and Central America. Not all bee species can be exploited by people for honey and wax, but there is always one or more honey bee or stingless bee species that may be utilized. The main products harvested from bees are honey and beeswax. Less commonly harvested products include pollen and propolis, while bee venom and royal jelly are specialized products harvested only in a few countries where industrialized, intensive beekeeping industries are established. The world beekeeping industry trades around 1.2 million tonnes of honey per annum, with about half of this exported to the world market by countries such as Argentina, China and Mexico. This is a globalized industry, using just one type of honey bee (European races of *Apis mellifera*), together with standardized technology that well suits this particular bee.

By contrast, beekeeping in forests is a far more variable type of extensive activity. Depending on the species of bees utilized, beekeepers may have a large number of hives distributed throughout the forest or they may practise honey hunting, i.e. the harvesting of honey from wild nests of bees. The latter is the most common apicultural activity of Asian forests, where some honey bee species nest in single combs in the open, since they cannot be kept inside a manufactured hive. In general, people practising forest-based beekeeping or honey hunting may be characterized as poor, usually living in remote areas, poorly represented and with few sources of cash income.

The main value (although it cannot be quantified in financial terms) of bees for forests is not the products of honey and beeswax, but rather a service – pollination. Complex interdependency has evolved whereby flowering plants depend upon bees to bring about pollination and thereby the production of viable seeds. The bees in turn depend upon the plants for their food and habitat. A tree does not need bees simply for its own reproduction (although for many plant species bees are vital), but for maintenance and regeneration of the whole system within which the tree exists. The more species of fruits and seeds generated within a system, the greater its diversity and the richer its life-carrying capacity. Trees and bees represent harmonious symbiosis: it is essential that this symbiosis be protected and, even without the promise of honey and beeswax we ought to be taking steps to protect bee communities.

For we are concerned about the future of honey bees. In 2007, the media highlighted news that beekeepers throughout the United States of America were experiencing a dramatic spate of sudden honeybee colony losses. As often happens, this created media exaggeration ranging from "Bee AIDS" to the extinction of human beings as a consequence of the loss of honey bees. The condition – now named Colony Collapse Disorder (CCD) has been familiar to beekeepers in Europe during the last ten years or so. No single cause has been identified; rather it is believed that the collapse of colonies arises as a result of the various honey bee pathogens that are now widely distributed (for example, the predatory mite *Varroa destructor*) and the viruses they carry, combined with the stress caused to bees by intensive, industrialized beekeeping. The bee stocks used by the global beekeeping industry are by now infested with a number of pathogens that are spread almost worldwide.

Tropical forests are valued as a habitat for the remaining mammal species; for example, in October 2007 the World Conservation Union (IUCN) reported that our closest living relatives – the world's apes, monkeys, lemurs and other primates – face unprecedented threat from the destruction of tropical forests, wildlife trade and commercial bushmeat hunting, with 29 percent of all species now in danger of extinction. For the protection of forest mammals, tourism, with all its associated costs, has so far been the only way found to enable local people to gain financially from the presence of rare mammals.

Yet tropical forests are significant also as the last strongholds for healthy populations of bee races and species. For these species, it is feasible for people to create worthwhile income without harm to bee populations. There are good examples of this, such as the North West Bee Products of Zambia, a cooperative owned by more than 6 500 beekeepers who live in the miombo woodlands of northwest Zambia and whose honey and beeswax are exported to the European Union.

Beekeeping may be one of the best, wholly sustainable ways for local people to create income from forests, and thereby to be concerned for their protection. Nevertheless, beekeepers are still sometimes banned from forests, losing their rights of access. Why is this? Where forests are being protected, it sometimes happens that beekeepers are banned from access, in the widely held belief that "beekeepers start forest fires". But is this true? It may be that this belief arises from the use of smoke to subdue bees during the honey harvest and, in some areas, beekeepers camp in the forest at the time of the harvest. However, beekeepers know that trees are the habitat and food source of their bees and, when interviewed, always insist that they

TEN EXCELLENT REASONS FOR BEEKEEPING

1. **Pollination.** Bees pollinate flowering plants – this activity is vital for life on earth. Adequate pollination leads to good-quality seeds and fruits, and is essential for maintaining biodiversity.
2. **Useful products.** Honey is valued by all societies as a healthy food or medicine. Beeswax is used in cosmetics and candles and has many other uses. Pollen and propolis may also be harvested from bees.
3. **Land use.** Bees visit flowers anywhere, so wild cultivated and protected areas all have value for beekeeping. Beekeeping does not use up land that could be used for crops.
4. **Low cost.** Beekeeping can be very low cost. Hives and other equipment can be made locally and bees are freely available. Bees do not depend upon the beekeeper for food.
5. **Income generation.** Where beekeepers have good market access, beekeeping easily generates a profit.
6. **Sustainable.** Beekeeping is non-extractive and sustainable. Beekeepers are friends of the natural environment, willing to collaborate to conserve forests and vegetation where bees live and forage.
7. **Benefits for several sectors.** Where there are beekeeping activities, other people in the community generate income by making equipment, from selling bee products and making secondary products.
8. **Comparative advantage.** In areas of developing countries where there are abundant natural resources and healthy bee populations, there are good possibilities for marketing organic-certified honey.
9. **Resilient income.** Beekeeping is resilient when disasters happen. Displaced communities can make hives and gain benefit in a relatively short time. It is not necessary for beekeepers to own land or to be settled permanently.
10. **Gender and age inclusive.** Bees can be kept by women and men of all ages. Bees do not need daily care and can be attended to as other work allows.

Source: Bees *for* Development

are forest guardians rather than arsonists. Yet the myth remains that beekeepers start fires. Perhaps officials hold on to this rumour, for which they have no evidence, for it is easier to pin blame on beekeepers (who are often poor and remote), rather than admit to the presence of poachers and other non-identifiable forest visitors.

As a NWFP-generating activity, apiculture is different from others, involving more than simple collection of the product, since the beekeepers, by providing containers for bees to nest inside (hives), are involved to some extent with ownership and management of the species to be harvested. Apiculture does not fit easily into the sectoral divides of rural development, spanning as it does forestry, horticulture, agriculture, environment, animal husbandry and entomology, without fitting precisely into any single one of these sectors. Similar problems confront the classification of bee products because honey is a food, whereas beeswax is listed among non-food waxes and oils. Indeed, beekeepers themselves are in different times and places categorized as farmers, hunters and gatherers, cattle keepers, or rural dwellers, with beekeeping remaining hidden as an important skill and part of their lives.

Small-scale beekeeping can contribute significantly to livelihood security and yet the practice of beekeeping is underplayed in both policy and planning. The fact that beekeeping is usually a sideline activity (albeit one of several activities that add up to a resilient livelihood), may be one reason why it receives scant attention. Another may be that in recent years many beekeeping interventions have not achieved the results anticipated. At Bees *for* Development, we believe that this is because projects too often endeavour to transfer the knowledge and technology that form part of the global beekeeping industry to forest-based beekeeping. For example, while tropical African bees look rather like European honey bees (and indeed are the same species), their biology and behaviour are very different. Equipment designed for beekeeping in temperate climates does not work well for bees in tropical Africa and for people who have limited access to external resources. The equipment used in globalized beekeeping is often referred to by the misnomer of "modern" (even though frame hives were invented in 1851) and many well-meaning projects endeavour to encourage forest beekeepers to transfer to "modern" equipment, erroneously expecting this to lead automatically to increased production and sales of honey. We are interested in seeing more value placed on existing, local and successful methods for forest beekeeping, with much greater emphasis given to creating linkages for marketing the products of this endeavour, and such that they are well differentiated from those of industrial beekeeping. With the need to find ways for people to create sustainable incomes from bees, we are interested in pursuing research to find the true measures of the values of forest beekeeping for local communities and the best ways to enable them to realize this value. The importance of the sustainable use of tree resources is now accepted but the tremendous scope for the sustainable utilization of bee resources is still poorly appreciated.

Please do contact us if you have any information to share.

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Dr Nicola Bradbear is the founder and Director of Bees *for* Development, *a United Kingdom charity formed in 1993. She is a world expert on apiculture, with extensive knowledge of bee operations in the forests of Africa, Asia, Central America and Europe.*

NWFPs IN THE PACIFIC ISLANDS

A new bamboo initiative in the Fiji Islands

Bamboo, mainly *Bambusa vulgaris*, grows naturally in the Fiji Islands, especially in the wetter parts. It has been used mainly for rafts for transporting agricultural products down river and for plaited bamboo walls for houses. However, with improvements in road systems and the use of timber and cement for houses, bamboo is now restricted to minor uses.

Nevertheless, with the need for Fiji's rural communities to enhance their livelihoods through participation in income-generating projects utilizing natural resources, attention is now focused on the possible contribution of non-wood forest products, including bamboo, to this endeavour. Bamboo is a logical candidate because of its relative abundance, accessibility, low cost, and the fact that it is a very well known raw material for numerous products traded internationally.

Various attempts were made by the Government of Fiji in the past to try to enhance the use of local bamboo for income generation by rural communities, with the support of the Chinese Government and the United Nations Development Programme (UNDP). Initiatives entailed the introduction of Chinese bamboo weaving and furniture-making experts to teach selected youths from bamboo-owning communities the necessary skills to be able to obtain products that could earn them an income. The main objective was to build the capacity of these youths so that they would be able to return to their communities and establish their own bamboo income-generating operations. Yet, while some success was achieved in the area of technology transfer, the project was regarded as a failure because none of the youths trained were able to start up their own business after the project ended. A number of factors, including, but not limited to, issues relating to inadequate project design and the susceptibility of local bamboo to insect infestations, were identified as the reasons for the failure.

This article is a brief description of a new initiative in Fiji, Bitukau Enterprises, to revive the use of local bamboo to make furniture and woven products for the enhanced livelihoods of rural communities.

Bitukau Enterprises

Bitukau Enterprises, unlike the previous government-initiated bamboo project, is the brainchild of a local indigenous entrepreneur. In 2000, this entrepreneur saw the potential of bamboo to contribute to the improvement of livelihoods in Fiji's rural communities. He invested his own money and labour to start a small enterprise in his community in Vusuya, Nausori, located on the southeastern side of Viti Levu, the largest of the Fiji Islands. Vusuya is a multiethnic community with a total population of approximately 300, of which youths make up 60 percent.

In 2003 the entrepreneur, at his own expense, travelled to China to participate in a bamboo training course and also built a small workshop with some basic tools to start the enterprise. But this initial investment was insufficient for his operation to progress since the skills required to start manufacturing marketable products to provide him with the income he so desperately craved were absent. His training in China was a good starting-point but it was not enough. He also needed working capital to purchase materials and to pay people to assist him in his operations.

Although Bitukau's progress up to now has been slow and difficult, it is regarded as a potential model and, if it becomes successful, will be replicated in other rural communities of the Fiji Islands as well as in other Pacific Island countries where there is a sufficient supply of bamboo.

External support

The bamboo business being pursued by Bitukau Enterprises is new for Fiji. This, together with the failure of the previous bamboo project, means that obtaining finance for development of the enterprise has been extremely difficult, if not almost impossible. Consequently, the entrepreneur has had to pursue alternative sources of support outside the traditional commercial ones.

In response to his request for assistance and in view of the enormous potential of bamboo to contribute to the enhancement of the livelihoods of rural communities, the Governments of Fiji and Indonesia and the Land Resources Division of the Secretariat of the Pacific Community (SPC LRD) are providing limited funding and technical support. The support includes two short-term expert trainers from Indonesia, who have trained the youths in basic weaving and furniture-making skills and in designing. A total of 14 youths have so far been trained and, with these skills, the enterprise is beginning to make furniture and woven products that are being introduced on the domestic market.

But while some interest has been shown by potential local buyers, it is apparent that a great deal of effort is still needed to improve the quality of products and to reduce costs. In this regard, two of the youths from the enterprise are now in Indonesia for a 12-month working assignment, again with the support of the Governments of Fiji and Indonesia and the SPC LRD. The objective is to enhance their skills further so as to be able to contribute positively to the enterprise's performance at a higher level, in terms of improving productivity and the quality of its products. Eventually, the two youths will also train others in Vusuya, thereby establishing a critical mass of skilled people in the community.

Raw materials

Bamboo currently used by the enterprise is mostly the naturally growing *Bambusa vulgaris*, which belongs to communities with traditional ties to the entrepreneur. These are being sourced at present without any payment to the resource owners. This, however, will change once Bitukau Enterprises breaks through the market and begins to earn income. Paying landowners for bamboo from their land will mean further spreading of the benefits derived from the enterprise.

Bambusa vulgaris is known for its high starch content, making it highly susceptible to insect infestation, a problem that was cited as one of the causes of failure of the previous bamboo project. The bamboo used by the enterprise is currently diptreated with chemicals, which is both expensive and unsafe under rural applications. In order to avoid using these chemicals, more suitable species of bamboo, coupled with appropriate post-harvest techniques, are being investigated. In 2000, an initiative by SPC LRD supported the introduction from Australia of selected species of bamboo considered to be more suitable for

construction, as well as for edible shoots. These are now in a number of trial plots in the country and the challenge is to produce the required planting materials from the introduced species for planting by farmers. Some work needs to be initiated in order to determine the best post-harvest handling practices to reduce the risks of insect infestation on the bamboo products.

Community participation

Although Bitukau Enterprises is the result of a private initiative, community support and participation have been vital to its progress so far, both in the area of material supply (at present sourced for free) and in the production of bamboo items. Continuing support from bamboo owners in this regard will be extremely important for the survival of the enterprise at this critical stage.

On the production side, the enterprise has sourced its workers from a number of families in the community close to its workshop. These workers are not being paid but in return are being trained at no cost at the enterprise's facilities. The idea is to train the workers at the workshop and, at the completion of their training, they will go back to their families and from there they will produce items to be ordered by the enterprise. Under this arrangement, the enterprise undertakes training, marketing, quality control and overall coordination. It is hoped that benefits will be equitably shared among the various interest groups, including the suppliers of raw materials, producers of bamboo items and the enterprise itself.

Conclusion

Bamboo has the potential to improve the livelihoods of rural communities in the Fiji Islands. The partnership between a local entrepreneur, Bitukau Enterprises, the Governments of the Fiji Islands and Indonesia, and the SPC LRD is working towards bringing this potential to reality.

However, a number of important lessons are being learned in the process, which need to be considered seriously by anyone wishing to venture into a similar line of business.

Bitukau Enterprises, despite its current shortcomings, is being looked at as a potential model for other rural communities in the Fiji Islands as well as in other Pacific Island countries. (*Contributed by*: Sairusi Bulai, Forests and Trees Programme, Land Resources Division, Secretariat of the Pacific Community, Private Mail Bag, Suva, Fiji. E-mail: SairusiB@spc.int)

***Canarium indicum* and *C. harveyi* (canarium nut)**

Canarium nut is one of Melanesia's most useful multipurpose trees, providing food (nuts), timber and oil. The nuts constitute an important seasonal food and appear to have been important in the diet of New Guineans for at least 6 000 years. Considerable selection by local peoples of individual trees with desired fruit characters has taken place in the Solomon Islands and in Vanuatu. These selections have been made on the basis of kernel size and taste, ease of opening, thin pericarp, oil content and, rarely, taste of the flesh and productivity.

In the Solomon Islands, canarium nut is considered by villagers to be the most important fruit- or nut-producing species in five of six provinces surveyed, namely, Makira, Malaita, Isabel, Choiseul and Western. It is also considered to be one of the most important timber species, providing cash income in Makira and Malaita Provinces and, to a lesser extent, in Choiseul Province. Moreover, it is the major indigenous tree species that villagers plant, tend or transplant in the Solomon Islands. Other traditional uses include the production of wood for canoes and for wooden articles such as bowls, collection of a resin for light or for canoe caulk and in traditional medicines, mainly involving preparations from the bark. Nowadays, within its natural range, canarium nut is commonly cultivated for its edible nuts. The nuts are of considerable sustenance and commercial importance, including sale in local markets, processing and export.

The kernels are an important seasonal food in Melanesia. They are nutritious and have a high protein content (8–14 percent). They are consumed either fresh, roasted or smoked and may be eaten as a snack or incorporated into various cooked dishes. (*Source*: extracted from *Traditional trees of Pacific Islands*, ed. Craig R. Elevitch, 2006.)

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Domesticating traditional trees of the Pacific

Information about traditionally important tree species of the Pacific is crucial for efforts aimed at developing sustainable, improved and integrated farming systems in Pacific nations. Studies are currently under way to enhance domestication of some top-priority species among these traditional trees, including cutnut (*Barringtonia procera*), Tahitian chestnut (*Inocarpus fagifer*), canarium nut (*Canarium indicum*), and sandalwood (*Santalum* spp.).

Domestication offers enormous opportunities to run "traditional trees" into cash crops with traditional values. Typically, a high degree of variation is found in traits that can be captured in new cultivars to enhance yield and a range of quality attributes. Once selected for superior market-oriented qualities, simple vegetative propagation techniques can be used to mass-produce elite tree cultivars.

TRADITIONAL TREES OF THE PACIFIC

The geographically isolated islands of the Pacific are homes to people who have used their trees for material survival, as well as to provide the essential ecological functions of soil enrichment, erosion control, watershed stability, coastal protection and wildlife habitat.

These trees have become "traditional" by virtue of being intertwined with the culture and the day-to-day lives of indigenous peoples, for whom they provide edible fruits, nuts, leaves and oils and serve as sources of medicine, fibre, fuel, gum, resin, aromatics, timber and wood for numerous valuable products of everyday importance.

Domesticating traditional trees is best implemented through partnerships between scientists and local communities, a process called participatory domestication. This process allows communities to adopt rapidly the new techniques, to be the beneficiaries of their own efforts and, most important, to retain the rights to their traditional knowledge. It also ensures that the interests of the people are foremost in the process. This kind of initiative is easily implemented using appropriate low-technology that is readily learned.

Early results from participatory domestication programmes in Africa indicate that local participants have improved livelihoods, higher incomes and

more sustainable farming systems, as well as new opportunities for commercializing and adding value to the products from a new generation of cash crops.

Extrapolation from this success suggests that if new tree crops can be developed by communities throughout the Pacific and integrated into their traditional farming systems, there can be very significant benefits for Pacific islanders and their islands. (*Source*: extracted from the foreword by Roger R.B. Leakey of *Traditional trees of Pacific Islands*, ed. Craig R. Elevitch, 2006.)

Medicinal plant use in Fiji

The following table provides information on

the plants commonly used in Fiji by WAINIMATE (the Women's Association for Natural Medicinal Therapy) to treat various ailments, especially infections of different natures.

THE ROUNDTABLE FOR NATURE CONSERVATION

The Roundtable for Nature Conservation is the largest cross-sectoral coalition of donors, non-governmental organizations (NGOs), regional organizations and national governments working in nature conservation in the Pacific.

For more information, please visit: www.sprep.org/roundtable/

Local name	Scientific name	General description of the plants	Uses and method of application
1. Botebotekoro	*Ageratum conyzoides*	Coarse herb up to 1 m tall. Flowers minute, whitish to pale blue, borne in sunflower-like heads. Now growing widely in the South Pacific, originally brought as an ornamental plant from the Americas	Juice or sometimes leaves are directly applied to infected wounds. Also used for eye infections, diarrhoea, dysentery, hepatitis, intestinal worms, filariasis, wounds and cuts, besides other ailments
2. Vulokaka	*Vitex trifolia*	Small tree up to 5 m tall. Flowers relatively small, bilateral, purple. Fruit a small globose, 4-seeded capsule. Grows widely throughout the Pacific and tropical region as far as South Africa	Used for mouth infections, as antihelminthic and in stomach pains
3. Uci	*Euodia hortensis*	Shrub to small tree up to 6 m tall. Small, white fragrant flowers. Fruit a 4-parted brown dehiscent follicle, with single seed in each segment. Native to New Guinea, now widely distributed in the South Pacific	Bark used for treating jaundice
4. Kaukamea	*Vernonia cinerea*	Up to 60 cm high, this herb is found throughout Southeast Asia. White to purple-tinged flowers, borne in small heads	Juice from plant is used to treat cuts from rusty knives, fish poisoning, stingrays and stonefish
5. Tarawau	*Dracontomelon vitiense*	Large tree, up to 20 m tall. Flattish branches, pinnate leaves, small whitish flowers, tough edible yellow fruits	Decoction of leaves is used for the treatment of venereal ulcers, boils in ear and earache. Liquid pressed from the bark is used to treat inflammation and filariasis
6. Wa bosucu	*Mikania micrantha*	Perennial scrambling or climbing vine. White, minute flower borne in densely packed heads resembling sunflower. Fruit a small achene with white bristles that aid in wind dispersal of seeds. Common weed of pastures, roadsides. Native to tropical America but widely distributed throughout South Pacific and tropical Asia	Used for insect bites and various skin irritations
7. Mokosoi	*Cananga odorata*	Tree up to 20 m tall. Flowers very fragrant with six large pale green to yellowish petals. Cultivated or naturalized in forests, slopes, etc. Native to Indo-Malesia	Has known antifungal, antibacterial, antipruritic, antiyeast and amoebicidal activity
8. Dawa	*Pometia pinnata*	Tree up to 20 m tall with buttressed trunk. Flowers minute, regular, 5-parted, whitish except for red stamens. Fruit red, juicy, whitish pulp with single seed. Widely planted and naturalized throughout the South Pacific	Known to have antiprotozoal and antimicrobial activity. Used for diarrhoea, coughs, fever, mouth infections
9. Kalabucidamu	*Acalypha wilkesiana*	Shrub, 2–5 m tall with hairy branchlets. Found widely in the South Pacific	Used for a wide range of respiratory ailments. The decoction of leaves is used to treat gastritis and lymphatoid swelling
10. Cevucevu	*Physalis angulata*	Herb up to 1 m tall. Found commonly in the South Pacific region. White flower; fruit a green to yellowish berry with numerous small seeds	Leaf juices are used as antipyretic and also applied on boils, ulcers and wounds. Juice also used to facilitate childbirth

Source: Kishore, K., Rao, D., Lal, R., Aalbersberg, B. & Pryor, J. 2007, in press. *Standardization of an antimicrobial assay for Pacific Island natural products.* (The authors are from the Fiji School of Medicine and the University of the South Pacific.)

MORE JOBS FROM PINE IN FIJI

The interim government has forecasted that the pine industry will provide employment to rural communities. Interim Finance Minister Mahendra Chaudhry said contract employment in the industry was expected to increase by 70 percent. He said it would be possible when the Fiji Pine Limited diversified into new ventures such as pine resin tapping operations. "This will create employment opportunities for rural communities, in particular rural women," he said. (*Source: Fiji Times*, 25 November 2007.)

Keeping tapa art alive

Kesaia Vakaola is among the limited number of women in Fiji who are adept at making *masi*, the traditional Fijian cloth produced from the bark of the mulberry tree. She now teaches other women the skills at the Veiqaravi ecumenical community training centre in New Town, Nasinu.

The consistent thudding of wood against wood is the only sound to emerge from this urban setting, as women concentrate on their individual tapa pieces. Beating the bark of the mulberry tree is probably the most integral part of the whole tapa-making process, which takes about three to five days at best. The activities provided at the centre are aimed at empowering women through acquired skills while also giving them some spiritual guidance.

"I have been making good money from tapa, roughly about $130 a week from the sales," said Vakaola. She said that as a small girl growing up in her village of Korotolu, she picked up the skill from older women. "I used to see my grandmother, mother and aunties beating (tapa) every morning until the afternoon."

Vakaola usually derives much of the mulberry bark from the village of Viwa in Yasawa, where mulberries grow prominently. The Veiqaravi training centre is encouraging trainees to plant their own mulberry trees in their backyard or garden. This is considered a good investment because it is usually six months or more before the bark can been harvested, which is a relatively short time for a good cash crop, according to Vakaola. The trainees have also been taught how to boil the bark of the *dogo* or mangrove plant to make the dye used to paint tapa. Vakaola said that most of her clients usually place their orders with her but, if they are not enough, she takes her wares to sell at the Suva flea market.

Vakaola is a good example of how individuals without much of an education can rely on skills such as making tapa as a means to financial independence. (*Source: Fiji Times*, 23 August 2007.)

Overview of NWFP trade in Papua New Guinea and its contribution to livelihoods

Effective NWFP policies, regulations and management strategies are needed for the economic, nutritional and cultural well-being of the people. The development of workable regulatory frameworks to reduce illegal and unregulated trade, while maximizing the sustainable management potential of NWFPs, is urgently needed. Forest economics are not just about trees and their products but also include both flora and fauna and the entire collective ecosystem itself, especially for the tourism industry, but also for research. Industrial forestry has had terrible social and environmental effects in many parts of Papua New Guinea (PNG) and there is a real need for an alternative industry focusing on NWFPs.

Rattan, sandalwood and eaglewood are leading examples of internationally marketed resources in PNG. There is an immediate need for management and policy guidelines to manage these NWFPs sustainably so that the people can benefit economically.

NWFPs have an economic value for rural people, which means that their development and improved trade will help alleviate poverty in these areas. Domestication of plant species that produce NWFPs should involve scientists and farmers so that improved silvicultural methods developed by scientists will be used by local farmers. Both eaglewood and sandalwood species are appropriate for domestication and are currently being tested at the Papua New Guinea Forest Research Institute (PNGFRI), with positive results, which will improve genetic selection, leading to incentives for market expansion.

There are many NWFPs in PNG that are traded at local, national, regional and/or international levels. For instance, rattan and sago (among other forest products) have cultural significance, used as clothing, shelter and food sources. Sago is exploited for stem starch and is both a subsistence and commercial product. Sago starch remains a staple food for many people and communities in PNG; it has found wide uses in many traditional foods and products and strongly features in the country's food security issues. It also generates a great deal of money from the local domestic market.

Regional trade remains an important aspect of NWFP economy in PNG. Eaglewood is one of the most highly priced commodities in the Asia-Pacific Region and has been extensively traded. The current discovery of natural stands of eaglewood in PNG has led to the extension of that trade, which has impacted the rural economy.

Other NWFPs traded internationally are rattan, butterflies, sandalwood and orchids.

The economic importance of NWFPs in the livelihoods of forest-dwellers should not be underestimated, with people historically depending entirely on them for food, shelter, clothes, medicine, etc. Eaglewood and sandalwood, however, have no recorded traditional use apart from their present economic uses. Rural populations currently use NWFPs as a means towards development and poverty alleviation.

In 1992 a total ban was imposed on wild orchids and the domestication of wild flowers is being encouraged by the National Botanical Gardens in Port Moresby and Lae Botanical Gardens. Wild orchids and flowers are very important income-generating opportunities for village communities; they are often sold in local markets and are grown to attract other NWFPs, such as insects and butterflies, which in turn attract tourists.

Socially, NWFPs play a crucial role in reducing social tensions within rural households by providing cash incomes to cover basic needs such as shelter, food, clothes, school and medical fees and transportation. Nuts such as karuka from a *Pandanus* species and canarium and okari nuts can be of great social significance. Most NWFPs are traded within the informal sector where there is no proper documentation or recorded figures to indicate the actual trading.

Eaglewood and sandalwood are two of these emerging commercialized NWFPs in PNG with poorly documented production and trade. However, such commercialization and the regulations that govern them have had major impacts (both positive and negative) on the sustainability of production, as well as on the benefits that accrue to stakeholders. One possible

reason for this is that there have been no effective mechanisms to ensure sustainable production, equitable trade and to show clearly the possibility of a win-win situation for traders, local producing communities and resource conservation. This has rendered fair trade dialogue difficult. A win-win situation is one in which the sustainable supply of raw materials as well as better prices commensurate with the efforts and end value of the products are assured.

A recent paper commissioned by FAO's NWFP Programme under the Norway Partnership Programme (NPP) "Forests for Sustainable Livelihoods" (FNOP/INT/004/NOR) analyses how trade-related instruments have influenced the commercialization and livelihood contributions of eaglewood and sandalwood in PNG, and also suggests how positive impacts can be enhanced or negative impacts minimized.Sandalwood and eaglewood are important NWFPs in PNG, producing substantial amounts of money and having economic potential. Consequently, if properly managed they could help to improve people's living standards. (*Source*: extracted from National analysis of trade-related instruments influencing trade in sandalwood (*Santalum macgregorii* F. Muell) and eaglewood (*Acquilaria* and *Gyrinops ledermannii* spp.): applications and impacts on poverty alleviation and sustainable forest management in Papua New Guinea. Unpublished FAO case study, available only in pdf format at www.fao.org/forestry/site/ 40716/en)

***Pandanus tectorius* (pandanus)**

Pandanus is one of the Pacific's must useful plants and is featured prominently in Micronesian and Polynesian creation mythology, cosmogony, proverbs, riddles, songs, chants and sayings.

Pandanus (*P. tectorius*) is a large shrub or small tree of immense cultural, health and economic importance in the Pacific, second only to coconut on atolls. Different parts of the pandanus plant are used to provide a myriad of end products throughout the Pacific Islands, especially on atolls.

Pandanus fruits are a staple food in parts of Micronesia including the Marshall Islands, the Federated States of Micronesia and Kiribati providing up to 50 percent of energy intake. They are also widely consumed in Tokelau and Tuvalu. In some places the consumption of pandanus has decreased in recent decades as a result of the availability of imported foods. For example, it was formerly a major staple food in Nauru. In Micronesia adults may commonly consume 20 fresh keys (phalanges) or about 1 kg of fruit per day.

The fruit pulp is preserved in several different ways. A paste, which is compared with dates in taste, texture and appearance, is made by boiling and baking the keys, followed by extracting, processing, and drying the pulp. Cultivars with large amounts of pulp are preferred and the taste differs among cultivars. Fresh pandanus is an important source of vitamin C. Preserved pandanus pulp mixed with coconut cream makes a tasty, sweet food item. Pandanus can also be made into flour that is consumed in different ways, usually prepared as a drink

In the atoll islands of the Central Pacific, the fruits are often sold fresh in local markets, and preserved food items are occasionally sold.

Pandanus leaves are used to weave traditional floor mats in many Pacific countries, as well as in the construction of traditional houses (thatch for walls and roofing). A roof made from pandanus leaves is said to last about 15 years, while one of coconut leaves may last for only three years.

The main commercial products from pandanus are woven products, often of high value. Individual mats may be worth more than US$500 in Tonga, Fiji and Hawai'i. In Tonga, mats made from thin strips of leaves with intricate designs (*fala*) are important gifts and indicators of wealth. Simpler designs using wider strips (*lotaha* and *papa*) are used as everyday floor mats. *Ta'ovala* mats are worn around the waist.

In the Ha'apai Group, 80 percent of women are involved in handicraft production, mainly using pandanus and some paper mulberry (*Broussonetia papyrifera*). Most traditional handicrafts made from pandanus are produced for home use, as gifts, or are informally exchanged for other products, including other handicrafts. Because the commodities are locally produced, non-perishable and can be processed a number of ways, there is a wide range of opportunities for producers and processors to enter into the handicraft marketing chain at any stage.

Pandanus is an important income-generating plant in the Ha'apai Group, and the islands are well known as producers of all types of mats known as *fakaha'apai* and *salusalu*.

In Tonga, producers and sellers report that prices of pandanus products are relatively stable, indicating that supply is matching demand. (*Source*: extracted from: *Traditional trees of Pacific Islands*, ed. Craig R. Elevitch, 2006.)

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Papua New Guinea Forestry Regulation and NWFPs

In Papua New Guinea (PNG), the forestry sector contributes significantly to the economy: in 2001, it contributed US$334 million to PNG's gross domestic product (GDP), which was about 76 percent of its total.

Although the contribution is predominantly from the logging industry, NWFPs do play some role in the local economy, with 13 tonnes of sandalwood on average being exported each year. This is evident in the Forestry Regulation 1998 (consolidated in subsequent amendments of 2001 and 2003), where mentions of NWFPs include the following.

Forest industry activities, i.e. any commercial activities within Papua New Guinea directly connected with:

- harvesting or processing of timber or rattan;
- buying unprocessed timber or rattan for processing or export;
- selling or, on behalf of another person or other persons, arranging or procuring the sale or purchase of

timber or rattan (whether unprocessed or processed but not including manufactured items made from timber or rattan materials), by a person where the timber or rattan harvest, processed, purchased, sold or arranged or procured to be purchased or sold, by that person in a calendar year exceeds i) 500 m^3 in volume; or ii) in the case of sandalwood or rattan 20 000 kina in market value.

Declaration of reserved trees. The Ministry in-charge of forestry may, by notice in the National Gazette, declare any trees or members of any species or class of trees to be reserved trees. NWFPs such as agarwood and sandalwood fall under the reserved species. (*Contributed by*: Regina Hansda, Flat 101, Teak Block, Sushant Estate, Sector 52, Gurgaon-122002, Haryana-India. E-mail: reginahansda@yahoo.co.in)

Sago palm (*Metroxylon* spp.)

The various species of *Metroxylon* (*Metroxylon amicarum, M. paulcoxii, M. sagu, M. salomonense, M. vitiense* and *M. warburgii*) have important cultural values throughout many parts of the Pacific and Southeast Asia. The two primary uses are durable leaf thatch. Several secondary uses have also been recorded, but these are not comparable in economic importance with the primary uses. M. sagu is a staple food crop in the Sepik and Gulf provinces of lowland Papua New Guinea, where most of the sago grows in wild uncultivated stands.

Among the Asmat of Papua New Guinea, felling of the palm and harvesting of the sago starch are accompanied by ritual. In house construction, sago leaves are used for roof thatch and wall siding, and the wood is used for floorboards and rafters. In the Solomon Islands, the thatch is known to last five years or longer.

The decaying trunks of the sago palm are a source of sago palm beetle grubs (*Rhynchophorus ferrugineus/ bilineatus*), an excellent source of protein.

Metroxylon sagu (sago)

SAGO GRUBS

Papua New Guinea is known for its nutty flavoured sago grubs (*Rhynchophorus ferrugineus papuanus* or *R. bilineatus*), beetle larvae that inhabit dead sago palm trees and are honoured at annual festivals. (http://nationalzoo.si.edu/publications/zoogoer/2005/4/edibleinsects.cfm)

EDIBLE STARCH

Metroxylon starch may be eaten as raw chunks of pith or as baked pieces of pith. Whole logs have been baked and taken as sea provisions on long canoe voyages.

Each of the species is currently or was previously used as a source of edible starch, with the possible exception of *M. vitiense*. The most intensive use as a food source has been in the western Solomon Islands and Bougainville. Throughout the rest of the range of distribution, the starch was eaten as a famine food, although this is questionable in Fiji and in at least one culture in the eastern Solomon Islands.

Production and use of sago starch vary somewhat from location to location. The production of sago from *M. paulcoxii* and *M. warburgii* is probably a recently introduced concept in Samoa. No starch has been observed from *M. paulcoxii*. Although starch production from *M. amicarum* is known, it is very rare since the trees are much more highly valued for thatch. At present, many cultures have virtually abandoned the production of sago starch, in favour of other starch crops such as sweet potato, taro, cassava (manihot) or imported rice.

LEAF THATCH

Leaves are highly valued for thatch for roofs and house walls in many islands of the Pacific. In Pohnpei, roofs are called *oahs*, the Pohnpeian word for *M. amicarum*, as the leaves are used for thatch. The thatch is applied in layers, with each sheet tied to the rafters by coconut sennit or vines. Walls may also be constructed from the same thatch sheets.

In northern Vanuatu, where both *M. warburgii* and *M. salomonense* are present, thatch from each species is used for different constructions. *M. warburgii* sheets are used for roofing, whereas *M. salomonense* sheets are used for wall siding. In Samoa, older informants indicated that the leaves of *M. paulcoxii* were not useful for thatch but that *M. warburgii* is considered to be a superior thatch. Younger Samoan informants did not seem to be aware of the difference between species and appeared to harvest the leaves indiscriminately.

The leaflets (basic thatch materials) of *M. amicarum* and *M. warburgii* contain highly modified and enlarged subhypodermal bundles of fibres. These explain the enduring quality of thatch made from these species. As humans have selected these species, they have probably also selected for increased fibre production and have selectively planted cultivated trees with better leaf qualities.

In other parts of the Pacific, *M. warburgii* and *M. amicarum* are viewed as emergency food and are rarely or no longer eaten by people, although they are used for thatch and animal feed. Various parts of the plant are used for traditional medicines, toys and other miscellaneous items. (*Source*: extracted from *Traditional trees of Pacific Islands*, ed. Craig R. Elevitch, 2006.)

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The crippling of the lucrative *kava* export industry in the Pacific Island countries

History. *Kava kava* (*Piper methysticum*) is a member of the pepper family. Its roots have been used for centuries in the Pacific Island countries (PICs), Vanuatu, Fiji, Samoa and Papua New Guinea, for the preparation of a ceremonial and social drink. In western countries *kava* has been mostly sold as a dietary supplement and in pharmaceutical preparations for patients suffering from anxiety, stress, nervousness and insomnia.

***Kava* production.** *Kava* is one of those NWFPs cultivated on a large scale, but wild sources continue to meet the market demand. Most of the PICs grow it; however, the archipelago of Vanuatu, the islands of Pentecost, Santo, Tanna, Epi, Ambae, Tongoa and Maewo are the primary *kava*-growing areas. In Vanuatu, *kava* production is less than that of copra (coconut) and cocoa, but the cash value to small subsistence Vanuatu *kava* farmers is significant.

Trade and export. During the late 1990s, *kava* was one of the top ten best-selling herbs globally. A boom in 1998 witnessed a surge in sales to an estimated US$50 million. Only some 100 000 kg were shipped to Europe during the whole of 1996, compared with 50 000 kg of dried roots shipped *every week* from Fiji alone in 1998. In 1997, *kava* extract was sold for $100/kg by processing companies to manufacturers, compared with $250–300/kg in 1998, a 300 percent rise in price.

Trade ban in western countries. The growing *kava* export industry in the PICs received a devastating setback in 2002 when countries in the European Union, led by Germany, imposed bans on *kava* products, withdrawing licences for all products containing *kava* and/or *kava*'s active ingredient (kavalactone). This was mainly because of the alleged links between *kava* extract and liver damage. Other countries such as the United Kingdom, the United States of America, Canada, Australia, New Zealand and Singapore also imposed a ban on the import and use of *kava* extract.

Post-ban impacts and initiatives. As a result of the ban, livelihoods of thousands of households across the PICs were impacted. Phytopharm, the Germany-based consulting firm on botanical research carried out an in-depth investigation into European Union member states' market restrictions on *kava* products at the behest of the Centre for the Development of Enterprise (an ACP [Africa, Caribbean and Pacific]/EU joint institution created in the framework of the Cotonou Agreement for promotion of small-scale enterprises among these nations) and PRO€INVEST (an EU-ACP partnership programme developed and undertaken by the European Commission on behalf of the ACP countries).

The International Kava Executive Council (IKEC) consisting of members from both the PICs and the EU was constituted in November 2003 in response to this trade disaster. The findings of the report were deliberated in the International Kava Conference 2004 organized by IKEC in Fiji, wherein participation from stakeholder representatives, scientists, health authorities and academics from 16 countries, including the Pacific ACP and EU states, took place. The outcomes of this conference led to the drafting and adoption of a resolution in 2004, which included the following.

- The efficacy and safety of *kava* in the treatment of conditions of nervous anxiety, stress and restlessness were proved through more than 20 clinical trials involving more than 10 000 patients. Of 82 reported cases of liver toxicity attributed to *kava*, only about four could be substantiated, highlighting that the incidence rate is one case in 50 million *kava* extract users.
- Toxicity studies on *kava* suggest a hypothesis that the causal factors to the reported cases may be related to the variety of *kava* utilized (many indiscriminate *kava* varieties were exported and used in the tablet industry, including even wild or false *kava*, since people were quick to exploit the high prices in the absence of any kind of quality control both between Pacific countries and export to Europe and the United States), and also possibly the extraction method used.
- The World Health Organization (WHO) was asked to work on *kava* safety evaluations.

Current status. WHO, in association with the Natural Standard Research Collaboration carried out an assessment of the risk of hepatotoxicity with *kava* products. This provides safety and regulatory information, analytical results and clinical recommendations, as well as conclusions and recommendations by the Committee appointed to handle the inquiry. Recent news briefings suggest a possible review of the *kava* import ban by the countries concerned as a result of the outcomes of the WHO report.

Lessons learned. The story of *kava* illustrates the value of understanding traditional uses of NWFPs; the significance of considering safety issues in herbal preparations; the need for introducing and enforcing quality standards and regulations to ensure that quality raw materials are used in the pharmaceutical, food and cosmetic industry; and the role of third party mediation.

IKEC's Web site (www.ikec.org) provides a comprehensive overview of this issue.

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VANUATU DEFENDS ITS FAMOUS *KAVA* DRINK

Vanuatu is battling to defend the reputation of its national drink, a bitter peppery concoction called *kava*, which is famous for its medicinal, stress-relieving properties. Since 2000, *kava* has been banned by many European countries, following claims that the herbal remedy can cause severe liver damage. Now Australia has imposed tight new import restrictions because of concerns that it is being abused in some Aboriginal communities.

But in Vanuatu, *kava* drinking remains an essential evening ritual, as the roots of the *Piper methysticum* plant are washed, chopped, mashed (ideally with a stick of dry coral) and strained into coconut cups. Many people on these remote islands believe that *kava* has been unjustly demonized. They claim that the herb – once widely available globally in pill form as a natural treatment for stress and anxiety, and known as *kava kava* – was encroaching on the turf of international pharmaceutical companies. Now Vanuatu's case has been strengthened by a new report from WHO that appears to rule out a link between *kava* and liver damage.

Despite the new restrictions imposed by Australia, *kava* traders in the Pacific are now hoping to revive their export industry, which has been badly damaged by these bans. (*Source*: BBC News [United Kingdom], 18 July 2007.)

HISTORY OF NWFPs

The forgotten heritage

There is growing awareness on the part of international forest science and policy as regards the significance and relevance of local and indigenous knowledge about forests and traditional possibilities of utilization, as well as the need to take account of this knowledge in the development of political strategies that aim at sustainable forest management. The protection, documentation and utilization of forest-related, tradition-based knowledge are the focus of numerous political discussions held within national, regional and international organizations and fora. Countries in the European region and elsewhere have in recent years increased their attention towards the cultural heritage values in forests (e.g. Vienna Declaration and Vienna Resolution 2003 adopted at the Fourth Ministerial Conference on the Protection of Forests in Europe).

Over thousands of years a diversity of forest management practices has shaped European landscapes, affecting density, structure and species composition of forests and woodlands, according to technical knowledge, environmental conditions and the role played by forests in time and space. Traditional knowledge has greatly contributed, providing multiple goods and services, food, raw material, energy sources, livelihood security and quality of life and developing management practices that have increased the biodiversity and quality of woodlands. Over the last decades the retreat of agriculture, socio-economic development, market changes, the replacement of renewable raw materials and modern forestry have deeply changed the relationship between society and forest resources, interrupting the transmission of traditional forest-related knowledge between generations. Thus, the demand for traditional products has decreased and former well-known techniques and uses are only partly recognized and have largely fallen into oblivion.

The gap between orally transferred forest-related knowledge and forest science can be bridged to a certain extent by forestry-related literature dating back to the eighteenth/nineteenth century. Although most of the authors (forest scientists and foresters) focused primarily on the production of highly valuable timber, they were aware that their scientific knowledge was based on traditional knowledge. This is the reason why they collected and published oral information about the various uses of trees and their different parts, such as bark, sap, leaves, blossoms and seeds. These books are of great importance for today's society because they provide information about different products and the recipes and skills necessary to produce and use them. Thus attention can be drawn to the fact that, in addition to wood, a wide variety of products can be derived from forest trees, with many traditional processing techniques known in practice only in rare cases and that have fallen into oblivion to a great extent.

The example of juniper may illustrate the importance of specific tree species for daily life and how they are used by local people. The wood of this species can be used for the manufacture of cups, plates, fuelwood and medicine. The roots, particularly from male shrubs, and the wood and berries produce a pleasant smoke. Roots can also serve as a medicine against fever and other diseases. Resin can be collected from the bark and used also as incense; needles might be used for smoking. The fruits can be the basis for the production of local brandy, medicine against various diseases and for oil. In these publications traditional knowledge is preserved, which has been handed down orally from generation to generation, that otherwise would have been lost. For a long time, some of these products have been referred to – in a mostly discrediting manner – as "by-products", e.g. tree saps, which are of interest in pharmacy and food technology or in the chemical industry even today.

One of the most interesting authors of that time is Peter Reber, who described in a very comprehensive way the common uses of forest trees, shrubs and herbs at the beginning of the nineteenth century (Reber, P. 1831. *Handbuch des Waldbaues und der Waldbenutzung. Jos. Lindauer'sche Buchhandlung München*). However, a considerable number of contemporary – mainly German - forest scientists have acknowledged the traditional multiple uses of woodlands.

Reber addresses the multiple products deriving from specific tree species and describes in detail not only the technical uses of wood but also the multiple uses of leaves, bark, sap, fruits and seeds. Thus different parts of the trees can be used for different purposes such as bark for tanning, dyeing, medicine, bast for weaving and ropes, or sap for the production of turpentine, resin, pitch, tar, soot, oil sugar, wine, brandy, vinegar and medicine. The leaves of various trees can serve as food for human beings as well as for fodder (green or dried) for cattle, goats and sheep and as fertilizer, but can also be used for tanning and dyeing. Multiple uses of fruits are also mentioned, such as food for human beings (green, dried, cooked), for fodder for husbandry and game, for tanning and dyeing, for beverages (syrup, coffee, brandy) and for medicine and oil. Just in the making of oil, more than 13 different raw materials are mentioned as the basis for production (such as seeds from beech, hazel, lime tree, horse chestnut, alder, spruce, fir, pine, larch; leaves from alder; buds from poplar and horse chestnut; and blossoms from roses and birch). Reber also pays attention to the importance and uses of diverse plants, herbs, grasses, mosses and lichens growing in the woodland. Other particular products are perfumes deriving from juniper (produced from wood, roots, berries and needles), larch (blossoms, needles), rose (leaves, blossoms), willow (blossoms) and spruce (bark). Different parts of trees are also highly valued because of their healing effect against diseases (mainly against fever) such as berries, fruits, leaves, branches, bark, seeds and wood (i.e. juniper and birch).

TRADITIONAL KNOWLEDGE

Traditional knowledge is a combination of ancient indigenous practices and techniques, locally adapted and distinctive in a territory or community. It is passed on through generations, packaged in folk songs, stories, dances, poetry, carvings and paintings. This knowledge has greatly contributed, and still does, to the world's natural and cultural heritage by sustaining the production of multiple goods and services that enhance livelihood security and quality of life. Traditional knowledge, cultural values and historical perspective have gained an increasingly important role in shaping policies towards achieving the Millennium Development Goals (MDGs) of alleviating poverty and ensuring economic, social and environmental sustainability.

Traditional knowledge has been used for managing the utilization of many natural resources, such as water, soil and forests, and for organizing rural and urban communities. Traditional Forest-Related Knowledge (TFRK) has long been known to have important implications for forest management and conservation of forest biodiversity, as well as for identification of valuable genetic resources.

The political commitments on increasing awareness of the role of TFRK and practices in the protection of landscapes and conservation of biological diversity were reaffirmed by many of the member states of the United Nations Forum on Forests. During its Sixth Session in 2006, countries agreed to four Global Objectives on Forests aimed at enhancing sustainable forest management (SFM) and the contributions of forests to the achievements of the MDGs. The increasing emphasis on SFM, which includes ecological, social, cultural, spiritual and economic sustainability, has prompted increasing emphasis on considering all relevant knowledge about forest ecosystems and the impact of forest management options in the development of forest policies and operational practices. (*Source: APAFRI Brief*, 19 June 2007.)

Active substances for pharmaceutical and cosmetic products are still being obtained from forest trees but, apart from well-established usages, new fields of use and products can also be created. Wood composites hold a huge, in many respects still unused, potential; for example, they can provide the basis for packaging materials, foils, paints and many more. At present, forest management systems based on traditional forest-related knowledge and often small-scale enterprises are not sufficiently recognized by researchers, managers and policy-makers. However, the experience of the past half century reveals a variety of relationships between science and traditional knowledge, in which the general trend has been from disapproval towards appreciation. (*Contributed by*: Prof. Elisabeth Johann, Oberdorfl 9, St Margareten 9173, Austria. E-mail: elisabet.johann@aon.at)

Morinda citrifolia

Ancient and traditional uses of *noni* (*Morinda citrifolia*)

Noni has probably been used by humans for at least 5 000 years and perhaps much longer. It belongs to a large plant group (genus) called *Morinda*.

Morinda species comprise a useful and widely distributed group of tropical trees, shrubs and vines. There are about 80 species, most originating from Borneo, New Guinea, northern Australia and New Caledonia. At least 20 species have significant economic and traditional value as a source of medicine, food, dyes or wood. Several species, including *noni*, have buoyant seeds that can float in saltwater for months and still remain viable upon landing on a remote coast.

These *Morinda* species became essential components of many tropical coastal and forest ecosystems, as well as serving important functions in a number of ancient indigenous societies. In fact, ancient societies turned to *noni* and other plants for many of their needs, ranging from the mundane to the life-sustaining and spiritual.

Proof of *noni*'s status as a critically important plant can be found in the stories of ancient Polynesians, who considered it to be important enough to take it intentionally to new lands in the Pacific and plant it near their settlements.

Many of the following ancient and traditional uses of *noni* are still in use among indigenous peoples throughout the tropics.

Fire. Fire is one the most basic and universal human needs. Tropical societies used *noni* wood as fuelwood for cooking fires.

Tools. The ability to make tools from materials in the environment enabled many ancient societies to flourish. Every society can use convenient and renewable sources of high-quality woods to make tools and to construct buildings. *Noni* wood was used to make canoe paddles, digging implements and other hand tools. It was also used in fashioning weapons such as axe handles.

First aid. Preventing sickness and loss of life helps to keep a society strong. *Noni* leaves and fruits were used as immediate first aid treatments for cuts, bruises, burns and broken bones. *Noni* served a dual role of helping to promote healing and to relieve pain.

Curative or advanced medicine. Societies all over the world have a long-established healing tradition of using *noni* as one of their most important medicinal plants. The specific medical uses of the plant, what plant parts are used, and how they are used vary among tropical societies. The importance of the plant also varies among societies. Nevertheless, the plant is so widely used for medicine that this may be considered its most important function. As a medicine, healers often mixed *noni* with other herbs. Healers commonly combined herbs in specific amounts and mixtures to effect more complete cures of complex problems. Herbal treatments together with spiritual healing or god supplication activities were probably more common than using herbs such as *noni* alone.

Clothing/fabrics. Fabrics are essential to societies for clothing and other purposes. Virtually all societies dye their fabrics in some way. Very important red and yellow dyes for tapa cloth were made from *noni* by many indigenous societies.

Fodder. Most societies utilize animals for food, transportation or work. *Noni* fruits and leaves are a good supplement for the diet of ruminating animals.

Human food. Island or seafaring societies in the tropics are faced with destructive hurricanes and tidal waves. These calamitous events can destroy most of the plant life near or on the coastline. Famine often follows such events and until the vegetation can recover, people need something to eat. *Noni* fruit and leaves filled this role as a "famine food" plant. They were not particularly delicious or nutritious but could sustain life. (*Source*: extracted from Nelson, S.C. & Elevitch, C.R. 2006. *Noni: the complete guide for consumers and growers*. Holualoa, Hawa'ii, Permanent Agriculture Resources. www.nonithecompleteguide.com).

Old glory

For millennia, people have thrived on products harvested from forests and for most of recorded history people have valued the forest not so much for wood but for other products. Ancient writings from China, Egypt and India record a wide variety of products derived from forest flora and fauna.

The early humans in their nomadic phase of existence lived as hunters and gatherers, living in caves and makeshift shelters. Domestication of plants and animals started with the beginning of settled agriculture. Systems of agriculture and medicine developed in different parts of the world, independent of each other.

Some 3 000 years BC, the Chinese emperor Shen Nung wrote down what is believed to be the earliest recorded use of plants as medicine. He noted that chalmugra oil, an extract from the fruit of *Hydnocarpus* spp. was an efficient treatment against leprosy. The ancient classical Ayurvedic texts Charaka Samhita, Susruth Samhita and Ashtanga Hrdaya Samhita mention a large number of medicinal plants for curing different ailments. Hippocrates, the father of modern medicine, wrote the book *Materia medica*, which discusses some 400 medicinal formulae using herbs such as mint, sage, rosemary and verbena as well as opium.

It is estimated that 35 000 to 70 000 plant species have at one time or other been used in various cultures for medicinal purposes. Indian traditional medicines are known to use 7 000 species;

Atropa belladonna

traditional Chinese medicines use some 5 000 species.

NWFPs were probably the earliest traded goods. In 1992, a team of amateur archaeologists discovered the Atlantis of the sands, the lost city of Ubar – the fabulous city in the sunken Arabian desert, which was linked to the trade of frankincense, obtained from the sap of the trees (*Boswellia* and *Commiphora* species) growing in the Dhufar mountains of Oman, which was traded on far-reaching routes from Rome to China.

NWFPs have been traded over long distances for many centuries, while wood products have only become major international commodities comparatively recently. The ancient Egyptians, for example, imported gum arabic from the Sudan and used it for the preparation of colours for painting and for mummifying. It was such an important article of commerce in the fourteenth century that it had a tax imposed on it. Other traded products included natural cosmetics, dyes, spices and food additives. Belladonna (*Atropa belladonna*) was used by Italian women to brighten their eyes. A drop of the plant extract widens the pupil and the Italians named it *belladonna* (beautiful woman). Today it is used in medicine. For example, one of its active substances, atropine, is used in tablet and injection forms to stimulate the nervous system.

The geopolitics of today have been influenced by the past trade in NWFPs – of spices, cosmetics, food preservatives and silks. The influence of trade in NWFPs continued up to the industrial revolution in the west, when the economy of scale slowly eased out the small-scale production of NWFPs.

The pre-eminence of wood (together with woodland management as against forest ecosystem management) began with the opening of colonies. Wood was used for various purposes such as ship building, packaging commercial products (e.g. tea chests), mining, infrastructure development, the establishment of wood-based industries and urbanization.

The trend started in the 1700s still continues. Increase in population, income levels and standards of living have resulted in an ever-increasing demand for wood. Extensive areas of forest lands have been cleared for agriculture, horticulture and other uses since population growth has led to an explosion in need for food, water, clothing, education, waste disposal, health care and employment. The two world wars also impacted on forests. Inadequate protection and management, frequent forest fires, heavy overgrazing, shifting cultivation, wasteful harvesting, excessive fuelwood collection, misuse of rights and privileges and illegal activities exacerbated the situation. Spiralling deforestation has become a worldwide phenomenon, especially affecting the developing countries.

The assault on forests in the past was made easier because of the undervaluation of forest benefits. Most valuations are based on the monetary values of marketed or marketable forest products and services and this omits the real value of unpriced goods and services. NWFPs mostly fall in this category. Yet these goods and services make up the greater part of the socio-economic values of forests. Their omission automatically leads to gross undervaluation.

A recent study indicated that, in India, against the estimated contribution of forest benefits valued at US$43.8 billion, the officially accounted contribution of forestry to national income in 1993 was only an equivalent of $2.9 billion, representing 1.2 percent of the GNP of India. Most of those missing in the official figures were related to forest grazing, green fodder, medicinal plants, forest foods, non-wood construction materials (e.g. thatch grass and bamboo) and some other NWFPs, amounting to a value of about $28 billion.

All along, the timber orientation of the forestry profession and the bias of planners in favour of large-scale enterprises have left NWFPs at a disadvantage. Production, at best, was considered incidental or subsidiary. This has resulted in NWFPs being left out of management prescriptions and preference

given to comparatively easier timber management.

Except for management operations of some commercially important NWFPs, such as bamboo, rattan, pine resin, *beedi* leaves, *kutch* and *katha* and sandalwood oil, others were lumped together as minor products and collection rights were auctioned off for lump-sum consideration. Apart from this, there were some isolated and disjointed activities on non-wood species introduction and domestication (e.g. *Pyrethrum*). There have also been systematic studies on several NWFP species, without commercial objectives. (*Source*: extracted from a key note address delivered by C. Chandrasekharan at the National Seminar on Sustainable Management of Non-Timber Forest Products of Western and Eastern Ghats held in Thiruvananthapuram on 25 May 2000.)

Entomofagia humana

La entomofagia es el consumo de insectos como alimento. Los orígenes de la entomofagia humana son muy antiguos. Es prácticamente seguro que todos los antecesores en la evolución de nuestra especie consumían, en mayor o menor medida, insectos.

Desde tiempos prehistóricos tenemos referencias del consumo de insectos en la alimentación humana. En la Cueva de La Araña en Bicorp (Valencia), que es una de las más antiguas, se representa la recolección de la miel (y probablemente también de larvas de abeja, ya que se extraían los panales completos). Estas pinturas rupestres tienen unos 8 000 años de antigüedad, sin embargo actualmente algunas tribus africanas extraen la miel (y consumen las larvas) de forma parecida.

De la cultura asiria, una de las más importantes del mundo antiguo, tenemos el testimonio del aprovechamiento de un abundante recurso natural – los saltamontes y, eventualmente, las plagas de langosta – como alimento. En un relieve del muro de un palacio de Ninive (actual Iraq) del año 700 a. C. se representa a dos esclavos que llevan a un banquete numerosos saltamontes ensartados.

Los antiguos griegos y romanos comían insectos habitualmente y existen numerosos testimonios históricos de esta costumbre. En la antigua Grecia los saltamontes o langostas eran considerados un manjar para las clases populares, las cigarras, en cambio, por su alto precio estaban reservadas para la alta sociedad.

En Europa casi desapareció la costumbre de comer insectos en épocas posteriores al imperio romano. Aunque un 80 por ciento de la población mundial come insectos habitualmente (y no sólo por necesidad, sino también por placer), en Europa, Estados Unidos, Canadá y otros países occidentales, la mayor parte de la población sigue siendo reacia a practicar la entomofagia.

México es actualmente el mayor centro de entomofagia mundial. En ningún país del mundo se consume una variedad tan asombrosa de insectos, muchos de ellos con una gran tradición histórica. En México se comen los saltamontes (conocidos allí como chapulines), los gusanos rojo y blanco (larvas de lepidópteros) que viven en el ágave o maguey, las larvas de hormigas o escamoles, hormigas odre, larvas de abejas y avispas y muchísimos otros insectos. El total de especies consumidas en México excede las 250, pero lo más extraordinario no es el número de especies sino el gran porcentaje de la población que habitualmente consume insectos y la diversidad y riqueza del recetario, ya que la gastronomía mexicana se ha enriquecido notablemente con el mestizaje entre las cocinas española e indígena. (*Fuente: Entomofagia. Alimentación con insectos* por Juan Lizama. Ediciones El Nibelungo.)

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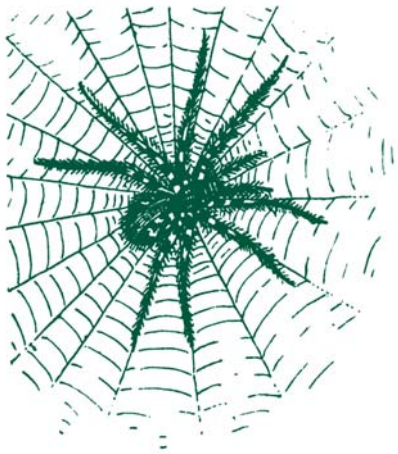

The vegetable fibre industry in the Canary Islands

Knowledge about the vegetable fibre industry in the Canary Islands comes from three main sources of information: archaeology, ethnography and ethnohistory. Thanks to archaeology, an important part of our prehistoric past can be reconstructed. Because of the particular climatic conditions of the Canary archipelago, many objects made of vegetable fibres have survived up to today.

The world of nature that surrounded the aborigines supplied them with the prime materials for their industry. Developments in the use of rush, palm and bulrush were a result of the abundance of prime materials, the needs of the aborigines and the technical knowledge they possessed.

Rush (*Holoschoenus vulgaris* Link) is a Cyperacea plant that grows abundantly in marshy areas, on the banks of ponds and streams. It can be used to bind mats, ropes, chairs, and so on. The natives used this fibre in the elaboration of their clothing, to distinguish those of different social status and those of authority. Archaeological finds are proof of its use in the aborigines' world with the existence of mats employed in shrouds for the dead, clothing and different cords.

The bulrush is a similar plant to the rush. Archaeological finds offer evidence that it was used to a lesser degree than the rush.

The date palm (*Phoenix canariensis*) is a species exclusive to the Canary Islands. Palm trees frequently grew on the lower slopes and coastal plains of the larger islands of the archipelago. At one time extensive palm groves covered the beds and sides of the *barrancos* (ravines).

The island of Grand Canary had an important vegetable fibre industry. The basic materials were rush, bulrush and palm. These three elements are those used by Don Juan Ramírez Pérez, who is considered the only artisan making cloth and objects of vegetable fibre following the techniques used by the native Canary islanders. (*Source: El Pajar*, II Época, No. 22, August 2006.)

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NWFP EXPLOITATION: LATEX FROM THE CONGO UNDER KING LEOPOLD OF BELGIUM'S RULE IN THE NINETEENTH CENTURY

Native communities in the *Domaine privé* (almost two-thirds of the Congo that was the exclusive private property of the state, in turn the exclusive private property of King Leopold) were not merely forbidden by law to sell items to anyone but the state: they were required to provide state officials with set quotas of rubber and ivory at a fixed, government-mandated price.

The rubber came from wild vines in the jungle, unlike the rubber from Brazil that was tapped from trees. To extract the rubber, instead of tapping the vines, the natives would slash them and lather their bodies with the rubber latex. When the latex hardened, it would be scraped off the skin in a painful manner, as it took off the natives' hair with it.

This killing of the vines made it even harder to locate sources of rubber as time went on, but the government was relentless in raising the quotas. (*Source*: Answers.com; Congo Free State history of the Democratic Republic of the Congo. Early history, migration and states (to 1867); www.answers.com/topic/congo-free-state-1)

History of NWFP use in Canada

In North America, the relationship between people and plants began thousands of years ago as the First Nation peoples developed their skills and knowledge and made their way south of the treeline. In eastern Canada, for example, not only were the forests a source of materials for fuel and shelter but also of food and medicine. Over 170 plant species have been documented as food sources. Almost all of the parts of plants were used: fruits, nuts, seeds, roots, bulbs, rhizomes, buds, flowers, shoots, leaves, inner bark and sap. Over 50 species were used as beverages.

The early colonists brought their knowledge of European herbals with them to the New World. Seeds of old world plants were brought and planted in their gardens and used as edibles and medicinals.

The federal governmental forest agency – The Canadian Forest Service (CFS) – was founded in 1899. The CFS has long been engaged in studying and demonstrating sustainable forest management practices. In 1933, the CFS established the Acadia Research Forest (ARF), near Fredericton, New Brunswick. This 9 000 ha forest was the second in a series of research forests established by the Canadian Government and "serves as a living laboratory for the Atlantic Forestry Centre".

ARF has been a leader in the research and development of NTFPs, for example in its early work in Christmas tree culture and management and the recent cultivation experiments of ground hemlock *Taxus Canadensis* Marsh. (*Source: Harvest beneath the trees: botanical non-timber forest products* by Deannie Sullivan-Fraser.)

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SHARING KNOWLEDGE

First Nation people often shared their knowledge of useful plants with the pioneers. The explorer Jacques Cartier had both his ships ice bound in the winter of 1635–36 at Stadacona, near the present Quebec City. During that winter he lost about 75 men from scurvy. In the spring, Cartier happened to see a group of First Nations; among them was Don Agauya who Cartier had noticed the previous autumn displaying the same symptoms as those that took the lives of his men. Cartier questioned him as to how he had recovered. Agauya sent some women in his group to collect the bark and boughs of a certain tree. He instructed Cartier how to make a tea from these and, as a result, all those who were ill recovered. Unfortunately, the tree was never described and has been the cause of interesting debates.

"Non-Wood Forest Products (NWFPs) consist of goods of biological origin other than wood, derived from forests, other wooded land and trees outside forests."
«Les produits forestiers non ligneux sont des biens d'origine biologique autres que le bois, dérivés des forêts, des autres terres boisées, et des arbres hors forêts.»
«Productos forestales no madereros son los bienes de origen biológico distintos de la madera derivados de los bosques, de otras tierras boscosas y de los árboles fuera de los bosques.»
(FAO's working definition)

AMAZON CHIC

The latest in luxury is buried deep in Brazil's Amazon rain forest where entrepreneurs are carving out a multimillion-dollar global market in everything from designer fish-scale running shoes made from giant Amazon river fish to seed jewellery and shampoos and bath oils made from exotic fruits such as *cupuaçu* and *açaí*.

In Brazil alone, Natura, a direct sales company that markets cosmetics based on Amazon oils and essences, controls 23 percent of the market share in a country of 185 million people. Last year, sales of Brazilian cosmetics, much of them based on Amazon products, topped US$484 million, up more than 150 percent from 2001, according to the Brazilian Toiletry, Perfumery and Cosmetics Association. Companies such as Natura are now starting to make their products available in North America and Europe. Natura has already made important inroads in the world's cosmetics Mecca, France.

Another company, Amazônia Natural, markets a range of hair products made from the *guaraná* berry, a natural stimulant indigenous to the Amazon region that acts as an astringent and is said to prevent baldness. The company also sells bath oils and creams made with passion fruit, which is marketed in Brazil as a relaxant. Other skin and hair care lines produced by both Amazônia Natural and Natura draw on the hydrating powers of *cupuaçu*, an Amazonian fruit whose oily seeds are used in the manufacture of skin creams, and *açaí*, a purple berry renowned for its rich antioxidant powers. *Açaí*, which is being heralded as a wonder food, is sold as a deep purple frozen slush at health food stores throughout North America and Europe. The berry, whose chemical properties are still the subject of scientific research, has been found to help combat premature ageing and has ten times more antioxidants than red grapes.

The Rio de Janeiro-based jewellery designer Maria Oiticica was born in the Amazon region. Several years ago, she began to design sophisticated jewellery using seeds from rain forest berries and nuts, and the leathery scales from giant Amazon river fish. Osklen, another high-end Brazilian retailer that recently opened its first North American store in New York, is also using fish scales in a collection of shoes and handbags. Like Osklen, Oiticica's unique designs are featured in fashion magazines around the world. Chunky rings and bracelets made with silver and dyed *jarina* and *açaí* seeds in a riot of bright colours retail at stores in London and in North America. Oiticica's accessories range in price from about $20 for a bracelet with woven palm fronds to several hundred dollars for bracelets and necklaces made with dyed fish scales and sterling silver.

Like most of the companies that market Amazon products, Oiticica works with local Indian tribes. She currently runs a programme for native women who have left their Amazon tribes to seek work in cities such as Manaus and Belém, only to find themselves living in abject poverty. Oiticica has set up a workshop for the women, and pays them to prepare the seeds and palm leaves that she uses in her jewellery production. "We take from the forest," says Oiticica, whose raw materials in her so-called "biojewels" are mostly seeds that have already fallen from the trees. "But we all have a responsibility to give back." (*Source*: Macleans.ca [Canada], 8 October 2007.)

BIOPROSPECTING/ BENEFIT-SHARING OR BIOPIRACY?

Boreal forest may be home to new medicines

Is the boreal forest the new Amazon rain forest? That's what the Great Lakes Forestry Centre (GLFC) and Northern Ontario School of Medicine (NOSM) are trying to find out. Long a source of the anticancer compound known as paclitaxel, the boreal forest is now being mined for other biological chemicals that could help humanity. "Most research in the past, in regard to drug discoveries, took place in the Amazon and South America. Recently, we have been looking at resources in our own backyard," said GLFC research scientist Mamdouh Abou-Zaid.

GLFC is collaborating with NOSM to launch the Boreal Bioprospecting Initiative. Bioprospecting is the search for economically valuable biological molecules, organisms or genetic materials using NTFPs such as trees, mushrooms, herbs and shrubs that could lead to nutritional or medical therapies.

Based on Abou-Zaid's considerable knowledge of disease-preventing antioxidant compounds derived from forests and NTFPs, NOSM approached him to be the project's research director. The core of the Boreal Bioprospecting Initiative will be his extensive library of about 1 000 natural product crude plant extracts and 800 purified compounds, many of which are novel natural products with antioxidant properties to prevent and halt damage from diseases triggered by overactive internal defence reactions in our bodies. In that library could be the key to new therapies for victims of cancer, stroke, Parkinson's disease and the like.

Abou-Zaid already has a few leads, such as the antioxidant properties present in maple syrup.

It has also been found that northern plants differ from their neighbours to the south in a significant way. With many more predators such as insects and plant-eating animals in South America, plant life there has evolved to develop a "wide range of compounds in low concentrations," he said. "The boreal forest plant, with its shorter growing season, focuses on producing a high concentration of specific compounds."

At this stage, paclitaxel (which is marketed under the brand name Taxol) remains Northern Ontario's greatest pharmacological export. In cooperation with an Ottawa-based company, Ensyn

Technologies, Abou-Zaid has applied for an international patent to extract paclitaxel more efficiently from the needles and twigs of eastern yew. The method they have developed is called byrolysis, which in its simplest terms means exposing the plant to a few seconds of heat to release the taxanes into an oil.

The impetus is both economic and environmental. Abou-Zaid estimates that just 2 percent of chemical-rich plant material is currently utilized from an available 10 percent, moreover using "harsh solvents".

NOSM has funding applications in various agencies to create the infrastructure to process and bring the raw material from the boreal forest to the marketplace, while maintaining intellectual property rights in northern Ontario.

In September, Member of Provincial Parliament (MPP) David Orazietti announced a Northern Ontario Heritage Fund Corporation $1.1-million funding to create NOSM's Biomaterial Collection Assembly and Central Processing and Analytical Facility at Algoma University College (AUC) in Sault Ste. Marie. The AUC site will collect plant samples from surrounding forests and identify the chemicals they contain. Those considered likely to have medicinal properties will be forwarded to researchers at both of the medical schools campuses, in Sudbury and in Thunder Bay. (*Source: Sault Star* [Canada], 12 June 2007 and 8 September 2007.)

Africa must patent traditional medicines

African medical practitioners have been urged to use their intellectual property rights in order to patent and protect traditional medicines and indigenous knowledge. South African Health Minister Manto Tshabalala-Msimang made this call on Monday, at the Africa Regional Consultative Meeting on Public Health, Innovation and Intellectual Property.

The two-day meeting is part of WHO's initiative to develop a global strategy and plan of action aimed at enhancing needs-driven, essential health research and development that are relevant to diseases disproportionately affecting developing countries. The high prices of medicine, the Minister said, makes it imperative that Africa takes a common position on issues of fair trade with regard to medicines affecting public health; the consultative meeting sought to consolidate Africa's position on this matter. The meeting was attended by representatives of at least 16 African countries and experts from various local and international organizations, including WHO.

In April this year, South Africa established the Medicinal Plant Incubator Project (MPIP) to protect its indigenous plants. This will be achieved by ensuring that those who need to use these plants do not pluck plant species in an uncontrolled manner from the wild. The indigenous plants will be grown in a nursery environment, be well cared for and be sold to traditional healers and others who have a use for them.

The project has, as one of its primary objectives, a duty to ensure preservation, propagation and recording of plants, and informing the public how to manage ethnobotany. This is a critical task especially considering the local and international pressure arising from competing land use and sheer arrogance from some quarters, in relation to biodiversity.

WHO estimates that between 70 and 80 percent of the populations of developing countries rely on traditional medicines. Over 30 000 of South Africa's plant species are said to be utilized as medicines and about 350 of these are still commonly used and traded as medicinal plants.

It is estimated that almost 20 000 tonnes of medicinal plants are used by at least 27 million consumers each year. In Gauteng, numerous species are harvested, particularly from the province's grasslands, which are already under pressure for land demand for housing and agriculture.

The success of this project will ensure that consumers have easier access to culturally acceptable and affordable medicine that promotes their physical and spiritual well-being. Other benefits of the project will include access by healers to a regular supply of plants that are important for treating some ailments, thereby promoting their businesses. A wider range of plants will also be available for healers to dispense and for consumers to purchase. (*Source*: BuaNews [Tshwane], 8 October 2007.)

Drug companies looting South Africa's bounty of medicinal plants

The government has stepped in to save a tiny South African plant from extinction after hundreds of tonnes were harvested for foreign drug companies, one of which has patented its use to fight HIV/AIDS.

Traditional healers, who have used the plant for centuries, are now trying to win back the patent which they claim is rightfully theirs.

The matter has become so heated that the Eastern Cape government has banned all further harvesting of the plant *Pelargonium* – part of the geranium family – until further notice. But illegal harvesting of pelargonium, also known as *umckaloabo* and *klawerbossie*, continues in the hills around Grahamstown and Alicedale and has led to dozens of arrests, according to Eastern Cape researchers.

Now the Department of Environmental Affairs has decided to review all bioprospecting projects to make sure they conform to new regulations that protect the commercial rights of traditional healers.

The pelargonium tug of war will be discussed next week in Canada at a special United Nations working group meeting on biopiracy and biodiversity.

Pelargonium is one of dozens of South African plants being targeted by drug companies eager to develop new medicines. Other plants successfully targeted in recent years include *Sutherlandia* and *hoodia*, succulent plants used by San communities to suppress appetite and thirst on long hunting journeys. (*Source: The Times* [Johannesburg], 7 October 2007 [in BIO-IPR].)

Namibian Government to act against plant pirates

The Government will set up a special committee to combat unlawful exploitation and trade of biological products, which include plants such as *hoodia* and devil's claw, and marula nuts. Namibia needs to guard against unlawful exploitation and biopiracy, but has no such policies and laws in place, Cabinet noted during its latest meeting.

The Ministry of Environment and Tourism is drafting a law on Access to Biological Resources and Associated Traditional Knowledge, which Cabinet expects to be finalized before the end of this year.

Trading in these products, which often means exploitation for financial gain without including indigenous people who

have centuries-old knowledge of the use of such plants, requires regulation to avoid exploitation.

Bioprospecting contracts lay down the rules of benefit-sharing between researchers and countries, and can bring royalties to less developed countries. The fairness of these contracts has been a subject of debate.

"Cabinet gave approval for the establishment of an Interim Bioprospecting Committee to coordinate Government's approach on biotrade and bioprospecting according to terms of reference still to be proposed," the latest Cabinet briefing paper stated.

Namibia has a large genetic diversity in plants and animals that has potential for commercial development. Biotrade has the potential to generate significant economic benefits to Namibia if properly controlled.

Cabinet noted that "in the absence of a regulatory framework, Namibia stands to lose millions of dollars in potential revenues from renewable plant, animal, fungal and microbial resources, if these are exploited by international pharmaceutical, medicinal and agrochemical interests without sound benefit-sharing arrangements". (*Source: The Namibian*, 20 August 2007.)

CAN TREES GROW ON MARS?

Mexico City. Scientists are using the pine-forested slopes of a Mexican volcano as a test bed to see whether trees can grow on a heated-up Mars, part of a vision of making the chilly and barren red planet habitable for humans one day. Planetary scientists at the National Aeronautics and Space Administration (NASA) and Mexican universities believe that if they can warm Mars using heat-trapping gases, raise the air pressure and start photosynthesis, they could create an atmosphere that would support oxygen-breathing life forms.

Getting trees to grow would be a crucial step. The scientists' quest has taken them to the snow-capped Pico de Orizaba – a dormant volcano and Mexico's tallest mountain – to examine trees growing at a higher altitude than anywhere else on Earth.

The scientists are studying what makes trees refuse to grow above a certain point, where temperatures drop and the air becomes thinner, to see how easily they could grow on Mars. (*Source*: Independent Online [South Africa], 16 July 2007.)

CERTIFICATION DES PFNL EN AFRIQUE CENTRALE

Une récente étude de la FAO a été menée sur les perspectives de la certification des produits forestiers non ligneux (PFNL) en Afrique centrale, en général, et dans les pays membres de la Commission des forêts de l'Afrique centrale (COMIFAC), en particulier. Sur la base d'une revue bibliographique et des discussions avec les différentes parties prenantes, l'étude a révélé des points importants relatifs à la certification des PFNL.

En ce qui concerne l'état des lieux en Afrique centrale, aucun PFNL n'est encore certifié. Cet état des choses est dû à de nombreux problèmes représentant déjà autant de contraintes à la certification des PFNL en Afrique centrale. Ces contraintes sont entre autres:

- Les PFNL sont souvent récoltés/collectés pour la subsistance, exception faite de quelques produits telles les écorces de *Annickia chlorantha, Gracnia cola, Prunus africana, Pausinystalia yohimbe*, les feuilles de *Gnetum* spp., de Marantacées (*Thaumatocucus danielii*), les amandes de *Ricinodendron heudelotii* et *Irvingia gabonensis* en ce qui concerne les végétaux, et les perroquets (*Psittacus erithacus*) chez les animaux.
- Dans la plupart des pays sinon tous, le bois a toujours été considéré comme produit forestier principal tandis que les PFNL ont longtemps été désignés comme produits secondaires. A ce titre, le commerce des PFNL se fait régulièrement dans le secteur informel à une échelle souvent locale et nationale et, dans quelques cas, régionale et internationale.

Pour ces raisons, et bien d'autres, la certification des PFNL devient alors problématique. En effet, la certification, procédure par laquelle une tierce partie donne une assurance/label commerciale écrite attestant qu'un produit, un processus ou un service est conforme à des normes spécifiques sur la base d'un audit conduit suivant des procédures agréées, suppose l'évaluation d'une gestion et, par conséquent, des coûts pour la mise en place du système de ladite gestion et pour son évaluation. Elle suppose aussi et surtout que le produit possède une certaine/grande valeur commerciale pour pouvoir couvrir les coûts de gestion et dégager des bénéfices. A ce titre, la certification des PFNL dont la production se fait sans véritable système de gestion, et dont la commercialisation est généralement informelle et pour la subsistance, devient pratiquement difficile à mettre en ?uvre pour ne pas dire sans objet pour l'Afrique centrale.

Toutefois, lorsque l'on considère qu'un PFNL fait partie intégrante d'un écosystème qui est la forêt, on peut alors envisager une alternative pour la certification des PFNL en Afrique centrale: on certifie la gestion de la forêt où le PFNL est récolté, puis la traçabilité de ce dernier, pour vérifier que toutes les étapes de sa production et de sa transformation respectent des normes élaborées suivant des procédures agréées. Cette approche représente une potentialité importante, on pourrait même dire la plus importante dans le processus de certification des PFNL en Afrique centrale. On pourrait alors encourager la certification des Unités de gestion: Unités forestières d'aménagement (UFA), Permis forestiers associés (PAF), Périmètres d'exploitation forestière (PEF), Unités forestières d'exploitation (UFE), Forêts communautaires et Forêts communales (FC). Le gestionnaire de la forêt supporte les coûts de gestion tandis que l'exploitant des PFNL supporte les coûts liés à l'évaluation de la traçabilité des ses produits. Une autre opportunité pour la certification des PFNL en Afrique centrale est le développement de plus en plus croissant d'outils politiques et cadres institutionnels de promotion de gestion forestière durable dans cette région.

Enfin, l'étude a défini des critères d'éligibilité des PFNL à la certification. Ainsi, les PFNL possèdent un potentiel de certification lorsqu'ils: a) ont accès à un marché international avec une demande significative; b) sont l'objet d'une commercialisation importante avec une valeur ajoutée; c) font l'objet d'une collecte organisée dans une filière bien structurée;

d) ont un cycle de production bien connu et maîtrisé pour une meilleure planification des récoltes et une bonne satisfaction de la demande:cet aspect suppose une production régulière avec une périodicité bien connue; et e) ont une haute valeur pour la conservation (hvc).

Certains PFNL peuvent satisfaire les exigences énumérées ci-dessus. Il s'agit, chez les végétaux:

- des feuilles de *Gnetum* spp. et de Marantacées;
- des écorces diverses comme celles de *Annickia clorantha, Garcinia cola, Prunus africana* et *Pausinystalia yohimbe*;
- des fruits, graines et amandes divers, entre autres ceux de *Irvingia gabonensis* et *Ricinodendron heudelotii*;
- des encens, résines et exsudats divers comme l'encens de *Canarium schweinfurthii* et la gomme arabique;
- de l'huile des amandes par exemple l'huile des amandes de *Allanblackia* spp, *Baillonella toxisperma* et *Vittelaria paradoxa*.

Chez les animaux, ce sont les perroquets (*Psittacus erithacus*), les escargots et autres mollusques, ainsi que les trophées de nombreuses espèces telles que l'éléphant, le bongo, l'éland de derby et le buffle particulièrement convoitées dans les marchés des pays développés. (*Source: Les perspectives de la certification des produits forestiers non ligneux en Afrique centrale*. Produits forestiers non ligneux. Document de travail N° 4, FAO, 2006.)

CHEWING STICKS

Across Africa south of the Sahara, many people go about their daily business with a small stick or twig protruding from their mouths, which they chew or use to scrub their teeth. Cut from wild trees and shrubs in the bush, this is the African toothbrush. Its users swear it is much more natural, effective – and cheaper – than the prettily packaged but pricey dental products on sale in pharmacies and supermarkets.

In Senegal, the chewing stick is called *sothiou*, which means "to clean" in the local Wolof language. In East Africa, the stick is called *mswaki*, the Swahili word for toothbrush.

Their users say the sticks are also medicinal, providing not just dental hygiene but also curing a variety of other ills. Dental experts agree that they appear to clean teeth well and some upmarket health stores in the United States have been selling chewing sticks as a natural form of dental care.

Traders in Dakar and other Senegalese cities sell neat bundles of the pencil-sized sticks – usually about 6 inches (15.2 cm) long – on the pavement, offering a variety of different types of wood at different prices.

If chewed, most of the twigs fray into finer strands, which have the effect of "flossing" between the teeth or, if rubbed up and down, can scrub tooth enamel clean as well as any toothbrush. But they can taste bitter compared with commercial toothpastes.

The World Health Organization has encouraged the use of chewing sticks as an alternative source of oral hygiene in poor countries where many cannot afford commercial dental products. While a manufactured toothbrush can cost upwards of CFAF300 (60 cents), a chewing stick costs only CFAF25 or 50. (*Source*: Conserve Africa, 18 June 2007.)

Pistacia khinjuk

DRIED FLOWER MAKING: A POTENTIAL COTTAGE INDUSTRY

Himachal Pradesh (India) is endowed with a wide variety of flora and fauna. Its forests and valleys harbour several plant species that are ideal for making dried flowers.

Dried flower making is an upcoming industry. Dried flowers need less care and are virtually everlasting. They can be painted, coloured or dyed and various floral products, such as cards, pictures, wall hangings, arrangements, potpourris and pomanders, can be prepared from them.

Examples include the following.

- The beautiful reddish leaves of *Pistacia khinjuk*, leaves of various types of ferns such as *Cheilanthes albomarginata, Atyrium* spp., *Christella dentata, Woodwardia unigemmata*, flowers of *Clematis gouriana, Reinwardtia indica* and different grasses can be used for making cards, calendars and wall pictures.
- The turgid leaves of *Quercus* sp., *Ilex dipyrena, Cycas* sp., flowers of *Verbena erinoide*s and fruits of *Dioscorea* sp., *Hedera canariensis, Mallotus philippensis*, cones of *Cunninghamia lanceolata* and hips of *Rosa brunonii, R. webbiana* and ferns such as *Polystichum* spp. and *Pteridium aquilinum* can be used for making bouquets, dried flower arrangements and potpourris.

At present, only tree cones and a few ferns are being sold. Dried flower products are sold at very high prices and there is great potential for setting up cottage industries. It is imperative, therefore, to preserve and cultivate such native species, not only for their aesthetic importance but also to restore the ecological balance. With its varied climatic condition, the region creates a congenial environment for cultivating many other ornamental plants that would be suitable for dried flowers, e.g. *Molucella, Helichrysum, Limonium* and *Nigella*. (*Source: MFP News*, XVII(3), 2007.)

HOME GARDENS

Home gardens worldwide are integrated into family life. Living space, boundaries and materials are integrated into gardens. Trees provide shade and shelter under their canopy and their roots stabilize soil around the home.

Multipurpose plants, such as sea buckthorn in cold areas, *Leucaena glauca* in tropical areas and even cassava, are planted as living fences to provide crop protection, privacy, firewood, materials, food and animal fodder. For example, a living fence of cassava provides a boundary to keep out wandering livestock, but also holds a food reserve in its starchy roots ready for an unexpected food shortage.

In Asia, parents traditionally plant a neem tree (*Melia azadirach*) in their home garden for every child born in their family, so that when they are adults there is timber for them to build their own house. Oil from leaves and seeds of the neem is a natural pesticide and the tree is now planted in African home gardens. (*Source: Livelihoods grow in gardens*. FAO Diversification booklet 2, 2004.)

LES PFNL ALIMENTAIRES EN AFRIQUE CENTRALE

En Afrique Centrale, il existe une grande variété de PFNL. Les plus importants sont le gibier, les plantes comestibles, les plantes médicinales et les rotins. Le tableau nous présente les PFNL essentiels en fonction des différents pays d'Afrique Centrale.

Pays	Principaux PFNL
Burundi	Gibier, animaux vivants, plantes médicinales
Cameroun	Plantes comestibles (fruits, noix, feuilles) ; plantes médicinales, rotin, gibier
République Centrafricaine	Gibier, plantes comestibles, plantes médicinales
Guinée Equatoriale	Plantes médicinales, plantes comestibles, rotin, gibier
Gabon	Plantes comestibles, osier, gibier
République du Congo	Plantes comestibles (fruits, champignons, légumes); plantes médicinales ; miel, gibier, plantes ornementales, matériaux de construction
République Démocratique du Congo	Plantes comestibles, gibier
Rwanda	Plantes comestibles (fruits); plantes médicinales, miel, animaux vivants.
São Tomé et Principe	Plantes médicinales

Ces produits jouent un rôle significatif dans l'existence des communautés locales de cette région car, ils leur fournissent de la nourriture et des revenus. La récolte, la transformation et le commerce relèvent essentiellement du secteur informel si bien que l'on ne dispose d'aucune information digne de foi à propos du rôle de ces différents produits sur l'économie rurale.

Les PFNL alimentaires peuvent être repartis en deux grands groupes: les PFNL alimentaires d'origine végétale et les PFNL alimentaires d'origine animale.

Les PFNL alimentaires d'origine végétale
Les plantes alimentaires font partie des principaux PFNL dans chaque pays de cette sous-région. Ils sont consommés comme aliment de base ou plat principal, aliment d'appoint, liant, condiments ou comme aromates, excitants ou aphrodisiaques, «amusegueules ».

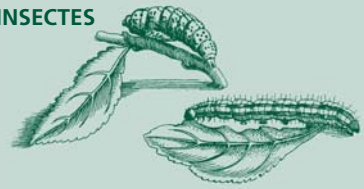
De nombreuses espèces sont utilisées pour une ou plusieurs de ces parties utiles, mais seules les plus importants (c'est-à-dire ceux qui sont économiquement rentables), sont commercialisés au niveau national et international. Parmi ces derniers, nous avons:

- les fruits d'*Irvingia gabonensis* (mangue sauvage); *Dacryodes edulis* (safou); *Cola acuminata* (kola); *Elaeis guineensis* (palmier à huile);
- les légumes-feuilles de *Gnetum africanum* et *Gnetum buchholzianum* (okok/eru);
- les écorces de *Garcinia lucida*;
- les racines et les tubercules, à l'instar de *Dioscorea sp.* (Igname sauvage);
- les sèves de *Raphia sp.* (Vin de raphia) et d'*Elaeis guineensis* (Vin de palme);
- les exsudats de *Baillonella toxisperma* (Huile de moabi).

Les PFNL alimentaires d'origine animale
En général, dans la zone d'Afrique Centrale, les PFNL d'origine animale ont une moindre importance comparés à ceux d'origine végétale; néanmoins ils occupent une place indiscutable dans l'alimentation car ils constituent la principale source de protéine.

Il existe plusieurs types de PFNL d'origine animale qui sont consommés dans la sousrégion d'Afrique Centrale. Les principaux sont les suivants: le gibier (mammifères terrestres et aquatiques), les insectes (chenilles, larves de hanneton, les criquets, les termites) et les produits apicoles (miel), les escargots géants, les poissons, les oiseaux et les reptiles. Le gibier est le produit d'origine animale le plus important de cette région, suivi par les produits apicoles et les animaux vivants et les insectes comestibles (chenilles, termites).

LES INSECTES



Dans la zone d'Afrique Centrale, de nombreuses catégories d'insectes sont consommées. Parmi ces insectes, on distingue:
Les larves de Hanneton qui se développent dans les troncs d'*Elaeis guineensis* et de *Raphia monbuttorum* en décomposition, les pétioles des palmes de *Raphia hookeri* sur pieds. Nous avons par exemple *Rhynchophorus phoenicis*, qui est très apprécié au Cameroun. Ces larves sont récoltées toute l'année; mais dans certaines localités, les autorités délimitent les périodes de récolte.
Les chenilles sont consommées aussi bien par les populations urbaines que par celles rurales des pays d'Afrique Centrale. Les espèces consommées appartiennent à diverses familles entre autres: Agaristidae, Attacidae, Bombycidae, Noctuidae, Nymphalidae, etc. Au Cameroun et en République Centrafricaine, l'on constate une nette préférence pour les Attacidae. Elles se nourrissent des feuilles de différentes espèces: *Bridelia ferruginea, B. micrantha, Erythrophleum suaveolens, Entandrophragma* spp., *Petersianthus macrocarpus, Triplochyton scleroxylon, Trema orientalis*. En général, on récolte les chenilles pendant la petite saison sèche, durant les mois de juillet et août et parfois septembre.
Les criquets apparaissent surtout en début des saisons sèches, surtout dans la zone du Cameroun. Elles sont aussi consommées par les populations camerounaises. Deux espèces sont communément appréciées au Cameroun, aussi bien dans les grandes villes que dans les zones rurales: le criquet puant et la sauterelle verte.

(*Source : Gestion des ressources naturelles fournissant les produits forestiers non ligneux alimentaires en Afrique Centrale*. Produits forestiers non ligneux Document de travail N° 5, FAO, 2007.)

MEDITERRANEAN FORESTS: REGIONAL DIVERSITY SETS THE SCENE

Mediterranean forests play a key role in the lives and the welfare of the local people, not only for the goods and services they provide, but also for the challenges they pose for conservation and management.

Mediterranean flora is extremely rich with around 25 000 vascular plant species, widely distributed throughout the diverse ecosystems of the region. Climatic, geomorphic and anthropogenic factors have resulted in a mosaic-type landscape of a variety of forest types that cover an area of 73 million ha, or about 8.5 percent of the region's area. However, purely Mediterranean forests and maquis cover about 56 million ha, i.e. 7.5 percent of the total land.

Mediterranean forest ecosystems provide multiple wood and NWFPs and services that are crucial for the socio-economic development of rural areas as well as for the welfare of the urban areas of the Mediterranean region. In this context, Mediterranean forests require special attention for the following reasons.

- They constitute a unique world natural heritage and play a key role in the welfare of urban and rural Mediterranean societies. The goods and services that they produce are very diverse (multifunctionality) and have a great market (many NWFPs) and non-market value (externalities).
- They represent an exceptional richness in terms of biodiversity.
- They are very vulnerable to numerous factors: forest fires, overexploitation, degradation and desertification.
- Their conservation and management affect the availability of soil and water resources, the latter being a key strategic resource for Mediterranean societies.
- As a transitional zone, their future is seriously endangered by climate change.

The situation of Mediterranean forests differs clearly from the northern rim to the southern and eastern subregion. In the northern part, the socio-economic changes of the past decades, triggered by the urbanization of society and better living standards, have increased the relevance of the ecological, recreational and landscape functions of Mediterranean forests. But these externalities do not always provide revenues for forest owners. Forest management lacks more human resources and profitability than ever before. As forests have become of low interest for their owners, forest lands are abandoned rather than cultivated or maintained. This, in turn, increases the risk of natural hazards such as forest fires, pests and diseases.

On the other hand, in the southern and eastern Mediterranean subregions, the current socio-economic conditions make forests, maquis and rangelands and their products (firewood, grass, aromatic and medicinal plants, etc.) relevant primary resources for the livelihood of local communities. In addition, forest environmental functions (fight against desertification, regulation of the microclimate, regulating water resources, etc.) are crucial for the sustainable development of society as a whole.

The harsh and unpredictable climate, the current socio-economic conditions and the unique and long-lasting history of human-forest-landscape interaction require the development of our knowledge for better conservation and sustainable management of Mediterranean forests. (*Source*: "Regional diversity sets the scene" by Marc Palahí, EFIMED,Yves Birot, Chairman of EFIMED Advisory Group, Aristotelis C. Papageorgiou, Demokritos University of Thrace, Greece [in European Forest Institute, Mediterranean Regional Office, *EFI news*, June 2007].

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MOSS PLAYS IMPORTANT ROLES

Petaling Jaya, Malaysia. That the diminutive moss plays an important role in retaining water in catchment areas comes as a significant discovery to researchers in the field of bryology (the study of bryophytes – commonly known as mosses), especially since it has always been assumed that trees were more important in slowing water from runoff when it rains, which in turn helps to prevent floods. According to research carried out in Genting Highlands, just 1 m^2 (2–3cm thick) of a particular moss found there can store one tonne of water for a week.

Prof. Mohamed Abdul Majid of the Institute of Biological Sciences, University of Malaya, said that the destruction of forests also meant that the moss growing on branches would be destroyed. Speaking during the five-day World Conference of Bryology here, Prof. Mohamed said that there were numerous other uses for mosses that were only now being explored. He added that Mount Kinabalu, in Sabah, probably contained the most diverse number of mosses in the world with more than 1 000 species present.

International Association of Bryologists President Prof. Janice M. Glime said that mosses have been found to contain anticancer and antibacterial properties. One of the mosses that had anticancer properties was found in the Cameron Highlands. "This is why it is important to research it. It is a largely untapped field and we still don't know enough about mosses and their potential in medicine," Prof. Glime said. She added that some countries have used mosses for insulation, air-conditioning or purely aesthetic purposes, while in Australia and parts of America, the use of mosses in horticulture or to provide fuel has depleted the amount present in forests prompting the need for harvesting guidelines. (*Source: Malaysia Star*, 23 July 2007.)

NON-PROFIT ORGANIZATIONS AND NGOS

Global Forestry Conclave and Sustainable Development, Cameroon

The Global Forestry Conclave and Sustainable Development (GFCSD) (*Partenaire à la gestion durable des ressources naturelles*) is an NGO working

on natural resource management that was formed through a coalition of three Cameroonian environmental working groups: wildlife management, agroforestry and fishing management, and forest lands ecosystems research.

The NGO's name resulted from the fact that the three original working groups had the same objective, namely a development priority of sustainable management of natural resources and environmental protection.

Among its activities, GFCSD encourages the promotion of community forest projects based on NWFP conservation and sustainable management by the creation of agroforests in our sites. GFCSD also has a special programme of traditional forest products' use with various indigenous forest peoples, which will contribute to participatory learning action and is very important for sensibilization.

FOR MORE INFORMATION, PLEASE CONTACT: M. Gwomb Bi Hell Emmanuel and M. Tabe Joseph Ako, Global Forestry Conclave and Sustainable Development (GFCSD), PO Box 8002, Yaoundé, Cameroon. E-mail: globalforestryconclave@yahoo.fr

Primary Environmental Care Association, Uganda

Primary Environmental Care Association (PECA) is an NGO based in Kampala, Uganda. We empower communities to meet their needs while conserving the environment. Currently we are teaching communities how to collect herbs from the wild in a sustainable way. We are also planning to set up a centre for indigenous knowledge and will collect, document, research and disseminate the knowledge in a participatory manner. We are seeking funding for this.

FOR MORE INFORMATION, PLEASE CONTACT: Mr Lakuma Opiro, Chairman, PECA, PO Box 23250, Kampala, Uganda. Fax: 256 41 345597; e-mail: peca-kol@excite.com

Resource Centre for Development Alternatives, Pakistan

The Resource Centre for Development Alternatives (RCDA) is a small multidisciplinary information and resource centre established to meet the organic development needs of the country. This non-profit educational organization was started in 1992 and formally registered in 1998. RCDA works to promote a vision of holistic development through education, training, awareness raising, counselling, linkages and information networking.

RCDA's educational areas – based on holistic approaches only – cover all aspects of ecological agriculture, natural health care, alternative technology, environment, alternative education and advancement of women. It collects all the relevant educational and resource materials (i.e. books, manuals, periodicals, directories and audiovisuals) from around the world for its resource library, which it is seeking to expand. Please contact RCDA if you can help in any way.

FOR MORE INFORMATION, PLEASE CONTACT: Mrs Amatul Wadood Nazli, Cofounder and Chairperson, Resource Centre for Development Alternatives (Regd), Faraz House, D-237, Ghazikot Township, Mansehra 21300, NWFP, Pakistan. E-mail: RCDA2000@isb.paknet.com.pk

Trees for Life

Trees for Life is a non-profit, people-to-people movement that helps plant fruit trees in developing countries. These trees provide a low-cost, self-renewing source of food for many people and protect the environment. Our programmes include three elements: education, health and environment.

Volunteers in the villages are trained by Trees for Life and provided with essential support for programmes that respond to the needs of their communities. Through their own efforts and labour, the villagers reap the benefits. Trees for Life provides hope, not handouts. Each person thus empowered pledges to help at least two more people.

Since the inception of Trees for Life in 1984, more than 3 million people have helped plant tens of millions of fruit trees in countries such as India, Guatemala, Haiti and Brazil.

Trees for Life also produces an online scientific journal – *Trees for Life Journal* – that focuses on traditional knowledge and scientific studies of beneficial plants. The journal provides a forum on beneficial trees and plants and brings together international articles about traditional medicine, small-scale field studies and scientific evidence regarding natural remedies and medicinal plants that could benefit humanity. The journal is available at www.tfljournal.org/

FOR MORE INFORMATION, PLEASE CONTACT: Balbir Mathur, President, Trees for Life, 3006 W. St Louis, Wichita, KS 67203-5129, United States of America. Fax: +1-316-945-0909; e-mail: info@treesforlife.org; treesforlife.org/treesforlife.asp

SCIENCE FOR THE POOR

In the lower Tocantins region of Brazil, one Amazonian woman questioned why scientists publish principally for elite audiences. Her experience suggests that the impact may be enhanced by also sharing data with people who depend upon forest goods.

Having defended her family homestead near the city of Cameta against loggers in the late 1980s, Glória Gaia became interested in strengthening the information base of other villagers so that they would not lose their forests for meagre sums. She challenged scientists to defy norms such as extracting data without giving back to rural villagers and publishing primarily for the privileged. Working with researchers, she helped them to publish an illustrated manual of the ecology, economics, management and cultural importance of key Amazonian forest species. With and without funds or a formal project, she travelled by foot and boat to remote villages to disseminate the book. Using data, stories and song, she brought cautionary messages to villages about the impacts of logging on livelihoods.

She also brought locally useful processing techniques regarding medicinal plants, fruit and tree oils. Her holistic teachings challenged traditional forestry to include the management of fruits, fibres and medicines. A new version of the book, requested by the Government of Brazil, contains the contributions of 90 leading Brazilian and international scientists and local people. Glória Gaia's story raises the following questions. Who is science for and how can science reach disenfranchised populations? Lessons for scientists and practitioners from Glória's story include: broadening the range of products from research to reach local people; complementing local ecological knowledge with scientific data; sharing precautionary data demonstrating trends; and involving women and marginalized people in the research and outreach process.

(*Source*: Shanley, P. 2006. Science for the poor: how one woman challenged researchers, ranchers, and loggers in Amazonia. *Ecology and Society*, 11(2): 28 [online]. www.ecologyandsociety.org/vol11/iss2/art28/)

THE ROLE OF NWFPS IN POVERTY REDUCTION

NWFPs play a crucial role in meeting the subsistence needs of a large part of the world's population who live in or near forests. They provide shelter, food and medicines on a daily basis as well as in times of crisis. For poor households, NWFPs are rarely the primary source of revenue, but can supplement income or lessen unexpected hardships such as the loss of crops. As long as people rely on these products for their basic survival and nutrition, care must be taken to prevent the resource from shrinking or being degraded.

"Riches of the forest: fruits, remedies and handicrafts in Latin America"

NWFPs are also important in terms of their potential to improve livelihoods through the sale of surplus products. In these instances, increasing forest areas or processing raw materials to add value could significantly enhance returns – making plant-based essential oils or manufacturing lotions and creams from shea butter – for example. Fair trade organizations can increase the amount of income that poor people earn as well, for example, by encouraging producer cooperatives to offer reasonable prices to suppliers, by providing good working conditions and by reducing the number of intermediaries in market transactions. (*Source*: extracted from *Better forestry, less poverty: a practitioner's guide*. FAO Forestry Paper 149. 2006. Rome, FAO. www.fao.org/docrep/009/a0645e/a0645e00.HTM)

HOW NWFPS CAN BETTER CONTRIBUTE TO LIVELIHOODS AND POVERTY REDUCTION

In order for practitioners to assist poor people to overcome obstacles to collect, consume and sell NWFPs, they need to:

- discuss the importance of NWFPs with users and identify the type of contributions that they make to livelihoods, recognizing that households rely on these products to varying degrees, depending on the extent of their poverty and vulnerability;
- find out which groups gather which NWFPs, how they access them, and whether they use them for personal consumption, trade or both;
- be aware of traditional practices regarding harvesting and collection, including traditional norms of access;
- determine which households can afford to invest in commercial activities and whether this option is more appropriate than other potential sources of income for vulnerable groups;
- identify opportunities and constraints related to access, collection and trade of NWFPs.

Once practitioners obtain this information, they can start working with community leaders, users and other stakeholders to:

- compile an inventory as a first step in formulating or revising management plans and practices that reflect local needs and promote sustainable use;
- form local associations/cooperatives and develop cottage industries or community-based enterprises if commercialization of particular products appears viable;
- choose sites that have the potential to yield maximum benefits such as those where plants that are used for medicinal purposes could be grown in home gardens for households to consume or sell;
- document knowledge on and experiences with cultivating medicinal plants and disseminate this information in local languages to inform village residents which ones to use for what illnesses and how to set up this type of home garden;
- lobby authorities to give priority to local residents or communities when issuing permits to collect NWFPs, based on management agreements that regulate, monitor and control harvesting levels.

WEAVING WITH NWFPS

Bamboo fibre goods to set new fashion trends

Because of the global focus that environmental issues have received, bamboo-fibre products have caught the fancy of consumers, who are considering their many ecofriendly advantages. Experts have predicted that bamboo-fibre products will set new fashion trends for 2008/2009 autumn-winter clothing such as scarves, ties and outdoor sportswear.

There are many local clothing, textiles and fabric enterprises that produce bamboo-fibre products. One such success story is that of Hebei Jigao Chemical Fiber Co. Ltd, whose products made of bamboo-fibre have become popular both in the domestic as well as the overseas markets. Currently, Hebei Jigao's products occupy over 90 percent of China's bamboo-fibre market. Despite high prices, bamboo-fibre products sell very well: a leisure suit made from bamboo-fibre material costs 40 000 yuan in Japan and even in China, bamboo-fibre clothes are sold for hundreds of yuan. (*Source*: Fibre2fashion News Desk [China], 20 August 2007.)

Grassroots support for raffia growers in the United Republic of Tanzania

Weaving lengths of fibrous palm leaves, the women of Tanzania's Nou forest are busier than ever. Situated in the Manyara region of the country's temperate northeast part, over 200 000 people depend on the forest which for generations has provided them with food, water and a valued raw material – raffia (*Raphia*).

Raffia is part of daily life in the forest, where an abundant water supply and fertile soils provide favourable growing conditions. The versatile palm has multiple uses: raffia culms (stems) are commonly used as supporting beams in buildings and the leaves make effective roof covering. There is also a long-standing tradition of raffia use in textiles

– baskets, mats, hats and rope can be woven from the flexible fronds. These goods were produced primarily for use within the villages but are now sold locally and abroad, generating much-needed income.Previously the situation was very different when a combination of rapid population growth and the need for productive agricultural land devastated large areas of the forest. Overharvesting and unsustainable methods of collecting raffia also contributed to the destruction of parts of the state-owned forest, threatening the village's water supplies and depleting most of the raffia. Faced with a potential environmental catastrophe, the Tanzanian Government banned the collection of raffia from the forest.

With the help of two NGOs, the ban has been revoked and forest communities are now weaving their way to a brighter future. FARM-Africa Tanzania and SOS Sahel Ethiopia established the Nou Joint Forest Management (JFM) project, a participatory forest management scheme, bringing villagers and the government together to manage the forest sustainably.

As a result raffia production has been domesticated, with large quantities now grown in homesteads on the forest perimeter. Areas of the forest have been replanted and the crop is also grown in swampy areas to avoid clearing more land. Furthermore, villagers no longer uproot the raffia during harvesting but leave the roots intact to allow plants to regenerate.

While the men of the villages harvest and collect the raffia, the women weave. In 2005, also as part of the Nou JFM project, raffia weavers' groups were established to help villagers improve the quality of their products and identify new market opportunities. As a result, demand has been increasing in local and foreign markets.

Although many women from the Nou forest have been weaving with raffia since childhood, the weavers' groups have helped change their fortunes. Typical is Paulina Hotay. "Before joining this project I made less than TSh2 000 (US$1.50) per month," she said. "Now I make TSh15 000 per month through raffia." (*Source*: The New Agriculturist Web site, viewed 8 October 2007; www.new-ag.info/07/05/focuson/focuson3.php)

Medicinal plants used in organic clothing line

Threads for Life, the first Ayurvedic apparel company in the United States of America, successfully launched its first collection in California. Infused with over 25 medicinal plants and herbs to help address both serious

and everyday ailments, each garment is 100 percent organic and woven by hand.

Based on the 5 000 year-old medicinal science of Ayurveda, each Threads for Life garment is infused by hand with unique formulas to address various emotional and physical health challenges. Through the transdermal process of fibre to skin contact, the herbs and plants are diffused into the pores of skin to restore vitality and balance for healing and optimum health. (*Source: Daily Green* [United States of America], 16 August 2007.)

Promoting the use of the "bayong" in the Philippines

Apalit, Pampanga. The wife of Pampanga Representative Juan Miguel Arroyo and the spouses of 20 of the province's mayors have spearheaded an effort to promote the use of "bayong" (native bags), instead of plastic bags, as one way to protect the planet from pollution. On Sunday they began distribution of at least 200 000 pieces of bayong or hand-woven rattan or *buri* bags throughout the province.

Television host and environment advocate Christine Bersola-Babao joined the launch at the public market, giving also a short talk on how plastic bags, if not reused or disposed of properly, hurt nature and people. "I started using bayong when I was in high school. It's my personal little way of helping Mother Earth." Bersola-Babao told the crowd of about 400 women who lined up to get their free bayong. (*Source*: Inquirer.net [the Philippines], 16 September 2007.)

Stripped of a natural fibre

Every year during the Mah Meri's *Hari Moyang* (Ancestors' Day), the Orang Asli would proudly wear beautiful bark clothing called *teghap*, enhanced with sashes and headbands woven from *nipah* palm leaves. However, trees have become such scarce commodities in Malaysia that even the Orang Asli can barely afford to use the bark.

"We wear our traditional bark clothing as a form of identity," explains Julida anak Uju, 38, from Sungai Bumbun Orang Asli Village, one of five villages in Carey Island. She had had to wade in knee-deep mud to harvest the *nipah* leaves for her costume, which takes a full day to weave into the *songkho* (plaited headband), *selipang* (sash) and *dendan* (skirt). The beige and dark green colours are obtained by interweaving young and mature leaves. "We also wear the costume for dances and it gives us a sense of pride in our traditions and customs. But due to the scarcity of terap trees, we can barely produce the clothing for our children."

She shows us the terap tree (*Artocarpus elasticus*, belonging to the mulberry family Maraceae) from where she obtains the bark. The sapling stood forlornly in a grove of palm oil trees. Like the *nyireh batu* wood, which men use for their magnificent carvings, these native plants are increasingly rare because of scarcity of land.

Bark is among nature's most versatile materials used by indigenous people for generations. Beaten bark clothing is found across tropical regions, mainly in the tropical Pacific Islands, Southeast Asia and parts of Africa and South America.

In Malaysia, the Mah Meri continues using bark clothing, but are these distinctive garments on their way to extinction? Julida says that they are very careful when washing the clothing so as not to tear them. "We don't know how long they can last and we can't make new ones." (*Source: Malaysia Star*, 17 June 2007.)

Woven bamboo products and crafts

Bamboo crafts and woven mats are traditional products in China, India, Malaysia, the Philippines and Thailand. The technique has been known for several thousand years. These diverse products have become an indispensable part of daily life, literature and art.

There are nearly 20 categories of woven bamboo products in Asia, including fruit baskets, trays, bottles, jars, boxes, cases, bowls, fans, screens, curtains, cushions, lampshades and lanterns. (*Source: World bamboo resources. A thematic study prepared in the framework of the Global Forest Resources Assessment 2005*. Non-Wood Forest Products 18. Rome, FAO. 2007.) ♣

In the middle of difficulty lies opportunity.
Albert Einstein

AÇAÍ

Brazilian super food going down a storm in the United Kingdom

A Brazilian berry straight from the Amazon rain forest called *açaí* (*Euterpe oleracea*) has quickly become the world's number one most powerful and nutritious food according to many environmental organizations and leading doctors.

A staple part of the Brazilian diet where they consume millions per day, already a big hit in the United States of America with a band of celebrity worshippers, and although still very new to the United Kingdom market it is fast becoming known as the "next big thing".

For many people, the *açaí* berry is probably still unknown. But if you have ever visited the new wave of juice bars now on many high streets, you may have had some in your smoothie or health drink and not even realized it.

Packed full of antioxidants, high in omega 6 and omega 9 oils, a rich source of protein and dietary fibre to name just a few of the benefits, this is probably why the *açaí* berry is such a huge success.

Operating from the United Kingdom, Sublime Food Ltd has been importing and distributing frozen fruit from Brazil for the past three years. Ronan O'Meara, its director, explains: "The *açaí* berry has been consumed by the indigenous people of the Amazon since time began; the berry is the size of a large blueberry, purple almost dark black in colour. It grows wild in the Amazon rain forest, which is the only place on earth where it grows. It has three times more antioxidants than blueberries and pomegranates. Antioxidants are vital because they mop up free radicals which can cause cancer and cell damage."

With his brother living and running a juice bar in Brazil for the past nine years, these two brothers have formed a unique international partnership where they are at the forefront of importing the *açaí* berry to the United Kingdom. "Once the berries are in season there are huge quantities; an area about half the size of Switzerland is completely covered in *açaí* trees. Berries are picked by small teams, often husband and wife that look after areas that are unique to them. One member of the team will climb up the tree, cut the branch or pull the berries off and drop them to the person waiting below who will put them into baskets. The baskets are then taken down the river to the local buyers, often cooperatives. Our buyer will inspect the berries and buy the best ones. He then takes them off and on that day places them in warm water for about an hour; he will then mash them through the first sieve, at which point the stones are removed. They are then mashed through a smaller sieve to break up the fibre inside the berries. A pulp is formed which is packed and shipped in frozen containers over to the United Kingdom," says Ronan.

The frozen pulp is then sold on to juice bars, smoothie bars, health shops and supermarkets.

Greenpeace champion the *açaí* berry because although they are aware that a wide range of sustainable and effective initiatives are needed to prevent the continuing destruction of the Amazon, they accept it as an important environment step forward as the berry is derived from a non-timber forest product within the Amazon rain forest and it gives the people a sustainable way of maintaining their livelihoods. (*Source*: FreshPlaza [the Netherlands], 18 June 2007.)

ACROCOMIA TOTAI

El cocotero, mbocayá o nuez del Paraguay (*Acrocomia totai*) es una planta de la familia de las arecáceas, nativa del Paraguay. El aceite de la semilla y la pulpa se utilizan en la alimentación y en la fabricación de jabones.

A. totai es una palmera de entre 15 y 20 m de altura, con uno o, en raras ocasiones, varios estípites de unos 20 a 30 cm de diámetro, cubierto de una corteza lisa y oscura, dotada de espinas fuertes y rectas. El sistema radicular es extenso y profundo. Muestra hojas palmadas, en forma de abanico, con el raquis duro y espinoso. El fruto es una drupa globosa. No requiere de un clima cálido o húmedo para desarrollarse. Crece en diferentes tipos de suelo, aunque parece preferir los arenosos, bien drenados, aún en zonas de altitud, pero no crece en suelos anegados.

Los aceites de la semilla y la pulpa se emplean en la fabricación de jabones, llamados de coco. La pulpa es comestible, de ella se extrae un aceite ligero y con su fermentación se elabora un licor de sabor agradable. El interior del tronco se muele para obtener una harina muy fina y sabrosa y el cogollo se consume como palmito.

Las hojas de *A. totai* se usan como forraje para el ganado; tras una maceración, se extrae de ellas una fibra útil en la confección de sogas, redes, etc.

El fruto sólo se industrializa en el Paraguay y es completamente aprovechable, se compone de 15 a 20 por ciento de cáscara (alimento de ganado, combustible de hornos). La pulpa comprende el 30 al 40 por ciento del peso del fruto y su tenor oleico varía desde un 20 hasta un 36 por ciento (expeller utilizado en alimentación de animales). El exocarpio compone el 30-40 por ciento de la fruta (combustible de calderas, materia prima para carbón de alta calidad). Un 7 a un 12 por ciento lo compone la almendra, que es oleosa en un 50-60 por ciento (expeller comestible para animales y seres humanos).

En cuanto a producción de aceites vegetales, esta especie nativa que posee el Paraguay, es la segunda en rendimiento por hectárea en el mundo entero, sólo superada por la palma africana. Los aceites de pulpa y almendra de coco tienen la ventaja de ser aceites de fácil conversión a biodiesel. (*Aportación hecha por*: Maura Isabel Díaz Lezcano, Escuela Técnica Superior de Ingenieros de Montes, Universidad Politécnica de Madrid, Ciudad Universitaria, 28040, Madrid, España. Correo electrónico: maisdile@yahoo.es)

AQUILARIA

Oudh – the sweet smell of tradition

Oudh is considered a supreme fragrance in the Gulf countries. In Bahrain, it is burned as a mark of respect and hospitality and is a traditional gesture of welcoming and honouring guests. In fact, oudh is considered an important feature at most social occasions.

Oudh, which simply means wood in Arabic, has an extraordinary pedigree. Also known as aloes and agarwood, oudh is

found in the forests of Southeast Asia and is an aromatic resin found in certain species of *Aquilaria* and *Gyrinops* trees. The resin is produced by the tree as an immune response to a fungus – *Phialophora parasitica* – that invades the tree and over many years spreads through it. It is believed that it takes as long as 300 years for the fungus to spread through the bark of the tree. Unlike the otherwise pale wood of the tree, infected sections are dark and extremely heavy. In fact, the Chinese and Japanese terms for oudh translate as "the wood that sinks in water".

The best grade of oudh is hard, nearly black and very heavy. In general, oudh becomes inferior as it becomes lighter in tone, flecked with diminishing amounts of resin. The only reliable way to test for quality is to burn a small bit and evaluate the complexity and richness of the smouldering wood.

Oudh is cut, sliced, polished and burned over coal in traditional incense burners called *mabakhir*. Chips of this fragrant wood are a prized, almost priceless commodity and burning it is one of the region's most distinctive traditions.

In most Gulf countries it is customary to pass the hand-held charcoal brazier or *mabkharah* of smouldering oudh at social gatherings. Oudh is burned over smouldering bits of coal in the cup that is normally lined with sheet metal. In some homes oudh is burned in an electric mabkharah instead of over coal for convenience. The mabkharah is always passed counterclockwise and people waft the smoke over themselves to perfume their clothes.

The tradition of burning oudh has not waned even among young Bahrainis who understand and appreciate the cultural significance of this age-old custom. Indian oudh is a favoured choice with most Bahrainis but because of its high price Cambodian oudh burns in most Bahraini homes. On average, a middle-income Bahraini home would spend up to BD50 on oudh per month whereas the well-heeled would spend up to BD150 per month on purchasing oudh for daily use. One kilogram of oudh normally costs between BD2 000 and BD8 000 or more, depending on the variety

The voracious demand for oudh is outstripping supply, thus making this sweet incense more precious than gold.

The agarwood harvesting countries stretch across Asia: Malaysia, Indonesia,

Cambodia, Myanmar, Thailand, Java, Viet Nam and India. There are more than 2 000 varieties of oudh in the world. Traditionally, India was one of the largest producers; however, Assam, once the source of the most valued oudh, has now exhausted its wild stocks and supplies the market only from plantations. In Viet Nam, agarwood trees are commercially extinct in the wild and in Thailand almost no trees remain outside the national park.

Oudh comes in different forms from wood chips to powder mixed with oil and shaped into round balls. While it is burned in mabakhir for fragrance, oudh oil or *dehn-al-oudh* is packaged in a bottle as a personal fragrance. Oudh-based fragrances are just as treasured a commodity as oudh.

Traditionally, brides use oudh fragrances on their wedding day as they have an individuality that is missing in international brands, but they are also more expensive. Oudh gives a powerful scent that lasts for 24 hours.

According to Malik Al Oudh, a company that supplies and distributes oudh in Saudi Arabia, half a tola (approximately 11.7 g) of *dehn-al-oudh* from India can cost anywhere between BD300 and BD600 depending on the richness and maturity of the oil. Eyad Saud, sales manager at Saudi Arabia's Arabian oudh company in Bahrain's Seef Mall says, "One tola of Cambodian oudh costs anywhere between BD6 and BD32. This is one of the cheaper and swift-selling varieties here in Bahrain."

Considering the steep price of a small vial of oudh fragrance, it is no wonder that wearing such fragrances is restricted to special events. All oudh shops, whether they are small kiosks peppered in the major malls in Bahrain or large speciality shops, carry ornately packed oudh fragrances in exquisite bottles that are a testament to the fact that the tradition of using this age-old prestigious fragrance lives on. (*Source: Gulf Weekly* [Bahrain], 19 September 2007.)

DVD ON *GAHARU*

Gaharu or eaglewood, an important non-timber forest product, is a well-known source of high-quality incense. It is formed when damaged *Aquilaria* trees produce a fragrant protective resin that gradually hardens and turns into black lumps. Because of its high market price (up to US$2 000/kg), the substance is sought out by many. Systematic hunting for the species starts from Sumatra, Kalimantan and Papua New Guinea. The high market pressure has led to uncontrolled, destructive and unsustainable exploitation of the species, threatening its existence.

A recent film raises the alarm on how these market demands are threatening the very existence of eaglewood. It looks at its unique sustainable harvesting system as practised by the Punan of Malinau, East Kalimantan. Not only do they have traditional regulations for land use and forest protection, but the Punan are also actively engaged in using *Aquilaria* for reforestation.

Rehabilitating this precious resource is making inroads in the national consciousness. The private sector stresses the need to balance *gaharu* exploitation with cultivation. Meanwhile, research on inoculation methods in order to enhance *garahu* production is well under way.

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BAMBOO

Bamboo as a plant and a resource

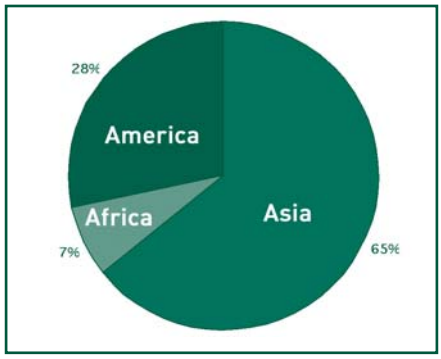
Bamboo belongs to the Gramineae family and has about 90 genera with over 1 200 species. Bamboo flowers rarely and in irregular cycles, which are not yet clearly understood. Thus taxonomists do not always agree on the identification of bamboo species and genera, but modern genetic analysis may shed new light on bamboo taxonomy.

Bamboo is naturally distributed in the tropical and subtropical belt between approximately 46° north and 47° south latitude, and is commonly found in Africa, Asia and Central and South America. Some species may also grow successfully in mild temperate zones in Europe and North America. Bamboo is an extremely diverse plant, which easily adapts to different climatic and soil conditions. Dwarf bamboo species grow to only a few centimetres, while medium-sized bamboo species may reach a few metres and giant bamboo species grow to about 30 m, with a diameter of up to 30 cm. Bamboo stems are generally hard and vigorous and the plant can survive and recover after severe calamities, catastrophes and damage. Young bamboo shoots were the first sign of new plant life after the nuclear bombing of Hiroshima and Nagasaki in Japan.

Bamboo shoots and culms grow from the dense root rhizome system. There are two main categories of rhizomes: monopodial and sympodial. Monopodial rhizomes grow horizontally, often at a surprising rate, and thus their nickname of "runners". The rhizome buds develop either upwards, generating a culm, or horizontally, with a new tract of the rhizomal net. Monopodial bamboos generate an open clump with culms distant from each other and can be invasive. They are usually found in temperate regions and include the genera *Phyllostachys* and *Pleioblastus*. Sympodial rhizomes are short and thick, and the culms above ground are close together in a compact clump, which expands evenly around its circumference. Their natural habitat is tropical regions and they are not invasive. The main genus is *Bambusa*.

Bamboo has received increasing attention over the last two decades for its economic and environmental values. In Africa, Asia and Latin America, it is closely associated with indigenous culture and knowledge and is widely used for housing, forestry, agroforestry, agricultural activities and utensils. In countries undergoing economic development, traditional bamboo culture gradually disappears. However, industrial development of bamboo is offering a new opportunity for younger generations to retain and continue developing cultural traditions related to the cultivation, harvesting and use of bamboo.

Contribution of world bamboo resources by continent



The physical and environmental properties of bamboo make it an exceptional economic resource for a wide range of uses and for poverty reduction. It grows quickly and can be harvested annually without depletion and deterioration of the soil. Bamboo can grow on marginal land not suitable for agriculture or forestry, or as an agroforestry crop. It has a relatively light weight, because the culms are hollow, and unlike wood can be easily harvested and transported without specialized equipment or vehicles. It splits easily for weaving and is thus easy to handle also for women. Bamboo is often cultivated outside the forest on farms, where it is more easily managed. Processing normally does not require highly skilled labour or special qualifications and can be started by poor rural communities at a minimal cost. For the same reason, it can offer income-earning opportunities for handicapped people.

Bamboo use and trade have been growing rapidly in recent years. Bamboo is becoming popular as an excellent substitute for wood in producing pulp, paper, board and charcoal. It is widely used in construction, either in its natural form or as a reconstituted material (laminated boards and panels). In addition, bamboo shoots have become a popular vegetable, with Asian cuisine spreading quickly around the globe. (*Source*: *World bamboo resources. A thematic study prepared in the framework of the Global Forest Resources Assessment 2005*. Rome, FAO. 2007.)

Bamboo bicycles in Ghana

Accra, Ghana. The Bamboo and Rattan Development Programme under the President's Special Initiative Programme (PSI) has introduced bamboo in the manufacture of bicycles for rural communities. The programme is aimed at raising awareness about the use and benefits of bamboo and rattan in poverty alleviation and socio-economic development of rural communities.

This initiative was made known during a meeting on Tuesday organized by the Forestry Service Division in collaboration with the Earth Institute (EI) at Columbia University in the United States of America on how to use bamboo in the manufacture of bicycles in Ghana. Three research scientists from the United States – Dr David T. Ho, Dr John Mutter and Dr Craig Calfee – are to spend ten days in the country to demonstrate how to use bamboo in making a bicycle.

Dr Ho said that the bicycle, made to carry a load of 100 kg, was designed for farmers in rural communities for sustainable transportation. He said finance was the main problem facing the project, adding that there should be a fund that would take up two-thirds of the cost of production so that local people could afford the bicycles. (*Source*: Joy Online [Ghana], 26 June 2007.)

Bamboo for housing construction

A book describing the methods of using bamboo for construction of houses, authored by Lionel Jayanetti and Paull Follat, was released recently at the auditorium of the National Engineering Research and Development Centre (NERD), Ja-ela, Sri Lanka.

A model house built using all-bamboo materials was also formally opened.

The Deputy Minister of Science and Technology said that since bamboo cultivation is not widespread, there will be a new industry in the Sri Lankan market. "Prices of material in the construction industry are soaring, hence bamboo will be an ideal alternative for building materials, especially in the hotel trade. It is high time for us to start cultivation."

The Science and Technology Minister, Prof. Tissa Vitarana said that this would be a good start not only in the building construction industry, but also for making furniture so that forest devastation may be prevented. (*Source*: TRADA International; international@trada.co.uk)

Bamboo chip-based particleboard developed

Pressed particleboard created from a blend of plastic chips and bamboo has been invented by the Kagawa Prefecture Sangyo Gijutsu Industrial Technology Centre in Japan. Suitable for application in construction, a particleboard that is made of 70 percent bamboo chip material according to weight has the same strength attributes as typical wood-based products. The release date of the product has not been announced and studies are in progress to find out whether the size and shape of the chips have any relevance to strength. (*Source*: Malaysian Timber Industry Board [in Friday Offcuts, 21 September 2007].)

Animal species associated with bamboo

The association of animal species with bamboo has been explored in a number of studies. The best-known animals dependent on bamboo are the giant panda (*Ailuropoda melanoleuca*) and red panda (*Ailurus fulgens*). Their diet consists almost exclusively of bamboo shoots and leaves. Several other mammals and birds live in a symbiotic relation with bamboo forests. The southern bamboo rat (*Kannabateomys amblyonyx*) lives in groves of *Guadua* and some introduced bamboo species. Bamboo flowering and seeding lead periodically to an explosion of the rodent population, resulting in famine and social cataclysms in various parts of the world. Local populations in northeast India suffer particularly from the rat outbreaks triggered by bamboo flowering. The dynamics of the rat population fluctuations have still not been well explored.

Interestingly, the majority of bamboo-dependent birds and mammals are endemic to the Atlantic Forest of eastern Brazil. At least 27 species of birds are considered to be associated with bamboo in the forest. Some species live almost entirely in large bamboo stands. Others may migrate to other ecosystems, but may depend on bamboo for feeding and breeding. Most of the bird species feed on bamboo nodes, internodes and the insects on foliage. Some species feed extensively on bamboo seeds and do not reside in bamboo forests during non-seeding periods.

Studies of bird association in the Amazon Basin show that 25 of approximately 440 bird species (about 6 percent) live in *Guadua* bamboo thickets. The degree of dependence on bamboo varies among bamboo-dependent species; they may depend on it for feeding, breeding, shelter and protection from predators. Depletion of bamboo ecosystems threatens species biodiversity: it has been observed that birds and mammals are less abundant than before in the Atlantic Forest. (*Source: World bamboo resources. A thematic study prepared in the framework of the Global Forest Resources Assessment 200*5. Rome, FAO. 2007.)

RODENTS RAVAGE VILLAGES IN MIZORAM, INDIA

Thousands of rats have destroyed rice fields in Mizoram, India, fuelling fears of a famine in the region. According to the Mizoram Agriculture Minister, at least 177 villages have been ravaged by armies of rats in the state this year. About 70 villages that bore the brunt have now nothing left to harvest. At least 65 villages have lost half their harvest while 42 villages have experienced low-intensity destruction. Mizoram, with about 1 million people, is dependent on agriculture. Rice and vegetables are the dominant crops.

Reports of rats destroying farmlands follow vast forests of bamboo bursting into flower in many parts of the state. When bamboo flowering takes place, the rat population shoots up, leading to an invasion of granaries and paddy fields. The Mizoram government has warned that a famine is going to hit the mountainous state.

The phenomenon of bamboo flowering occurs every 48 years. (*Source*: NEWSPost India, 25 September 2007.)

BUTTERFLIES

East Africa feels the butterfly effect

Beating the air with her homemade net, Aicha Ali chases a swirling black and turquoise butterfly. Far from indulging in a frivolous pastime, this Kenyan mother is earning crucial family income. Arabuko Sokoke on the Kenyan coast is known for its rare species of butterflies, which a development project called *Kipepeo* (butterfly in Swahili) is helping export to exhibits and museums in Europe and North America.

Forest dwellers in the neighbouring United Republic of Tanzania have also benefited from such butterfly-farming initiatives, which not only increase the local community's economic wealth but also help protect the environment.

"I need the forest to feed the butterflies," Aicha explains.

Only a few years ago, she and most of the 100 000 villagers living around Arabuko Sokoke "had a negative perception of the forest", says Kenyan scientist Maria Fungomeli. They saw it as little more than a refuge for the monkeys and elephants attacking their farms and a hostile growth that should be cut down to harvest timber, says Fungomeli, assistant director at the Kipepeo project.

Deforestation is threatening what is the largest block of coastal forest remaining in East Africa as well as the rare animal species it shelters.

But what conservationists call "the butterfly effect" has started to pay off, both for Arabuko Sokoke and its inhabitants. About 800 families now live thanks to the sale of butterflies. Flying handkerchiefs, emperor swallowtails and African blue tigers are some of the rare species collected at Kipepeo, fetching between US$1 and $3 a piece for visiting tourists. One villager now earns between $15 and $23 a month from his work with Kipepeo, double what he used to make selling timber. Another villager is equally adamant about the changes butterfly farming have brought to her lifestyle. "We did go hungry now and then, but now we can meet the needs of the children: medical care, school fees, uniforms," she says, sorting pupae at the project's collection centre.

Kipepeo, launched in 1993 with funds from the United Nations Development Programme, buys only pupae. The villagers therefore have to breed the butterflies after capturing them. George Jefwa closed his

shop down a few years ago to build his butterfly "farm": a large, netted wooden cage teeming with multicoloured butterflies. He has learned to identify dozens of different types of butterflies and moths and regularly collects their eggs from the cage. He then places them in a plastic box for five days and drops the newly morphed caterpillars on plants, where they feed before the penultimate stage of their transformation into pupae ready for export.

In Tanzania's Usumbura mountains, butterflies are also revolutionizing local traditions. Farmers who had been earning a meagre living producing cash crops such as coffee and bananas are now reaping the rewards of butterfly farming, says the Tanzania Forest Conservation Group. The community will earn $50 000 in 2007 from the project, the group said in a recent statement. "The forests are better protected now. The community knows that the base populations of butterflies and host plants must be conserved if the enterprise is to continue," the statement said. "A recent survey found much higher conservation awareness among butterfly farmers compared with those not involved in the venture."

Kenya's Kipepeo project has been so successful with the local population that it is struggling to find buyers for the thousands of pupae collected in Arabuko Sokoke. "We get 200 000 pupae a year. But we market only 25 percent of them," says Fungomeli. She explains that gaining new markets is crucial to keep the project alive and bring on board those villagers who are still chopping down the forest's endangered tropical trees. (*Source*: Mail and Guardian Online [Kenya], 29 July 2007.)

CORK

Plastic, not axes, threatens cork forests

Tempio Pausania, Sardinia. If you buy a bottle of wine with a metal screw top or a plastic cork, you may be dooming the world's cork forests. That is the view of environmentalists and cork producers who have joined forces to protect cork oaks – and the unique habitat they provide – from competition in the wine trade.

Alternative "corks" are ever more common, as synthetic and aluminium wine closures have grabbed a 20 percent share of the market, up from just 2 percent in 2000, according to wine industry consultant Stephane Rein of Rein Consulting. She says that could increase to 35 percent by the end of the decade.

"Silicone corks are not a problem for quality wines that will always use cork," said Battista Giannottu, an agronomist who works with a consortium representing Sardinia's cork producers. "But the mass market, which is 80 percent of the total, might. That's not just an economic problem but an environmental one."

The *Quercus suber*, or cork oak, which grows on both the European and African sides of the Mediterranean, provides the raw material for practically all the 20 billion wine corks used every year. The way cork is harvested – shaved off the sides of trees – means that forests continue to thrive as they give up their valuable bark.

In Sardinia, the only region in Italy that produces cork, the forests are a haven for wild boar, a species of hawk native to the island and Sardinian deer. The highly endangered Iberian lynx roams the cork forests of Spain and Portugal, which is the global leader in cork production; in North Africa the forests provide a habitat for Barbary deer.

A cork oak must be at least 30 years old before the first harvest and, even then, the gnarled, porous "virgin cork" is not good enough to make wine stoppers. It will take another ten years for the bark to grow back and be good enough to make corks. That means a poor rate of return compared with other trees that might be planted in such areas, such as the fast-growing eucalyptus which competes with cork oaks for land. "It isn't a tree which gives a lot of one thing – it gives a little of a lot of things," said Nora Berrahmouni of the World Wide Fund for Nature (WWF), an environmental group working to protect cork forest habitats.

The undergrowth is a patchwork of fragrant shrubs, including ones that produce the myrtle, a berry gathered to make Sardinia's *mirto* liqueur – an extra source of forest income.

More than 80 percent of the world's cork production is used for bottle stoppers. The rest is used for building materials and in items such as fishing tackle and badminton shuttlecocks.

The best-quality cork – which is the least porous and has no cracks or flaws – makes the best grade of stopper sold at a premium for wines made to be matured in the bottle. Lower grades are used for cheaper wines: cork granules are agglomerated with a type of glue to make the dense champagne corks that must withstand the pressure of sparkling wine. Offcuts are glued to plastic discs to make the type of stoppers found in some sherry bottles.

As well as being cheaper alternatives, plastic and metal do not pose the same risk of "corking" the wine – when a chemical called TCA is present in the stopper and gives the wine a "mouldy" odour.

But cork producers and environmentalists are fighting back. Aiming to cash in on the demand for "green" products, they have started to produce corks certified as environmentally friendly under the Forest Stewardship Council (FSC) scheme, an "ecolabel" system already widespread for timber products. Backers of the FSC scheme hope that "green" wine buyers will prefer a bottle with the FSC label. Cork makers hope that it can guarantee their future by differentiating their traditional product from the upstarts. (*Source*: ENN Daily News, 6 August 2007.)

GUARANÁ

Guaraná fights cancer and global warming

Scientists from the University of São Paulo (USP), Brazil, have discovered that guaraná from Amazonia, sold on a large scale by the state of Amazonas from production in Maués (268 km from Manaus), is effective in fighting cancer. The study was published in the journal, *Ciência Hoje*, by the Brazilian Society for the Advancement of Science (SBPC).

The researcher responsible is veterinarian Heidge Fukumasu, who has worked on research in tumour regression through ingestion of guaraná since he graduated from university. Now, with a doctorate from USP and a member of a solid research team, the scientist highlighted that the decrease in cancer cells occurs in a type of breast cancer called Ehrlich tumour.

Fukumasu still does not know the substance within guaraná that acts to decrease cancer cell levels. Nevertheless, according to data from the journal, experiments are under way to find out.

Another important study that was recently announced was on the development of cloned guaraná seedlings that are more resistant and offer greater yields, aiding both in exportation of the product to the national and international markets as well as reducing deforestation. The experiment by the Brazilian Agricultural Research Corporation (Embrapa), which also investigates the effects of guaraná, has its lines of research directed more towards cloning seedlings to increase effectiveness of seeds and reduce deforestation in Amazonia. This year, five new clones of guaraná have been launched in Manaus, helping to reduce the total area deforested in the state for planting guaraná by as much as 90 percent.

Among other variables, the research studies the cause and effect relationship of cloning guaraná plants and felling the forest, and is being conducted by agronomist Firmino José do Nascimento Filho. He stresses that reduced deforestation is also one of the major advantages of clones in relation to traditional seed-bred plants. This is so, says Nascimento Filho, because of the low environmental impact that results from the use of guaraná clones. (*Source: Amazonas Em Tempo*, 24 August 2007.)

HONEY

Setting manuka standards

A New Zealand honey health science company and a German university have joined forces in a bid to set industry standards for the use of manuka honey products to heal wounds, overcome stomach and skin problems, and potentially in the fight against cancer. The move comes in the wake of the discovery by the university's researchers of the compound responsible for manuka honey's antibacterial activity.

Te Awamutu-based Manuka Health New Zealand Ltd and the Technical University of Dresden have formed a partnership to establish a process to certify levels of the compound in manuka honey. Announcing the partnership today, Manuka Health chief executive Kerry Paul said that the university's Institute of Food Chemistry was the first to identify the compound methylglyoxal (MGO) and prove its high levels in some New Zealand manuka honeys.

Mr Paul said that the discovery that honey's antibacterial ability was directly related to MGO levels was highly significant for the industry. "We have known for some time that manuka honey has this property. The term Unique Manuka Factor (UMF) is used to describe this honey's consistently reliable antibacterial effect and UMF has been trademarked by the Active Manuka Honey Association. But we haven't known until the German discovery what the compound is that is responsible. The next step is to put a standards process in place with the industry which independently certifies MGO levels in honey-based health products."

Manuka honey was already well known for its reliable antibacterial activity, making it highly effective for overcoming gastrointestinal and skin health problems and improving healing of wounds. However, with the identification of MGO, further applications for manuka honey are possible, including use as a potential tumorcidal agent to fight cancer.

A research team led by Prof. Thomas Henle, head of the Institute of Food Chemistry at Dresden, tested more than 80 honeys from around the world and found MGO levels as high as 700 mg/kg in some New Zealand manuka honeys, more than 70 times higher than ordinary honey. Previous research had shown the highest concentrations in any food or drink were about 100 mg/kg in cocoa and coffee. During their research, Prof. Henle's team developed assays for measuring MGO in honey.

Mr Paul said that medical researchers had found MGO had the potential to act specifically against malignant cells in the body and has a significant curative effect on a wide range of cancers in animals. Current research on humans shows MGO results in complete remission in about 40 percent of malignancies, with partial remission in a further 40 percent. More studies are under way to improve treatment techniques.

A Japanese cancer researcher at a German university hospital announced last month the results of a study showing Manuka Health's Bio30 propolis extract suppressed NF1 neurofibromatosis, a type of tumour affecting one in 3 000 people. (*Source*: Manuka Health press release [New Zealand], 2 July 2007.)

Capsicum frutescens

MEDICINAL PLANTS AND HERBS

Poultry farmers in Uganda take on herbs to control diseases

Farmers have embraced medicinal plants in treating poultry diseases. Research carried out by Makerere University in central and eastern Uganda revealed that about 80 percent of poultry farmers know how to use medicinal plants to treat these diseases.

Prof. Bukenya Ziraba from the Makerere University Department of Botany said the research that was carried out in Mbale, Rakai and Mbarara districts shows that many farmers are using medicinal plants to treat coughs, diarrhoea, swollen eyes, mites, worms and lice, as well as Newcastle prophylaxis and coccidiosis. Research found that medicinal plant species such as *Capsicum frutescens* (kamulali) and *Cannabis sativa* (enjaga) were used in all the three districts, while *Nicotiana tobaccum* (taaba), *Aloe* sp. (lukaka), *Vernonia amygdalina* (omubirizi) and *Tagets mihuta* (kawunyira) species were used in Rakai and Mbarara.

Ziraba says the most common way of preparing the medicine is by crushing the plant material, adding water and administering the concoction orally. Some farmers prefer to give chickens the medicine by hand, while others put it in a container and leave the chickens to drink it when they are thirsty. He says that using medicinal plants saves farmers losses caused by outbreaks of diseases. "Since some of the farmers cannot afford to buy modern poultry drugs, medicinal plants work as a substitute," he says.

Ziraba presented the research during a symposium on drugs discovery from African flora, organized recently by the Natural Research Network for Eastern and Central Africa. (*Source: New Vision* [Kampala], 14 August 2007.)

Artemisia annua

***Artemisia annua*. Artemisinin "promising" as leishmaniasis treatment**

The antimalarial drug artemisinin shows promise as a treatment for leishmaniasis, according to Indian researchers, whose research was published in the September issue of the *Journal of Medical Microbiology*.

Visceral leishmaniasis – also known as *kala-azar* – is caused by the *Leishmania* parasite and transmitted to humans through biting insects such as sand flies. The parasite lowers immunity and causes persistent fever, anaemia, liver and spleen enlargement, and is lethal if left untreated. It infects 500 000 people worldwide, according to WHO. There is no vaccine for the disease and there are signs of increasing resistance to the few effective drug treatments.

Researchers evaluated the efficacy of artemisinin against the *Leishmania donovani* parasite. They found that the drug kills the parasite at both stages of its growth, particularly the disease-causing amastigote form of the parasite. The study also indicated that artemisinin was safer than the existing antileishmanial drug pentamidine, which can cause diabetes, and miltefosine, which has been linked to birth defects.

Lead researcher Mitali Chatterjee, from the India-based Institute of Postgraduate Medical Education and Research, said that the advantage of artemisinin is that it is already a licensed drug, so toxicity studies have already been completed.

Swapan Jana, secretary of the India-based NGO Society for Social Pharmacology, said the prospect of using artemisinin was "very encouraging, given leishmaniasis is endemic in India and existing antileishmanial drugs show side-effects".

But Neena Valecha, deputy director of the National Institute of Malaria Research in India, warned that any expanded use of artemisinin must not affect malaria management. "We have to consider that artemisinin is the valuable drug for acute illnesses like malaria," Valecha said. (*Source*: SciDev.Net, 1 October 2007.)

Fighting poverty with herbs and medicinal plants

Scientists from all over the world have recently begun deliberations on the role of herbal, medicinal and aromatic plants (HMAPs) in improving the livelihoods of the rural poor. Addressing researchers attending the three-day regional expert workshop held at the International Center for Agricultural Research in the Dry Areas (ICARDA), in Aleppo, Syrian Arab Republic, Dr Mona Bishay, director of the Near East and North Africa (NENA) division of the International Fund for Agricultural Development (IFAD) said that several obstacles hinder the full exploitation of the potential of HMAPs in reducing poverty and improving the livelihoods of rural people in the region: poor local technology; inadequate business and entrepreneurial skills and awareness on quality requirements; limited knowledge on the properties of HMAPs beyond traditional knowledge; and limited access to intellectual property rights.

Underscoring the need to analyse and find means to address the obstacles, Bishay said that the most important handicap was the inability of the collectors and growers of such plants to take advantage of potential markets, because of lack of access to resources; inadequate extension and training services; lack of improved technology and business skills; and insufficient marketing information and local organizational skills that could enable them to take advantage of emerging market opportunities.

Dr Mahmoud Solh, Director-General of ICARDA, said it was regrettable that indigenous knowledge on HMAPs was not backed up with adequate use of modern technology, despite the fact that folk medicine still serves 80 percent of the world's rural population. "The HMAP sector faces various challenges and constraints, such as overexploitation of naturally occurring species; fragmented approaches and projects that address only limited aspects of selected HMAP value chains; lack of quality control standards of locally produced HMAPs and products; and poor distribution of benefits in value chains," said Solh. "Our partners in national agricultural research and extension systems possess rich knowledge on HMAPs and this gives us a great opportunity to add valuable new crops to our joint knowledge of ecogeography and farming systems in the NENA region," said Solh, elaborating ICARDA's role in research on HMAPs.

According to Solh, tremendous room for growth and export opportunities exists if quality products are available that can compete with other suppliers. New science and technology can be deployed to understand potential new uses for processing, transforming and adding value to natural products – with the purpose of generating income for poor farmers. (*Source: Yemen Observer*, 17 July 2007.)

Desarrollo y conservación de ipeca (*Psychotria ipecacuanha*) (Brotero) Stokes en Costa Rica

La raicilla, nombre vernáculo en Costa Rica de la ipeca (*Psychotria ipecacuanha*) familia Rubiaceae, es una planta nativa de América usada económicamente por la industria farmacológica mundial. La distribución natural se extiende desde la planicie oriental de Nicaragua pasa por el sur a través de Centroamérica (Costa Rica y Panamá) y el norte de Sudamérica, hasta Brasil (Estado de Rondonia y Matto Grosso).

Constituye desde el siglo 20 el producto forestal no maderero (PFNM) de mayor importancia económica de las exportaciones de cultivos no tradicionales con categoría de planta medicinal de Costa Rica. Su cosecha comenzó a partir de poblaciones silvestres en la Región Huetar Norte, Costa Rica, a partir de la década de 1950 y constituye el primer cultivo comercial implementado para cobertura del bosque.

La ipeca es una planta herbácea, con un tallo semileñoso, delgado y retorcido, entre 20 y 30 cm de largo. El rizoma es tuberoso y posee una envoltura áspera, de 0,5 a 1 cm de grosor y de 15 a 17 cm de longitud.

El producto comercial es la raíz, que después de su deshidratación presenta un color grisáceo, un particular olor a moho y tiene la característica de presentar anillos en su superficie. La importancia económica en la industria farmacológica y homeopática se debe a la presencia de alcaloides isoquinolínicos, como la emetina, cefaelina, psicotrina, éter metílico de psicotrina y emetamina, con usos medicinales como emético para contrarrestar la disentería amebiana, como expectorante. Las poblaciones silvestres

varían ampliamente en el contenido de alcaloides totales, de acuerdo con la época; en Panamá, por ejemplo se registran resultados medios entre 1,657 y 3,536 por ciento.

Las poblaciones cultivadas tienen la ventaja de producir mayor cantidad de alcaloides y una biomasa de raíz seca en promedio de 2,3 toneladas por hectárea.

En un estudio realizado por el CIPRONA (Centro de Investigación de Productos Naturales) de la Universidad de Costa Rica sobre el contenido de alcaloides totales de poblaciones cultivadas mayores a 2 años de cultivo por medio de estolones, se lograron resultados en promedio de 2,65 por ciento de alcaloides totales, con 1,92 por ciento de emetina y 0,72 por ciento de cefaelina.

El tiempo para ejecutar la cosecha de la ipeca varía de 3 a 4 años, aumentando los rendimientos en biomasa y el contenido de alcaloides totales, en Costa Rica comúnmente se cosecha entre 2,6 hasta 3 años.

En estudio realizado por el Centro Internacional de Investigación Forestal (CIFOR) en el año 2000 sobre la situación de desarrollo de la ipeca como estudio de caso de un producto no maderero del bosque (PNMB) en Costa Rica se determinó la existencia de un área de 45 hectáreas de cultivo y una cosecha potencial de 103 toneladas de raíz seca, situación que en esa fecha mantenía precios bajos, 7 dólares EE.UU. por kilo de raíz deshidratada, precio reportado en las estadísticas nacionales, por lo tanto el precio pagado al agricultor fue menor, lo que determinó un desinterés por el cultivo.

Es importante resaltar la producción del año 2000 y compararla con la producción histórica exportable de Costa Rica, un promedio de 20 toneladas por año (1961 a 1985), situación que se vio aumentada por el interés por parte de los agricultores y empresarios en el cultivo gracias a los incentivos gubernamentales para el desarrollo de cultivos no tradicionales, lo que provocó exportaciones entre 115 y 180 toneladas entre 1989 y 1996 Esta situación provocó anomalías y se descubrieron distorsiones por parte de las compañías exportadoras en las cifras sobre exportaciones de la raíz de ipeca, provocando una fiscalización del sector y poniendo en duda la confiabilidad de las estadísticas oficiales.

El hecho de un mercado contraído y de bajos precios internacionales, condujo a la reducción de las exportaciones del año 2002 a 7 toneladas y el desinterés de los agricultores en el cultivo de la ipeca y finalmente en el año 2006 se presenta una ausencia de materia prima en el mercado internacional provocando un nuevo interés por parte de las empresas importadoras de los países consumidores: Alemania, Francia, Austria, Bélgica, Estados Unidos de América, elevando el precio hasta 50 dólares EE.UU. por kilo seco a nivel de agricultor.

En el 2007 no existen volúmenes suficientes de materia prima para abastecer las necesidades del mercado internacional. Esta situación conduce a que Bougainvillea Extractos Naturales promueva una iniciativa de desarrollo de producción con agricultores de la Región Huetar Norte para incentivar el cultivo a precios razonables, con un contrato de respaldo para producir extractos fluidos para el mercado internacional con el objetivo de contribuir con la estabilidad de un mercado internacional que se ha caracterizado por precios inestables en el tiempo, provocando situaciones adversas para el agricultor y por ende, para la industria farmacológica.

La importancia de esta iniciativa es lograr contribuir a dar valor agregado a nivel local, ya que los PFNM históricamente se han exportado como materia prima, por lo tanto lograr la estabilidad de un precio base para el agricultor contribuirá a la conservación del bosque tropical húmedo, y dará seguridad en el abastecimiento del producto de ipeca para la industria internacional. (*Aportación hecha por*: Rafael A. Ocampo S., Bougainvillea S.A. Apartado Aéreo 764-3100. Santo Domingo, Heredia; correo electrónico: quassia@racsa.co.cr)

MORINGA OLEIFERA

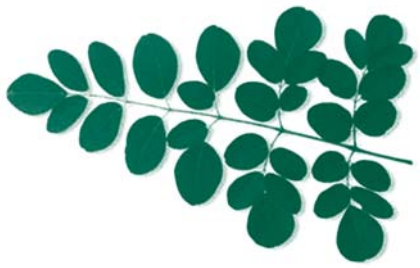
Sunlight reduces the value of *moringa* leaves

A recent research by Mbarara University of Science and Technology has revealed that the proven potency of *Moringa oleifera* can be lost during preparation. The leaves, which contain vitamins A and C, calcium, potassium and proteins, need proper handling for effective use. Ritah Namutebi, a student at the university, studied the preservation of vitamin A which acts as a shield against eye and skin disease, heart ailments and diarrhoea. She found that much of the vitamin is lost in the way leaves are preserved.

While presenting a paper during the Biodiversity and Medicinal Plants Joint Conference at Makerere University recently, Namutebi said the study was undertaken to explore an effective method and time of picking the leaves in order to maintain the high vitamin A quantities. During the study, leaves were picked at different times – in the morning, at midday and in the evening. Vitamin A quantities in each freshly harvested sample were analysed to quantify losses based on different picking times and drying methods. The results revealed that the leaves dried in sunshine lost 35–60 percent and those in the shade, 11–15 percent.

Dr Raymond Tweheyo, a lecturer at Mbarara University, said: "25 g daily of *Moringa oleifera* leaf powder would give a child the recommended daily allowances of vitamins A and C, calcium, iron, magnesium, proteins and potassium. We recommend people in developing countries grow it at the household and community level."

Duncan Sesaazi, also from Mbarara University, said that *moringa* can be an effective supplement in the treatment of HIV/AIDS. (*Source: New Vision* [Uganda], 5 June 2007.)



Malunggay leaf

***Malunggay*: a "miracle vegetable" taking centre stage in the Philippines**

Malunggay, described as a "miracle vegetable", is among the many native plants in the Philippines that can contribute greatly to human health, according to the country's Bureau of Agricultural Research (BAR).

BAR disclosed recently that the Medical College in Kolkota, India has discovered that among the many different medicinal herbs, *malunggay*, a green, leafy vegetable containing phytochemicals, plays an important role in preventing the development of cancer cells as well as in the treatment of female reproductive disorders such as epithelial ovarian cancer. Research studies also indicate that

malunggay is an effective treatment for ovarian cancer because of a combination of antitumour and hormonal properties that can be taken from its root bark extracts.

Malunggay also contains antioxidants and can help prevent other chronic ailments such as arthritis, kidney diseases and heart complications. Moreover, it is rich in vitamins A, C and E and thus helps to maintain good eyesight; facilitates digestion and bowel movement; cleanses wounds and ulcers; and cures stomach aches, scurvy, asthma, earache and headaches.

Also known as the drumstick or horseradish tree, *malunggay* is the most widely cultivated sample of the genus *Moringa* that can be grown almost anywhere using seeds and cuttings. The Department of Agriculture revealed that three months after germination, the young leaves can already be harvested, providing vitamins, niacin, iron, calcium and protein.

Given *malunggay*'s many health benefits and the fact that it is helping farmers by becoming their major source of income since it can be developed as an export crop under their biotechnology programme, the Department of Agriculture and BAR have pledged to step up their campaign for production and planting of the vegetable.

Recent studies also indicate that because of its nutritional value, the Department of Health is advocating Filipino families, especially lactating mothers, to increase their intake of *malunggay* leaves in their daily diets since it is an excellent source of nourishment.

In a related move, to promote its development, production and intake further, *malunggay* will be showcased at the launching of BAR's "Indigenous Plants for Health and Wellness Program" which coincides with the proclamation of National Health and Wellness Month. (*Source*: Philippine Information Agency, 2 October 2007.)

MYRICA GALE

***Myrica gale* as a beer ingredient**

Bog myrtle (*Myrica gale*) is a distinctive shrubby plant that grows on wet, acidic heathland, bogs and moors in the north of western Europe. One of the world's leading brewers is to create a new beer using this obscure Scottish moorland plant that was once used to flavour medieval beverages. In fact, Vikings and native Scots once drank a brew made from this shrub, long before the Romans brought hops to Britain.

Now the Danish brewing giant Carlsberg is planning to use bog myrtle to flavour a new version of one its range of strong "bock" lagers. The firm has signed a supply deal with Scottish company Highland Natural Products (HNP) in the United Kingdom, which has already been instrumental in bringing several bog myrtle lines to the market. HNP's managing director said it was a "landmark deal" between a small Highland company and a giant in the world of beverage production, and foresees huge benefits for the Highland rural community in Scotland. He added that the contract could lead to repeat orders and possible interest by Carlsberg in some of the other flavours the company is producing.

Some microbreweries in Scotland already use bog myrtle as a chief ingredient in specialist beers. But beer experts said the interest being shown by Carlsberg, which is the United Kingdom's fourth-largest brewer, would give it a major boost.

The use of bog myrtle as a major beer ingredient died out more than 500 years ago. Although used extensively as flavouring in Britain during the Middle Ages, it was gradually replaced by hops, which could be more easily grown on agricultural land closer to population centres.

Beer-making aside, it has had many uses in the past, including as a medicinal product for wounds, stress and coughs, as well as a midge repellent. Earlier this year, the high-street chemist Boots launched a new Botanics Sensitive Skin product incorporating bog myrtle after five years of research and development. It sourced its raw material from bog myrtle plantations in the Highlands. (*Source: The Scotsman*, 22 July 2007.)

NUTS

Managing the southwestern United States of America as a nut grove: the Pinyon-Juniper Ecosystem Management Project

Pinyon-juniper ecosystems cover 36 million acres (approximately 14 568 683 ha) scattered across Colorado, New Mexico, Arizona, Nevada and Utah. Pinyon trees exist in association with more than 1 000 species of plants, insects, birds and mammals, and perform important ecosystem services, such as water and soil retention. For 10 000 years, human inhabitants in the Southwest also relied on pinyon trees, primarily for sustenance, shade, firewood and building materials. To this day, pinyon trees are sacred among the region's indigenous cultures and pine nuts – the seeds of pinyon trees – are highly prized among Native American and Hispanic residents for their flavour and nutritional value. Commerce in pine nuts is an old tradition in the Southwest, dating back at least 1 000 years, and linking peoples of the Great Basin, the Colorado Plateau and the Great Plains. As late as the 1930s, trading posts shipped millions of pounds of pine nuts each year from southwestern forests to markets in New York City and Los Angeles.

Over the past 50 years, however, the flow of pine nuts from the Southwest's forests has dwindled to a trickle. Much of this decline is directly linked to a century of unsustainable public land management policies. For much of the twentieth century, rangeland ecologists treated pinyon trees as weeds and recommended converting wooded savannahs in many parts of the Southwest to grasslands stocked with non-native grasses. By the late 1980s, the combination of wide-scale clearing, fire suppression and intense livestock grazing had created landscapes dominated by abnormally dense thickets of small-diameter pinyon trees across much of the Southwest. Prolonged drought during the 1990s increased the susceptibility of these forests to insects and disease, resulting in massive die-offs of the trees over large parts of Colorado, New Mexico and Arizona, and placing the remaining live pinyon trees at extreme risk to wildfire. Despite the negative ecological impacts of previous pinyon removal efforts, current efforts to restore pinyon-juniper ecosystems continue to rely on management techniques, such as hydromowing and chaining, that indiscriminately remove all pinyon trees, rather than retaining healthy specimens.

Land management approaches that encourage the restoration of healthy pinyon groves instead of eliminating them are badly needed. One promising alternative is to reverse current management priorities and manage pinyon-juniper ecosystems primarily for nut production, and only then for grazing, timber and mining. Such an approach would benefit the land, water and wildlife; it would also decrease the risk of catastrophic wildfire and provide a reliable supply of highly nutritious nuts, thereby increasing the economic viability of the local pine-nut industry.

The notion of managing pinyon-juniper forests as nut groves is neither new nor far-fetched: humans have managed pine forests for nut production for thousands of years in the Mediterranean, and the indigenous peoples of the Southwest practised a variety of management techniques to improve nut production, including selectively thinning unproductive trees, clearing around the base of the trees and removing lower branches.

In 2007, with funding from the Colorado Wood Utilization and Marketing Program (a collaborative effort between the Colorado State Forest Service, Colorado State University, the United States Forest Service and the Bureau of Land Management, Colorado State Office), the Institute for Culture and Ecology initiated a pilot project aimed at building the capacity of Southwestern communities and land management agencies to manage pinyon-juniper ecosystems as nut groves. In this phase an interactive Web site (www.pinonnuts.org) is being established where harvesters, buyers, land managers and scientists can share information about pinyon nut crop locations and yields, permit prices and harvesting restrictions, pinyon nut prices and methods for improving pinyon nut production. Penny Frazier, owner of Goods from the Woods and long-time advocate of sustainable management of pinyon-juniper ecosystems, was the inspiration for the project and is coordinating the development of the Web site.

The Institute for Culture and Ecology has produced several educational tools highlighting the many benefits of pinyon trees, including an overview of the pine nut industry, guidelines for managing pinyon-juniper forests for nut production and a scientific poster on pinyon management. These materials are available at: www.ifcae.org/projects/pinyon/ and www.pinonnuts.org/ (*Contributed by*: Rebecca McLain, Institute for Culture and Ecology and Penny Frazier, owner, Goods from the Woods.)

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NORTHERN NUT GROWERS ASSOCIATION, UNITED STATES OF AMERICA

The Northern Nut Growers Association, Inc. (NNGA) is a national non-profit organization with members throughout the United States and 15 other countries, founded in 1911 to share information on growing nut trees. Members include new nut culturists, farmers, amateur and commercial nut growers, experiment station workers, horticultural teachers and scientists, nut tree breeders, nursery people and foresters.

The most popular kinds of nut and fruit trees that NNGA members plant are walnut (*Juglans*), filbert (*Corylus*), pecan and hickory (*Carya*), chestnut (*Castanea*), oak (*Quercus*), pine nut (*Pinus*), paw paw (*Asimina triloba*) and persimmon (*Diospyros kaki* and *D. virginiana*).

NNGA has been publishing articles, research papers, and monographs on nuts, nut-tree growth and culture since 1910. Summaries of some of these articles and a listing of books that can be borrowed can be found on the NNGA Web site.

For more information, please contact: Mr Tucker Hill at tuckerh@epix.net or visit www.northernnutgrowers.org/

Price of Brazil nuts plummets in Acre, Brazil

This year alone, the native Brazil nut groves in the regions of Alto Acre, Baixo Acre and Iaco/Purus, have produced over 10 000 tonnes of Brazil nuts, according to optimistic forecasts in the extractivist sector. Despite increased production, the price per can of Brazil nuts has plummeted on the regional market, where it is currently R$14, when last year it was as high as R$17. (*Source: O Rio Branco*, 2 August 2007.)

Maya nut (*Brosimum alicastrum*): an ancient food for a healthy future

Maya nut (*Brosimum alicastrum*) – or Ramon, Ojoche, Masica, Ujuxte, Ojushte, Ojite, Ash, Ox, Capomo, Mojo and Breadnut – is a delicious, nutritious, abundant nut from neotropical rain forest trees that provided a staple food for pre-Columbian hunter gatherers. Maya nuts are exceptionally nutritious, providing high-quality protein, calcium, iron, folate, fibre and vitamins A, E, C and B.They are also one of the best native forage species and show great promise for providing ecological alternatives to pasture for cattle ranches in the neotropics.

In recent history, maya nuts have been critical to rural food security; thousands of villages throughout Central America and Mexico have survived drought and famine by eating them when no other food was available. Unfortunately, knowledge about the nuts has decreased as globalization, export crops and deforestation negatively impact indigenous cultures and the forests that sustain them. As a result of this loss of indigenous knowledge, people cut maya nut trees for firewood and burn forests to plant maize, beans and other crops. The maya nut tree is in danger of extinction throughout its range, a situation that threatens the food security of both human and animal populations.

The Equilibrium Fund's Maya Nut Program is working to rescue lost traditional knowledge about the tree for food, fodder and ecosystem services. Since its inception in 2001, more than 7 000 women have been trained from 312 communities in Honduras, Nicaragua, Guatemala, El Salvador and Mexico about the nutrition, processing, recipes, conservation and propagation of *Brosimum alicastrum* seed. This programme has resulted in the conservation of more than 400 000 ha of maya nut forests and the planting of more than 150 000 new seedlings.

The programme focuses on women as the caretakers of the family and the

environment, and addresses key factors for sustainable livelihoods – sociocultural, environmental and economic – by creating leadership, educational and economic opportunities for women and girls. In this context, we have facilitated the creation of five autonomous women's producer groups who produce *Brosimum* seed for consumption and sale, and who train new communities to provide women with the skills and knowledge they can use to earn income and produce food for their families.

Our anticipated accomplishments include:

- reforesting 50 percent of El Salvador with *Brosimum alicastrum*;
- creating at least three agroforestry demonstration plots in Mexico for cattle ranching using *Brosimum* fodder in conjunction with pasture;
- creating and strengthening a women's producer group network to unify the producer groups and reduce competition, and improve supply, quality, and sustainability;
- expanding the programme to Haiti, Cuba, Jamaica and other parts of the Caribbean; and
- obtaining research funding to explore the *Brosimum* genome.

(*Source*: Eco-Index Monthly Update, October 2007.)

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SILK

Cambodia promotes mulberry tree planting and silkworm feeding for silk production

The Cambodian Government is encouraging farmers to expand mulberry tree planting and silkworm feeding under the "one village for one product" policy to produce silk to fulfil the demand in domestic and foreign markets, a senior official said on Monday.

There are up to 20 ha of land to plant mulberry trees in Sre Cheing commune, Chom Kiri district in Kompot Province, Sun Kunthor, an adviser for the Cambodian Government and secretary-general of the committee of "one village for one product" said. "I saw mulberry trees and silkworms grew well there," he said, adding that the government wants to develop the area with roads and water dams.

Techniques and seeds from China are being used to plant mulberry trees in Chom Kiri district, Sun Kunthor said. Chinese experts told him that the weather in Cambodia is good for silkworm feeding and products can be harvested throughout the year. "In Cambodia, we need to feed the silkworms for 20 to 30 days before they can spin strings of silk, but in China it will need about 45 days", he quoted an expert as saying. "One hundred kg of silkworm cocoons can yield 20 to 22 kg of silk", he added.

"We plan to establish the Association of Mulberry Tree Planters to protect the benefits of our silk products," he said. "When we expand our land for planting mulberry trees to 800–1 000 ha, foreign investors will come here to set up a factory to make silk for exporting." "If we can produce raw materials of silk in the country, local people will have jobs," he said, adding that it will help promote higher living standards, reduce poverty, stop labour migration and increase national revenues. (*Source*: People's Daily Online [China], 23 July 2007.)

Mulberry tree

India's Central Silk Board and its 10th five-year plan

The Central Silk Board (CSB), apex body of the Indian sericulture industry, has almost met its targets in releasing new sericulture products during the 10th five-year plan. The CSB's inventions were primarily aimed at improving productivity in a bid to reduce silk imports from China.

Of the total 297 research projects targeted during the 10th plan period, the research institutes attached to the CSB have completed 281 projects. The remaining 16 projects will be completed during the current 11th five-year plan. As research mainly involves biological materials such as mulberry and the silk insects, the results of the products cannot be ascertained in the short term. The benefits of these products will be felt during the 11th plan period.

However, some products have already started yielding results during field trials. To highlight a few, officials said mulberry leaf productivity has doubled to 60 tonnes per ha per year when compared to 30 tonnes during the 9th plan period.

Cocoon productivity has also increased to 60 kg per 100 dfls (disease-free layings) from 40 kg, pushing up the cocoon production to 698 kg per ha from 627.5 kg. Input cost per kg of cocoon produced has been brought down to Rs75 from Rs100.

Primarily, raw silk production per ha has increased to 82.9 kg from 68.3 kg. The CSB has also filed 40 technologies for patenting, of which 16 have been commercialized.

During the 10th plan, production varied but has been steadily increasing, surging to 17 305 tonnes in 2005/2006 and now in the financial year 2006/2007 it has reached 18 760 tonnes. Despite this production increase, India still imports around 8 000 tonnes of silk from China.

With new inventions, the CSB hopes to increase its production to match local demand and thus reduce imports from China as much as possible during the 11th plan period, when the country will witness the benefits of newly invented sericulture products. (*Source: Financial Express* [India], 15 July 2007.)

Rwanda: turning the nation into a land of silk

Samples of Rwanda's silk have been ranked the best in India. With these positive results, planners are positioning the country to produce silk for both local and international markets. Peter Muvara, chairman of the silkworm project, says returns from silk are two times higher than that of coffee and three times that of tea. Having a local silk industry processing cocoons to silk yarn and finished fabrics would develop markets for other rural products and Rwanda could be turned into a land of silk.

The government has allocated about RF154 million for training 30 farmers from the four provinces in the country. They will be trained in mulberry farming, silkworm rearing and weaving to ensure that they produce quality silk products.

Jointly run by farmers' cooperatives and the private sector with the Ministry of Defence playing a leading role, about 600 000 ha of mulberry trees are to be planted in three years, with at least 60 000 families targeted to benefit. Each household will plant 0.1 ha. The Rwanda Investment Group has already opened 20 ha of silkworm production in Rusizi-Western Province. The government has also interested UTEXRWA, a local textile company, in upgrading their factory to start processing silk products.

Some money has been invested in the Institute of Science and Agricultural Research, to build up staff capacity in silkworm egg production. Five ha of mulberry tree plantations have been opened at the Institute to kick-start silkworm egg production. The country has been importing eggs from the Republic of Korea, but the stakeholders in silkworm production complain that they are expensive. To cut costs and losses, eggs will be produced locally in Rwanda. It is estimated that 1 ha of land needs 20 boxes of silkworm eggs.

These worms feed on mulberry trees. Cuttings were imported from Uganda and planted on 10 ha, at four sites in the Northern, Southern, Eastern and Western Provinces. To boost silk production, the government plans to give out free mulberry cuttings; however, when the project takes off, farmers will have to pay back for them. The farmers will also be trained in rearing and reeling silk for production. The government will install weaving facilities to be managed by cooperatives.

If the project takes off fully, planners believe that it will act as an incentive, triggering off economic growth and increasing the balance of payments and foreign currency earnings.

Muvara is optimistic. He believes that the silk industry is well suited for Rwanda because of the excellent agroclimatic conditions that favour silk production throughout the year. He cited some countries that are not competitive in silk production, some of them producing as little as 600 kg, while Rwanda can produce twice as much.

Rwanda has the opportunity to exploit the silk market through the African Growth Opportunity Act because world supply is currently about 45 percent. When the country goes to full production, about 19 000 tonnes of cocoons worth $64 million will be produced on the 10 000 ha of land planned to be opened for silk production. (*Source: New Times* [Kigali], 9 July 2007.)

"Riches of the forest: fruits, remedies and handicrafts in Latin America"

SPICES

Allspice: the flavour of Mexico

Allspice is similar to Asia's "black pepper" but with a sweeter, more aromatic flavour and smell. Sourced from the pepper tree (*Pimenta dioica*), the flavour comes from the dried, ground fruits, which first appear as small strongly scented green berries. In addition to the ground seasoning, essential oil is also extracted from the dried berries for use in the medicinal, cosmetic and food industries.

The pepper tree grows in several Central American countries and in Mexico, where its history of use dates back long before the arrival of the Spanish. Known in Mexico as *pimienta gorda*, the pepper tree has historically given both the Old and the New World the tremendous gift of flavour. In pre-Hispanic times, indigenous people in Mexico used the berries, which they called *xocoxóchitl*, to season their food, and as an ingredient in traditional medicine. The Spanish colonists quickly adopted the local seasoning and used it in their cooking as well, mixing native condiments, cultivars and fruits with produce from plant varieties from their homeland. They called the local pepper *malagueta* or tabasco pepper, and it went on to become one of the main commercial products in the new Spanish colony.

During the seventeenth century, the small green berries were commercialized around the world by Dutch and English entrepreneurs. Since the nineteenth century, the states of Veracruz, Chiapas and Tabasco have been the main allspice producers, joined in more recent times by the states of Oaxaca, Campeche and Puebla. Demand for the dried berries and essential oil is continuing to grow. Between 1990 and 2000, the total Mexican production of allspice increased from 868 to 4 980 tonnes. Most of the production is exported, with only 2.2 percent being consumed in Mexico. The majority goes to South America, the United States of America, Europe and the Middle East. In 2000 the total export value was US$12 million.

Pepper trees that grow to a height of 20 m are native to tropical forests in Mexico, Honduras, Guatemala, Belize and Jamaica. They are becoming scarce in the east Mexican forests of the Sierra Norte region as rising human populations have led to forests increasingly being cleared for agriculture and cattle ranching. However, escalating international demand for the seasoning has been a catalyst for the cultivation of pepper trees in and around this region and over the past two decades the number of the trees has increased twofold.

Pepper trees can be found mainly within the shade-grown coffee plantations of the Sierra Norte de Puebla, along with other valuable tropical trees, such as *mamey*, banana, orange, mandarin, cedar, mahogany and *jonote* trees (which are used for making bark paper). In the municipality of Tuzamapan, each hectare of coffee plantation contains about 70 to 100 productive pepper trees, which produce up to 120 kg of green fruit. Each kilogram sells for around US$2.2. The pepper trees are valued not just for monetary reasons, but because they also help to improve the soil, with the falling leaves forming a protective layer against erosion in mountainous terrain such as that of the Sierra Norte de Puebla.

Within the coffee plantations, a common practice is to prune the branches of nearby trees in order to promote the yield of the pepper trees. In addition to shade-grown coffee plantations, pepper trees are cultivated in orchards, *milpas* (maize plots) and *potreros* on small cattle ranches. Farmers also protect the natural regeneration of pepper trees in areas where they are not actively cultivated. When clearing weeds and grasses with machetes, the farmers try not to cut the small pepper seedlings. Some farmers even protect the seedlings with fences or replant them within their coffee plantations. Others establish small nurseries.

Men harvest the pepper berries from May to August – harvesting up to 25 kg a day. When the harvesters return home, the women and children pick the little green berries off the small branches. They spread the berries out over flat, cement surfaces or on bed rolls to dry in the sun. An important stage in the drying process involves making the berries "sweat" – there needs to be just the right level of moisture content (or *sudado*) in the dried allspice. The first day in the sun ensures that the allspice acquires its characteristic scent and black colour, but it takes four to five days before the fruit is dried properly. Alternatively, the berries can be processed more rapidly in

only nine hours in an electric dryer. Grain sieves are then used to remove damaged fruit and sort the remaining berries by size.

The allspice market. At the beginning of the 1970s, itinerant traders would visit the region to buy allspice and then move on to hawk it in other towns and cities, such as Cuetzalán or Veracruz. More recently, local farmers have organized themselves into associations of allspice producers, taking more responsibility for production as well as sales. With the support of the state, these small cooperatives have begun to export their produce through intermediaries.

The harvesting and processing of allspice represent an important economic activity for many families in the Sierra Norte de Puebla. In recent years this activity has come to the rescue of coffee growers, following the fall in international coffee prices. Indeed, allspice has become a more important source of income than coffee. For example, in Tuzamapan, in the Sierra Norte de Puebla, where about 56 percent of the villagers are engaged in producing allspice, 17 percent of their overall income is derived from allspice, with 11 percent from coffee.

Although the prices of these international products are subject to instability and fluctuations, the two products continue to be important for the livelihoods of many rural households. The diversity of crops offers some protection against economic uncertainty or changes that can affect one particular crop, such as coffee in this instance. Local people benefit greatly from the pepper trees, which provide a direct source of income, as seasoning for domestic use, medicinal leaves and shade for coffee plants. The plantations also provide valuable resources such as fruits, fuelwood, medicinal plants and herbs, highlighting the benefits of multiuse plantings. (*Source*: Case study on allspice, pepper seasoning by Miguel Angel Martínez Alfaro, Virginia Evangelista Oliva, Myrna Mendoza Cruz, Cristina Mapes and Francisco Basurto Peña [in *Riches of the forest: fruits, remedies and handicrafts in Latin America*, eds C. López, P. Shanley and A.C. Fantini].)

Sri Lanka: spice industry needs duty rebates to encourage exporters

Sri Lanka has exported spices worth US$30.5 million and these spices, particularly because of their original flavour, are in heavy demand on the global market, said the Director of Seven Seas Commodities, V.P. Rajan.

From time immemorial Sri Lanka has been popular in the spice industry globally and this cultivation needs to be developed to meet the demand, he said. "We exported $30 million of pepper and $0.5 million of cinnamon last year. Our company mainly exports pepper, cinnamon, oil seeds and mace from the nutmeg fruit. "We should improve our productivity of cinnamon gradually. Mostly South and Central American countries consume Sri Lankan cinnamon." "Since the demand for Sri Lankan cinnamon is very high, the produce could be sold at attractive prices," Rajan said. He added that this year cinnamon production was less because of the heavy rains and floods.

Rajan said that the tariff rebate to which exporters are entitled had been reduced and the government should reinstate the earlier rebate rate to encourage them. (*Source: Ceylon Daily News* [Sri Lanka], 8 June 2007.)

Cinnamon helps fight against bird flu

Tel Aviv University technology transfer company Ramot has signed an agreement with Frutarom, a multinational neutraceutical company based in Israel, for applying a technology using a cinnamon extract in a whole host of applications from disinfecting the air as a spray against avian flu in airports, to a daily supplement that protects people against common flu. The discovery was made by Prof. Michael Ovadia, of Tel Aviv University's Department of Zoology.

Ovadia's initial experiments proved to be true – his savoury cinnamon extract was quickly and efficiently able to immunize chicken embryos from the Newcastle disease virus, which costs the poultry industry in the United States of America alone millions of dollars a year. Apparently further studies on avian influenza H9, sendal virus and herpes simplex 1 also achieved positive results. "Not only was the extract able to neutralize the viruses, but it also showed for selected viruses that it has the potential to immunize against them as well."

Besides human applications, Prof. Ovadia sees that cinnamon fills an important niche in the agricultural industry where chicks need to be immunized by hand against the deadly Newcastle disease virus. Applying his research on the global scale could only be done with the help of a large company, which is where Frutarom comes in. The flavour and food additive company has grown in the last ten to15 years from US$10 million a year to a projected $350 million by the end of 2007. (*Source*: World Poultry Net, 8 August 2007.)

TRUFFLES

Giant field of rare black truffles in Poland

An enormous field of black truffles has been discovered by mushroom researchers from the University of Lódz. The truffles are growing over a large area in the vicinity of the southern city of Czestochowa, making this the farthest reach of the mushroom in northeastern Europe and the only point of its appearance in Poland. A kilogram of truffles, considered a delicacy and an aphrodisiac by some, can sell at around €3 600.

According to the researchers from Lódz University, Polish black truffles are just as aromatic as truffles from Burgundy. In Poland truffles are a protected species, so the location of the rare Polish truffle field is being kept a scientific secret. (*Source*: Polish Radio External Service, 14 August 2007.)

Summer rain boosts United Kingdom truffle harvest

Farmers across the United Kingdom have been counting the cost of the summer's devastating floods but one corner of the industry has received an unexpected boost from the heavy rainfall. Hunters and farmers of truffles have reported a huge increase in the number and quality of the fungi growing on roots of trees and the trend will continue as the main harvest gets under way throughout August.

Although France and Italy are generally regarded to be the world leaders in the truffle market, some species found in the United Kingdom can be eaten and can fetch a high price on the international market.

The heavy rainfall during June and July has particularly benefited the summer truffle (the only variant grown that is eaten), a caramel-coloured species with white veins that has a nutty and sometimes gritty consistency and can fetch up to £300/lb (0.5 kg).

One entrepreneur set to benefit is the biologist Dr Paul Thomas whose business, Plantation Systems, has pioneered a way of cultivating summer truffles in the United Kingdom. Dr Thomas used his expertise as a biologist to find a way of impregnating the roots of trees with truffle fungus in the laboratory and then transferring the

saplings on to one of four plantations across the country.

The expected bumper harvest will be particularly welcome to the small number of truffle farmers who are hoping that chefs and the wider public will be interested in buying local truffles rather than more expensive foreign variants. (*Source: The Independent*, 6 August 2007.)

WILDLIFE

Global and EU wildlife trade values

The value of legal global international wildlife trade, including non-CITES (Convention on International Trade in Endangered Species of Wild Fauna and Flora) species and based on declared import values in 2005, is conservatively estimated to be about €249 billion per year, with timber and fisheries accounting for about 90 percent of this value. As a comparison, the United Nations Statistics Division records the declared import value of the global trade in coffee, tea and spices in 2005 at about €14 billion; while domestic sales of medicinal plants in China was valued at around €19 billion in 2002, and has increased by 8 percent a year since 1994.

The Table provides an estimate of the global value of international wildlife trade, and an estimate of these values specifically for the EU. Wildlife traded at the national level or within the EU is not included in these estimates, but can represent significant value. Moreover, these estimates include only certain categories of commodities and do not include the value of the illegal trade in wildlife products. Consequently, the table is far from a complete representation of the value of wildlife trade either globally or in the EU; however it serves as an indication of its scale. (*Source: Opportunity or threat. The role of the European Union in the global wildlife trade*, by Engler, M. and Parry-Jones, R.A. TRAFFIC Europe Report. 2007.)

TRADE IN REPTILES

In 2005, the European Union (EU) was the top global importer by value of live reptiles (€7 million) for the pet trade, and reptile skins (€100 million) for products such as handbags and shoes. Imports into the EU have been suspended from countries where there are concerns about the sustainability of the trade. However, import suspensions do not automatically address conservation concerns. For example, ten years after imports from Indonesia were suspended for certain species of Indonesian monitor lizards, original concerns remain unaddressed. A strategic EU action plan for external assistance should be developed, to enable priorities to be identified and addressed in collaboration with states in order to ensure wildlife trade is sustainable.

Estimate of global and EU wildlife trade values, 2005

Commodity	Estimated global value (€)	Estimated EU value (€)
Live animals		
Primates	75 million	15 million
Cage birds	38 million	7 million
Birds of prey	5 million	0.2 million
Reptiles, including snakes and turtles	31 million	7 million
Ornamental fish	257 million	89 million
Animal products for clothing/ornamental		
Mammal furs and fur products	4 billion	494 million
Reptile skins	255 million	100 million
Ornamental corals and shells	85 million	15 million
Natural pearls	57 million	12 million
Animal products for food (excluding fish)		
Game meat	365 million	126 million
Frogs legs	40 million	16 million
Edible snails	60 million	19 million
Plant products		
Medicinal plants *	1 billion	324 million
Ornamental plants	11 billion	1.2 billion
Subtotal		
(excluding fisheries food products and timber)	17.2 billion	2.5 billion
Fisheries food products (excluding aquaculture)	68.6 billion	26 billion**
Timber	154 billion	64 billion
TOTAL	**239.5 billion *** **	**93 billion**

* Estimate from 2004. ** Estimate for all European countries. *** Does not include global estimate for NWFPs of €9.5 billion (FAO estimate, 1995).

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Wildlife trade and biodiversity loss

A number of factors including habitat loss and climate change contribute to global biodiversity loss. However, wildlife trade can be an equally significant threat to the survival of certain species, such as the tiger for medicine and skins, and the Tibetan antelope for its wool.

The 2006 International Union for Conservation of Nature and Natural Resources (IUCN) Red List of Threatened Species records a significant increase in the number of animals and plants in the Critically Endangered, Endangered and Vulnerable categories between 1996 and 2006.The high value of wildlife trade can increase threats to biodiversity by acting as a financial incentive for people to trade in wildlife products even when the trade is not sustainable. For instance, in six United Kingdom wildlife trade prosecutions that occurred between 1996 and 2002, the value of the wildlife products concerned totalled £4 058 000 (over €6 million). These cases involved commodities from highly endangered species, such as rhinoceros horns, shahtoosh shawls and certain parrots and birds of prey.

Because of the environmental, economic and social impacts of wildlife trade, regulation is necessary to ensure sustainable resource use and to avoid the depletion of natural capital and biodiversity loss. (*Source: Opportunity or threat. The role of the European Union in global wildlife trade*. A TRAFFIC Europe Report, 2007, by Engler, M. and Parry-Jones, R.

The price of a wild trade

Proteins obtained from hunting wild animals are crucial for the survival of many forest-dependent people of the Congo Basin. In Gabon, the overall annual bushmeat trade has been valued at US$25 million (€18.5

ILLEGAL WILDLIFE ITEMS SEIZED IN THE UNITED KINGDOM

The top ten illegal wildlife crime items as seized by customs officials in the United Kingdom between 2006 and 2007 were the following.

1. Traditional Chinese medicine (containing products from endangered species including tiger, rhinoceros, seahorse, deer musk)
2. Snake and lizard products
3. Alligator/crocodile products
4. Plants (including orchids, cycads and cacti)
5. Live reptiles (including snakes, lizards, chameleons, iguanas, tortoises and terrapins)
6. Caviar (amounts over 250 g)
7. Coral
8. Elephant ivory and skin products
9. Queen conch shells
10. Animal skin products or stuffed animals

(*Source*: WWF News, 16 October 2007.)

million). In West and Central Africa, estimates of the national value of the bushmeat trade range from US$42 to $205 million (€31–151 million) per year. The current harvest in Central Africa alone may well be in excess of 2 million tonnes annually, the equivalent of over 1.3 billion chickens or 2.5 million cows.

If current levels of hunting persist, bushmeat protein supplies will fall dramatically in Central Africa in less than 50 years. However, if bushmeat harvests are reduced to a supposedly sustainable level, all countries will be seriously affected by the immediate loss of wild protein supply. Most Central African countries do not produce sufficient amounts of non-bushmeat protein to feed their populations. There is a clear dilemma here. (*Source*: extracted from an article by Robert Nasi in *Spore* 130, August 2007.)

Asia's exotic animal black market

Two of the world's most beautiful creatures have been found stuffed into a fridge in Hanoi – a rare insight into the lucrative trade in endangered animals across Southeast Asia that makes a mockery of international conservation treaties.

Vietnamese police this week found the two frozen tigers in an apartment, along with two soup kettles filled with animal bones in an outdoor kitchen. A 40-year-old woman confessed to police that she had hired three experts to cook tiger bones to make traditional medicines that she sold for about Â£400 per 100 g. "The tigers could have been bought in Myanmar or the Lao People's Democratic Republic and transported back to Viet Nam by ambulances or hidden in coffins," said Vuong Tri Hoa, a forest ranger.

And there is the problem: while more developed countries in Southeast Asia, such as China and Viet Nam, have taken strong steps to stamp out the illegal hunting of endangered animals, impoverished states such as the Lao People's Democratic Republic and Myanmar either will not or cannot.

Demand for exotic animals across Southeast Asia remains high – newly affluent Chinese prove excellent customers. Three of the world's nine tiger subspecies became extinct in the last century, and many scientists believe a fourth, the South China tiger, is already "functionally extinct".

Poached from forests and sold to traders for as little as Â£5, almost every part of Asia's biggest big cat has commercial value. Skins are sold as rugs and cloaks on the black market, where a single skin can fetch as much as Â£10 000. Tiger meat is marketed as giving "strength", and bones are ground into powders or immersed in vats of wine to make curative "tiger-bone wine" tonics for the traditional Chinese medicine market.

If the market of Mong La – a town in Myanmar on the Chinese border – is anything to go by, the remaining wild elephants, tigers and bears in the country's forests are being hunted down slowly and sold to China. The market offers a grisly array of animal parts, as well as many live specimens, to the hundreds of Chinese tourists who flock across the porous border each day. Bear paws and gall bladders, elephant tusks and chunks of hide, tiger and leopard skins, as well as big-cat teeth and deer horn are all openly on display next to crudely welded cages of live macaques, cobras, star tortoises and pangolins. The live creatures, some of them on the IUCN World Conservation Union's "Red List" of critically endangered species, are destined for the cooking pots of exotic animal restaurants in China's neighbouring Yunnan Province, or further afield. Food stalls in the market openly advertise dishes of pangolin or black bear.

Most of the specimens come from Myanmar's still vast tracts of virgin forest, wildlife experts believe.

The exotic animal black market is worth billions of pounds a year – exceeded in value only by the illegal trade in arms and drugs, experts believe. The 100 000 yuan (Â£6 500) price tag on a tiger skin stretched across the wall of one shop in Mong La shows what cross-border police efforts such as Southeast Asia's Wildlife Enforcement Network, launched in 2005, are up against.

The Chinese Government has stepped up efforts in recent years to stamp out the domestic wildlife trade and educate people about the environmental perils of stripping forests of their native flora and fauna. However, the appetite for exotica remains and, partly as a result of the crackdown, the trade has intensified beyond China's borders. (*Source*: Environmental News Network [ENN] News, 7 September 2007.) ♣

WILDLIFE IN AFRICA

Wildlife is undoubtedly a very important natural resource of Africa, with considerable potential for contributing to rural development through employment and income from tourism, and as a source of food, especially bushmeat. Establishment of protected areas – especially national parks and sanctuaries – has been an important approach to conservation. Game viewing and trophy hunting have proved to be major attractions for tourism in some countries, contributing significantly to increased export earnings. (*Source: Companion Document. Comprehensive Africa Agriculture Development Programme. Integrating livestock, forestry and fisheries subsectors into the CAADP.* The new partnership for Africa's development [NEPAD]/ FAO.)

The little unremembered acts of kindness and love are the best parts of a person's life.

William Wordsworth

AFGHANISTAN

A land of non-wood forest products

Afghanistan is an exquisitely beautiful country comprised of mountains, scattered forests and lakes, located in the Hindu Kush mountain range and over 500 km from the nearest ocean. It has a continental climate: summers are warm everywhere except on the highest peaks, while winters can be extremely cold with considerable snowfall at high altitudes; at lower elevations, winters are milder and the climate is that of the desert or semi-desert.

The country is divided into 34 provinces, with Kabul as the largest city and administrative capital. Agriculture has traditionally been the basis of the economy, the main crops being wheat, fruit and vegetables, maize, barley, cotton, sugar beet and sugar cane. The rearing of livestock, mainly sheep, cattle and goats, is also important, and is the principal activity throughout the desert and semi-desert areas. The little industrial activity concentrates on food processing, textiles, leather goods and furniture. Since 1979, most sectors of the economy have been badly affected by almost continuous civil warfare. Eighty percent of the country's population relies directly on the natural resources to meet their daily needs. Out of its total land area, only 12 percent (7.9 million ha) is arable and 4 percent irrigated. An additional 46 percent is under permanent pastures and 3 percent under forest cover. The remaining percentage is mountainous.

Afghanistan has a multitude of NWFPs, which could contribute substantially to the national economy. The country can be divided into five geographic regions according to their NWFP suitability, as shown in the Table on p. 42.

NWFPs: present and future activities

Potential NWFPs	Ongoing activities of government and non-government agencies	Activities needed
Fruit and timber trees	The World Bank's Poverty and Health Development Profile (PHDP) and the Ministry of Agriculture, United States Agency for International Development (USAID), German Technical Cooperation (GTZ) and the Bangladesh Rural Advancement Committee (BRAC) are implementing a project for quality seedling production with community people, local entrepreneurs and farmers' associations	Production of quality fruit and timber seedlings for better utilization as food, fuelwood, fodder, wood, etc. for local consumption and to reduce forest depletion
Medicinal plants	No detailed information on medicinal plants was found but rural people are using herbal medicines at large and vendors of herbal medicines exist throughout the country	Explore medicinal plant potential throughout the country as the rural population is dependent on herbal medicines
Dried fruits and nuts	Local entrepreneurs produce export quality dried figs, black and green raisins, dried apricots and pistachios in different parts of the country for local consumption and export to the Islamic Republic of Iran and neighbouring countries	Best-quality fruit production and processing of dried fruits and nuts could constitute important export-oriented NWFPs
Saffron	Local entrepreneurs produce saffron in some parts of the country. Major growing areas are the Islamic Republic of Iran and Kashmir; current price/kg of good-quality saffron is US$200	Best-quality saffron production could become an alternative livelihood approach to opium cultivation
Apiculture	FAO has conducted several exploratory assessments for apiculture as a means of potential income-generating activities (IGAs) for the landless, disadvantaged and rural poor	Develop apiculture through research and support of the Ministry of Agriculture and donor and development agencies
Sericulture	The Ministry of Agriculture has conducted several initiatives to establish this potential industry through research and assessments in coordination with FAO	Sericulture could be a major income generation for rural populations since mulberry trees are largely available throughout the country
Mushrooms	USAID-funded projects have initially been carried out in the eastern part of the country, involving the rural population as a potential IGA activity	Mushrooms could be an export-oriented industry in rural areas
Oil crops (olives, almonds, sunflowers, cotton, mustard, etc.)	The Ministry of Agriculture and FAO have conducted experiments and projects for the production of oil crop development; local entrepreneurs and farmers cultivate these crops but most of the production goes to neighbouring countries for processing	Oil crop production, processing to oil and preparation for local consumption and export
Juices and preserves from orchard fruits	Local entrepreneurs process juice for local markets. Export to international markets could be organized since quality fruits are available throughout the country	Quality juice production from abundant fruits and its processing could be of high demand on local and international markets
Karakul	USAID-funded programme includes research to improve the sector; 75 000 lamb pelts are exported per year from Afghanistan at varying prices – a very good-quality lamb pelt costs US$45 on the EU market	Improved production level and quality of Karakul sheep are needed, with an increase in Karakul sheep herders and also in export volume
Wool	USAID-funded programme includes research to improve the sector; at present wool is sent to Pakistan where carpets are prepared and exported as Pakistani carpets. Yearly turnover of Afghan carpet industry is estimated to be US$290–325 million	Improved production level and quality improvement of Afghan wool are needed, with an increase in sheep herders and also in export volume
Tourism	National entrepreneurs are eager to vitalize tourism. Afghan Logistics and Tours have already begun and, if the security situation improves, this sector could be of major earning importance to the national economy	Exploration of tourism industry, assessment of national economic development from tourism sector

NWFP potential in different regions of Afghanistan

Region	Province covered	Potential NWFPs
East	Nangarhar, Nuristan, Kunar, Laghman	Oil crops Apiculture and sericulture Skins/hides/leather Dried fruits and nuts Wool and carpets
West	Hirat, Farah, Badghis, Ghor	Saffron Cashmere Dried fruits and nuts
Central	Kabul, Kapisa, Parwan, Logar, Bamyan, Daykundi	Skin/hides/leather Juices and preserves Orchard fruit (juicing) Dried fruits and nuts
North and northeast	Balkh, Faryab, Saripul, Jawzjan, Samangan, Badakhshan, Takhar, Baghlan, Kunduz	Orchard fruit (juicing) Weaving and embroidery Karakul Wool and cashmere Tourism Dried fruits and nuts
South and southwest	Kandahar, Paktika, Paktya, Ghazni, Khost, Zabul, Uruzgan, Helmand, Nimroz	Orchard fruits/dried fruits Forestry Red meat/casing Skins/hides/leather Carpets

Years ago, Afghan NWFPs – especially fruits and nuts – were world famous; however, because of the country's situation of unrest over the last 25 years, this trade has been mostly abolished. In addition, during this long period the growing grounds of these products have been destroyed. The remaining resources are used by local people who rely on their traditional knowledge in the collection, processing and consumption of their valuable NWFPs.

NWFPs, which could play a vital role in the economy of Afghanistan, need to receive intensive attention and increased importance from the Government and development agencies working in the country. A multitude of NWFPs could be exported. The successful development of these products could have a profound impact on Afghan farmers, the economy and their international marketability. By being involved in NWFP cultivation and management, Afghan farmers could find an alternative livelihood to divert them eventually from illegal opium cultivation.

In order to achieve national economic objectives the potential NWFP sector must be transformed in the best way as soon as possible. (*Contributed by*: Mohammad Muktadir Hossain, Sector Specialist (Forestry), Agriculture Development Programme, BRAC Afghanistan, House 45, Lane 4, Baharistan, Kabul, Afghanistan. Fax: 00 93 798 125 100; e-mail: muktadir21@yahoo.com; www.bracafg.org)

Medicinal herbs, an asset for local medicine and the export trade

Herbs are a key resource for most Afghans, both as domestic drugs and as traditional healers' remedies. Medicinal plants are also harvested, dried and exported. A flourishing trade exists towards Tibet and India. Herb shops are often run by herbalists of Hindu or Sikh descent, called *pansar*.

In Afghanistan, Ayurveda conceptions are combined with Arabic influences. Thus, the diagnosis and therapeutic principles of Afghan herbalists are often ascribed to the four elements: heat, cold, moisture and dryness (air, earth, fire and water).

Home care is the first resort in illness. Where this fails, the family of the patient asks for the advice and help of a spiritual leader (*mullah*) or exorcist (*jenkash*). An aromatic seed called *asfand* (*Peganum harmala*) can be burned, in order to purify homes and persons from the evil eye. Afterwards, or as an alternative to this spiritual intervention, a healer (*hakim* in Dari or *tabib* in Arabic) prescribes the appropriate drugs and gives dietetic advice.

Food and drugs with opposite humours such as cold and hot, are used to re-establish body balance. Bitter concoctions such as an infusion of plantain leaves and roots, considered cold, are prescribed to heal sickness caused by cold influences, e.g. respiratory diseases and summer headaches.

Herbs highly popular among Afghan healers include the *daraona* (eye inflammation), water lily and *Zizyphus vulgaris* fruits (heart arrhythmia), *Plantago ovata* (headaches), *Capparis spinosa, Condonopsis clematidea* and *Rumex nepalensis* (indigestion), *Cannabis indica*, aloe and *Citrullus colocynthis* (laxative). An infusion of *Rubia tinctorum* leaves is used to increase female fertility. *Berberis lycium* and *mirhinz* (*Hippophae rhamnoides*) are renowned panaceas. The latter is traded and exported, since it is highly sought after by traditional healers and the drug industry, especially in China. (*Source*: a translated extract from Brandolini, G.V. 2005. *Medicine tradizionali*. Bergamo, Italy, CRF Press.) (*Contributed by*: G.V. Brandolini, Orizzonte Terra, via Mazzini 30, I-24 128 Bergamo, Italy. Tel./fax (+39) 035 21 91 42; e-mail: Orizzonte.Terra@gmail.com)

Capparis spinosa

ARMENIA

Armenia Tree Project receives US$100 000 grant to partner with Yale University

A new partnership between the Armenia Tree Project (ATP), Yale University's Global Institute of Sustainable Forestry and Conservation International will bring international "best practices" of sustainable forestry to Armenia. The joint venture, "Evaluation and Implementation of Sustainable Forestry Models in Northern Armenia," involves conducting a state-of-the-art analysis of the forest ecosystems in the Lori region with the aim of producing the first sustainable forestry training manual tailored to the specific needs of Armenia.

The goals of the project are to evaluate the condition of the forests in northern Armenia, paying particular attention to the

factors that are limiting the ability for regeneration. An assessment will be made of plants, herbs and other NTFPs that may be sustainably harvested for generating alternative income for residents living in close proximity to the forests. Training on rotational grazing will be held with livestock owners to prevent soil erosion and further degradation of forests.

This two-year $100 000 project is being funded by the Critical Ecosystem Partnership Fund.

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AUSTRALIA

Double gain for tea tree oil industry

A nine-year breeding programme has resulted in a new "breed" of tea tree that could increase the Australian industry's competitiveness by dramatically increasing production volumes of high-quality tea tree oil.

Tea tree oil is a significant part of Australia's essential oil industry – it is incorporated into many personal care and household products and is also used in a variety of agriculture and veterinary applications. The Australian industry is slowly recovering from several years of decline when the prices of this oil fell below the cost of production for many producers. Recent increases in demand and higher prices have seen renewed interest in growing the tea tree. Other challenges face the industry, however, such as the threat of increasing overseas competition.

The breeding programme forms part of an industry strategy developed by Ensis scientist, Dr John Doran. He says that if Australian producers are to maintain their commercial viability, they need to give serious consideration to replanting with the best material the breeding programme can provide. "The improved seed will be able to produce plants that are capable of producing 270 kg of oil/ha from paddocks that would otherwise yield 148 kg/ha, if established with unimproved seed," he says.

The principal source of oil is *Melaleuca alternifolia*, a medium-sized tree from the coastal plains of New South Wales. (*Source: North Queensland Register* [Australia], 10 July 2007.)

TFS sandalwood

Tropical Forestry Services (TFS) is the world's leading sustainable and socially responsible producer and manager of Indian sandalwood (*Santalum album*) with over 1 100 ha established in Kununurra, Western Australia's tropical Kimberley region.

Since 1999 TFS has planted, and continues to plant, the prized Indian sandalwood using seeds originally sourced from India. Expert foresters have concluded that these trees will be suitable for harvesting at age 13 to 15 years based on current rates of heartwood formation. TFS plans to become vertically integrated, consistently to supply large quantities of high-quality plantation-grown Indian sandalwood oil, cultivated and produced in an environmentally friendly and ethical way.

Sandalwood

The latest Baz Luhrmann film *Australia*, starring Nicole Kidman and Hugh Jackman, is currently being filmed on the beautiful Kingston Rest property purchased by TFS late last year. TFS believes that this uniquely beautiful property represents the future of Indian sandalwood, allowing the company to expand on its existing 1 100 ha. As part of this acquisition, TFS has committed to expanding its existing training and employment opportunities for indigenous Australians. About half of the Kimberley population is of Aboriginal descent. TFS is committed to providing employment opportunities to ensure that at least half of its Kingston Rest staff is indigenous by 2016. By working with the Kimberley community and environment we believe we can help to ensure shared long-term benefits for the community, the environment and TFS.

TFS has donated the profits from filming to the Clontarf Foundation, a programme aimed at encouraging education, good health and relationship-building among the region's indigenous children. (*Contributed by*: Danae Christensen, Research Officer, Tropical Forestry Services Limited, PO Box 3068, East St George's Terrace, Perth WA 6832, Australia. Fax: +61 8 9221 9477; e-mail: danae@tfsltd.com.au; www.tfsltd.com.au)

BANGLADESH

***Hogla* (*Typha elephantina* Roxb.): a potential NTFP for socio-economic upliftment in rural Bangladesh**

Hogla, the local name for a bush-like small plant, *Typha elephantina* Roxb. of the family Typhaceae, looks like a grass and may attain heights of 2–5 m. The species shows an encouraging growth performance in waterlogged, swamp and even under poor soil nutrition conditions in Bangladesh. It also provides a satisfactory yield in rural areas when incorporated with other agrocrops, without hampering the main crops. The species could, therefore, be an economically viable associate crop in rural areas since it does not require extra care, fertilizers or other costs involved in the collection and planting of seeds. The plant can survive even after a heavy flood.

Dried grasses of the species are extensively used to make prayer mats, and other types of mats, baskets, ropes and various handicrafts. The residual matter (i.e. defective leaves, petiole, roots) of the plant is also extensively used as fuel and for partitioning and thatching purposes among rural farm holders. Moreover, the plant produces a huge quantity of pollen, which is used to prepare a delicious traditional food in rural areas.

A recent study of southwestern flood plain areas of Bangladesh reveals that rural women, old people and even children are involved in preparing secondary products from *hogla* leaves, while men are mainly engaged in the planting, collection, sorting and marketing of the leaves. Women usually utilize their leisure time to produce secondary products. The study also suggests that planting of *hogla* just once can secure the sustainability of planting materials on the same field for at least ten years. It was also evident that farmers can earn an additional US$5 from a decimal part of their land just from selling *hogla* leaves.

In Bangladesh – a country with a huge population growth, shrinking income and per capita agricultural land, low agricultural productivity, acute shortage of fuel in rural areas, and where sudden floods become serious threats –

incorporating *hogla* with other profitable agricultural crops can be an advantageous solution. The massive introduction of the species in rural areas will also empower women and old people to contribute increasingly to their family income and thus to improve their living standards. The residual products obtained from the species can be used to minimize the domestic fuel shortfall in rural areas. However, the marketing system, both for primary and secondary products, needs to be improved to maximize the profit of growers and producers. (*Contributed by*: Sharif Ahmed Mukul, Department of Forestry and Environmental Science, School of Agriculture and Mineral Sciences, Shahjalal University of Science and Technology, Sylhet 3114, Bangladesh. E-mail: sharif_a_mukul@yahoo.com)

"Riches of the forest: fruits, remedies and handicrafts in Latin America"

***Murta* (*Schumannianthus dichotoma*) cottage industry in socio-economic development of rural people in the northeastern region of Bangladesh**

A recent study has attempted to generate information on the status of the *Schumannianthus dichotoma* (*murta*) cottage industry and its contribution to the income and employment of rural areas in the northeastern region of Bangladesh with the aim of improving the database necessary for any socio-economic development programme. This survey was carried out at Gowainghat thana (subdistricts) in Sylhet district.

The forest-based cottage industry is one of the major sources of off-farm income for the rural population of Bangladesh. NWFPs could generate potential income for the local people and provide employment for about 229 000 of them, which would continue throughout the year, or at least during the agriculture off-season.

Murta, an important NWFP belonging to the family Marantaceae, is a clump-forming shrubby plant, dichotomously branched, with green cylindrical stems of 3.7–4.6 m in height and a diameter of 2 cm. Local names for this NWFP differ throughout Bangladesh, e.g. *patipata* and *pati-jung* in the Chittagong region, *mostak* in Noakhali, *pat-bat* and *murta* in the Sylhet and Tangail regions and *paitrabon* in Barisal.

The species is generally grown in low-lying marshy areas of greater Sylhet, Mymensingh, Barisal, Noakhali, Chittagong and Pabna districts and covers sizeable areas in the forest of Sylhet division. It is sporadically planted along roadsides and around ponds and, formerly, fallow and unproductive paddy fields were used for its large-scale cultivation.

Murta is extensively used as a raw material in cottage industries, especially for floor mats, prayer mats and woven utensils, and is adopted by both the rich and the poor. A recent valuation study revealed that the stem (culm) harvested from 100 ha of land, worth 65 lakh taka (US$108 300) can produce products (such as *shitalpati* prayer mats) worth 1 crore 80 lakh taka (approximately US$300 000). Thus, it plays a significant role in generating income and providing employment opportunities, as well as improving the socio-economic status of the rural people.

A large number of local people throughout the country have adopted the *murta*-based cottage industry as either their part-time or full-time profession and have earned a substantial income. Various novelty items produced from it are very popular with both the people of Bangladesh and also abroad, where it is in great demand and earns foreign currency. But, this is all about to be ruined since more and more fallow land is now being converted for agricultural production, considerably reducing *murta* production. The productivity and sustainability of the industry are, therefore, becoming uncertain because of this shortage and artisans are consequently suffering the curse of poverty. If this process continues, production of the popular *shitalpati* prayer mat will decrease and ultimately be lost forever, making thousands of people jobless.

Our study revealed that 77 percent of the total population are directly involved in this cottage industry and that each article fetches a different price, depending on total requirements for *murta* and other materials, market demand and workdays required to produce an article. The net average profit/workday on various articles varies from Tk16 to 51, with net profit/article varying from Tk25 to127. Entrepreneurs manufacture articles according to seasonal requirements and local market demand.

The *murta*-based cottage industry, therefore, can improve rural livelihoods, help to generate additional employment and income, contribute to foreign currency and support biodiversity conservation. *Murta* can play a vital role in the economy and environment of the country. It is possible to develop the cottage industry to a profitable international standard through the scientific cultivation of *murta* on private and government forest lands. It is necessary to look not at the product or commodity in isolation, but at a wide range of factors that would enable it to be exploited, managed for sustainability and marketed for profit. The government and other national and international agencies should come forward to motivate and assist interested farmers through technical support and financial assistance to help the industry flourish. If managed properly, it will not only attract foreign currency but also create employment opportunities for thousands of unemployed villagers in Bangladesh. (*Contributed by*: Romel Ahmed, Mostafizur Rahman, A.N.M. Fakhrul Islam and Mohammad Redowan, Department of Forestry, Shahjalal University of Science and Technology, Sylhet 3114, Bangladesh. E-mail: romelahmed76@yahoo.com)

BHUTAN

Grow bamboo, save trees

In Bhutan, bamboo is seen as a possible alternative to wood to reduce the pressure on forests. The Forestry Development Corporation Limited (FDCL) office in Phuentsholing distributed 10 000 seedlings on 2 June 2007 to government agencies and interested private individuals in Samtse and Chukha *dzongkhags* (districts) to start large-scale cultivation of bamboo. The bamboo seedlings were raised last year mainly in Samtse.

More than 866 acres (approximately 350.5 ha) of degraded land under Samtse and Chukha *dzongkhags* were identified last year for plantation of various bamboo species and other valuable tree species that were of commercial value according to the divisional manager of FDCL, Tashi Peljore. Bamboo helped to conserve soil and water in catchment areas such as Balujora in Pasakha and Dam Dum in Samtse by minimizing the downstream flow of silt.

Bamboo products such as flag posts with *reti* and *khorlo* supplied by FDCL have been extremely effective as a substitute for wood. Since the establishment of bamboo plantations in mid-2006, 1 500 flag posts have been supplied to the public at reasonable rates, said Tashi Peljore. Bamboo is now also used by architects and designers in the construction of airy summer houses as well as for furniture. Gardeners in the southern region grow bamboo for screening and greening, and to be used as flagpoles and scaffolding.

Phuentsholing is the second highest consumer of timber after Thimphu according to FDCL officials. (*Source*: Kuensel [Bhutan], 28 June 2007.)

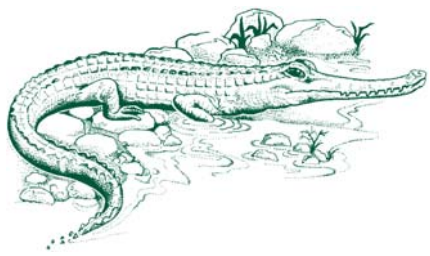
BOLIVIA

Caiman (*Caiman yacare*) in Bolivia: a CITES success

After a long period of overexploitation of caiman (*Caiman yacare*) for its leather in Bolivia, the Government installed a general prohibition against hunting of the animal in 1990 – having signed the Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES) in 1987 – and this resulted in the population's recovery. It has now grown strong and hunting is again possible, although it is regulated by quotas that assure it cannot be overexploited once again.

CITES set a quota of 50 000 caiman leathers that can be exported per year, which until now has been respected and gave estimated returns to the local people of around US$0.38 for 40 062 skins in 2003, and US$0.44 for 46 720 skins in 2004.

The preliminary results of an evaluation undertaken by the National Programme of Caiman Management in 2005 indicate that around 1 750 people are employed in the commercialization of caiman leathers. (*Source: Trade measures – tools to promote the sustainable use of NWFPs?* FAO Non-Wood Forest Products Working Document 6.)



BRAZIL

Top-selling products at Mercadão Floresta

One of the main purposes of Mercadão Floresta (Forest Market), organized by the NGO Amigos da Terra–Amazônia Brasileira and held from 25 May to 3 June at the Municipal Market of São Paulo, was to present the enormous range of products based on Brazilian biodiversity and the importance of protecting Brazilian biomes for residents of São Paulo. For the first time, these products were made available for retail and, simultaneously, renowned chefs took turns in providing taste tests and talks in a gastronomical venue established at the market.

One of the highlights of the fair, for example, was a sweet made from *umbú* (*Spondias tuberosa*) and organic sugar produced by the Canudos, Uauá and Curaçá Family-Based Agricultural Cooperative, which works in the semi-arid Brazilian northeast.

Another top seller was organic powdered cocoa from the Atlantic rain forest, produced by the Cabruca Cooperative of Organic Farmers in southern Bahia in partnership with the Belgian firm, Barry Callebaut, a worldwide leader in the production of cocoa and chocolate goods. Certified by the Biodynamics Institute (IBD), the product is obtained by processing 100 percent organic cocoa seeds, without the use of any pesticides.

Baru (*Dipteryx alata* Vog.) nuts were also much sought after among the agroecological products. Produced at the Cerrado (savannah) Center for Studies and Sustainable Use, their sustainable economic use helps preserve the species and aids local communities directly involved in production.

One of the market niches offered was an extra virgin, cold-pressed Brazil nut oil. Produced by Ouro Verde, it is perfect for salads, risottos, fish and complex recipes. Rich in omega 6, omega 9 and vitamin E and with no cholesterol, it helps to prevent heart disease, stimulates the immunological system and increases longevity.

Another hot item was honey vinegar, from the Fernão Velho bee farm. A natural product, it is made from water and fermented hydromel (mead) acetic acid, and does not contain preservatives or artificial aromas.

The event was an important opportunity for companies from northern Brazil to market their products. José Luiz Felício, manager of Miragina, said that "the fair is an excellent way of bringing our products and making them known". The company from Acre, founded in the 1960s, makes Brazil nut-based products. Generating income for traditional populations, delicious biscuits are made from Brazil nuts. These were one of the top sellers at the fair, with four extra shipments being brought in to supply the demand generated by the event.

The same happened with frozen *açaí* (*Euterpe oleracea*) from Fruitamazon, a company from Pará, which transferred its activities to the neighbouring state of Amapá and is known for offering the best *açaí* pulp available on the Brazilian market. The company has 30 ha planted and also buys from riverbank communities in places such as Calçoene, Porto Grande, Serra do Navio, Ferreira Gomes and Mazagão in Amapá. *Açaí* has been arousing interest around the world because of its nutritional value. In addition to having become a fad among youths throughout the country, several products that include *açaí* are beginning to appear abroad.

Besides *açaí*, names such as *cupuaçu* (*Theobroma grandiflorum*), *pequi* (*Caryocar brasiliense*), *taperebá* (*Spondias mombin* Jacq.), *buriti* (*Mauritia vinifera* and *M. flexuosa*), *tucumã* (*Astrocaryum aculeatum*) and *bacuri* (*Platonia insignis*) have now entered the vocabulary of Brazilian products. Chocolate sweets with fruit fillings from Amazonia, chocolate pralines with forest fruits prepared by chef Daniel Briand and native fruit hand soaps from Atelier Especiarias also were part of the mix of top-selling products at the fair.

Setting records in terms of public and sales, the fair demonstrates the huge potential of forest products and how production and sales of these products are the means to keep the forest standing. (*Source*: Amazonia.org.br, 4 June 2007.)

BULGARIA

President affirms Bulgaria's forests as national symbol

Bulgaria's forests should be regarded as a national symbol, President Georgi Purvanov said, during a regional conference about forest preservation and restoration issues in the southeastern Bulgarian town of Yambol. Purvanov added that the Bulgarian forestry sector needs a clear strategy and also a real governing policy that could yield visible results.

He called for reforms that would combine experience and tradition. "I hope the establishment of the State Agency for Forestry will revive the love of forest and care of its fate," Purvanov said. He also expressed his hope that next year's budget would allow this agency to be financially independent. (*Source: Sofia Echo* [Bulgaria], 24 August 2007.)

CAMBODIA

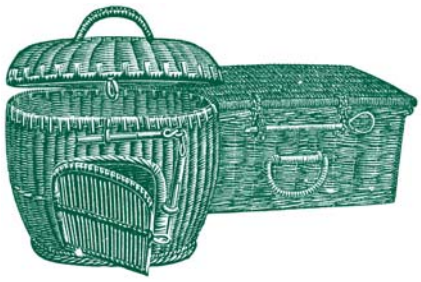
Searching for the secret of sustainable rattan use

NTFPs are important resources for local Cambodian communities, since they provide people with many necessities such as food, income, medicine and shelter. Rattan is one of the most important NTFPs; in some communities selling rattan is the second major source of a family's income. Unfortunately, an increasingly high demand for rattan and other NTFPs threatens forest resources and local livelihoods.

Under sound management, rattan can provide a sustainable income for many communities. The WWF Greater Mekong's Cambodia Country Programme is working with the Preak Thnot commune, located around Bokor National Park in eastern Cambodia, to develop a suitable rattan management model. The aim of the project is to develop economic incentives for local people to manage rattan sustainably inside the forest or Community Protected Areas.

A rattan management group, composed of two subgroups – the handicraft group and the nursery group – has been established. It is estimated that through value-added processing and market linkages, group members could generate an additional US$600–800 per year. Part of this extra income could be used to administer the group and also fund the cost of establishing rattan plantations inside the forest, which provide local people with a renewable source of rattan.

To support plantation activities, WWF has established Cambodia's first rattan nursery. Covering an area of more than 200 m^2, the nursery can produce around 20 000–30 000 rattan seedlings per year. Under the management of the rattan group, local villagers have received training on the day-to-day management of the nursery, collection of seeds and transplantation techniques. The villagers are collecting seeds and seedlings from areas of the forest with high densities of rattan. In six months time, the seedlings will be planted in specific areas in the forest and once the plantation is established the nursery will sell its seedlings to other villages. (*Source*: WWF Cambodia, 28 June 2007.)



Flourishing trade in Cambodian cane

Home to a number of indigenous tribes, Ratanakiri Province lies nestled in the lush upland forests of northeast Cambodia. Communities eke out a living by growing rice for half of the year, but food shortages caused by low yields and increasing family size are common. One source of income is cashews, grown in fields created out of the forest through the slash-and-burn technique. However, this practice is threatening forest biodiversity as well as limiting availability of other NTFPs on which villagers depend for nutrition, building materials, medicines and money to buy food and other household essentials.

Cambodians have traditionally harvested a wide variety of NTFPs, including numerous species of wild fruits and nuts, resin, honey, mushrooms, medicinal plants, bamboo and rattan. But untapped potential exists for increasing the value of many of these products for rural communities. Bamboo and rattan, in particular, have a range of different uses – as raw materials for building houses and for household furniture.

In addition, bamboo and rattan are often fashioned by villagers into baskets, boxes, musical instruments and other handicrafts and sold on a limited basis. However, by learning the technical skills needed to manufacture high-quality goods, gaining direct access to markets and learning sustainable cultivation and harvesting practices, villagers could achieve consistent profits while maintaining the forest habitat in which rattan and bamboo flourish.

In order to provide support to forest communities in Ratanakiri, several NGOs in Cambodia have formed the National NTFP Working Group. For example, the Community Handicraft Initiative Project (CHIP), recently launched by the Cambodian NTFP Development Organization (CAN-DO), aims to revive and preserve the skills needed to create traditional arts and crafts among the indigenous Kreung people, while also providing training in forest conservation and business skills. CAN-DO executive director Sarim Heang reports that the organization is supporting two village NTFP enterprises (VNEs), set up in late 2006, where members participate in workshops, demonstrations and informal discussions to learn how to harvest bamboo and rattan in a sustainable manner.

At the NTFP workshop in December 2006 attended by CAN-DO and others, techniques were shared for sustainable harvesting and cultivation of bamboo and rattan. Mark Poffenberger, director of Community Forestry International (CFI) – another member of the National NTFP Working Group – emphasized that regular trimming of bamboo is necessary to maintain high levels of plant productivity. Poffenberger added that the practice of culturing rattan and bamboo is also growing in Cambodia. For example, training is given on how to separate and prepare bamboo seedlings for planting, when to plant and how to plant three bamboos in a triangle to improve wind resistance. Amanda Bradley of CFI reports that community forestry groups are also protecting the bamboo and rattan habitat by organizing patrols to prevent burning and logging.

To enhance development of bamboo and rattan handicrafts each VNE, supported by CAN-DO, holds regular gatherings to discuss methods for improving quality, colouring, patterns, product size and delivery. More formal monthly meetings are held where producers review their achievements and develop action plans for the following month.

Heang notes that VNE members are beginning to understand that customer preferences must be taken seriously to improve profitability. In addition to customer feedback, producers receive support and regular field visits from CAN-DO. These strategies are also endorsed by Poffenberger who believes "improved processing can substantially enhance NTFP values, often raising the gate price of a product by 300–1 000 percent".

Creating direct market access is also supported by CAN-DO, particularly with rattan back-baskets sold in Banlung town. Producers are now transporting their goods directly to two retailers, cutting out intermediaries and thus increasing profits. In addition, with partners such as the

Artisans' Association of Cambodia, CAN-DO is assisting producers to design more value-added products, including musical instruments and home accessories. During the last six months, Heang reports that VNE members have begun to realize that bamboo and rattan will provide significant income for their families, but only if they continue to protect the forest, adopt sustainable methods of cultivation and harvesting, and work continually to improve product quality.

CAN-DO is part of a collaborative network of NGOs and community-based organizations. It works closely with the Non-Timber Forest Products Exchange Programme for South and Southeast Asia, the National NTFP Working Group, and some handicrafts-based NGOs and enterprises in Cambodia to enable the CHIP endeavour to move forward. (*Source*: Treena Hein, New Agriculturist Web site, viewed 8 October 2007.)

CAMEROON

Bee farming and honey marketing organizations in the Northwest Province

Two types of honey are extracted from the Kilum-Ijim forest of the Northwest Province: light brown and cream white honey. The light brown honey is more popular in the Northwest Province and other parts of Cameroon. The cream white honey, principally extracted from the highest peaks of the Kilum-Ijim forest, is less popular and therefore scarcer in the province. Indeed, this honey, which looks like cream butter, is unknown not only to many consumers in the province but also to many Cameroonians.

As quality is a key element in product marketing, honey is no exception. Each of the marketing organizations assesses the humidity level of their honey using appropriate instruments. In addition to determining humidity levels, the different honey types are sold in measurements ranging from 100 g to 30 kg. While dealers in cream white honey present it in open-mouthed containers, those of light brown honey do not have any standard measures.

A recent paper assessed the efficiency of honey marketing organizations in the Northwest Province, while raising awareness on the economic and ecological potentials of bee farming. Data were collected on the type and form of honey marketed, as well as the costs and prices using a structured questionnaire. Secondary data were obtained from the sales records of the market dealers covering a period of five years. Costs and profit margins were analysed. Irrespective of type of honey, the marketing organizations were judged to be more efficient dealing with comb honey than partially drained honey when used as raw material. Furthermore, the honey marketing organizations are profitable with a net margin of at least 18 percent, the minimum interest rate charged by microfinance institutions across the Northwest Province.

Results of the study suggest that profit margins of the product marketed could be increased if market dealers interact and share experiences. While there is an obvious need for improving the technical capacities of actors of the subsector, more specific information on the cost structure of the entire value chain would shed more light on the potential and actual contributions of bee farming to emerging regional and national economies.

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Exhibition of local indigenous crops impresses population

It was a day for local/indigenous crops and NTFPs recently in Bamenda with an exhibition to raise awareness about their value and importance. The welcome initiative by the Network for Sustainable Agriculture (NESA) and the Western Highlands Nature Conservation Network (WHINCONET) assembled rare local and indigenous food crops from the Western Highlands: pumpkins, bambara groundnuts, cowpeas, garden eggs, cashew nuts, monkey cola, Bali guava, passion (Adam) fruit, *ancop*, tree trunk mushrooms, etc.

Fon Nsoh, President of NESA, told participants at the exhibition about the need to encourage the consumption, promotion, cultivation and preservation of indigenous food crops. Fon Nsoh revealed that about 100 million Africans suffer from food insecurity which exposes them to serious health risks and famine. He blamed it on the underuse or misuse of existing food resources and expressed the conviction that the base of Africa's food supply could be broadened by growing its almost forgotten indigenous food crops and also by the sustainable exploitation of NTFPs. It was evident during the exhibition that Africa's indigenous knowledge base for food production and especially traditional food crops is being lost and that is why most of the major foods cultivated and consumed have their origins elsewhere.

The exhibition also offered a rare moment for lessons on the advantages of indigenous crops over exotic ones as many were encouraged to consume, to give farmers a chance to improve their standard of living.

The NESA exhibition was organized under the combined theme "Valuing local/indigenous food as a right for people living in poverty, rural women as agents of change, producing and providing". The exhibition was organized on the heels of the 2007 Rural Women's Day, World Food Day and the International Day for the Eradication of Poverty. (*Source: Cameroon Tribune*, 29 October 2007.)

CANADA

Forestry funding coming to Chapleau, Ontario

A northeastern Ontario mill town will be the epicentre of a movement to harvest the wealth of northern Ontario's alternative bioproducts commercially on a regional scale. With $1.6 million in seed funding from Ottawa, the town of Chapleau has been chosen to make it happen.

The forestry town of 2 300 people was selected in July as one of 11 sites across Canada for Natural Resources Canada's (NRCan) new Forest Communities Program (FCP). The potential in developing NTFPs caught the attention of NRCan officials. The 11 communities and their yet-to-be created regional organizations will be able to tap into a $25 million fund dispensed over five years. The idea behind these organizations is to develop and share knowledge, tools and strategies to help hard-hit forestry towns

make a transition into value-added and emerging new forest-based opportunities.

The programme, to be known as the Northeast Superior Forest Community partnership, may be headquartered in Chapleau but project manager Sylvie Albert wants to cast a wide regional net and build as much collaboration as possible. Armed with $325 000 for each of the next five years, Albert says that the programme emphasis is beyond just building bricks and mortar and making inventories of what is available in the bush. She wants to see a new wave of innovative forest projects come through to production. For some small producers, the money will be a final incentive to take their fledgling enterprises to the next step.

Besides Chapleau, five other communities of Dubreuilville, Hornepayne, White River, Manitouwadge and the township of Michipicoten will be involved in the partnership, which includes involvement with three area First Nation communities. They will have at their disposal university academics and community development personnel as well as government, business and industry experts in value-added forestry.

Combined with the NRCan money, Albert has raised a total of $2.3 million with additional community contributions and she is looking for more. Other players such as the Northern Ontario School of Medicine (NOSM) and Laurentian University's School of Management, where Albert teaches, are coming on board as collaborative partners. NOSM is interested in using plants in the boreal forest for medicinal and nutraceutical (natural health products) uses.

Albert says that one of the most advanced projects is the newly created Non-Timber Forest Products Corporation. High on its agenda is finding new and promising NTFPs to commercialize, such as blueberries. Quebec, Nova Scotia and New Brunswick have already done so with great success, she says.

There are other promising natural crops such as Canada yew (an ingredient used to fight cancer) and fireweed (a skin care nutraceutical).

"If you have pockets of producers across the north, it would certainly support what other provinces are trying to do on a worldwide scale," says Albert. "There are many things the forest has to offer beyond just cutting lumber that could be utilized to start up cottage industries." (*Source*: Northern Ontario Business, 6 September 2007.)

Maple syrup harvest bittersweet

Despite a disastrous maple syrup crop in the lower St Lawrence region this year, the product's provincial marketing board predicts the overall 2007 harvest will still yield a record $200 million plus in sales. Charles Felix Ross, Secretary-General of the Fédération des producteurs acéricoles du Québec said it will mark the second consecutive year that a below normal size crop sets a new sales mark after the 2006 harvest sold for the previous high of $180 million.

Even though a recent survey of the federation's 7 300 maple production farm operators calculated a yield of 61.7 million lbs (1 lb = 0.45 kg), a 10 percent drop from last year, there is an equal percentage increase in sales and exports. Ross credits stronger promotions domestically and growing interest in the health benefits of maple syrup south of the border for the product's increasing popularity.

An average crop is 78 to 80 million pounds, while a bumper crop is 100 million pounds, so Ross called this year's yield very small.

Quebec accounts for 93 percent of Canada's maple syrup and produces 80 percent of the world's supply, 60 percent of which is consumed in the United States of America. About 2 000 maple farm operators produce 80 percent of Quebec's maple syrup. (*Source: Montreal Gazette*, 17 July 2007.)

COSTA RICA

Manejo y conservación de *Ryania speciosa* en el trópico húmedo de Costa Rica

Ryania speciosa Vahl, es un arbusto de la Familia Flacourtiaceae; constituye uno de los muchos productos forestales no madereros (PFNM) de América tropical que es objeto de comercio en el mercado internacional.

Es propio de los bosques tropicales en América, generalmente se encuentra a orilla de ríos en bosques primarios y la distribución va desde Nicaragua, Costa Rica, Panamá, Trinidad, Venezuela, Colombia, Ecuador, hasta Perú y Brasil.

Una investigación realizada por el Centro Agronómico Tropical de Investigación y Enseñanza (CATIE) determinó su presencia en los bosques húmedos de Costa Rica. El estudio etnobotánico realizado en 1989 mostró el uso tradicional por parte de un grupo nativo de la etnia Bribri, establecido en Talamanca, Costa Rica, quienes emplean la madera en la construcción de viviendas por su resistencia al comején, lo que determina su empleo milenario por parte de las comunidades nativas de América.

La presencia de ingredientes químicos, tipo alcaloide en la madera y hojas cuyos principales componentes son ryanodina ($C_{25}H_{35}NO_9$); 9, 21-didehydroryanodina, contribuyó a que se emplee desde el siglo pasado en Europa y Estados Unidos para el control de plagas en la agricultura.

Dada su importancia económica en el control de plagas en la agricultura y el aprovechamiento comercial de su madera, condujo al CATIE a realizar investigaciones enfocadas a su manejo sostenible dentro del Proyecto de Conservación y Desarrollo Sustentable para América Central.

Los resultados de la ejecución de estudios ecológicos condujo a determinar que R. speciosa es una especie esciófita por su característica de crecer y desarrollarse a la sombra del dosel del bosque y presentar madera dura. La distribución de las poblaciones silvestres presenta un patrón espacial agregado únicamente para los brinzales, siendo para los latizales el patrón al azar y para la población total un patrón agregado en el bosque húmedo tropical de Costa Rica, con una densidad de poblaciones silvestres de hasta 874 ind/ha y capacidad de rebrote posterior a su cosecha.

El auge de la agricultura orgánica ha conducido a un mayor aprovechamiento de los PFNM como sucede con *Quassia amara* (Familia Simaroubaceae), *R. speciosa*, situación que está provocando vulnerabilidad en poblaciones silvestres, como respuesta se han implementado investigaciones para el manejo de poblaciones silvestres y acciones de domesticación en Costa Rica.

En la actualidad, el abastecimiento de la materia prima (madera) de Ryania para el mercado internacional proviene de Trinidad y Tabago. El principal importador es Italia y Estados Unidos de América. En América

existen productos comerciales en Estados Unidos y Argentina.

Por esta razón Bougainvillea Extractos Naturales, empresa establecida en Costa Rica realiza acciones de manejo de poblaciones naturales y domesticación con la participación de agricultores dueños de bosques para su comercialización como biopesticida en forma de extracto estandarizado en el control de mariposas. (*Aportación hecha por*: Rafael A Ocampo S., Jardín Agroecológico Bougainvillea. Apartado Postal 764-3100. Santo Domingo, Heredía, Costa Rica. Correo electrónico: quassia@racsa.co.cr; www.bioextractos.com)

Costa Rica and the United States of America swap debt for nature

Costa Rica and the United States have signed an agreement to swap US$26 million of Costa Rican debt for funds to protect more than 1 000 acres (approximately 404.7 ha) of tropical forest. The move will protect biodiversity in the region and help thousands of indigenous people to maintain sustainable livelihoods.

The two countries made the agreement this month (October), with Costa Rica agreeing to spend the swapped amount on forest conservation over the next 16 years. The United States of America will contribute $12.6 million, with the environment protection organizations The Nature Conservancy and Conservation International each providing $1.26 million.

Six areas have been designated for protection, based on a scientific analysis to determine gaps in forest protection, says Zdenka Piskulich, director of The Nature Conservancy in Costa Rica. The swap will target forest protection in some of Costa Rica's best known biodiversity hotspots, such as Tortuguero, a system of natural waterways near the Caribbean Sea. The area surrounding the Rincón de la Vieja volcano, home to over 300 species of birds, and the Osa Peninsula, home to 2.5 percent of the world's animal and plant species, will also benefit, together with ecosystems in the Amistad region, which contains 90 percent of Costa Rica's known plant species.

Piskulich said in a press release that the funding will also allow indigenous communities, many of whom live in the Amistad region, "to pursue sustainable and economically viable livelihoods, thus improving their lives and sustaining the diverse biological resources on which they depend". (*Source*: SciDev.Net, 24 October 2007.)

CZECH REPUBLIC

A new season begins for Czech mushroom pickers

Twenty-six million kilograms of mushrooms – that's how much Czechs picked in the forests across the country in 2006. According to a survey carried out by the University of Agriculture, an average Czech family collected about 8 kg of mushrooms last year. It seems that mushroom-picking remains one of the most popular Czech pastimes.

One proof of the continuing popularity of mushroom-picking is the number of mushroom-devoted Web pages providing detailed information about the current situation in different areas of the Czech Republic. You can even download a so-called "myco-map" – a map indicating the occurrence of individual mushroom species in different regions. (*Source*: Radio Prague [Czech Republic], 17 August 2007.)

EGYPT

Wild aromatic, culinary and medicinal plants of Egypt

Egypt is characterized by a variety of climatic and environmental conditions that have helped in the distribution of numerous wild aromatic and medicinal plants around the country. These plants have been used for various therapeutic and economic purposes throughout history and are now receiving increased interest in Egypt and elsewhere.

Great efforts are being made to increase awareness of aromatic and medicinal plant products in Egypt and to strengthen national collaboration between the regional desert areas. Accordingly, the Aromatic and Medicinal Plants Department, Desert Research Center (DRC), in collaboration with FAO, invited local communities, private enterprises and other socio-economic actors involved in collecting, processing, trading, marketing and sustaining of wild aromatic and medicinal plants to attend a stakeholders' workshop in early September 2007 to discuss the wild aromatic, culinary and medicinal plants of Egypt.

The specific objectives of the workshop were to gain a better insight into the present resource situation and utilization status of medicinal, culinary and aromatic plants in Egypt, their potential, and the problems and issues to be addressed for their sustainable development; and identify and propose priorities for action at various levels and programmes and projects to support national/regional efforts for resource conservation and sustainable development of these products in the country.

The focus of the workshop was on aromatic and medicinal plants gathered from wild sources (such as on forest and/or rangelands) in the Egyptian desert, so as to differentiate these products from those obtained as agriculture cash crops (on irrigated lands).

The workshop provided a useful overview of the specific characteristics of medicinal, culinary and aromatic plants and their resource/utilization status in Egypt. The outcome of the workshop was presented and discussed in plenary until an agreement by consensus was reached on all recommendations. At the closing session, a proposed project with the key recommendations ("Survey, sustainability and conservation of the wild aromatic and medicinal plants in Egypt: protecting their genetic resources and evaluating their economic values") was introduced by the chairman of the workshop Prof. Dr Inas Abd El Moati Tolba, Professor of Ecology and Phytochemistry, Head of the Aromatic and Medicinal Plants Department, DRC.

FOR MORE INFORMATION, PLEASE CONTACT: Prof. Dr Inas A. Tolba, Head of the Aromatic and Medicinal Plants Department, Desert Research Center, PO Box 11753, Cairo, Egypt. Fax: 02 26357858; 02 2 6370788; e-mail: profmed_inas@hotmail.com

FINLAND

Reindeer ecotourism

Half of our income comes from reindeer husbandry, half from reindeer tourism, says reindeer herder and entrepreneur Anssi Kiiskinen. "The ultimate reason to branch into tourism was to increase our income from reindeer, so they would

provide for us." Kiiskinen says that the income from reindeer meat is not enough to offset the costs of the increasingly mechanized reindeer husbandry. That is why he and his uncle set up a joint reindeer tourism enterprise, the Kopara reindeer farm, on the flanks of the Pyhätunturi Fell in Lapland.

In the Kiiskinens' business, reindeer herding and reindeer tourism complement one another. In reindeer herding, the busiest seasons are spring and autumn, and in tourism summer and winter. The meat from the herd of reindeer is served as appetizing dishes in the farm restaurant. During winter the customers are offered reindeer safaris, usually consisting of a few hours' ride across the snowy wilderness in a reindeer-drawn sleigh. Kiiskinen has 40 reindeer trained for the purpose. In summertime, visitors can walk the "reindeer trail" which provides information about reindeer and reindeer husbandry – and feed the reindeer themselves.

The last five years have been a time of investments in the enterprise. Each year, the turnover has grown by 20 percent.

The assets of Kiiskinen's firm consist of reindeer, ideas, enthusiasm, labour and customer contacts. But not the land. The buildings and the reindeer enclosures are built on land rented from the state-owned forestry enterprise Metsähallitus. The routes of the reindeer safaris run in commercial forests managed by Metsähallitus. This is frequently the case in northern Finland. According to Pertti Sarajärvi, Land Use and Environment Manager for Metsähallitus in eastern Lapland, tourism supports Metsähallitus's operations. "Tourism helps to keep the area inhabited and so ensures potential employees for us." (*Source*: Krista Kimmo, Pelkosenniemi, Finnish Forest Association Web site, 4 October 2007.)

INDIA

Tackling poverty through international trade of forest products: a case study of *Cassia tora*

Cassia tora, commonly known as tora, sickle senna, sickle pod, coffee pod, tovara, chakvad and foetid cassia, is a wild weed crop growing luxuriously in some parts of India, including Madhya Pradesh, during the period October to February.

A natural gelling agent that has industrial and food applications is made from the seed. The primary chemical constituents of the seed include cinnamaldehyde, gum, tannins, mannitol, coumarins and essential oils (aldehydes, eugenol and pinene); it also contains sugars, resins and mucilage, among other constituents.

Cassia tora has many uses. It is used as a natural pesticide in organic farms; roasted seeds are substituted for coffee; its powder is most popularly used in the pet food industry; it is mixed with guar gum for use in mining and other industrial applications; its seeds and leaves are used to treat skin disease; and its seeds act as a laxative. This weed could also become a reliable cheap supply of nutritious fodder for *Ctenopharyngodon idella*, a fast-growing exotic carp.

Cassia tora tea is a herbal, pure, natural, non-polluted green health beverage. In the Republic of Korea, it is believed to refresh human vision. Moreover, the tea has created a new term "coffee-tea", because of its mysterious but very rich taste and its coffee aroma. It is made from 100 percent *Cassia tora*, with no artificial colouring and no caffeine, and could be a great substitute for coffee and sodas.

The edible part of the plant varies from 30 to 40 percent. Because of its external germicide and antiparasitic character, it has been used for treating skin diseases such as leprosy, ringworm, itching and psoriasis and also for snakebites. Galactomannans from *Cassia tora* (CT-gum), after proper processing and chemical derivatization, could function as a better and more economical thickener than locust bean gum for textiles, because of the latter's current high price ($18/kg) and limited availability.

Most of the CT-gum processing plants in India are located in Gujarat state because of the availability of *Cassia tora* beans in the neighbouring states, but the widespread use of these beans as vegetables and seeds as cattle feed have been pushing up the raw material cost for the CT-gum industry. The total installed capacity in the country is 0.2 million tonnes for splits and 59 000 for powder based on *Cassia tora* seeds. The capacity utilization in the industry has been around 70 percent for the last three years.

Apart from domestic consumption, there are now significant exports of cassia powder of international standard to various countries, such as the United States of America, Australia, Germany, France, Spain, Denmark, Italy, the Netherlands, Belgium, New Zealand, the United Kingdom, Singapore and Japan. The export value of *Cassia tora* has been gradually increasing over the last five years. Detailed export data revealed that Japan and the United Kingdom receive a regular supply, while the United States market fluctuates. However, the export growth rate of *Cassia tora* clearly shows the difference between quantity and value, which leads to a low price per unit price. (*Contributed by*: Dr Parag Dubey, Faculty of Forest Product Marketing, Indian Institute of Forest Management, PO Box 357, Nehru Nagar, Bhopal 462003, Madhya Pradesh, India. E-mail: parag@iifm.ac.in)

Jharkhand: rich in NWFPs yet not fully tapped

Jharkhand state was formed on 15 November 2000 after its separation from Bihar state. Jharkhand literally means forest and plateau. Its total geographic area is 79 714 km^2, 22 716 km^2 of which is forest. It has 18 districts, eight of which are tribal. Tribals are an inseparable part of forests so they are given special rights and privileges.

Previously this area was very rich in forests, but over time this has changed and now most of the natural forest is in a degraded state and reduced (however, Asia's famous Saranda Sal forest belongs to this state). State population has increased (18.82 percent from 1991 to 2001) and average population growth rate is more than the national average. This is an important factor that has contributed significantly to the conversion of forest land.

In spite of this, Jharkhand is rich in natural resources. Its main NWFPs resources can be categorized as:

- kendu leaf (*Diospyros melanoxylon*), used as a smoking stick, locally called *bidi*;
- sal seed, from which oil is extracted;

- *Terminalia bellerica*, locally called *harnat*, used in medicine; and
- *Madhuca indica*: its seed is used for extraction of oil, its flower in the preparation of local wine and its leaf in the preparation of a dish locally called *donna patta*.

Realizing the importance and potential of NWFPs, in February 2002 Jharkhand's Ministry of Environment formed JSVVN Limited, which is the sole agency for the authorized collection and marketing of NWFPs. JSVVN manages its NWFP collection work through two circles, six divisions and 45 regional offices. In 2002/2003, the net profit earned by JSVVN was Rs773.345 lakhs, with Rs2 051.196 being shared among the people engaged in NWFP collection, and it was able to generate 31.56 lakh/workdays.

The collection of NWFPs is time - consuming work and delays in collection and marketing cause losses. Kendu leaf and sal seed collection starts in May and continues up to the first week of June. During this period poor rural and tribal people do not have any work in their agriculture fields or elsewhere and so JSVVN provides them with employment. In this way, they earn money (kendu leaf collection generates 31–32 lakh/workdays) and also eliminate the intermediaries. Therefore, NWFPs can have enormous scope in the state and are both a good source of revenue for the state government and a source of income for rural and tribal people.

The state has another opportunity to strengthen the NWFP area by raising bamboo and medicinal plants, both of which could generate income and employment for the state. (*Contributed by*: S.K. Singh, Forest Survey of India, Kaulagarh Road, PO-IPE, Dehra Dun 248195, Uttaranchal, India. E-mail: sk_singh24800@yahoo.com)

Medicinal and aromatic plants (MAP) certification – its importance and relevance in an Indian background

The importance of good collection practices, storage and maintenance in medicinal plants has been felt from time immemorial. The rich traditional Ayurvedic heritage and folklore practices in India reflect the understanding of the ancients regarding the sustainable utilization of natural resources. However, with the massive expansion of the medicinal plant business as well as changing socio-economic conditions, rapid depletion of natural resources and diverse sociocultural practices, it has been felt that there should be national-level guidelines for wild collection of medicinal plants. These guidelines should be in parity with international norms and regulations as well as satisfying Indian demands.

In view of these increasing demands, the International Centre for Community Forestry (ICCF) at the Indian Institute of Forest Management (IIFM) has started a MAP certification project sponsored by the National Medicinal Plant Board (NMPB). This project is designed to:

- evaluate the potential for MAP certification in an Indian context;
- create awareness among gatherers, foresters and other stakeholders about MAP certification and its implication for sustainable management of wild MAP resources;
- document and analyse current practices in the MAP sector in the light of certification requirements;
- develop national-level generic standards for MAP certification, with special emphasis on raw material collection to marketing; and
- establish demonstration plots to test the sustainable collection concepts through a participatory approach and information dissemination.

Four states were selected for the pilot study (Chhattisgarh, Madhya Pradesh, Orissa and Uttarakhand) based on their MAP resource richness, livelihood dependence and available institutional framework. Important steps have already been taken for the implementation of the project, e.g. field surveys, interviews with multiple stakeholders and local- and regional-level consultations/meetings with social organizations. A draft standard has been prepared in the light of current internationally available standards, as well as socio-economic parameters relevant to the Indian scenario. The parameters/ statements of the draft standard are under evaluation with state existing practices. Thrust areas of the study include legal and policy framework, wild area conservation and sustainable management, responsible collection practices, economic development and benefit sharing.

A comparative analysis of the available information based on the above-mentioned issues reflects prominent differences in policy-level interventions and social understanding of MAP resource management, as well as conservation measures. Further study and research are taking place to make the draft more flexible and acceptable to the diverse MAP sectors in India. (*Contributed by*: Dr Prodyut Bhattacharya, International Centre for Community Forestry (ICCF), Indian Institute of Forest Management (IIFM), PO Box 357, Nehru Nagar, Bhopal 462003, Madhya Pradesh, India. Fax: +91-755-2772878; e-mail: prodyut@iifm.ac.in)

Medicinal plants of the Kashmir Himalayas

Medicinal plants have assumed a significant importance in the recent past owing to the growing appreciation of human health care through herbal medicines. The Kashmir Himalayas house a diverse variety of plants of medicinal value. A recent paper (*Traditional medicine: some plants of the Kashmir Himalayas*) by Gulzar Ahmad Sheergojri, Nelofar Lolapuri and Efath Shahnaz presents the results of a survey carried out in 2006 and discusses some of the medicinal plants identified and their importance in traditional medicine.

The Kashmir Himalayas – the northwestern region of the Himalayas – represent a rich repository of diverse plant species that have been used by the locals to treat their ailments since time immemorial. They have also served as an important source of raw material for various pharmaceutical units. About 28 percent of all the plants on Earth have been used for curing various human ailments. Nearly 40 percent of the known medicinal plants of the Kashmir Himalayas are used in the Indian pharmaceutical industry alone. Global imports of medicinal plants increased from US$335 million in 1976 to $551 million in 1980. However, non-judicious exploitation, habitat destruction and the absence of cultivation programmes have put a tremendous pressure on these green dispensaries, especially in developing and underdeveloped countries. Furthermore,

poor infrastructure and scarcity of funds in developing states such as Jammu and Kashmir have made these plants vulnerable to biopiracy.

Consequently, the authors carried out a survey to underline the importance of some of the plants of the Kashmir Himalayas in traditional medicine so that adequate measures may be taken to save them. Information was collected on many medicinal plants and their traditional uses were documented. The study revealed that these herbal medicines provide remedies for a significant number of ailments, especially in remote areas where health care facilities are meagre. A comprehensive strategy for the conservation and development of these medicines would not only widen the forest-based economy, but also provide important raw materials for immunomodulation. (*Contributed by*: Gulzar Ahmad Sheergojri, M.Sc. (Agriculture), Sheri Kashmir University of Agriculture Sciences and Technology, R/O Inder Pulwama, J & K, India 192301. E-mail: mukhtar555@gmail.com)

KENYA

KEFRI wants ban on bamboo lifted

The Kenya Forestry Research Institute (KEFRI) wants a ban on bamboo harvesting lifted to enable farmers to enter the multibillion Kenyan shilling global bamboo trade currently dominated by China, Japan and Thailand. Samson Mogire, a bamboo product expert at KEFRI, said they had sent fact finding missions to the Asian nations to learn methods of sustainable exploitation of the forests.

The ban on bamboo harvesting was imposed in 1989 by former President Moi and its use later restricted to select public institutions. KEFRI said the fear of overexploitation that led to the imposition of the ban no longer held, since the plant had rejuvenated into extensive bamboo forest cover. To mitigate against possible overexploitation, KEFRI is teaching farmers how to propagate the plant in central Kenya, with financing from the United Nations Development Programme.

A bamboo tree takes an average of three years to mature and is a good protector of water catchment areas. To increase the commercial value of the tree, KEFRI is training artisans on the use of bamboo in the making of furniture and office fittings.

Locally, the tree does well in the Aberdares, Olengurueni, Molo, Western Province and parts of the coast.

Despite the promising prospects, exploitation of bamboo still faces a number of hurdles, including lack of awareness of its potential among local communities. (*Source: Business Daily Africa* [Kenya], 26 July 2007.)

Tribe of honey hunters fights extinction

Kiangwe. The marginalization of Kenya's Boni tribe, known for their unique tradition of whistling to birds that guide them to honey, has raised fears that their mellifluous song will soon be silenced. With little or no access to health care and other resources, the Boni's ranks have steadily dwindled and the tribe is now on the verge of extinction.

The semi-nomadic Hamitic tribe nestled between the Indian Ocean and the Somali border in northeastern Kenya's Lamu district numbers barely 4 000, compared with 25 000 half a century ago, according to the Organization for the Development of Lamu Communities (ODLC).

"We depend entirely on nature for food and medicine," said Nur Mohamed, a Boni. The central ingredient in the Boni's diet is honey, which they track down with the help of birds – known by locals as *mirsi* and commonly described as honey guides – who feed on wax and bee larvae. The peculiar species has been scientifically proven to lead animals and humans to bee nests. On a good day, the *mirs*i will noisily alert the Boni by landing on a tree concealing honey. The Boni then hack at the tree trunk and smoke it up to numb the bees before retrieving the bounty.

Members of the hunter/gatherer tribe also eat wild fruits, roots and a variety of game – which they say has put them at odds with wildlife officials. "Nowadays, I hunt secretly and I eat secretly. Otherwise, the Kenya Wildlife Service (KWS) will beat us and arrest us," said Sadi Jumaa, who wears a belt made of baobab bark. However, Mohamed Ali Baddi, who heads a local development organization, says "Hunting is a way of life. For them, it is not poaching. But for the KWS, they are poachers."

Some of the Boni's other traditional practices are a far cry from modern life, for better or worse. "We know the herbs to treat malaria, stomach aches and snakebites. But some of the herbs are too strong for children. Sometimes they die," Mohamed says. The nearest hospital to his village of Kiangwe is several hours' walk away.

While they are keen to preserve their ancestral way of life, the Boni feel ignored by the Kenyan Government, as do other tribes of honey hunters across the country. Kiangwe is a small village of 360 inhabitants living in mud huts with no dispensary, no road, no running water and no shops. Residents say travelling vendors pass through on average twice yearly. "Maybe the government should come up with a policy for a Boni reserve so that they can preserve their culture," said Omar Aliyoo, one of two Boni tribesmen to sit on the local municipal council. "Our way of life is disappearing. There is a danger that the Boni people will disappear." (*Source*: Independent Online [South Africa], 10 July 2007.)

LEBANON

Illegal imports undercut local pine nuts

Chouf. Lebanon's pine nut cultivators denounced the government's lack of interest in putting an end to the illegal importing of pine nuts, saying they face threats to their businesses as a result of the invasion of Turkish and Chinese pine seeds into the local market. Consequently, the problems of cultivators eased over the last three years following the government's decision to halt imports in an attempt to cultivate the local market. The Syndicate of Pine Nut Cultivators, however, recently discovered that several dealers have been illegally given licences to import the nuts. Cultivators in the Chouf, Jezzine, Metn and Aley are therefore facing a problem thought solved just a few years back.

"The cultivation of pine trees is a really costly business," said cultivator Abdullah Hassan. "The cost of the harvest is very high and therefore the price of pine seeds is relatively high. However, with the market

flooded with imported pine seeds, our business might collapse at any moment."

Pine trees are abundant across Lebanon and have also long been considered as a tourist attraction and an economic resource. However, cultivators fear pine trees will not be cared for as much as before because of the smuggling, endangering pine tree woods in the country.

"We need to find a solution to the current situation by forbidding the illegal import of pine seeds, especially since pine seeds are a basic ingredient of Arab sweets," said Ahmad Awar, a cultivator. "But unfortunately the owners of such sweet shops do not care about quality and prefer using the cheaper imported seeds instead of the finely harvested Lebanese pine seeds." (*Source: Daily Star* [Lebanon], 5 July 2007.)

LIBERIA

Promoting ecotourism

Conservation International (CI), an NGO working in Liberia since 2002, has developed a scheme to bring tourists into the country. Russell A. Mittermeier, President of CI, has been discussing with top government officials on how the forests of Liberia can be conserved and used to make a profit for the country. Mr Mittermeier said that Liberia's forests are in a "hotspot", i.e. "an area where most of the animal species that live there cannot be found anywhere in the world. This means it is the most important spot in the West African region".

He said an ecotourist would be willing to pay up to US$500 to visit Liberia's natural wildlife and see at first hand how these animals live in the wild. (*Source: The Inquirer* [Monrovia], 23 August 2007.)

MADAGASCAR

Beekeeping, poverty alleviation and forest conservation in Imadiala

Beekeeping is an important source of livelihood in Imadiala, an eastern subdistrict of Ambositra. However, in spite of the efforts made by beekeepers and numerous organizations to improve beekeeping in the region, the negative effect of deforestation on beekeepers' activities is increasing.

Approximately 90 percent of Madagascar's flora and fauna is endemic. Eleven million hectares (20 percent of Madagascar's surface area) are forest and 350 000 ha are *Eucalyptus* species and pine plantations. However, loss of species, including the decrease of honey bee populations on the island, is closely related to the loss of forests.

In September 2003, President Marc Ravalomanana committed to increasing protected areas in Madagascar from 1.7 million to 6 million ha by 2008. Now Madagascar is attempting to reduce poverty and increase the areas under conservation. Beekeeping has the potential to play an important role in these processes, both for poverty alleviation and the conservation of natural environments.

The remaining natural resources and the willingness of beekeepers to improve their activities make beekeeping possible on a large scale in Ambositra. However, Imadiala, which is the most advantaged beekeeping area in the whole region, has suffered serious deforestation by felling trees to make planks, charcoal and sculptures or to make space for cultivation, causing severe negative effects for beekeeping. This process is ongoing and forest degradation remains one of the major problems for beekeeping, honey hunting and swarm catching in Imadiala. (*Source: Bees* for *Development Journal*, Issue 84, September 2007.)

MALAWI

Miombo woodlands

In her recent short essay, *Miombo woodlands and rural livelihoods in Malawi*, Janet Lowore cites a study of 36 farming households which revealed that during a period of 25 months, local people collected 37 different species of leaf vegetables, two species of root vegetables, 21 of fruit, 23 of mushroom and 14 of caterpillar.

Between 1946 and 1996, Malawi lost 2.5 million ha of woodland, most of which was converted into farmland. The loss of woodland means many things for local people. Women must walk further and spend more time searching for firewood. Households have to buy wood for construction, and as a substitute for tree fibres they must buy sisal or use the wire from old car tyres. Without the forest, they must also go without wild game, caterpillars, medicinal plants, fruits and many other things.

Lowore stresses that it is impossible to come up with a simple blueprint of recommendations for improving dry-forest management. However, her study confirms that Malawi's miombo woodlands are vitally important, both as a resource that satisfies the subsistence needs of the rural poor, and for the many environmental benefits that they provide. (*Source: Building on success*. Center for International Forestry Research (CIFOR) Annual Report 2006. http://www.cifor.cgiar.org/publications/pdf_files/AReports/AR2006.pdf)

MALAYSIA

Malaysia is taking steps to ensure that trade in *gaharu* is sustainable

Gaharu, the aromatic resin from *Aquilaria* trees, was previously regarded as worthless woodchips but authorities are fast realizing its value and are tightening the relevant regulations. States in Peninsular Malaysia have been told to keep a close eye on extraction of the heartwood by emphasizing enforcement of Section 15 of the National Forestry Act 1984, which requires any removal of the valuable product to be accompanied by a removal pass.

The latest move by Peninsular Malaysia Forestry Department is to develop a uniform grading system for the fragrant resin. Deputy director-general (planning and development) Datuk Dahlan Taha says the absence of a standardized grade has hampered administration and regulation of this NTFP. "The 10 percent royalty payment is currently based on weight and not on quality. The government is losing out on revenue collection. Hence, we organized a workshop in June and produced a grading system. We are recommending four grades: A Super, A, B and C," says Dahlan.

He is also encouraging all states to pay attention to this NWFP, which is coveted by both local and foreign poachers. He claims that greater awareness has led to better protection of the heartwood against illegal collection, as indicated by zero arrests in the last two years.

The department is also directing replanting of *gaharu* species in logged production forests. So far, 215 ha have been planted. The oldest is a four-year-old plot in Kelantan. The lure of the highly priced resin has also promoted commercial planting of the species as well as research into artificial inoculation of the stem. In the wild, a *gaharu* tree produces the resin as a biological response to contain infection from bacteria, fungi and pathogens. The resin covers wounded areas and blackens the whitish heartwood to produce *gaharu*.

Under the Ninth Malaysia Plan, *gaharu* is being introduced as a potential income-generating crop to be planted alongside vegetable farms in agroforestry programmes. Meanwhile, the government is capping export of *gaharu*, internationally known as agarwood, at 200 tonnes this year.

In 2004, all eight *Aquilaria* species and a species of *Gyrinops* that also produces aromatic resins were included in Appendix II of the Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES) to ensure survival of the species in the wild. A listing in Appendix II subjects trade in the species to the CITES permit system that covers export, import and re-export. However, oil products from *gaharu* still escape CITES scrutiny because of its exclusion from the Customs export prohibition order. The Customs and Excise Department is in the final stage of amending the order to control the export of processed *gaharu* in oil form.

As high-grade agarwood becomes scarce, local collectors are resorting to processing lower-grade woodchips into oil to increase their profit margins. *Gaharu* distillation plants have sprouted in several parts of the country. Although states in the peninsula are trying to monitor the amount of extraction through its licensing scheme, it is believed that various amounts are slipping through the cracks and these unspecified volumes are turned into oil products that elude the CITES permit and the government taxation system. Hence, accuracy of the official extraction volume is doubtful.

While the export loophole is likely to be plugged soon, a similar effort was not made simultaneously to address the issue of import. The Customs import prohibition order does not cover *gaharu* oil products. Therefore, the Malaysian Timber Industry Board (MTIB) has not issued any CITES import or re-export permits to date. (*Source: Malaysia Star*, 31 July 2007.)

MAURITANIE

Les PFNL en Mauritanie

La Mauritanie pays désertique membre du Sahel et Maghreb dispose d'une couverture végétale non négligeable sous forme de savanes arbustives ou de savanes herbeuses.

Les principaux produits forestiers non ligneux (PFNL) de la Mauritanie sont les plantes alimentaires (par exemple *Adansonia digitata* et *Zyzyphus mauritiana*), les plantes fourragères (*Acacia* spp.), les gommes (*Acacia senegal*) et les plantes médicinales (par exemple *Acacia albida, Balanites aegyptiaca* et *Salvadora persica*). Les PFNL de moindre importance au niveau socioéconomique sont les colorants (*Acacia seyal, Anogeissus leiocarpus*), les tannins (*Acacia nilotica*), les produits cosmétiques, les outils et les résines.

Les PFNL ont une importance particulière en Mauritanie dans la mesure où ils contribuent à la nourriture humaine et au fourrage pour les animaux. Ils sont également utilisés pour des soins par les tradipraticiens, dans la cosmétologie, dans la construction et chez les artisans mais également comme boisson. Parmi les PFNL en Mauritanie, seule la gomme arabique fait l'objet d'importantes activités commerciales structurées.

Nourriture: Les arbres produisant des fruits comestibles incluent *Boscia senegalensis, Balanites aegyptiaca, Adansonia digitata, Zizyphus mauritiana* et *Sclerocarya birrea*. Les fruits de *Sclerocarya birrea* font l'objet d'un commerce local. La pulpe des fruits, riche en alcool, est fermentée et transformée en bière. Du fruit, on peut faire des jus et des confitures. L'amande du noyau de *Sclerocarya birrea* contient des matières grasses et beaucoup de vitamine C. Elle donne aussi une huile comestible. Les graines de *Boscia senegalensis* donnent une excellente farine pour la fabrication des repas. En outre, on consomme l'albumen des graines et les feuilles d'*Adansonia digitata*.

Fourrage: les plantes fourragères importantes sont *Acacia albida, Acacia raddiana, Acacia nilotica, Acacia senegal, Acacia seyal, Boscia senegalensis, Balanites aegyptiaca* et *Prosopis juliflora*. Ces plantes fournissent des feuilles, de jeunes rameaux, des gousses et l'écorce qui constituent des fourrages pour les moutons, les chèvres, les dromadaires et les chameaux.

Médecine: les écorces, les graines, les feuilles, les racines, les fruits et les branches d'*Adansonia digitata, Acacia albida, Acacia nilotica, Boscia senegalensis, Balanites aegyptiaca, Anogeissus leiocarpus, Salvadora persica, Commiphora africana, Prosopis juliflora* et de *Sclerocarya birrea* sont utilisés pour le traitement des maladies variées telles que le rhume, la grippe, les maux de dents, les hémorroïdes, les douleurs rhumatismales, l'impuissance sexuelle, le diabète, l'asthme et autres complications respiratoires, la fièvre, la diarrhée, la fatigue générale, etc.

Parfums et cosmétiques: les racines de *Balanites aegyptiaca* rentrent dans la fabrication du savon.

Colorants et tannins: les fruits d'*Acacia nilotica* constituent le principal produit de tannage chez les cordonniers. L'écorce d'*Acacia seyal* fournit une teinture rouge qui sert à teindre les vêtements. Les feuilles et l'écorce d'*Anogeissus leiocarpus* fournissent une teinture jaune pour les peaux et les tissus.

Ustensiles, artisanat et matériaux de construction: l'écorce du tronc d'*Adansonia digitata* fournit également des fibres utilisées pour tisser les nattes et confectionner les cordes. Le tégument d'*Acacia senegal* est utilisé pour la fabrication des cordes. Le macéré du fruit de *Balanites aegyptiaca* est ichtyotoxique (poison à poisson).

Exsudats: la gomme, exsudant du tronc d'*Acacia nilotica*, sert à fabriquer une boisson rafraîchissante. La gomme arabique est fournie par l'*Acacia senegal*. L'exsudation est causée par des fentes dues à la sécheresse et des blessures. Quatre-vingt-dix pour cent de la production de la gomme arabique est commercialisée. L'*Acacia seyal* est une gomme arabique de qualité inférieure. La **résine** de *Commiphora africana* est utilisée comme encens, parfum et insecticide.

Malgré le rôle important que jouent les PFNL en Mauritanie, la filière économique des PFNL généralement très confinée dans l'informel demeure peu développée. La filière économique des PFNL nécessite une

valorisation et un développement. L'Etat doit, en collaboration avec la FAO et les autres partenaires de développement, sensibiliser les populations sur l'importance des produits et surtout des coopératives féminines en milieu rural.

En effet la promotion, la gestion et le développement des PFNL pourraient permettre de réaliser une importante activité génératrice de revenus pour les femmes rurales. Cela pourrait aider à la réalisation de certains objectifs clés des OMD: réduire l'extrême pauvreté et la faim, promouvoir le genre et le développement et protéger l'environnement. (*Source: Gestion participative et développement des produits forestiers non ligneux comme moyen de réduction de la pauvreté des femmes rurales: cas du Maghreb et du Sahel* par Mme Hawa War, Volontaire, FAO, Le Caire.)

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"Riches of the forest: fruits, remedies and handicrafts in Latin America"

MEXICO

Mexican palm fronds for the United States floral industry: opportunities and threats

A recent study on the camedora palm (*Chamaedorea elegans, C. concolor, C. oblongata*) was undertaken in two indigenous Chinantec communities located in the river basin of Papaloapan, on the Atlantic slope of the Sierra Norte, Oaxaca, situated some 300 km from the city of Oaxaca. Both communities are situated in isolated mountainous locations, with limited access to the nearest road.

The camedora palm, also known as *xate*, represents a set of species that belongs to the genus *Chamaedorea* and dominates the herbaceous field layer of montane forests. Access to the resource is relatively equitable, since it is largely collected from communal land with free access. However, over the last ten years, distances to harvest sites have increased to three hours' walk because of land conversion for maize and coffee, and as a result of overexploitation of the palm.

The species reproduces easily via seed, requiring little light and possessing a high tolerance for humidity. For these reasons, several communities in the study area and other regions – Veracruz, Chiapas and San Luis Potosí – have begun to domesticate via understorey cultivation. When leaf fertilizer is applied in plantations, each plant can be harvested every three months. In the wild, peak harvesting, between April and October, follows the rains, when the quality and quantity are most readily available for two to three cuts. Some camedora palm species are on the Mexican protected species list and thus require an extraction permit. However, because of the cost involved in acquiring a permit, some communities cut leaves illegally and many have established small plantations.

The palm leaves are used fresh in floristry and have been exported from the humid tropical regions of Mexico and Central America since the 1940s. Mexico is the leading world exporter of the leaves and seeds of different species of camedora palm, predominantly to the United States. It is estimated that the global production of this foliage currently meets only one-third of the international demand.

In Mexico, the leaves are used in floristry, wreaths and bouquets; as traditional adornments for Easter and Palm Sunday; as a fresh base for exhibiting produce in supermarkets; and as garden plants. The leaves are highly sought after because once cut, they remain green for up to three weeks.

Market access for communities depends largely on production capacity: commercial intermediaries are attracted to areas where there is sufficient volume to make trade worthwhile. Many families have to overcome several obstacles to access regional trade centres, including low-quality roads and lack of access for vehicles. Monte Tinta overcame this barrier by designating one community member to pool together the leaves and transport them, by donkey, to the road on the trader's route. In return the trader pays on time and compensates for the costs of accidents during collection.

Because of the market demand for palm leaves, retailers need to work with a large number of community suppliers. The viability of this commercial activity and the ability to obtain significant profits are a result of traders sourcing from numerous producer communities. In Chinantla, as in other regions of Mexico, six different actors are involved in the commercialization of palm leaves. Men collect the foliage and women grade it, preparing bushels of 140 leaves that sell for up to US$1.30 to a local stockist. A second actor transports the product to a regional wholesaler, who manages a centre where he accumulates, grades, packs and sells the product to wholesalers in Mexico City. Leaves are sold to the Mexican consumer at 12 leaves/US$1, and sold on to a foreign buyer, who retails them to the United States consumer at six leaves/US$1.

There are very few companies dedicated to the export of palm in Mexico, owing to the existence of a monopoly; the national market is concentrated in the hands of a single successful entrepreneur who had sufficient capital to invest in refrigerated transport and storage facilities. This individual is the sole representative of the North American company that imports camedora. The existence of a single company buying leaves makes communities somewhat vulnerable. This single buyer supplies half of the product from his own plantation. While this is important to maintain the value chain throughout the year, it can also pose a threat to wild palm collectors who are restricted mostly to cutting only a few months in the year. Even though there is small-scale domestication of camedora palm in southern Mexico, these poorly organized communities are finding it difficult to compete with the industrial-scale plantations being established in the United States – with seed exported from the Chinantla region. (*Source*: extracted from Marshall, E., Schreckenberg, K. & Newton, A.C., eds. 2006. *Commercialization of non-timber forest products: factors influencing success. Lessons learned from Mexico and Bolivia and policy implications for decision-makers*. Cambridge, United Kingdom, UNEP World Conservation Monitoring Centre.)

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MOROCCO

300 ha of argan trees to be reforested in the south of Morocco

Essaouira (south). Some 300 ha of argan trees will be reforested in the south of Morocco, under a cooperation agreement signed in 2002 between Midi Pyrenees regions and the region of Marrakech-Tensift-El Haouz, revealed the Mohammed V Foundation for Research and Argan Tree Preservation. The foundation, which held its third general assembly, underlined achievements, mainly those pertaining to the notion of the geographic indication, which represents an important step in the process of the protection of the argan tree.

The foundation's director-general, Ms Katim Alaoui, noted that the agreement also provides for the upgrading and marketing of argan oil by women's cooperatives.

This project aims at saving firewood through the use of solar energy, with project officials estimating that the setting up of 500 solar ovens will result in avoiding a loss of 50 to 100 ha of argan trees per year.

Set up in May 2004, the foundation aims at guaranteeing a legal protection from argan tree exploitation, promoting and protecting natural equilibrium, improving the standard of living of the population working on argan trees and guaranteeing the quality of its products.

A forest, fruit and fodder tree, the argan tree covers currently some 870 000 ha, which is around 10 percent of Morocco's forest areas. (*Source: Maghreb Arabe Presse* [Morocco], 11 June 2007.)

NICARAGUA

Elementos de la legislación nacional sobre Productos Forestales no Madereros

En Nicaragua, no está muy difundido el manejo y aprovechamiento de los productos forestales no madereros (PFNM). Sin embargo, existe el aprovechamiento de estos recursos en algunos departamentos como el de río San Juan, Jinotega y las Regiones Autónomas del Atlántico.

No se cuenta con suficiente información sobre volúmenes y valor comercializado de estos productos; se conoce su uso a nivel artesanal, en comunidades cercanas a los bosques o en zonas urbanas, y en general son comercializados de manera informal. La actividad productiva de estos productos ha sido de carácter extractiva y los volúmenes comerciales no han representado un flujo comercial de importancia. En relación con su aprovechamiento, la Ley General del Medio Ambiente y los Recursos Naturales N° 217/1996 establece que «para el uso y aprovechamiento de las áreas de producción forestal de productos maderables y no maderables, éstas deberán ser sometidas a manejo forestal con base sostenible, con la aplicación de métodos y tecnologías apropiadas que garanticen un rendimiento óptimo» (Art. 100).

Por otro lado, a través del Acuerdo IRENA (Instituto Nicaragüense de Recursos Naturales y del Ambiente) del 1990, se creó el Centro de mejoramiento genético y banco de semillas forestales cuyo objetivos principales son: la protección de áreas forestales de interés científico, el mejoramiento genético de especies de importancia económica y científica a través de la instalación de viveros, huertos semilleros o clónales, tanto de latifoliados como de coníferas, la recolección de semillas para suministrar material genético óptimo para los proyectos de reforestación, así como para el manejo sostenido de los bosques.

El Centro será el responsable de garantizar la calidad y pureza de las semillas forestales exportadas e importadas a Nicaragua a través de controles fitosanitarios (Art. 1).

El Centro que goza de autonomía financiera, estará sujeto al control de una auditoría externa nombrada por el IRENA (Art. 5) quien nombra también a su director (Art. 2).

En fin, el Decreto 50/2001 sobre la política de desarrollo forestal de Nicaragua, actualmente modificado y en fase de aprobación por parte de la Comisión Nacional Forestal (CONAFOR), puntualiza que «se promoverá la diversificación de mercados y productos, incluyendo mercados a futuro, para mayor número de bienes y servicios provenientes del bosque y el apoyo en la inserción en los mercados internacionales. Además para ampliar y fortalecer los mercados, se promoverá a través de incentivos el sometimiento voluntario de bosques bajo manejo, a la certificación forestal para garantizar un manejo eficiente del mismo» (Art. 4). (Aportación hecha por Francesca Felicani Robles, Consultora legal, FAO, Via delle Terme di Caracalla, Roma 00153, Italia. Correo electrónico: Francesca.felicanirobles@fao.org)

PAKISTAN

Indigenous use of non-timber forest products in the Kalash valley, Chitral

The Kalash valley is located in the remote southwestern part of Chitral, an area of unique cultural and biological diversity. The natural forest of the area mainly consists of

A variety of mushrooms/morels are found in the Kalash valley, including *Morchella esculenta, M. vulgaris, M. deliciosa* and other morels such as oyster. Their local names are *quchi, brangalu* and *shunt*i. Local people often hide the place where they pick mushrooms. The Kalash community have their own indigenous knowledge for mushroom collection; for example, it is believed that mushrooms often appear under various trees such as *Juglans regia* and *Pinus wallichiana*. Morels are collected mostly for marketing purposes, but are sometimes also used as a traditional medicine or flavouring agent.

Morel collectors are usually poor villagers who collect morels as their part-time activity besides farming and livestock keeping. The collectors – 27 percent women, 33 percent men and 40 percent children – collect morels during spring and early summer, from March to July, and sell them in the local market to earn a livelihood. Morel collection is a hectic job and requires a lot of physical exertion, devotion and passion. Sometimes the collectors spend days in the forest collecting morels. In most cases, they sell the morels in fresh form to the local Pathan dealers or in the markets of Chitral after drying the morels.

Morchella fetch high prices and thus play an important role in the economy of the Kalash valley.

pine (*Pinus wallichiana*), chlghoza (*Pinus gerardiana*), deodar (*Cedrus deodara*) and broadleaf species such as oak (*Quercus incana*).

The forest of the whole Chitral district (including the Kalash valley) is estimated to be 41 949 ha and is mainly used for timber extraction. The natural forest is under the control of the Chitral Forest Department but villagers have certain rights. Up to 25 000 tonnes of forest wood are used annually as fuelwood. Almost 13 percent of the population use the forest for generating their first cash. Additionally 80 percent of local people are, in one way or the other, dependent on NTFPs.

Some of the important NTFPs in the Kalash valley are wild mushrooms (*Morchella esculenta, M. vulgaris, M. deliciosa*), honey (*Apis cerana*), medicinal plants (*Ferula narthex, Paeonia emodi, Inula recemosa*), pine nuts (*Pinus gerardiana*) and silk cocoons.

The people of this remote area rely on their indigenous knowledge to collect, pack and dry these NTFPs and most of the local people are dependent on the products for income generation.

A recent research paper by Ajaz Ahmed investigated the situation of NWFPs and suggested future guidelines for proper planning and management.

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PARAGUAY

Sweet herb may be green gold for Paraguay

Paraguay is hoping a small herb that is not trafficked, addictive, or even fattening, could prove to be the real thing that the food industry has been waiting for.

Stevia (*Stevia rebaudiana bertoni*) has been used for centuries by the Guarani native people to sweeten their drinks, since it is 300 times sweeter than sugar with none of the calories. Now the 60-cm high shrub has caught the eye of Coca-Cola, and its small Latin American home is hoping the cash tills will soon start ringing.

Coca-Cola and Cargill, one of the top United States food companies, recently unveiled plans to make a *stevia*-based sweetener under the trade name Rebiana.

And even though the herb is not yet authorized for consumption in the United States and has only a limited use in the European Union, it is already popular in Asia where China has planted thousands of hectares of rural land with the shrub.

"World demand is enormous," said Nelson Gonzalez, head of the Stevia Chamber of Commerce, a trade group of producers under the aegis of Paraguay's Ministry of Industry. "But the sugar lobby wants to stop the importation of this natural, safe, revolutionary product."

Studies at the medical school at the University of Asunción found that *stevia* had a long list of beneficial properties, being an antioxidant, anti-inflammatory and an antibacterial agent useful in the battle against diabetes, high blood pressure and tooth decay. But it is finding it hard to shake off fears over carcinogens which have dogged its sister, chemically manufactured sweeteners, saccharin and aspartame.

In ten years, plantations of *stevia*, which is native to northwest Paraguay, have grown from 350 to 1 500 ha. Officials hope to increase this figure tenfold over the next five years through cloning, which is more effective than planting the seeds. However, the largest producer of *stevia* is not Paraguay, but China, which has 20 000 ha under cultivation.

Paraguay's *stevia* pioneer, the company Emporio Guarani, grows the plant and extracts the sweetener in its plant in Luque, 10 km outside Asunción, and is not worried by China's influence on the market. "The land of *stevia* is right here," said manager Maria Teresa Aguilera, whose phone has not stopped ringing with calls from companies around the globe, following Coca-Cola's announcement. "Thanks to our climate, we can raise three crops while China grows one," she said.

Besides its claims to safety, *stevia* has another advantage over aspartame: it is stable to 200°C so it can be baked.

A kilogram of *stevia* crystals, extracted from 12 kg of leaf, is worth US$40 to $100, depending on its purity.

Knowing that Paraguay, half of whose six million inhabitants live in poverty, may be sitting on a gold mine, authorities are now launching a bid to win international recognition as the *stevia* plant's country of origin. (*Source*: Independent Online [South Africa], 18 July 2007.)

PERU

Maca (*Lepidium peruvianum*) benefits United States consumers and Peruvian economy

Nine years after medicine hunter Chris Kilham took an exploratory trek to the Peruvian highlands, a treasured traditional superfood called *maca* has entered the United States consumer mass market. Now Wal-Mart has placed Medicine Hunter Maca Stimulant® on the shelves of 3 480 stores, coast to coast.

According to ethnobotanist Kilham, who is Explorer in Residence at the University of Massachusetts, "*Maca* is one of the greatest superfoods of all time and makes people feel very good very quickly."

Two thousand years ago, the legendary *maca* root was valued as gold and traded as currency in the ancient Incan culture. History books record Incan warriors eating it to attain fearsome prowess in battle.

A member of the mustard family, the plant grows under the most inhospitable conditions, in poor "moonscape" soil where the air is thin and the sunlight and wind are extremely harsh. Local harvesters today grow *maca* for its medicinal root, which they use as a staple in their diet and export worldwide as a mega-energy food and potent sex booster for both men and women.

In addition to the United States consumer, the beneficiaries of Kilham's work are the Peruvian harvesters who can now earn a decent wage from cultivating *maca*, which is a better option than the gruelling, dangerous and low-paying toil of mining, their only other source of income. (*Source*: ENN News, 27 September 2007.)

PHILIPPINES

Establishment of a rattan plantation

A Japan-based international agency has provided a financial grant to help underwrite the establishment of a rattan plantation in Mindanao. The plantation will be set up at a government experimental forest in Kidapawan City, North Cotabato, with the support of the International Tropical Timber Organization (ITTO). The grant was provided by ITTO to the Department of Environment and Natural Resources-Ecosystem Research and Development Services (DENR-ERDS) in Region 12 (central Mindanao).

Dr Bighani Manipula, acting regional technical director for research of DENR-

Region 12, said that the project will showcase the rattan seedling technology developed by the research sector and will employ the community-based approach in managing the plantation. Immediate stakeholders will be tapped as partners in developing, managing and protecting the plantation instead of just treating them as "resource users and beneficiaries", Manipula said.

As an initial activity, the project management team recently met the local community to brief them on the project. The stakeholders will also be taught about rattan production – from seed harvesting to nursery management and plantation development. The project is expected to enhance and rehabilitate the 30-ha teak and rubber plantation that DENR-ERDS set up in 1985. (*Source: The Philippine Star*, 5 October 2007.)

"Riches of the forest: fruits, remedies and handicrafts in Latin America"

The Bulacan Province aggressively promotes bamboo farming

The Bulacan government has launched an aggressive campaign to boost the bamboo industry, especially targeting regions along the rivers.

Global demand for bamboo has suddenly surged as its fibres can now be transformed into cloth. Cultivating bamboo in test tubes not only yields large amounts but has also been perceived as an easier method. Researchers have developed innovative means of cultivation that result in swift production of the plant. Bamboo has generated curiosity in the textile industry; its fibre has been recognized as both durable and soft and can also be produced at low cost.

Not only this, bamboo is one of the most environmentally friendly products. Experts say that bamboo releases almost 35 percent oxygen and helps purify the air. Plantations on riverbanks also help control floods.

Recognizing all the benefits, the government is encouraging local people to indulge in bamboo farming. This will also provide livelihoods in the domestic handicraft industry. (*Source*: Fibre2fashion.com [India], 29 August 2007.)

REPUBLIC OF KOREA

Korean ginseng products receive recognition as distinct food

The Republic of Korea's ginseng-derived products have received initial recognition as distinct foods by an international standard-setting commission, the Government said on Sunday.

The Ministry of Agriculture and Forestry said that the Codex Alimentarius Commission (Codex) had approved food standards forwarded by the country on dried and liquid extracts of ginseng. The ministry said that the decision made by a gathering of food experts in Rome to pass the food standards for ginseng is positive for exports. The Republic of Korea considers the root a health food but some countries classify it as a medicinal substance. Medicinal substances operate under different import rules from ordinary food, which makes trading them more difficult.

The latest decision by Codex will be forwarded to member countries of the organization for feedback. That feedback and the initial review will then be examined in detail by a subcommittee board before an international standard is established. (*Source: Yonhap News* [Seoul], 15 July 2007.)

SOUTH AFRICA

Recipe for making traditional "mukumbi" *marula* beer

Marula beer is brewed from the fruits of *Sclerocarya birrea*. Drinking *marula* beer is a social and cultural event in South African rural areas, and people gather every year to drink it.

Currently, commercialization of *marula* beer is growing in most urban areas. People, especially women, sell the beer for income generation. A litre costs R2 on the urban market.

Making the beer is a skill, but that skill can be transferred to others. The followings are simple steps on how to make *marula* beer.

- Collect fallen *Sclerocarya birrea* fruits and allow them to ripen fully at home. They will change their colour to yellow.
- Use a fork to remove the outer layer and squeeze it from side to side.
- Put only the juice and seeds in a 20-litre bucket, until it is about 15 litres.
- Add 5 litres of water to the bucket and press down to mix with a wooden spoon.
- Remove the seeds by squeezing the juice from them.
- Leave the juice in the bucket left for about four days to ferment.
- Before drinking *marula* beer, the thick *dangwa* layer on the top must be removed although some people drink with it to clean their digestive system.
- Sometimes the beer is preserved for several months in a big clay pot called *mvuvelo* and then drunk as a fully matured beer – *lutanda*.

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Traditional medicine for HIV to go on trial

Clinical trials to test a traditional medicine's effectiveness in delaying the onset of AIDS in HIV-positive patients will begin in South Africa within weeks, according to researchers.

Approximately 125 HIV-positive patients at Edendale Hospital in Pietermaritzburg in KwaZulu-Natal Province will take part in trials of the herb *Sutherlandia frutescens*, a well-known South African traditional medicine. The purpose of the trial will be to test the safety and effectiveness of capsules of *Sutherlandia* in patients newly diagnosed with HIV. Results are expected by August 2009. The research will be conducted by the South African universities of KwaZulu-Natal and the Western Cape, along with the Traditional Healers' Association of South Africa and the University of Missouri in the United States of America.

Traditional healers use *Sutherlandia frutescens*, sometimes known as "cancer bush", to treat a host of ailments from weight loss to aches and pains. *Sutherlandia* has several active ingredients, said Quinton Johnson, one of the study researchers and director of the International Centre for Indigenous Phytotherapy Studies at the University of the Western Cape. The plant contains pinitol (a compound with antidiabetic properties), canavine (used by traditional healers to treat wasting diseases such as tuberculosis) and the amino acid GABA, which produces a feeling of well-being.

Nceba Gqaleni, Deputy Dean of the University of KwaZulu-Natal's Nelson R. Mandela School of Medicine, said this was the first collaboration between scientists and traditional healers to assess the

effectiveness of indigenous practices in treating such a serious health issue.

According to Sazi Mhlongo, Chairman of the Traditional Healers' Association of South Africa, the plant is "the most powerful of our herbs, which we mix with other herbs to treat a lot of different problems". Mhlongo, who has practised as a traditional healer in KwaZulu-Natal for 34 years, said traditional healers have become increasingly aware of the herb's success in treating HIV-positive patients. Patients who took it "felt better", he said. (*Source*: SciDev.Net, 4 September 2007.)

UGANDA

Uganda's "sex tree" under threat

The soaring demand for a tree which some Ugandans believe can boost a man's libido and virility, may lead to its extinction, researchers warn. The most popular part of the slow growing *Citropsis articulata* tree, locally known as *omuboro*, is its roots. Ugandan lecturer Maude Mugisha says this means the whole tree is uprooted to satisfy consumer needs.

Found mainly in forest reserves, the tree's aphrodisiac qualities are yet to be scientifically proven.

The experts' concern was revealed during a symposium in the Ugandan capital, Kampala, on conserving and improving the use of endemic plant species. A by-product of the tree was actually on sale outside the conference venue. The vendor said he had been growing the tree himself and extracts a powder that is steeped in hot water and drunk as a beverage.

It is said that the tree's stimulating effects are only evident in men. (*Source*: BBC News [United Kingdom], 25 July 2007.)

Uganda risks losing EU honey deal

It has been two and half years since the European Union listed Uganda among those countries entitled to export honey but not one single consignment has ever been sent. After listing, Uganda was given an opportunity to export 200 tonnes of honey annually but this volume has never been realized, despite the good quality of the honey present in the numerous tests and certification procedures undertaken countrywide and verified in Germany.

The President of the Uganda National Apiculture Development Organization (Tunado) is worried that failure to comply soon will result in the country being de-listed. If this happens, it will not only ruin the country's reputation and lose trust in the EU market, which is still Uganda's largest single exporting destination, but is also frustrating in the efforts to eradicate poverty.

Stakeholders are blaming the government's failure to help local farmers to access facilities that could help them harvest and produce the honey in a manner that is recommended by EU certification standards. For commercial purposes, a single farmer may require up to USh4 million to produce high-quality honey.

The trend in world supply has continued to rise, but earnings have declined by about US$20 million (USh35 billion). (*Source: The Monitor* [Kampala], 3 October 2007.)

UNITED REPUBLIC OF TANZANIA

Beekeeping in Umalila

Beekeeping is an important secondary industry in Umalila. Many of the beekeepers are elderly, however, and beekeeping does not appear to be attractive to most young people. In addition, much of the original forest is in a degraded state and is being gradually lost to logging and cultivation.

As the forest has traditionally produced the bulk of the honey, the future for beekeeping is uncertain. This is more than unfortunate for three reasons.

- Beekeeping could provide a useful income, particularly for young people, many of whom do not have access to land unless they hire it.
- Bees are important for the adequate pollination of crops such as passion fruit.
- It is traditional to site hives in areas of forest thus affording some protection for the remaining patches of indigenous forest. One tree in particular, *impembati* (*Polyscias fulva*), is frequently used and even planted because of its branching habit and thus its suitability for the placement of hives.

Beehives are traditionally constructed from *iliogoti* (*Hagenia abyssinica*) and *Ilangali* (*Euphorbia nyikae*). Now they are usually made from *Euphorbia nyikae* and *Cupressus lusitanica*.

The hives are approximately 1 m long and divided into two halves. These are bound together with a cord made from *isintu* (*Ipomoea involucrata*) or other creepers. Hives are always placed in trees, mainly to keep flying bees above people living nearby or cultivating surrounding crops; to catch the warmth of the early sun, particularly during the dry season when it can be cold at over 2 000 m; and to provide some protection from pests. The two halves of the hive are hauled up and assembled high in the tree and then covered over with bamboo sheaths, supported and held down with sticks. The hive is baited with beeswax, which is normally effective in attracting a colony to enter.

When harvesting honey, the beekeeper uses lit pieces of bamboo of *ipekeso* (*Conyza bonariensis*) stalks surrounded by *igawo* (*Ensete ventricosum*) wild banana leaves to produce smoke, but he can nevertheless get badly stung. Sometimes he will lower the hive to the ground where two forked sticks are used to support the hive. Harvesting can then be carried out more easily as most of the flying bees will return to the original hive site in the tree. Not all combs are taken during harvest. Some of the honey is left, together with brood combs.

There is normally a small harvest at the end of June (up to 10 litres) but the main harvest takes place in November and December when between 18 and 25 litres can be collected.

Honey has a ready local market, mainly eaten in the comb. Wax is sold separately from the honey and is used by local carpenters and for shoe repairs. (*Source*: extracted from Latham, P. 2007. *Plants visited by bees and other useful plants of Umalila, Southern Tanzania*.)

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UNITED STATES OF AMERICA

Ginseng labelling act introduced in Congress

Legislation was introduced in both the United States Senate and House of Representatives yesterday that would require that ginseng (*Panax* spp.), when sold in its whole form, is labelled to identify its country of harvest.

Senate Bill 1953, the Ginseng Harvest Labeling Act of 2007, was sponsored by Sen. Russ Feingold (D-WI) and Sen. Herb Kohl (D-WI), while the companion bill, House Resolution 3340, was introduced by Rep. Dave Obey (D-WI). In his floor statement, Sen. Feingold noted that the bill has long-standing support from ginseng farmers and the Ginseng Board of Wisconsin as well as the support of the American Herbal Products Association (AHPA) and the United Natural Products Alliance.

Feingold stated that ginseng grown in Wisconsin – where 90 percent of United States ginseng is cultivated – "is of the highest quality", but that "smugglers will go to great lengths to label ginseng grown in Canada or Asia as Wisconsin-grown". He also stated that this legislation is intended to correct the problem and is "a simple but effective way to enable consumers to make an informed decision".

"This bill will ensure that buyers of whole ginseng root are given truthful information as to its source, without creating unnecessary labelling requirements for other herbal ingredients or for finished herbal products," said Michael McGuffin, AHPA's president. (*Source*: American Herbal Products Association, 5 August 2007.)

UZBEKISTAN

Sale of NWFPs

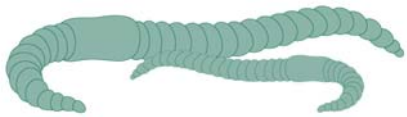
The sale of wood and non-wood forest products by forestry enterprises generates 300–350 million Uzbek sum in annual income (see Table). Currently, more than 500 tonnes of food and medicinal plants (about 35 plant species) are harvested from the forests.

NWFPs include plants such as coriander, basil, fennel, onion anzur, dog rose and raspberries. In addition, saplings and seeds of various woody and bush species are exported. For example, in 2004 seedlings of woody and bush species were donated to Afghanistan for gardening.

A big threat to the sustainability of forest resources is the illegal logging of trees and shrubs for fuel. This is mainly recorded in remote saxual forests in deserts far from forestry enterprises and forest guards. (*Source*: United Nations Economic Commission for Europe (UNECE)/FAO. 2006. *Forest and forest products country profile. Uzbekistan*. Geneva Timber and Forest Discussion Paper 45. EC/TIM/DP/45.)

Income from forests in Uzbekistan, 2004

Product or service	Income US$1 000	%
Industrial roundwood	184.8	58.8
Woodfuel	49.3	15.7
Medicinal plants	27.02	8.6
Aromatic plants	0.94	0.3
Raw material for colourants and dyes	1.29	0.4
Hunting	38.43	12.3
Fishing	12.31	3.9
TOTAL	**314.09**	**100**



VIET NAM

Salt-marsh forests threatened by illegal digging for impotence-curing worms

Increasing numbers of people are visiting the Can Gio salt-marsh forest to dig for Dia Sam (*Sipunculus*). According to Tran Minh Long, the leader of Loi forest guards at An Binh Hamlet, An Thoi Dong Commune in Ho Chi Minh City, this activity seriously damages the forest's ecological system.

Dia Sam is a type of worm that plays an important part in enriching the ground and helping forest trees to grow better.

"Recently, Dia Sam has become a special dish in Ho Chi Minh City and is also exported to China. That's why digging for worms in the forest has become so popular," said resident Sau Xe. Dia Sam often hide on wet land under bushes. People can dig them up easily and only need to use a hoe. A regular digger can collect 3 kg of Dia Sam per day. As 1 kg of the worms fetches VND12 000, a digger can earn a generous income that pays much more than other jobs.

Rach Moc, a protected forest, is considered the best place to dig for Dia Sam. More and more people are visiting the area to dig for the worm illegally. "It is difficult to arrest people because they go further and further inside the forest and use sophisticated camouflage to hide in the bushes and trees," said the leader of Thanh Nien Guard.

Because of lack of knowledge about forest protection, most diggers just think of their own immediate benefits. They do not realize that digging Dia Sam damages forest land and tree development or that their activities have a destructive effect on the whole ecological system. Once the Dia Sam are caught, many old mature forests are destroyed. The forestry situation is getting worse without the Dia Sam to help improve the quality of the soil. Can Gio is crying out for help to stop widespread hunting of Dia Sam. (*Source: Vietnam News*, 28 July 2007.)

Handicraft exporters target key markets

The handicraft industry has increased export value by nearly 30 percent in the last three years but needs to reform to compete with other regional exporters, according to industry insiders. In 2004 the industry earned US$450 million and $630.4 million in 2006, which accounted for 3 percent of the country's total exports. Since 2000, the industry has focused efforts to expand exports to potential markets, including the United States of America, the European Union, Japan, the Russian Federation and the Association of Southeast Asian Nations (ASEAN) countries. Of these, the EU accounts for 50 percent of Viet Nam's total handicraft exports, followed by Japan and the United States.

The handicraft industry has created jobs for more than 1.35 million workers, 60 percent of whom are women. Most women make rattan and bamboo articles, weave carpets and sleeping mats and make embroidered products.

Nguyen Van Sanh, deputy director of the Mekong Delta Development Research Institute, said that despite the industry's contributions to increase export revenue and hasten rural economic restructuring, the handicraft and arts industry still faces challenges. The industry is plagued with outdated designs and high delivery and transport fees that make it less competitive than China, Thailand and other ASEAN countries, particularly in the United States and the EU. According to Sanh, the industry needs to expand planting areas for materials and reform production and processing methods. (*Source: Vietnam Economic Times*, 11 September 2007.)

Businesswoman brings Sa Pa medicinal plants to the world

A 31-year-old woman, Do Thi Thu Ha, has helped change the lives of ethnic minorities in Sa Pa with her company, trading medicinal plants after many years of living in the mountainous area. In 2002, she was assigned as coordinate officer to a project on developing medicinal plants in Sa Pa sponsored by the New Zealand Agency for International Development and the EU. The project aimed to encourage the conservation of endangered medicinal herbs and improve the livelihoods of ethnic minorities in the Sa Pa district of Lao Cai Province.

After three years' implementation, the project saw some fruitful results. Some overexploited and endangered plants that used to be seen as weeds had become medicinal plants with high prices. The most successful thing, according to scientific researchers, is that these plants could help cure common diseases of a developing society such as depression or Alzheimer's.

The project also discovered a kind of root containing an anticancer active element, which could lead to a turning-point for the inhabitants of Sa Pa, once verified by researchers. Later, intellectual property rights for the project's products will be granted for the benefits of the Sa Pa ethnic community.

In 2005, Ha established a company to sell the products. The company is now busy seeking partners to sell medicinal plants to Australia and New Zealand. Some foreign pharmaceutical firms have asked to buy the company's registered patent for mass production.

Ha's company's medicinal plants preservation project was awarded one of five 2007 Global Supporting Entrepreneurs for Environment and Development (SEED) Awards. "Bridging the Gap", as the project is called, uses sustainable cultivation of traditional medicinal plants to develop high value-added products, the manufacturing and proceeds of which improve the livelihoods of ethnic minority communities, according to the United Nations.

Over the next 12 months, each of the five SEED award recipients will receive targeted support services designed to expand their initial ideas and projects into a socially, economically and environmentally sustainable enterprise. With SEED support, exports of medicinal plants in Sa Pa into foreign markets are quite likely in the near future.

In September 2007, Bridging the Gap was filmed for a BBC television programme. (Sources: Vietnam net, 3 July 2007 and Sacred Earth, 27 August 2207.)

Traditional medicine in Viet Nam: an overview

Viet Nam has a long history of traditional medicine (TM) practices spanning thousands of years. Two, often interlinked, forms exist within the country: *thuoc bac*, or traditional Chinese medicine (TCM), is the dominant system in the north and uses materials native to China; and *thuoc nam*, or traditional Vietnamese medicine (TVM), which predominates in the south and uses Vietnamese materials.

Traditional medicines in Viet Nam are made from animal, plant and mineral products. Plants are used in far more remedies (over 90 percent) than animals, and most animal-based medicines also include plants to neutralize unpleasant odours and increase their overall effect. All parts of a plant can be used. Similarly, many different animal parts are used, from whole bodies to specific organs.

Of the more than 80 million people in Viet Nam, over 75 percent are estimated to use TVM as their primary source of treatment for common health problems. This is perhaps unsurprising considering the prohibitive expense of western medicines, combined with poor access to hospitals or community health centres. Together with increasing demand from urban areas, exploitation of medicinal plants and animals has risen to pose a serious threat to some species in Viet Nam – around 70 species are listed as threatened on the World Conservation Union (IUCN) Red List. The current Viet Nam Red Data Book lists 359 animals of conservation concern, many of them traded and used for medicinal purposes, including tigers (*Panthera tigris*), rhinoceros (*Rhinocerotidae* spp.) and bears (*Ursus* spp.).

The impact of exploitation of wild medicinal plant species is less well documented, but may be equally severe, especially as over 90 percent of the 3 900 plant species used in traditional medicine are wild harvested. The uncontrolled harvest of wild medicinal plants in Viet Nam, particularly on a commercial scale for processing and export by the pharmaceutical industry, along with habitat loss and degradation, are considered to be the primary causes for the decline of 136 species, 18 of them classified as Critically Endangered by IUCN. Several other species have declined so much in the wild in Viet Nam that they now have to be imported by the major pharmaceutical companies.

Regulation and testing (quality control) of the trade in medicinal plants and animals are poor. Current legislation is old and has many gaps, and only applies to state-run companies and institutions. Within private industry there is no official regulation (either administration or enforcement) of activities. With such a complex structure, some of it "underground", planning to regulate this large private industry will be a huge challenge in the coming years. (*Source: Traffic Dispatches*, 26, November 2007; http://www.traffic.org/content/1036.pdf)

ZAMBIA

Beekeeping has a long and old record in Zambian culture and there are few Zambians who do not understand about bees being helpful to humans. Most of the beekeeping methods used are of local origin, and most commonly used is the bark hive.

A tree is chosen with the desirable diameter and is then utilized to its fullest to avoid deforestation. One fully grown tree can produce about ten hives each measuring up to 1.2 m in length. This measurement is used to allow the beekeeper easy access to the combs from both ends.

When the site for the apiary has been chosen, the hive is hung high in the tree to secure it from attack by honey badgers. (*Source: Bees* for *Development Journal*, 83, June 2007.) ♣

If you can walk you can dance. If you can talk you can sing.

Proverb, Zimbabwe

AFRICA'S DRY FORESTS

The dry forests of sub-Saharan Africa cover over 40 percent of the continent and are home to more than 230 million people. Many of the poorest people on Earth live in and around the forests and depend on them for their survival and their meagre incomes. Over much of Africa, dry forests are suffering from overuse and severe degradation, and this makes it even harder for rural communities to lift themselves out of poverty. During the past three years, CIFOR's Dry Forests Project has sought to stimulate dialogue among a wide range of stakeholders. Besides alerting policy-makers, resource managers and the international community to the importance of dry forests, the project has been strengthening research capacity within Burkina Faso, Ethiopia, the United Republic of Tanzania and Zambia in order to promote sustainable forest management and enhance local livelihoods.

According to forester Daniel Tiveau, CIFOR's regional coordinator for West Africa, it is high time we paid more attention to Africa's dry forests. "Over the past decade, world attention has tended to concentrate on the destruction of tropical rain forests, even though worldwide degradation and conversion of dry forests is far more advanced than that of wet forests," he says. "They provide construction material for farms and homes, dry-season fodder for Africa's vast livestock populations, as well as wood fuel, medicinal plants and many other products."

The role that dry forests play in supporting hundreds of millions of people is described in a Forest Livelihoods Brief – *The wealth of the dry forests* – published by CIFOR in 2006. Among many other outputs, three reports focused on particular aspects of dry-forests management and husbandry in Zambia, Burkino Faso and Malawi. (*Source*: Center for International Forestry Research (CIFOR) Annual Report 2006, *Building on success.* www.cifor.cgiar.org/publications/pdf_files/AReports/AR2006.pdf)

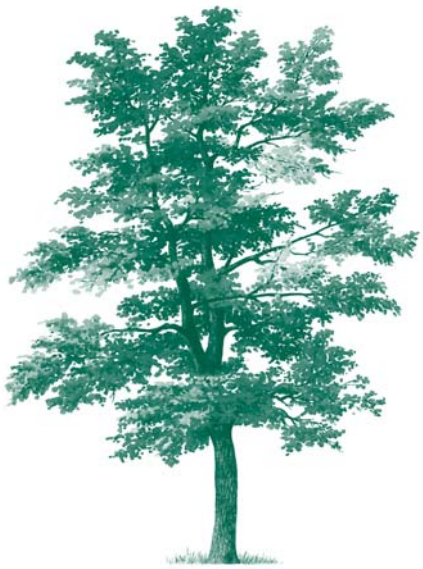
AMAZON RAIN FOREST AT RISK FROM INITIATIVE TO CONNECT SOUTH AMERICAN ECONOMIES

An unprecedented development plan to link South America's economies through new transportation, energy and telecommunications projects could destroy much of the Amazon rain forest in coming decades, according to a new study by Conservation International (CI) scientist Tim Killeen. However, Killeen reports that such a disastrous outcome could be avoided if steps are taken now to reconcile the legitimate desires for development with the globally important need to conserve the Amazon ecosystem.

His 98-page report, entitled "A perfect storm in the Amazon wilderness: development and conservation in the context of the Initiative for the Integration of the Regional Infrastructure of South America (IIRSA)", offers pragmatic approaches for resolving the enduring paradox between economic development and environmental protection. (*Source*: ENN News, 2 October 2007.)

COALITION FOR RAINFOREST NATIONS

The Coalition for Rainforest Nations was formed after a call by the Prime Minister of Papua New Guinea, Sir Michael Somare, in May 2005 and operates as an intergovernmental organization.
The participants within the coalition seek responsible stewardship of the world's last great rain forests through innovative strategies that integrate social, economic and scientific rationales to achieve environmental sustainability. The Coalition's mission seeks to underpin lasting environmental sustainability and economic advancement with strengthened technical capacity and international market reform designed to enhance tropical forest stewardship, biodiversity conservation and global climate stability.



The coalition endeavours to move from unsustainable to sustainable use of forests and, in the process, members will be able to:

- manage tropical rain forest areas in support of climate stability, biodiversity conservation, sustainable development and poverty alleviation;
- improve the living standards of people living in forest areas;
- guarantee the long-term security of their living standards; and
- set a precedent for other similarly forested countries.

The coalition seeks to achieve environmental sustainability by developing viable economic alternatives for tropical forest resource owners through:

- utilizing selective logging practices;
- harnessing and remunerating the carbon sequestration and absorption capabilities of the rain forest;
- valuing biodiversity;
- facilitating ecofriendly community businesses; and
- avoiding deforestation and the associated pulsed releases of carbon.

Such innovation is necessary in order to reduce the destruction of the tropical rain forest while creating sustainable social and economic development.

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ENVIRONMENTAL CERTIFICATION AND ITS ROLE IN THE ECONOMIC GROWTH OF AMAZONIA

In addition to being one form of preservation, environmental certification in community forests is also a primary factor for sustainable economic growth in these areas, providing market credibility to production, political organization to communities and control over prices. This is the conclusion of the doctoral thesis "Certificação Ambiental – Uma estratégia para a conservação da Floresta Amazônica" (Environmental certification – a conservation strategy for the Amazon rain forest), by researcher Raimundo Maciel, which was recently defended at Campinas State University.

The study was based on Brazil nuts produced and exported by the Chico Mendes extractivist reserve and concluded that "environmental certification in community forests provides forest producers with fair prices, precisely because they effectively participate in the management and find niches in markets for sustainable products".

Maciel, who is also coordinator of the project, Economic Analysis of Basic Rural Family Production Systems in the Acre Valley (ASPF) of the Federal University of Acre, also pointed out that certifications need to be conducted on three levels: forestry, organic production and socially. "Triple certification [of Brazil nuts] was decisive in enabling producer cooperatives in the study region [...] to sell to the demanding European market, in particular the fair trade market niches, currently in rapid expansion", the study reports.

Even though reserves, a set of public policies and local associations would ensure sustainability of forest products, attention should not only be focused on the market. "A balance must be found between production capacity and market demand. Production does not necessarily have to be determined by the market, on the contrary, the market must adapt to natural resource products, even renewable ones", Maciel points out.

He also concluded that communities naturally concern themselves with economic use of the forest, as these practices directly impact their habitat.

The idea of forming certified extractivist reserves is basically a form to achieve local economic development. In his research, Maciel also addresses economic organization and migration of forest peoples to urban areas and highlights: "Remaining forest populations have been driven to urban areas as if they were being freed from the poverty and hardships of the forest, when historically the inverse is true, people living on urban outskirts are becoming increasingly poor and unviable." (*Source*: Amazonia.org.br, 5 September 2007.)

MINING AND DEFORESTATION

Increased mining activity in the Democratic Republic of the Congo (DRC) is not only fuelling violent conflict but is also contributing to deforestation and loss of wildlife in valuable rain forest regions. One driving force behind excessive mining in Africa is the growing consumer demand for electronic devices such as cell phones, computers and hand-held technological instruments.

Columbo-tantalite, or coltan, is at the root of electronics-related deforestation. Coltan is refined into tantalum, which is efficient in holding high electric charges. For this reason, coltan is in high demand in a growing age of electronic gadgetry.

The DRC holds 64 percent of the global coltan supply. Two-thirds of the Congo rain forests are within the DRC. An estimated 40 million people depend upon NWFPs from these forests for survival – both hunting and gathering food – and have done so for thousands of years. Kahuzi Biega National Park is one endangered region. Large numbers of people moved to the region and built mining camps as they flocked to set up house and work the mines. Deforestation and wildlife loss are already problems; clearing land for camps and killing animals for food have exacerbated the situation.

Recycling electronic products and researching the manufacturers can help minimize the environmental mining damage in the DRC and around the globe. (*Contributed by*: Rebecca Arrington, Side Porch Ind., LLC, 2705 W. Zenith Dr., Milford, Mi 48380, United States of America. E-mail: sideporchindllc@aol.com)

PICKING BERRIES PROTECTS RAIN FORESTS BEST, STUDY SHOWS

According to a recent study, small community projects for picking fruits and nuts are the best way to alleviate poverty and protect the Amazon and other tropical forests, but are largely ignored by governments. Communities harvesting natural products generate more long-term income than many national parks or big timber companies, said a report by the International Tropical Timber Organization (ITTO) released at a forestry conference in northeastern Brazil. "Someone depending on a forest for income and habitat will look after it," said Andy White, one of the report's authors. "We need people in forests."

The 200-page report is based on 20 case studies on three continents, ranging from raising bees in Africa to making bamboo chopsticks in China.

The ITTO, an intergovernmental group promoting the conservation and trade of tropical timber, says communities living in the forest have a "longer time horizon for resource management" than big timber companies. For example, in Nepal, the extraction of juice from the Bel tree by local communities is rejuvenating degraded forests and helping prevent unsustainable timber extraction, the report said.

Community forest management has increased in recent years with political decentralization and the recognition of historic land tenure rights in several countries. But such efforts must overcome red tape, competition from big business and government indifference, the study said.

In Brazil, local forest communities are often displaced by loggers, farmers and miners, and many lack the infrastructure to bring products to the market.

"If the government dedicated only a fraction of its farm aid to forestry management, you would see a

conservation revolution in the Amazon," ITTO Executive-Director Manoel Sobral Filho said. (*Source*: ENN Daily News, 18 July 2007.)

PUTTING A MONETARY VALUE ON BIODIVERSITY

Placing monetary value on biodiversity is no easy task, say experts from the Forest Research Institute of Malaysia (FRIM). But this is what they want to do. They are working to come up with a predictive model that will help calculate the opportunity cost of logging forest areas by placing a quantitative value on the biodiversity.

As such, flora and fauna will be calculated in terms of *ringgit* and *sen* to enable a comparison between the cost of timber produce and the cost of non-timber produce at a specific jungle site. To calculate the value of bats, one could use the cost of durian trees as the basis, since bats were the main pollinators of durians, said project director Dr Shamsudin Ibrahim. "No bats, no durians," he said, adding that monetary value for bats could equal the current cost of durians.

The US$5.67 million (RM19.6 million) project, the first of its kind in the world, was aimed at helping those involved, especially contractors, make more "informed decisions" about cutting down forests, he said.

Shamsudin added that the success of the "Conservation of Biological Diversity through Improved Forest Planning Tools in Operation" project would showcase Malaysia as a leader in sustainable tropical forest management. "Should we succeed in coming up with a practical, easy and cost-effective tool to calculate the monetary cost of biodiversity within a targeted production forest area, we will be the pioneers in this sector." One criterion is that the tool can be replicated to be used in other tropical forests around the world.

The project was mooted by former FRIM scientist Dr S. Appanah and American forest scientist Dr Peter Ashton. It took them six years to get the project off the ground and obtain funding from the Global Environment Facility. The Perak Integrated Timber Complex has been chosen as the project site.

Project manager Dr Woon Weng-Chuen said that one of the easier methods to calculate the value of the biodiversity of a

specific forest area was to consider the extent of ecotourism the area could attract. The amount of non-timber forest produce collected from the area and sold by the indigenous people could also assist in the value calculation. "This will give us an idea of the opportunity cost of logging that area."

The bigger elements to consider in terms of opportunity cost would be how the forest area contributes towards flood mitigation or acts as water catchment areas with natural filtering systems. (*Source: New Straits Times* [Malaysia], 28 June 2007.)

THE 2010 BIODIVERSITY INDICATOR PARTNERSHIP

The United Nations Environmental Programme (UNEP) has inaugurated a multimillion dollar effort to track the fate and fortune of the world's biological diversity. Funded by the Global Environment Facility (GEF), the 2010 Biodiversity Indicator Partnership (http://www.twentyten.net/) aims to complete a set of indicators that will allow the international community to assess better whether conservation efforts are succeeding towards the target of "reducing the rate of loss of biodiversity by 2010".

Under the new US$8.8 million partnership, which has secured over $3.6 million from GEF, a wider range of existing and new indicators will be brought together to gain greater and deeper insight into whether the 2010 biodiversity target is on course. Some of the new indicators, emerging from a list chosen by the Convention on Biological Diversity (CBD), include threats to biodiversity; the degree to which forests, farmlands and fisheries are managed in a way that protects biodiversity; the extent to which people are affected by changes in biodiversity and the contribution of traditional knowledge to the biodiversity target.

There will also be a focus on the components of biodiversity, including genes, species and ecosystems. Several of the new indicators will require a comprehensive gathering of data exercise, including trends in the spread of invasive alien species and in the health and well-being of communities dependent on the goods and services provided by local ecosystems. (*Source*: Afrique en ligne [France], 18 July 2007.) ♣

A forest bird never wants a cage.
Henrik Ibsen

FAO

RIGHT TO FOOD

On 16 October 2007, FAO celebrated World Food Day with the theme "The Right to Food". The right to food is the right of every person to have regular access to sufficient, nutritionally adequate and culturally acceptable food for an active, healthy life. It is the right to feed oneself in dignity, rather than the right to be fed. With more than 850 million people still deprived of enough food, the right to food is not just economically, morally and politically imperative – it is also a legal obligation.

Since 1996, following the World Food Summit, FAO has been working with governments and communities worldwide to gain recognition for this basic human right.

Severe food insecurity affects at least one-seventh of the world's human population.

Given the persistent high numbers of undernourished people, in June 2002, the "World Food Summit: five years later" decided to develop guidelines to support Members' efforts to realize the right of everyone to adequate food. In 2004, after intensive negotiations, the Right to Food Guidelines were adopted unanimously by FAO members. FAO set up a Right to Food Unit to support member countries in the implementation of the guidelines.

The guidelines are a practical tool to assist countries in their efforts to eradicate hunger. They provide a set of coherent recommendations on, among others, labour, land, water, genetic resources, sustainability, safety nets, education and the international dimension. They also encourage the allocation of budgetary resources to antihunger and poverty programmes, such as those currently being undertaken in Brazil and Mozambique.

By recognizing the right to food, governments have an obligation to respect, protect and fulfil this right. In order to achieve the World Food Summit objective and Millennium Development Goal number one of reducing hunger by half by 2015, efforts are needed to give a voice to the hungry and to strengthen governments' capacity to meet their obligations.

"Riches of the forest: fruits, remedies and handicrafts in Latin America"

"The right to food is not a utopia. It can be realized for all. Some countries are on the way to doing this, but everyone should contribute to make this happen," says Barbara Ekwall, Coordinator of the Right to Food Unit.

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La contribución de los productos forestales no madereros al derecho a la alimentación

¿Como reforzar un enfoque basado sobre los derechos humanos?

El derecho a una alimentación adecuada y su aplicación, en línea con las directrices voluntarias en apoyo a la realización progresiva del derecho a una alimentación adecuada, tiene una directa implicación con la necesidad de un manejo adecuado de los bosques, requiriendo un marco legal que integre disposiciones con miras a favorecer los derechos relativos al acceso a los recursos naturales.

Los productos forestales no madereros (PFNM), por ejemplo, ejercen una importante función como proveedores de alimentos (frutas, semillas comestibles, plantas medicinales y miel). Disposiciones de ley deberían mencionar la necesidad de un acceso justo y equitativo a tales productos por parte de los grupos más necesitados.

Hay también que tomar en cuenta los múltiples factores que contribuyen a mejorar la seguridad alimentaria a través de una reglamentación apropiada, considerando la necesidad que instancias, autoridades pertinentes y mecanismos adecuados hagan valer los derechos de los grupos más vulnerables.

Recientes disposiciones en Honduras y Nicaragua (véase pagina 56) reglamentan algunos aspectos de los PFNM, cuya contribución para la seguridad alimentaria podría ser aún más relevante si se tuviera en cuenta su potencial.

A veces, la falta de conocimiento de su valor comercial, no atrae el interés en tomar acciones para reforzar un marco legal que evidencie la necesidad de incrementar su uso sostenible y su producción en beneficio de las poblaciones nativas.

Sin embargo, esta tendencia se está revirtiendo tanto en Honduras como en Nicaragua, las leyes forestales vigentes incluyen disposiciones específicas para promover la compensación por bienes y servicios ambientales derivados de un manejo sostenible de los recursos provenientes del bosque como los PFNM. Es primordial que el Pago por Bienes y Servicios Ambientales (PBSA) sea fundamentado en la ley, con el fin de asegurar el derecho de acceso a esos servicios a las poblaciones locales.

En línea con un enfoque basado sobre los derechos humanos, los gobiernos deberían acompañar con acciones concretas estos esfuerzos. A través de mecanismos claros y procesos transparentes se deberían definir responsabilidades y obligaciones derivadas de la aplicación de la ley, en el marco del proceso de descentralización administrativa del sector forestal.

El Comisionado de los Derechos Humanos, asociaciones de la sociedad civil, y ONG podrían ser parte activa de estas iniciativas.

En fin, los PFNM, como bienes ambientales proveedores de alimentos deberían contar con sistemas de valoración adecuados que generen seguridad jurídica y un marco conceptual claro y práctico que permita rescatar con eficiencia la utilidad ambiental, social y económica.

(Aportación hecha por Francesca Felicani Robles, Consultora legal, FAO, Viale delle Terme di Caracalla, Roma 00153, Italia. Correo electrónico: Francesca.felicanirobles@fao.org)

FORESTRY DEPARTMENT

Right to food and FAO forestry activities – the way forward

Incorporating human rights principles into traditional development approaches may supply the "missing element" that has prevented 50 years of development aid from overcoming poverty. Empowerment is a key to moving away from the benevolence model of aid to a sustainable, enabling environment in which people can feed themselves. A rights-based approach can help not only achieve food security, but also meet international poverty reduction goals, while simultaneously recognizing human dignity and the inherent worth of every individual. How is the right to food (RtF) different from usual ways of fighting hunger, poverty and food insecurity? How will this work for FAO? Some points to consider in answering these questions include the following.

- The RtF is a human right.
- For the 156 countries that have ratified the International Covenant on Economic, Social and Cultural Rights, the RtF is a legally binding right.
- Who is responsible for implementing the RtF? How can states achieve the RtF?
- How can people accede, maintain and claim the RtF?
- How does the RtF differ from food sovereignty, food security and other concepts?

In their document "Putting the right into practice – implementing the right to food at the national level", the Right to Food Unit have selected five areas of action as entry points: i) advocacy and training; ii) information and assessment; iii) legislation and accountability; iv) strategy and coordination; and v) benchmarks and monitoring,

FAO and its Forestry Department are currently exploring the ways and means to create a synergy through their activities in order to support member countries to achieve food security and the right to food.

As a first step, four thematic clusters were selected – based on themes, and geographic and opportunities criteria – to explore and facilitate the integration of the RtF principles into the work of the Forestry Department: i) intersectoral linkages; ii) legal framework; iii) NWFPs; and iv) policy and institutions.

By the end of 2007, specific recommendations on how to go forward in the next biennium will clearly define forestry options as a means to achieve the full realization of the right to food for all.

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"Riches of the forest: fruits, remedies and handicrafts in Latin America"

***Unasylva* celebrates its 60th birthday**

FAO's longest-running periodical celebrated its 60th anniversary with a special double issue (*Unasylva 226/227*), reprinting material from every decade of *Unasylva*'s rich history. The selected articles illustrate how "Weaving knowledge into development", the slogan from the March 2007 session of the FAO Committee on Forestry, characterizes what *Unasylva* has been doing for 60 years. Collectively, these articles document the evolution of forestry and of FAO's activities in forestry – and some of the earliest articles may surprise readers by anticipating concepts that we thought were new.

The double issue can be downloaded from: www.fao.org/docrep/010/a1222e/a1222e00.htm

FAO IN THE FIELD

Appropriate legislation: key to a thriving NWFP sector in Central Africa

Millions of people in Central Africa, notably women and minorities, depend on a wealth of non-wood forest resources. These resources enhance food security of the poorest part of the population and increase revenues through commercialization. FAO contributes to the development of the NWFP sector in Central Africa through its projects "Enhancing food security through sustainable use of non-wood forest products in Central Africa" (GCP/RAF/398/GER) and "Mobilization and capacity building of small and medium enterprises in the non-wood forest product value chains in Central Africa" (GCP/RAF/408/EC).

The projects operate within the strategic framework of the *Commission en charge des forêts d' Afrique Centrale* (COMIFAC) and are fully in line with FAO's priorities for the development of the forests of the Congo Basin. These are i) improving the socio-economic conditions of the poorest people, enhancing food security and reducing poverty; ii) reinforcing subregional cooperation; and iii) strengthening data collection and management.

A key activity of project GCP/RAF/398/GER is the improvement of the legal framework in order to ensure that forestry laws promote the sustainable use of NWFPs in Central Africa. The appropriate inclusion of NWFPs in forestry laws is an important precondition for sustainable forest management, allowing local populations to increase their well-being and develop the largely informal but economically important market chains of NWFPs.

To this effect, an interdisciplinary working group has elaborated a subregional model law that provides countries in the Congo Basin with orientations for the integration of non-wood resources in their respective national forestry laws. Experts and government representatives from the subregion met twice and finalized the text online. It is available for comments on the project's Web page at www.fao.org/forestry/site/43715/en. Before its submission to the Executive Secretariat of the Central Africa Forests Commission (COMIFAC) in 2008, the draft will be discussed and validated during a subregional workshop in November 2007.

Whereas the use of wood resources can be directed by relatively clear-cut, uniform legislation, the enormous diversity of NWFPs in terms of use and vulnerability (harvesting impact, scale and intensity of use, perspectives of domestication) requires tailored legislation. Parallel to the subregional harmonization through the model law initiative, project GCP/RAF/408/EC pilots a participatory process to develop product and chain-

oriented legislation. This should lead to the elaboration of appropriate decrees of application for the sustainable use of key products.

An inclusive, participatory approach is believed to create the support needed to bridge the gap between the national legal frameworks and notoriously informal markets. Including stakeholders ranging from producers' associations to the governing institutions, it is expected to promote sustainable use, increase the law-enforcing institutions' legitimacy and allow for an alignment of their capacities with their mandates.

FOR MORE INFORMATION, PLEASE VISIT OUR WEB SITES OR CONTACT: Mr Daniel Knoop, Associate Professional Officer, c/o FAO Representation in Cameroon, PO Box 281, Yaoundé, Cameroon. Fax : +237 2 220 48 11; e-mail: Daniel.Knoop@fao.org; www.fao.org/forestry/site/43715/en (GCP/RAF/398/GER); www.fao.org/forestry/site/43055/en (GCP/RAF/408/EC)

THE 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. INBAR connects a global network of partners from the government, private, and not-for-profit sectors in over 50 countries to define and implement a global agenda for sustainable development through bamboo and rattan.

INBAR's mission is to improve the well-being of producers and users of bamboo and rattan within the context of a sustainable bamboo and rattan resource base by consolidating, coordinating and supporting strategic and adaptive research and development. In their "Decade of Achievements" (1997–2007), INBAR has been active in many countries, covering resource improvement and management; processing and product technology; national and international policy; and human resources development.

To mark its tenth anniversary, INBAR is holding a wide range of different events in late 2007 and early 2008 around the world, from workshops and seminars to festivals and trade fairs. A full listing of INBAR's anniversary events can be found at www.inbar.int/anniversary/main.htm.

INBAR has also recently produced its "Strategy to the year 2015".

FOR MORE INFORMATION, PLEASE CONTACT: INBAR, PO Box 100102-86, Beijing 100102, China. Fax: +86-10-6470 2166/ 3166 ; e-mail: info@inbar.int; www.inbar.int

Over one billion people live in bamboo houses. However, in the absence of recognized bamboo building codes, professional architects cannot legally utilize bamboo as a building material. Insurances and loans are not available for bamboo buildings. The impact of the approval of the Bamboo Building Code developed by INBAR and submitted earlier to the International Standard Organization (ISO) cannot be overestimated. It will boost bamboo building industries worldwide, promote bamboo utilization and lead to safer, environmentally friendly and affordable dwellings, especially in the developing world.

INDIGENOUS ISSUES

The International Work Group for Indigenous Affairs

The International Work Group for Indigenous Affairs (IWGIA) is a non-profit, politically independent, international membership organization that supports indigenous peoples worldwide in their struggle for self-determination. IWGIA's

RIGHT TO FOOD AND INDIGENOUS PEOPLES

Indigenous peoples are among the world's most vulnerable groups and poorest socio-ethnic populations. They make up a significant percentage of the food insecure, often facing chronic hunger and malnutrition.

The Right to Food Guidelines refer to indigenous communities in the context of access to resources and assets. Access to land and other productive resources (forest, fishing, water, etc.) are of vital importance for indigenous people's right to food. The cultural identity and heritage of indigenous peoples are inseparable from their traditional lands. Indigenous peoples obtain food directly from their lands by hunting, gathering or cultivating; they may also acquire food indirectly by marketing their produce.

States have particular obligations concerning the right to food of indigenous peoples. These include respecting indigenous peoples' traditional way of living, strengthening traditional food systems and protecting subsistence activities such as hunting, fishing and gathering. States are also responsible for ensuring the application of general human rights principles to indigenous peoples, both in their food and nutrition security policies and policies that may affect their access to food.

The right to food is an important tool for indigenous peoples to bring about real change in their lives and for the motivation to negotiate power structures. (*Source: Right to food and indigenous peoples,* paper in the "Focus on" series, Right to Food Unit, FAO.)

activities focus on human rights work, documentation and dissemination of information, and project activities in cooperation with indigenous organizations and communities.

The world's indigenous peoples account for more than 350 million individuals, divided into at least 5 000 peoples.

Since its foundation in 1968, IWGIA has followed the indigenous movement and continuously increased its activities and expanded its network with indigenous peoples worldwide. IWGIA supports indigenous peoples' struggle for human rights, self-determination, right to territory, control of land and resources, cultural integrity and the right to development. It collaborates with indigenous peoples' organizations all over the world.

Documentation about indigenous affairs is an essential part of IWGIA's work. IWGIA publishes books, periodicals and a yearbook about indigenous peoples.

IWGIA's work is primarily funded by the Nordic Ministries of Foreign Affairs and the European Union.

FOR MORE INFORMATION, PLEASE CONTACT: International Work Group for Indigenous Affairs (IWGIA), Classensgade 11 E, DK 2100, Copenhagen, Denmark. Fax: (+45) 35 27 05 07; e-mail: iwgia@iwgia.org; www.iwgia.org/

United Nations Permanent Forum on Indigenous Issues

The UN Permanent Forum on Indigenous Issues (UNPFII) is an advisory body to the Economic and Social Council, with a mandate to discuss indigenous issues related to economic and social development, culture, the environment, education, health and human rights.

The Seventh Session of UNPFII, with the special theme "Climate change, biocultural diversity and livelihoods: the stewardship role of indigenous peoples and new challenges", will take place at the United Nations headquarters, New York from 21 April to 2 May 2009.

FOR MORE INFORMATION, PLEASE CONTACT: Secretariat of the Permanent Forum on Indigenous Issues, United Nations, 2 UN Plaza, Room DC2-1772, New York, NY 10017, United States of America. Fax: 1 917 367 5102; e-mail: indigenouspermanentforum@un.org; www.un.org/esa/socdev/unpfii/

"Riches of the forest: fruits, remedies and handicrafts in Latin America"

Declaration on the Rights of Indigenous Peoples

The UN General Assembly on Thursday adopted a non-binding declaration upholding the human, land and resources rights of the world's 370 million indigenous people, brushing off opposition from Australia, Canada, New Zealand and the United States. The vote in the assembly was 143 in favour and four against. Eleven countries, including the Russian Federation and Colombia, abstained.

The declaration, capping more than 20 years of debate at the United Nations, also recognizes the right of indigenous peoples to self-determination and sets global human rights standards for them. It states that native peoples have the right "to the recognition, observance and enforcement of treaties" concluded with states or their successors.

Indigenous peoples say their lands and territories are endangered by threats such as mineral extraction, logging, environmental contamination, privatization and development projects, classification of lands as protected areas or game reserves and use of genetically modified seeds and technology. (*Source*: Agence France-Presse newswire, 13 September 2007 [in BIO-IPR docserver].)

SECRETARY-GENERAL DECLARES INDIGENOUS RIGHTS DECLARATION A "TRIUMPH"

The Secretary-General of the United Nations warmly welcomes the adoption of the Declaration on the Rights of Indigenous Peoples as a triumph for indigenous peoples around the world. He notes that this marks a historic moment when United Nations Member States and indigenous peoples have reconciled with their painful histories and are resolved to move forward together on the path of human rights, justice and development for all.

The Secretary-General calls on governments and civil society urgently to advance the work of integrating the rights of indigenous peoples into international human rights and development agendas, as well as policies and programmes at all levels, so as to ensure that the vision behind the declaration becomes a reality. (*Source*: UN press statement SG/SM/11156 HR/4931, 13 September 2007.) ♣

38TH INTERNATIONAL SYMPOSIUM ON ESSENTIAL OILS

GRAZ, AUSTRIA
9–12 SEPTEMBER 2007

The main topics covered by plenary lectures were:

- Recent developments in molecular biology and biosynthesis of terpenes
- Body(sweat) – fragrance – interactions
- New developments in quantitative essential oil analysis
- Essential oils in animal health and nutrition.

FOR MORE INFORMATION, PLEASE CONTACT: the Organizing Secretariat, SEMACO GmbH, Firmianstr. 3, 5020 Salzburg, Austria. Fax: +43 662 82 68 78 4; e-mail: congress@semaco.co.at; www.iseo2007.org/index.php?pg=home

INTERNATIONAL CONFERENCE ON THE SUSTAINABLE DEVELOPMENT OF NON-TIMBER FOREST PRODUCTS AND SERVICES

BEIJING, CHINA
26–28 SEPTEMBER 2007

This conference, hosted by the Chinese Academy of Forestry and organized by the International Tropical Timber Organization (ITTO) in collaboration with the International Network for Bamboo and Rattan, the International Centre for Bamboo and Rattan and FAO, was attended by 120 people from 42 developed and developing countries, including officials from forestry agencies in tropical countries, researchers, project managers and representatives of national and international non-governmental and development assistance organizations.

The conference was convened at a time when some non-timber forest products (NTFPs) are emerging rapidly in the global marketplace and as markets for the environmental services of forests are being increasingly promoted. Many countries and organizations see a great deal of potential for these forest products and services to assist the process of sustainable development and to help alleviate poverty in some of the world's poorest places. The conference was held in China, a country that is at the forefront of many of the most dramatic developments in the utilization of NTFPs. A study visit to Anji Province in southern China showed how a huge bamboo resource there is being used in a wide range of industrial processes, from reconstituted boards to rugs and curtains, aiding the province's rapid development process.

The papers presented at the conference and the discussions they provoked were wide-ranging. The conference received an overview of the global NWFP and services sector, considered the growing significance of community forest enterprises in the production of forest products and services, and discussed policy and practical issues related to the development of markets for carbon and other forest services. It also learned of experiences in a number of ITTO-funded projects and canvassed issues related to NTFPs and environmental services in Brazil, Cameroon, the Central African Republic, China, Colombia, the Congo, Germany, India, Indonesia, Liberia, Malaysia, Mexico, Myanmar, Peru and the Philippines.

During the conference, participants formed five break-out groups to reflect further on the ideas, experiences and issues raised during plenary sessions. The key issues and recommendations presented below were derived from the findings of these five groups.

Key issues

- The NTFP sector is highly diverse and, often, region- or country-specific. While a great strength, this diversity has not been helpful in communicating to decision-makers the importance of NTFPs. There is also a wide diversity of definitions of NTFPs and environmental services, which hinders the development of the sector.
- Forests provide many services, including carbon sequestration (forest growth, protection); avoided carbon emissions; hydrological services; scenic beauty /recreation; biodiversity conservation; soil erosion control; disaster mitigation; climate buffering; environmental purification; and pollination. Payments for these services can help reduce both poverty and deforestation. Recent experiences in Mexico and China show that schemes to introduce such payments are feasible within a clear national legal and institutional framework and with start-up funding.
- Governments and forestry institutions have tended to neglect research and development into NTFPs and environmental services, although for some products and services this is changing rapidly.
- NTFPs are extremely important for many communities, particularly the rural poor and among women, probably much more important than available data would indicate. Some high-value, internationally traded NTFPs also make significant contributions to national economies. However, the benefits of the trade in NTFPs are not always distributed equitably and markets are often informal, disorganized and open to exploitation.
- For many NTFPs, the value chain is not well developed and more value-adding at the local level could provide forest-based communities with significant benefits.
- The sustainable use of NTFPs and environmental services are key elements of sustainable forest management (SFM), but this is not always clear to forest managers. There is a lack of normative guidance on the management of many NTFPs and a need to pursue the integrated ("multiple-use") sustainable management of forests for all goods and services.
- Information on the production, use and trade of NTFPs is generally very poor at all levels. It is known, however, that NTFPs are being extracted at higher than the sustainable rate in many forests.
- A lack of clear resource tenure, access and rights inhibits the development of community-based forest enterprises. Fiscal policies and regulations are also often counterproductive to the successful commercialization of NTFPs and environmental services.
- Many NTFPs and environmental services transcend national boundaries and offer an opportunity for strengthening trade and cooperation between countries. International legal mechanisms exist that play a role in the trade of NTFPs, but not all governments make full use of this role.
- There is a suspicion among some policy-makers and forest owners and users that payments for carbon credits will mean the exclusion of other uses, such as the extraction of timber and non-timber products. However, this is not necessarily true.

Recommendations

Governments and international organizations should:

- fully recognize the huge existing and potential role of NTFPs and forest environmental services in sustaining

and adding wealth to people living in and around forests;
- improve the terminology and definitions of NTFPs and environmental services to ensure a consistent approach to their management and trade;
- where necessary, institute and support participatory processes to develop and improve legal and policy frameworks that support the production and trade of NTFPs and services, including by addressing land tenure, resource access and user rights;
- ensure that these laws and policies allow and assist indigenous and local communities, including women, to develop successful forest-based enterprises;
- ensure that such laws and policies also encourage the improved organization and equitability of markets for NTFPs and environmental services at the local, national and international levels;
- review the need for new and/or improved financial mechanisms to promote community-based enterprises based on NTFPs and environmental services with the objective of reducing poverty;
- develop cooperative agreements for the sustainable management of NTFPs within common biogeographic areas;
- develop guidelines for the sustainable and socially equitable use of NTFPs and environmental services in the context of SFM;
- strengthen capacity among local communities, government and the private sector to apply such guidelines;
- support the development of national and international standards and certification systems for different groups of NTFPs and environmental services;
- boost research and development into NTFPs and payments for environmental services, including by:
  - facilitating the collection and dissemination of applied research and knowledge
  - improving methodologies for assessing the social, economic and environmental importance of NTFPs and services in the context of SFM
  - encouraging the greater involvement of the private sector in technology development
  - identifying knowledge gaps and improving research into and the transfer of appropriate technology for value-adding to NTFPs, particularly post-harvesting and processing techniques at the village level
  - clarifying the costs and benefits of certification for all stakeholders in the NTFP value chain
- strengthen international networks on NTFPs to improve the quality, availability and exchange of technical, marketing and management information; and
- support the development of:
  - capacities for monitoring and assessing environmental services and payments for them as a way of adding value to tropical forests and reducing poverty
  - effective procedures for the valuation of environmental services
  - better instruments for financing environmental services, especially from the private sector
  - integration in national development/ sectoral planning and legal frameworks.

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THE 8TH PACIFIC ISLANDS CONFERENCE ON NATURE CONSERVATION AND PROTECTED AREAS

ALOTAU, PAPUA NEW GUINEA
22–26 OCTOBER 2007

The conference's theme, "Conservation serving communities, in a rapidly changing world" highlights the inextricable link between Pacific islanders and the natural environment, and the importance of strengthening networks in the climate of global change.

FOR MORE INFORMATION, PLEASE CONTACT: Ruth Pune, Conference Coordinator, Secretariat of the Pacific Regional Environment Programme, PO Box 240, Apia, Samoa. Fax +685 20231; e-mail: ruthtp@sprep.org; www.sprep.org/roundtable

TRONDHEIM CONFERENCE ON BIODIVERSITY

TRONDHEIM, NORWAY
29 OCTOBER – 2 NOVEMBER 2007

The fifth Trondheim Conference on Biodiversity, hosted by the Norwegian Government in collaboration with the United Nations Environment Programme (UNEP), was entitled "Ecosystems and people – biodiversity for development".

The conference provided input to the Convention on Biodiversity (CBD) and its preparations for the ninth Conference of the Parties (COP-9) in Germany in 2008. It focused on the critical role of biodiversity and ecosystems in providing goods and services that are necessary for human well-being and security and for economic development.

FOR MORE INFORMATION, PLEASE CONTACT: Directorate for Nature Management, 7485 Trondheim, Norway. Fax +47 73 58 05 01; e-mail: postmottak@dirnat.no; www.trondheimconference.org/

INTERNATIONAL CONFERENCE ON SUSTAINABLE FOREST MANAGEMENT AND POVERTY ALLEVIATION: ROLES OF TRADITIONAL FOREST-RELATED KNOWLEDGE

KUNMING, CHINA
17–20 DECEMBER 2007

Traditional knowledge has greatly contributed, and still does, to the world's natural and cultural heritage by sustaining the production of multiple goods and services that enhance livelihood security and quality of life. This conference provided a platform for sharing of information and exchanging experiences related to traditional forest-related knowledge (TFRK) in the Asia-Pacific Region. The conference also highlighted the importance of TFRK in achieving the Millennium Development Goals and sustainable forest management. It also encouraged further development on incorporating TFRK in models of sustainable practices.

FOR MORE INFORMATION, PLEASE CONTACT: Dr Liu Jinlong, Sustainable Forestry Research Centre, Chinese Academy of Forestry, Beijing 100091, China. E-mail: liujl@caf.ac.cn; www.iufro.org/science/task-forces/traditional-forest-knowledge ♣

FOREST INSECTS AS FOOD: HUMANS BITE BACK. A WORKSHOP FOCUSED ON ASIA-PACIFIC RESOURCES AND THEIR POTENTIAL FOR DEVELOPMENT

CHIANG MAI, THAILAND
19–21 FEBRUARY 2008

Humans have consumed insects for thousands of years – in some cases as emergency food, in other cases as a staple, and in still other cases as delicacies. In modern times, consumption of insects has declined in many societies, and has often been shunned as old-fashioned, dirty or unhealthy. Yet, among various cultures scattered throughout the world, insects remain a vital and preferred food and an essential source of protein, fat, minerals and vitamins. For some members of the rapidly growing upper and middle classes of urban society, insects are "nostalgia food," reminding them of earlier, simpler days in the rural countryside.

Worldwide, over 1 400 insect species are reportedly eaten as human food. Most are harvested from natural forests. But, while insects account for the greatest amount of biodiversity in forests, they are the least studied of all fauna. Surprisingly little is known, for example, about the life cycles, population dynamics and management potential of many edible forest insects. Similarly, little is known of the impacts that overharvesting of forest insects might have on forest vegetation, other forest fauna and the ecosystems themselves.

Among forest managers, there is little knowledge or appreciation of the potential for managing and harvesting insects sustainably. There is almost no knowledge or experience in manipulating forest vegetation or harvest practices to increase, maximize or sustain insect populations. Indeed, as many insects cause massive damage and mortality to valuable commercial trees, virtually all insects are considered undesirable pests by many forest managers. What knowledge does exist in these respects is often held by traditional forest dwellers and forest-dependent people.

The capturing, processing, transporting and marketing of edible forest insects provide interesting income and livelihood opportunities for an undetermined number of people around the world. Traditionally, these activities were all locally based and largely under-recognized. Recently, however, more sophisticated and wide-reaching marketing and commercialization of edible forest insects have been advanced, including attractive packaging and advertising. Some advocates believe that creating a wider market for food insects could provide an economic incentive for conserving insect habitat.

To promote further forest insects as human food, six major areas need to be addressed:

- geographic information gaps;
- improved insect identification;
- better understanding of the ecological roles of edible forest insects;
- assessment of the potential for rearing insects for food and other purposes;
- post-harvest handling of insects and improved processing and storage; and
- economic and marketing data and information.

The Chiang Mai workshop will attempt to address these issues and discuss strategies to promote edible forest insects for enhancing human nutrition and forest management. The workshop will focus on all aspects of edible forest insects, including management, collection, harvest, processing, marketing and consumption. Social, environmental and economic aspects will be explored, including opportunities and issues related to income and livelihoods. The focus of the workshop will be on knowledge and experiences from Asia and the Pacific, but the workshop will also draw on examples and resource persons from other regions of the world as well. Consideration will be given to insects and their edible relatives, such as spiders and scorpions.

Workshop themes and subjects

Edible forest insects as a natural resource. Overview of current status of forest insect exploitation for food in Asia and the Pacific. Insect conservation issues. Thematic presentations by participants, with particular attention to the identified geographic gaps (i.e. Viet Nam, Cambodia, Myanmar, Peninsular Malaysia and the Pacific Islands).

Models of insect management for food and other products. Examples from beekeeping, silk worm farming and palm grub harvesting. Complementary and competing economic non-food insect products and uses (i.e. medicine, livestock feed, ritual, ornamental and integrated pest management). The relationship of insect exploitation to the extraction of common non-wood forest products (NWFPs) and linkages to forest management.

Development potential for edible forest insects. The role of edible forest insects in food security. Insect protein as a contribution to better nutrition. Economics of collecting edible forest insects. Harvesting, processing and marketing of edible forest insects. Promoting insect eating: snacks, dishes, condiments, recipes, etc.

The workshop is co-organized by FAO and Chiang Mai University. Local support is provided by the Forest Restoration Research Unit (FORRU), Chiang Mai University.

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CLIMATE CHANGE AND BIODIVERSITY IN THE AMERICAS

SMITHSONIAN TROPICAL RESEARCH CENTER (STRI) IN PANAMA
25–29 FEBRUARY 2008

This symposium is being organized by Environment Canada, the Adaptation and Impacts Research Division and the Smithsonian Institution, National Zoological Park, Center for Conservation Education and Sustainability.

The focus of the symposium is to provide a forum for leading scientists to present the results of research and monitoring activities of climate change and forest biodiversity throughout the Americas. The aim is to establish a cooperative science, research and monitoring network of activities that interlink biodiversity conservation and sustainability, policy responses and adaptation to climate change throughout the Americas.

The changing climate is a significant driver of biodiversity and is already affecting many ecosystems throughout the Americas. It is necessary to mitigate and prevent these changes to preserve the biodiversity and ecological integrity of these regions. Increasingly, governments, organizations, industries and communities need to consider

adaptation to impacts of current and future changes in forest biodiversity and sustainability in their planning, infrastructure, and operations.

FOR MORE INFORMATION, PLEASE CONTACT: Don MacIver, Director, Adaptation and Impacts Research Division, Environment Canada, 4905 Dufferin Street, Toronto, Ontario, Canada M3H 5T4. Tel.: 416-739-4436; fax: 416-739-4297; e-mail: don.maciver@ec.gc.ca; www.climatechangeandbiodiversity.ca

INTERNATIONAL SYMPOSIUM "UNDERUTILIZED PLANTS FOR FOOD, NUTRITION, INCOME AND SUSTAINABLE DEVELOPMENT"

ARUSHA, UNITED REPUBLIC OF TANZANIA
3–7 MARCH 2008

Underutilized plants are species with underexploited potential for contributing to food security and nutrition by combating "hidden hunger" caused by micronutrient deficiencies; they often have medicinal properties and other multiple uses and they provide options for improved incomes to the poor and for environmental services to the global community. These species collectively receive little attention from research, extension services, farmers, policy- and decision-makers, donors, technology providers and consumers.

The symposium will be organized around four main areas of importance for underutilized plants: food security, nutrition and health, income generation, and environmental sustainability.

FOR MORE INFORMATION, PLEASE CONTACT: Dr Hannah Jaenicke (Convener), International Centre for Underutilised Crops, 127 Sunil Mawatha, Colombo, Sri Lanka. Fax: +94-11-2786854; e-mail: Symposium08@avrdc-rca.co.tz; www.icuc-iwmi.org/Symposium2008

XIII WORLD FORESTRY CONGRESS

BUENOS AIRES, ARGENTINA
18–25 OCTOBER 2009

The World Forestry Congress is held every six years and is cosponsored by FAO and the host country. The main objective of the congress is to provide a forum for the exchange of personal experiences and for discussions on topics related to forestry activities, involving professionals and other interested people from all over the world.

Approximately 6 000 participants from more than 160 countries are expected at the XIII World Forestry Congress, which is being organized by the Government of Argentina in collaboration with the FAO Forestry Department. Activities at the congress will include conferences, roundtable discussions, poster presentations, parallel events, exhibits, study and technical tours. All will focus on subjects related to the main subject theme of the congress: "Forests in development: a vital balance".

This theme guarantees opportunities to analyse social, environmental and economic aspects of natural resources in a local, regional and global context. The importance of the sustainable management of all types of forests will be emphasized, as well as the contribution of forest resources to the sustainability of the planet. The congress will provide an opportunity to learn about the diverse ecosystems of the different regions of the world, as well as the diverse perspectives of people and organizations sharing an interest in forests, including academics, forest producers, environmentalists, rural and indigenous people, forest managers, technical experts and policy-makers. The congress will offer a truly global view of the future of the world's forests.

First call for voluntary papers and posters

We invite every interested person to submit voluntary papers and posters expressing new ideas and providing information on experiences, theoretical models and interesting initiatives. Papers will be published in the congress proceedings and posted on the official Web site of the congress. Papers and posters can be submitted to the FAO Forestry Department before 30 June 2008.

Information or guidelines for presentations can be downloaded from our Web page www.wfc2009.org or be requested by e-mail at info@wfc2009.org or by mail or fax. Abstracts should not exceed 250 words and the complete paper no more than 4 500 words, tables included.

FOR MORE INFORMATION, PLEASE CONTACT: XIII World Forestry Congress, FAO, Forestry Department , Viale delle Terme di Caracalla, 00153 Rome, Italy. Fax: +39-06-5705-5137; e-mail: WFC-XIII@fao.org; www.wfc2009.org *or* www.wfc2009.org/version2/registroSimple_ingles.aspx

18TH COMMONWEALTH FORESTRY CONFERENCE

EDINBURGH, SCOTLAND, UNITED KINGDOM
28 JUNE – 2 JULY 2010

The Commonwealth Forestry Association (CFA), founded in 1921, is the world's longest-established international forestry organization. It works to enable people to manage and sustain their forests and trees effectively. It is a professional association linking foresters throughout the world to exchange information on developments in forest policy, forest science and forestry practice. It also publishes the *International Forestry Review* and assists in reviewing voluntary papers. The CFA is represented on the Standing Committee and is closely involved with planning the conferences.

Preparations are now under way to agree a theme, develop a Web site and appoint an organizing committee for the CFA's 18th Conference.

FOR MORE INFORMATION, PLEASE CONTACT: Charlton Clark, British Forestry Commission press office, 231 Corstorphine Road, Edinburgh, Scotland, United Kingdom EH12 7AT. E-mail: charlton.clark@forestry.gsi.gov.uk; www.cfa-international.org/CFC2010.html ♣

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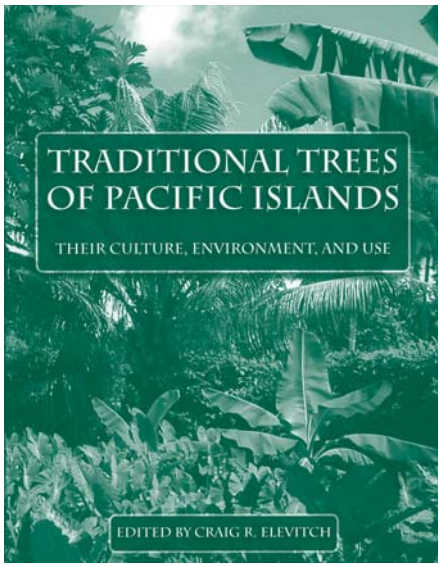

Full text available for downloading from: http://www.traditionaltree.org; copies of the book can be ordered from http://www.traditionaltree.org

FOR MORE INFORMATION, PLEASE CONTACT: Craig R. Elevitch, Permanent Agriculture Resources, PO Box 428, Holualoa, Hawai'i 96725, United States of America; e-mail: cre@agroforestry.net (Please see pages 6, 9 and 10 for extracts from this book.)

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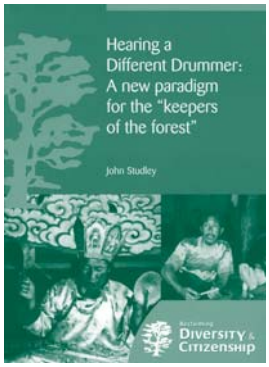

Based on research in the Kham region of southwestern China, this book explores the crisis of extinction facing indigenous knowledge systems, biodiversity and cultural diversity worldwide. It introduces ERA (the endogenous realization of aspirations), to enhance well-being and biocultural diversity by building on local or endogenous ambitions and dreams. The author offers practical methods and policy recommendations for incorporating this approach into development practice within local forest concepts and values.

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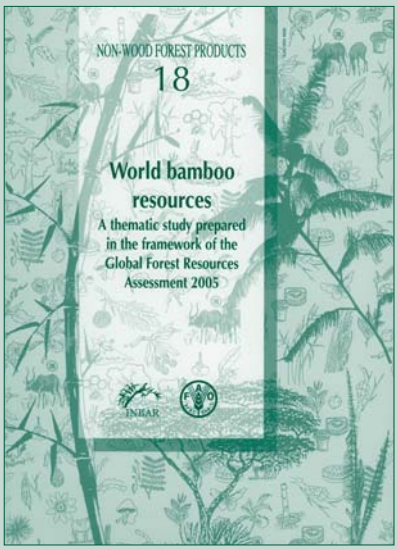
NEW PUBLICATIONS FROM FAO'S NON-WOOD FOREST PRODUCTS PROGRAMME

Non-Wood Forest Products series



World bamboo resources. A thematic study prepared in the framework of the Global Forest Resources Assessment 2005. Non-Wood Forest Products series, 18. This study is a joint FAO/INBAR initiative to incorporate bamboo into the FAO Global Forest Resources Assessment programme. It was undertaken as one of seven thematic studies within the forest resources assessment 2005 process and is a first attempt at systematic reporting of the best available information on bamboo resources and utilization at the global level.

A total of 22 countries responded to the FAO/INBAR call for information and submitted national reports. Although data availability and quality are often weak, the main value of the study is that it has established a systematic methodology and has launched the most comprehensive assessment of global bamboo resources to date.

Copies of this publication can be purchased from FAO's Sales and Marketing Group at publications-sales@fao.org. An electronic version is available from FAO's NWFP home page: www.fao.org/docrep/010/a1243e/a1243e00.htm

NWFP Working Documents

The following three publications have been added to our NWFP Working Documents series.

- No. 4. *Les perspectives de la certification des produits forestiers non ligneux en Afrique Centrale*
- No. 5. *Gestion des ressources naturelles fournissant les produits forestiers non ligneux alimentaires en Afrique Centrale*
- No. 6. *Trade measures – tools to promote the sustainable use of NWFP? An assessment of trade-related instruments influencing the international trade in non-wood forest products and associated management and livelihood strategies.*

Working Documents 4 and 5 were produced by FAO's NWFP regional project GCP/RAF/398/GER "Enhancing the contribution of non-wood forest products to food security in Central Africa".

Electronic versions of these documents are available from our NWFP home page www.fao.org/forestry/site/40716/en. Hard copies are available free of charge from FAO's NWFP Programme at the address on the first page or by sending an e-mail to: non-wood-news@fao.org

Pipeline publications

A new publication in our NWFP Working Document series – *The role of CITES in controlling the international trade in forest products: implications for sustainable forest management* – is being finalized and will be available shortly.

OTHER RECENT PUBLICATIONS

Forest harvesting case study on NWFPs in the Congo Basin

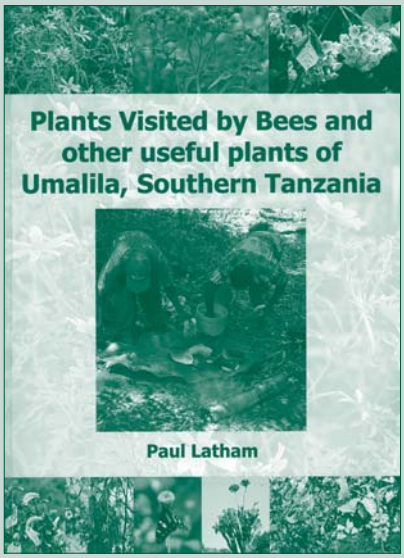
A new case study produced by FAO's Forest Products Service – *The impact of timber harvesting on the availability of non-wood forest products in the Congo Basin* (Forest Harvesting Case Study 23) – seeks to examine the impact of timber harvesting in two villages, one in Cameroon and one in the Central African Republic. It documents many plant-based and animal-based NWFPs of great significance to the livelihoods of the local populations in terms of food security, income generation and health.

With regard to the impact of logging on NWFP availability, the study finds that the greatest impacts have been on tree species with NWFP values that are extracted by the timber companies. Timber exploitation also leads to the destruction of secondary trees and understorey species that furnish NWFPs. Damage is associated with tree falls and the passage of heavy machines that also destroy NWFPs. Apart from a few NWFPs that benefit from logging-induced microclimate changes at the forest floor, most plant-based NWFPs decrease in availability following logging. With regard to the availability of animal-based NWFPs, the overall trend is also one of decline after logging.

The forest of the Congo Basin is a major economic asset for national governments, local communities and economic operators. With the drive towards sustainable forest management, it would be ethical to take into consideration all stakeholders in designing policy, management and control tools that minimize the negative impacts of logging and encourage multiple benefits from a greater array of forest products. The study offers recommendations on policies governing forest exploitation.

FOR MORE INFORMATION, PLEASE CONTACT:
Ms Simmone Rose, Forestry Officer, Forest Products Service, FAO, Viale delle Terme di Caracalla, Rome 00153, Italy.
E-mail: simmone.rose@fao.org;

Plants visited by bees and other useful plants of Umalila, southern Tanzania



In his book, Paul Latham provides information on 188 plants in Umalila in the Mbeye district of the United Republic of Tanzania. A forage chart indicates the months when bees collect pollen and/or nectar. Plants are listed alphabetically and, in addition to photographs, details of their botanical, vernacular and common names are given, together with brief descriptions. The distribution, uses and the propagation and management of selected plants are also provided where appropriate. (Please see page 59 for an extract from this book.) ♣

The things I want to know are in books; my best friend is the man who'll get me a book I ain't read.

Abraham Lincoln

FAO'S NWFP HOME PAGE

Our Web site is gradually being updated and new features added. We invite you to visit:

- the "Reader's Research" page, which includes new articles on Prunus africana, Cameroon honey and many more (www.fao.org/forestry/site/35667/en)
- the updated "Other NWFP links" (www.fao.org/forestry/site/12979/en)
- our ever-expanding "NWFP bibliography" page (www.fao.org/forestry/site/13467/en)

Please help us make this a rich resource by sending us (non-wood-news@fao.org) your NWFP Web sites, citations of any publications that we are missing, as well as any research that you would like to share.
www.fao.org/forestry/site/6367/en

BioAssess – The Biodiversity Assessment Tools Project
The Biodiversity Assessment Tools Project is developing a tool box for assessing the impacts of policies on biodiversity in Europe. In addition, the project is measuring the impact of land-use change on biodiversity across Europe's biogeographic regions.
www.nbu.ac.uk/bioassess/

Blogs
Blogging underutilized species
This is an information exchange tool that complements the Global Facilitation Unit (GFU) for Underutilized Species portal. We hope this will stimulate further thought, learning and discussion. A link can be found from GFU's home page.
www.underutilized-species.org

World bamboo blogspot
world-bamboo.blogspot.com/

Cropwatch
Cropwatch is an independent watchdog for endangered and vulnerable natural aromatic products used in the aroma (perfumes, flavours, aromatherapy, cosmetics), herbal, traditional medicine and phytochemical industries. Information provided to Cropwatch is forwarded by a number of academics, researchers, industry professionals, trade and ethnic peoples, all of whom have primary concerns for the environment.
www.cropwatch.org/index.htm

Databases
The Eco-Index

The Eco-Index, an online database of conservation projects in the Americas created by the Rainforest Alliance, now features more than 1 000 projects in English and Spanish. It has grown steadily since it was launched in January 2001 with 70 projects. The projects in the database now represent the work of more than 700 NGOs, research institutions and government ministries in the Americas. Project profiles outline contact information, summaries, objectives, funders, budget, accomplishments, lessons learned, methodology, links and reports.

The Eco-Index also offers a variety of other resources to conservation researchers. Users can check out a bimonthly bulletin called the Eco-Exchange about environmental issues and success stories in the Americas and read interviews with conservation leaders and field staff. Users can also subscribe to a monthly e-newsletter in English or Spanish that lists new projects that have been added to the Eco-Index. An average of 20 projects are added or updated on the Eco-Index each month.

The Eco-Index is also home to the Eco-Index of Sustainable Tourism (www.eco-index.org/tourism), a searchable database of sustainable tourism operations in Latin America and the Caribbean.
www.eco-index.org
(Please see page 35 for an Eco-Index report of a maya nut project.)

ForestHarvest – NTFP in Scotland, United Kingdom
www.itto.or.jp/live/index.jsp

Khadi and Village Industries Commission of India
www.forestharvest.org.uk/home.htm

Global Biodiversity Information Facility (GBIF)
The new GBIF data portal is an Internet gateway to more than 130 million data records provided by 200-plus institutions scattered over more than 30 countries around the world.
http://data.gbif.org

Learning for Sustainability (LfS)
This Web site aims to provide a practical resource for proponents of multistakeholder learning processes. It recognizes that social learning is an ongoing process that underpins health and other sustainable development initiatives, rather than an outcome to be achieved.

As an international guide to online resources, this Web site is designed for government and agency staff, NGOs, researchers and other community leaders working in peace, community development, public health, forestry, catchment and natural resource management. It acts as a gathering point for resources that have been developed in these separate sectors, and supports the sharing of ideas across sectors.

The new site will replace the NRM-changelinks site that has provided links in this area since 1998. Feedback on this new site is welcomed. If you have particular guides on the Internet that you find useful

NWFP-DIGEST-L

The Digest is a free monthly e-bulletin produced by FAO's NWFP Programme and covers all aspects of non-wood forest products. Past issues can be found on FAO's NWFP home page at *www.fao.org/forestry/site/12980/en*.

You can take part in contributing to the continued success of this newsletter by sharing with the NWFP community any news that you may have regarding research, events, publications and projects. Kindly send such information to NWFP-Digest-L@mailserv.fao.org.

To subscribe: either by sending an e-mail to: mailserv@mailserv.fao.org, with the message: subscribe NWFP-Digest-L; or through the NWFP Programme's home page at *www.fao.org/forestry/site/12980/en*

in practice please suggest them as a future resource to add and share with others.
http://learningforsustainability.net

Mapping the changing forests of Africa
http://nasadaacs.eos.nasa.gov/articles/2006/2006_africa.html

Mesoamerican Biological Corridor (MBC)
www.ghcc.msfc.nasa.gov/corredor/corredor.html

New Euroforest portal
The European Forest Institute (EFI) has launched this new information service. The portal aims to meet demands for better access to current information on European forests and forestry in an easily accessible and user-friendly form. It also contains a news section and a metadatabase of Web resources – Web pages of organizations, networks, information providers, databases and selected major reports.
http://forestportal.efi.int/

Rain forest educational resource
Mongabay.com, a leading tropical rain forest information Web site, has now made available a rain forest educational resource in 19 languages.

The site explains what constitutes a tropical rain forest, why they are important, why they are threatened and how they can be saved.
http://world.mongabay.com/

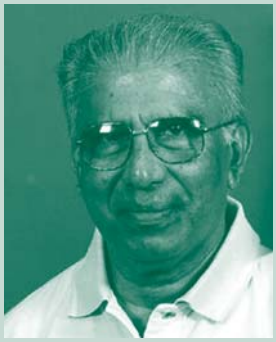
The Green Corridor Project
www.huegreencorridor.org
Village soap makers
http://laurapel.com/index.htm

Yummy bugs
www.sciencenews.org/articles/20071006/safari.asp ♣

He has half the deed done who has made a beginning.

Horace

OBITUARY



CHERUKAT CHANDRASEKHARAN (1933–2007)

Dr C. Chandrasekharan, founder and first editor of *Non-Wood News*, passed away on 11 September 2007, leaving an imprint in professional forestry spanning more than 50 years.

Although he retired from FAO in 1995, Chandra (as he was affectionately known to his friends and colleagues) always kept in contact with our NWFP Programme – ever willing to offer advice and support. He was enthusiastic about our recent idea of creating a new feature – the guest article – and was delighted to be its first contributing author, presenting a stimulating article in the last issue of *Non-Wood News* (15).

Chandra's career is a remarkable example of hard work and commitment as he moved up the professional ladder in India (his home country), occupying various positions and dealing with a wide array of issues. His career in FAO began in 1975 at the Regional Office in Bangkok where he worked as the Regional Forestry Economist and where he played a leading role in developing its forestry programme. He realized the significance of information exchange and was responsible for starting *Forest News*, which eventually was developed as the *Tiger Paper*. His subsequent assignments with FAO included: Senior Forestry Planning Officer at FAO headquarters; Team Leader of the FAO/World Bank Project in Indonesia; Forestry Institution Specialist in Bangladesh; and, eventually, Chief of the Non-Wood Forest Products and Energy Branch in the Forestry Department at FAO headquarters in Rome, a post he held until his retirement in 1995.

Even when retired from FAO, Chandra's professional involvement in forestry probably increased and his advice and expertise were much sought after by organizations such as ITTO, Asian Development Bank, World Bank, Ford Foundation, CIFOR, WWF and IDRC. Notwithstanding his ill health, he maintained his professional interest and commitment. Even a few days before his end, he was coordinating the electronic discussion on science and technology development in the NWFP sector.

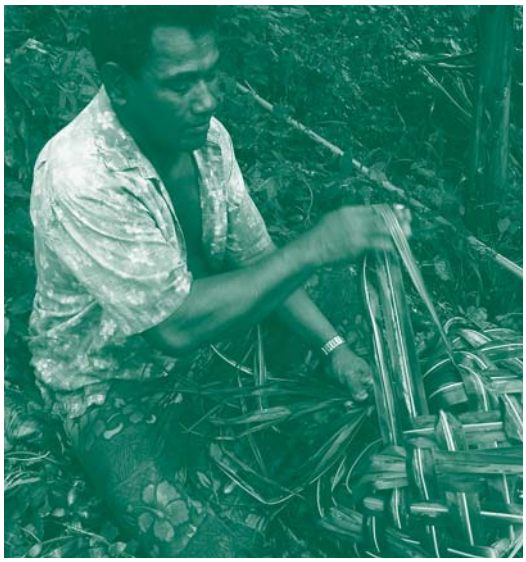
Bringing NWFPs to the forefront of the forestry agenda was one of his significant achievements. He was the architect of *Non-Wood News*, which he launched in 1993 and which has since become a leading source of information on NWFPs and a means of networking among those interested in the subject.

As a person, Chandra was known for his soft-spoken approach and for his ability to motivate and encourage coworkers. He was also a true gentleman and his generosity and encouragement will be missed by many, including all his friends here at FAO's NWFP Programme.

When a roll call of outstanding foresters in the world is taken, Chandra will be in the forefront.

Weaving and thatching using non-wood forest products

© Lex Thomson



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Since ancient times, the trees of the Pacific Islands have been providing their inhabitants with a variety of benefits – in addition to timber, they are used as sources of food, medicine, adornment and shelter. Weaving and thatching, using the leaves and fronds of these traditional trees, are important cultural activities.

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