

"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)

AYURVAstra TEXTILES

Experiments to test the clinical effectiveness of Ayurvastra textiles – dyed in medicinal herb concoctions – were inaugurated by the Indian Health Minister at the government Ayurvedic College in Thiruvananthapuram on 22 August 2006.

Ayurvastra is a new initiative aimed at establishing a niche for the ecofriendly handloom fabric and is a result of experiments carried out by the Balaramapuram-based Handloom Weavers' Development Society. Handloom fabrics dyed in herbal medicines can actually be used as part of Ayurvedic treatment.

For the handloom industry, this could be the opportunity to regain its glory. Apart from the medicinal benefits of the Ayurvastra fabric, its inclusion in the United States Pharmacopeia (USP) as an ecofriendly product could also help the handloom industry to enter the global market. Many countries have been enforcing a ban on textiles coloured with chemical dyes, which has proved a blow to the industry. At the same time, textiles dyed with natural vegetable dyes, especially medicinal plants, have been commanding a huge market.

The Handloom Weavers' Development Society had initiated certain experiments in this direction and the novel idea of Ayurvedic clothes as a project was proposed. Implementation was entrusted to the state department of handlooms and textiles, with assistance for research and development. It

was as part of this project that the Dravyaguna Department of the Ayurvedic College started work on creating Ayurvastra.

In an earlier similar project, Ayurvedic dyes were developed to add colour to coir products. The Society also had a role in this venture. A Chirayinkeezh-based coir matting company had manufactured coir mats using the medicated coir fibres developed by the Society. The Dravyaguna Department used these coir mats to create an "Ayurvedic environment", which various trials found can help those suffering from skin diseases, arthritis and blood pressure.

Ayurvastra technology, backed by marketing, could save traditional industries such as those of coir and handlooms.

(Source: *The Hindu*, 24 August 2006.)



Nothofagus solandri

BEECH FOREST "HONEYDEW"

Associated with beech (*Nothofagus* spp.) forests in Canterbury, New Zealand, is an indigenous coccid insect (*Ultracoelostoma assimile*) that infests the bark of the trees. During the intermediate stage of its life cycle, the insect exudes excess carbohydrate from the tree cell sap. This is known as honeydew and provides an important food source for various birds, the brush-tailed possum and the insects that inhabit the beech forests. Honey bees use the carbohydrate as an alternative to flower nectar and produce beech honeydew honey, which is similar to maple syrup in texture and properties.

"Honeydew production varies from year to year in response to weather conditions, but is generally sufficient in Woodside Forest to support 300 beehives. We limit the number of beehives so there is sufficient surplus honeydew for the resident nectivorous indigenous bird

population," explained the manager of the beech honeydew honey operation at Woodside Forest.

Current production of beech honeydew honey from the property is about 15 000 kg/year, or 170–180 kg/ha/year. This is exported mostly to Germany. [Source: extracted from "Woodside Forest: learning and adapting" by J. Novis, I. Platt and A. Griffiths [in *In search of excellence: exemplary forest management in Asia and the Pacific*, ed. P.B. Durst et al.].]

BIOJEWELS

Biojewels are made from products of the forest and are sold in both internal and external markets. With talent and creativity, artisans in Brazil transform seeds, shells and nuts, rustic raw materials of the Amazon forest, into finely finished jewels. These jewels have a high added value since they combine the art of indigenous handicrafts with the precision of that of jewellery. Artisans do business with buyers in Switzerland, the United States and the United Kingdom.

In partnership with the Brazilian Micro and Small Business Support Service (Sebrae) in the state of Amazonas, these artisans released a new collection of biojewels during the III Amazon International Fair (Fiam 2006), with prices varying from R\$20 to R\$150 (about US\$9 to \$70).

The main components in the production of biojewels are the seeds of jarina, the ivory nut palm, known as vegetable ivory. Coconut shells, Brazil nuts, tucumã (*Astrocaryum aculeatum*) and calabash are also used but the ivory nut palm is preferred because, apart from necklaces and bracelets, it is possible to transform it into miniatures of manatees, toads and the pink river dolphin, among other animals.

Currently there are no statistics on the number of artisans working with the product. [Source: Fibre2fashion.com [India], 2 September 2006.]



BIOPROSPECTING OR BIOPIRACY?

Banking on bioprospecting in Costa Rica

Researchers at Costa Rica's flagship biodiversity institute are hoping that an ambitious new project will ease its financial worries.

The five-year project of the National Biodiversity Institute (INBio) aims to find chemicals in wild species that could form the basis of new drugs. INBio's previous efforts at "bioprospecting" failed to yield major moneymaking products and the institute hit financial problems when several grants ended in 2005. This time around INBio is looking for compounds that can be easily isolated and duplicated from sources such as fungi, leaves or bacteria, instead of focusing on insects as it did previously.

The findings will eventually be entered into a free access database for researchers around the world to investigate. Profits from successful findings will be ploughed back into INBio in the form of licence fees.

Costa Rica – and in turn INBio – is among the few developing nations currently receiving licence fees from natural products. Diversa, a San Diego-based biotechnology company, is currently paying Costa Rica nearly US\$6 000 a year for two products developed from the country's resources, while INBio's knowledge of plants helped a Costa Rican firm, Lisanatura, develop a treatment for hangovers or indigestion – Hombre Grande – from a plant called amargo (*Quassia amara*). [Source: *Nature*, 441: 567–569 [in SciDev.Net Weekly Update].]

Brazilian Government issues list of Brazilian plant species to prevent biopiracy

In commemoration of World Biodiversity Day, the Brazilian Government released a list containing the scientific names of around 3 000 species of Brazilian flora, such as cupuaçu, kiwi, carambola (starfruit), pequi (souari nut), babosa (aloe) and catuaba. The purpose of the list, which represents an unprecedented move by a country, is to prevent foreign companies from registering the names popularly used in Brazil to refer to these plants. "We are acting preventively," affirmed the Minister of the Environment, Marina Silva.

The list of Brazilian species is open to constant update. The document will be widely circulated and delivered via diplomatic channels to foreign patent offices

and international organizations, such as the World Intellectual Property Organization (WIPO), that deal with these matters.

[Source: Agência Brasil, 23 May 2006.]

Chile no cuenta con una legislación contra la biopiratería

Pese a que el 80 por ciento de todas las plantas que existen en Chile son nativas, el país no cuenta con una legislación que las proteja de las bioprospecciones privadas que buscan lucrar mediante el cobro de patentes, informó Renzo Dinami, del diario *La Nación Domingo*.

Según el diputado Jaime Quintana, habría más de 700 especies en Chile que han sido patentadas por particulares «sin ningún tipo de retorno económico a sus comunidades de origen».

Quintana afirmó que Chile no cuenta con una legislación como la que tienen las naciones del Pacto Andino, inclusive Argentina y Brasil, tienen medios para proteger las investigaciones biogenéticas que se realizan. «Hoy, en Chile, cualquier particular o institución puede intervenir donde existan organismos y elementos que puedan ser inscritos y patentados en el extranjero». [Fuente: *La Nación Domingo*, 30 de julio 2006.]

FTA paves way for biopiracy

Indigenous communities and environmentalists call it biopiracy; international pharmaceutical companies and academic researchers call it bioprospecting. Whatever one chooses to call it, the Central America Free Trade Agreement between the United States and Central America and the Dominican Republic (CAFTA-DR) has opened the door to foreign ownership of the right to exploit the region's abundant and diverse tropical flora.

Under the intellectual property provisions of CAFTA-DR, the United States has forced legislation in member countries that potentially legalizes patenting the biological resources of the region to the benefit of pharmaceutical and agro-industrial companies.

These companies can now seek plants with properties previously unknown to them, and then legally claim ownership of the subsequent processes in which they are employed. Such rights completely ignore the prior use of and even dependence on these plants by local and indigenous communities, which may have been using them for centuries and consider them part of their heritage.

Both the researchers and the companies arrogate the biodiversity of underdeveloped countries and knowledge of its use – a trend that has come to be called biopiracy.

This arrangement puts those vulnerable to dispossession of their ancestral knowledge at a distinct disadvantage when it comes to protecting their rights. The Director of the Technical Biodiversity Office of the National Council of Protected Areas in Guatemala, Fernando García Barrios, explained that "the governments of Central America do not create the administrative and legal mechanisms for their genetic resources and associated traditional knowledge". What is needed, he says, is a "common, coordinated regional regimen that supports regional and national initiatives" on questions of intellectual property and access to these resources and knowledge bases. [Source: *Latinamerica Press*, 15 August 2006.]



"Steps to sustainable and community-based NTFP management"

Indian Government moves to check foreign patents threat

After losing nearly 18 000 patents of medicinal plants to the West because of government reluctance to share traditional knowledge, India has decided to allow International Patent Offices (IPOs) to access its Traditional Knowledge Digital Library (TKDL) for examining patent claims.

The library, which will be ready by December 2007 at a cost of Rs10 crore, has codified the medicinal information of 75 000 Ayurvedic, 50 000 Unani and 15 000 Siddha formulations as well as 1 500 yoga postures in patent application formats in five international languages – English, French, Spanish, German and Japanese.

The non-disclosure agreement with IPOs will be negotiated on the principle that the latter will not use the TKDL for any other purpose except for examination of patent applications or to prevent misappropriation of traditional knowledge. The agreement will also disallow IPOs and their examiners

to make any third party disclosure of the TKDL other than what is necessary and essential for the purposes of patent search and examination.

Health Minister A. Ramadoss said: "We want to thwart anyone who tries to profit from our traditional knowledge, from yoga to 150 000 ancient medical remedies.

The progress of the TKDL project has been remarkable – 13 million pages of information already created, with 18 million pages being targeted by the end of 2006.

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The library will prevent those living abroad from claiming patents for existing formulations. IPOs from 11 countries, including the United States and the United Kingdom, which have signed an agreement with India, will have access to the database." [Source: *Times of India*, 30 June 2006.] (Please also see Non-Wood News 13, *News and Notes*, for more information on the TKDL.)



BOREAL FORESTS

Although boreal forests may be valued primarily as timber resources, they also provide a wealth of tourism and recreational opportunities, cultural and spiritual uses and NTFPs.

People living in the boreal region have a long tradition of using its rich natural resources in a non-destructive way. One example is the traditional collection of various NTFPs for home consumption and trade. NTFPs provide a vital contribution to the daily subsistence of forest-dependent communities of the boreal region. Some examples of NTFPs include wildlife, berries, mushrooms, honey, spices and medicinal plants.

One of the most famous boreal medicinal plants is the perennial herb Siberian ginseng (*Eleutherococcus*

senticosus). Siberian ginseng has been used for centuries in Russian folk medicine to improve resistance to colds and mild infections; to restore concentration, memory and cognition; and as a remedy for stress, depression and fatigue. [Source: *Trouble in the Taiga*, Taiga Rescue Network.]



BOTANIC GARDENS: USING PLANT DIVERSITY FOR HUMAN WELL-BEING

Botanic Gardens Conservation International (BGCI), the world's largest network for plant conservation, released a major new report (*Botanic gardens: using biodiversity to improve human well-being*) in April 2006 highlighting how botanic gardens across the world are involved with projects to improve human well-being.

In the past, botanic gardens have not often been associated with practical improvements to people's lives, although they are well known for their importance to plant science and their significant role in conserving plant diversity. However, the issues of conservation and development are inextricably linked, and BGCI believes that it is an ethical and practical imperative for botanic gardens to link biodiversity conservation with poverty reduction. The new report is based upon an extensive literature review and multilingual survey of BGCI's botanic garden members. Its many case studies highlight the fact that botanic gardens can link plant resources with contributions to four main aspects of human well-being: i) improving nutrition; ii) improving healthcare; iii) alleviating financial poverty; and iv) providing community and social benefits.

For example, Aburi Botanic Garden in Ghana has been improving local access to medicinal plants by empowering local communities to set up home gardens. It established a model home garden; gave various lectures, seminars, workshops and demonstrations; distributed manuals; and provided seedlings to enable communities to set up their own nurseries and first-aid gardens.

There are many other ways that botanic gardens work for well-being, from developing and hosting horticultural therapy programmes, to educating children about healthy eating and training disadvantaged minorities in useful skills, such as the production of handicrafts. In

South Africa, Natal National Botanic Garden is part of a consortium tackling the problem of HIV/AIDS, by supplying a local health care clinic with plants and information that allow patients to self-treat some symptoms by growing and using plants such as *Bulbine* and *Carpobrotus*.

BGCI's report also illustrates how various activities, such as education and research, underpin the ability of botanic gardens to improve well-being. For example, many gardens put strong emphasis on research relevant to the development of useful plants in agriculture and health care. A typical example is the Fundación Xochitla Botanic Garden in Mexico, which focused on developing plants to be cultivated locally for use in the ornamentals market.

Although certain aspects of well-being are more relevant to some areas than others, botanic gardens can act across all parts of the world. For example, in less developed countries significant contributions to basic health care can be made by projects to encourage the cultivation of medicinal plants, while in developed countries urban greening projects can make a significant contribution to improving the neighbourhood environment and community relations. Botanic gardens in developed countries can also partner with gardens in less affluent regions, to address their local needs. Similarly, the issue is relevant to botanic gardens in both urban and rural areas. For example, in Colombia, a project to encourage home vegetable gardens is tackling the prevalent problem of urban poverty. Sometimes projects involve collaboration between gardens. In many cases it is important that the unique role of botanic gardens is complemented by partnerships and collaboration with non-botanic garden institutions, such as local health care clinics.

Botanic gardens are much more than just "pretty places". This new report suggests that the unique expertise and resources of botanic gardens must be better recognized and utilized if plant resources are to be used efficiently and effectively to meet human needs. The report is available to download free of charge from: www.bgci.org/wellbeing/report (Contributed by: Kerry Waylen, Coordinator of Well-being Review, Botanic Gardens Conservation International (BGCI), 199 Kew Road, Richmond, Surrey TW9 3BW, United Kingdom. Fax: +44 2083 325956; e-mail: wellbeing@bgci.org)



CADRE LÉGAL ET RÉGLEMENTAIRE RÉGISSANT LE SECTEUR «PRODUITS FORESTIERS NON LIGNEUX» EN AFRIQUE CENTRALE

Le secteur «Produits forestiers non ligneux» (PFNL) est l'un des domaines les plus importants pour le monde rural en Afrique centrale car il fournit aux populations des produits de subsistance et contribue à la génération de revenus. Les PFNL importants incluent les produits comestibles, les plantes médicinales et les matériels de construction.

Vu l'importance du cadre légal pour la valorisation du plein potentiel socioéconomique et écologique du secteur PFNL, le Projet GCP/RAF/398/GER («Renforcement de la sécurité alimentaire en Afrique centrale à travers la gestion et l'utilisation durable des produits forestiers non ligneux») analyse ce cadre aux niveaux national et sous-régional. Outre des études spécifiques commanditées par le projet, un atelier sous-régional a été organisé en juin/juillet 2006 par la COMIFAC, la FAO et la Coopération technique allemande (GTZ) pour développer les grandes lignes d'une stratégie sous-régionale pour la mise en œuvre d'un cadre légal approprié favorisant le développement du secteur PFNL et l'intégration sous-régionale en Afrique centrale.

Terminologie

En Afrique centrale, les codes forestiers font souvent la distinction entre produits forestiers végétaux et animaux. Dans la plupart des pays, les PFNL sont considérés comme produits végétaux bien que le terme «PFNL» soit peu appliqué dans la législation forestière de la sous-région. Les termes utilisés sont «produits forestiers spéciaux» (Cameroun), «produits de cueillette ou fruits» et «produits de la forêt naturelle» (République centrafricaine, RCA), «*productos forestales non maderables*» (Guinée équatoriale), «produits forestiers autres que le bois» (Gabon), PFNL (République démocratique du Congo, RDC) et «produits forestiers accessoires» (République du Congo).

Les définitions de PFNL fournies par les différents codes forestiers restent floues et se contentent généralement d'une énumération des produits selon les termes utilisés. Une classification harmonisée des différents produits ou catégories de produit est inexistante en Afrique centrale.

Cadre légal

Dans les différentes législations en vigueur dans les pays de la sous-région, les différents textes régissant la gestion des PFNL sont tous construits sur le modèle classique de l'aménagement forestier et l'utilisation durable des ressources naturelles, celui-ci étant axé sur l'exploitation du bois d'œuvre. Les codes font référence aux PFNL d'une façon aléatoire et isolée. Des stratégies nationales ou sous-régionales définissant les priorités politiques pour une valorisation efficace de ces produits sont inexistantes.

Droit d'usage

En Afrique centrale, la propriété et la gestion des ressources forestières sont du ressort de l'Etat. La loi forestière accorde aux populations riveraines des forêts le droit d'usage des PFNL pour satisfaire leurs besoins domestiques. La commercialisation des PFNL est exclue du droit d'usage dans la plupart des pays. En RDC, la commercialisation est autorisée pour quelques fruits listés par les autorités provinciales.

Dans plusieurs pays, on observe un dualisme entre le droit coutumier et le droit écrit, ce qui rend difficile l'application du cadre légal.

Commercialisation

La commercialisation des PFNL nécessite l'obtention d'une autorisation pour la récolte, le transport et la vente des produits forestiers. Très souvent, les commerçants des PFNL devraient être agréés par l'autorité en charge avant de déposer la demande d'obtention d'une autorisation.

Ces procédures sont similaires au secteur bois et souvent difficiles à suivre par les commerçants des PFNL. Par conséquent, la plupart des personnes impliquées dans le commerce des PFNL n'ont aucun titre légal et exercent leurs activités dans l'illégalité ou l'informalité.

Fiscalité

La fiscalité relative aux PFNL commercialisés inclut le régime fiscal de l'accès à ces ressources, le régime de la vente des produits (par exemple taxe d'impôt libératoire, droit de marché) et de leur l'exportation (par exemple certificat d'origine et certificat phytosanitaire). La fiscalité des PFNL est peu développée. Cet état provoque des tracasseries extensives sur les prélèvements fiscaux, qui risquent

d'empêcher le développement du secteur privé.

Vu la provenance des PFNL des terres forestières et agricoles (par exemple dans les systèmes agroforestiers), l'application du régime fiscal forestier ou agricole reste souvent à être clarifié.

Cadre institutionnel

Le cadre institutionnel étatique est caractérisé par une multitude de ministères et d'institutions de recherche impliqués dans le secteur PFNL. Peu d'institutions ont une mission spécifique concernant les PFNL comme la Sous-Direction de la promotion et de la transformation des PFNL du Ministère des forêts et de la faune au Cameroun. Le manque de leadership institutionnel, de moyens humains et financiers et de collaboration efficace entre les institutions concernées ne facilite pas le développement du secteur.

Les interventions des partenaires au développement restent fragmentées et sont peu ciblées vu l'inexistence d'une politique nationale voire sous-régionale sur le sujet.

Le secteur privé reste peu développé et des associations professionnelles ou cadres de concertation sont quasi inexistantes dans la sous-région à l'exception du Cameroun.

Conclusions et recommandations

Le cadre législatif et réglementaire régissant l'utilisation des PFNL en Afrique centrale pourrait apporter une meilleure contribution à la valorisation du plein potentiel socioéconomique et écologique du secteur.

Au niveau politique, l'élaboration de stratégies compréhensibles, participatives et focalisées sur les acteurs concernés est nécessaire afin de définir les priorités pour le développement du secteur PFNL.

Ensuite, il est nécessaire de compléter et de renforcer l'application des textes réglementaires en prenant en compte les PFNL. Cela peut être facilité par l'inclusion des PFNL dans le domaine d'intervention du processus AFLEG/FLEGT qui se concentre, en ce moment, sur l'utilisation des ressources forestières ligneuses.

Au niveau du droit d'usage, il serait important pour légaliser le commerce des PFNL au niveau local d'analyser les possibilités d'étendre le droit à une commercialisation limitée par zone géographique.

Au niveau de la commercialisation et de la fiscalité, il est indispensable de mettre en place un dispositif d'octroi d'agrément spécifique aux PFNL, afin de faciliter l'accès aux permis de commercialisation. La fiscalité et les documents de circulation concernant les PFNL devraient être harmonisés afin de promouvoir le commerce sous-régional.

Au niveau institutionnel, il est nécessaire de clarifier et renforcer le rôle des services gouvernementaux concernés et de faciliter la création d'associations professionnelles relatives aux PFNL.

La mise en œuvre de ces propositions ne nécessite pas de financements importants mais dépend d'une volonté politique au niveau de leur application.

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d'informations sur ce projet.)**

CARMINE AND COCHINEAL EXTRACTS

The Food and Drug Administration (FDA) is deliberating a rule that would require food companies to state on their labels whether a product contains additives made out of insects that, when crushed and processed, yield a rich red or a vivid orange colour. The additives – carmine and cochineal extract – can cause allergic reactions in a small group of people.

The additives have been used for centuries and come from female beetles imported from Peru, the Canary Islands, Bolivia, Chile and South Africa. The FDA said that the beetle-derived ingredients are used in 815 cosmetic products, most of which are already labelled. The additives also produce the lovely pinks, purples and reds that perk up juices, Popsicles, cosmetic face blushers, fruit cocktail cherries, port wine cheese, artificial crab meat, strawberry milk drinks, caviar, fruit-based aperitifs and other products.

The FDA, based on company testing, declared carmine and cochineal extract safe in the 1960s. Companies at that time said they had received no adverse reports from use of the substances. It was not until about ten years ago that medical reports

surfaced showing that the additives can cause allergic reactions.

The FDA proposed in January 2006 that foods containing carmine and cochineal extract list them on their labels. Retail cosmetics must already list them, but the FDA proposal adds "professional-use" cosmetics and gifts or free samples that often come with promotions to buy cosmetics. Companies would have two years to change their labelling under the proposal, which could cost up to US\$3 million, the FDA said. Because they come from insects, carmine and cochineal extract are considered natural additives and can now be accounted for on a label as simply "artificial colour" or "colour added". (Source: *The Seattle Times* [United States], 10 May 2006.)



"Riches of the forest: for health, life and spirit in Africa"

COMMERCIALIZING NON-TIMBER FOREST PRODUCTS: DOES IT HELP POOR PEOPLE?

Non-timber forest products (NTFPs) provide food, building materials and medicines, and are an importance source of income. But many development programmes for rural forest communities fail to make the best use of these products.

A report from the United Nations Environment Programme's World Conservation Monitoring Centre, funded by the Forestry Research Programme of the United Kingdom Department for International Development (DFID), looks at 16 NTFP value chains in Mexico and Bolivia. The plant products traded include wild cocoa, organic rubber, mushrooms and various palms. Commercialization increases the demand for NTFPs that are already farmed or produced by poor communities in tropical forest areas. This approach supports the idea that people

need access to a range of different activities for secure incomes.

Several factors make NTFP commercialization successful, but research findings indicate that forests can only contribute to poverty reduction when poor people have secure long-term rights to forest resources. Land tenure is also important, but neither Mexico nor Bolivia has policies specifically to support this aim and forest-dependent communities are often forced to trade NTFPs in the informal sector because they lack the legal requirements to trade in official markets.

Non-governmental organizations (NGOs) can help, but most NGOs provide support through donor projects. These often lack coordination with government programmes and general donor funding for commercializing NTFPs tends to be low. Nevertheless, research shows that NTFPs can contribute up to 95 percent of a household's annual income, providing a safety net when other activities fail to provide income. NTFPs also represent one of the few income opportunities for women in rural communities, who are more likely to be involved in processing and cultivating the products.

Several factors may contribute to the lack of success of NTFP commercialization initiatives, including the following.

- In most cases, commercialization initially leads to overexploitation of a resource.
- Communities often suffer from a lack of market information and a limited capacity to act on it when they do receive it.
- Many projects define success on how well a product sells, rather than considering other non-financial benefits considered important by rural forest-based communities, including improved organization, resource management and individual status.

The successful commercialization of NTFPs can reduce poverty, increase gender equality and improve landownership and access to resources for poor people. It can also improve forest management practices and make them more sustainable. However, this is largely subject to interventions from governments, including:

- policies that focus on more than one product and support a range of NTFPs;
- a clear statement of which laws apply to NTFPs, under which circumstances and who is responsible for implementing them;

- better access to education, information and credit systems for poor rural people and small-scale entrepreneurs;
- better transport and communication facilities in forest areas to improve access to markets;
- policies that further increase opportunities for women in NTFP activities.

[Source: *Commercialization of non-timber forest products in Mexico and Bolivia: factors influencing success*, eds E. Marshall, K. Schreckenberger and A.C. Newton. UNEP World Conservation Monitoring Centre, 2006; <http://quin.unep-wcmc.org/forest/ntfp/outputs.cfm>]

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ESSENTIAL OIL OF SPANISH SAGE

Spanish sage (*Salvia lavandulifolia* Vahl) is endemic to the Iberian Peninsula, arable and of high commercial interest. Its name comes from the Latin *salvus*, which means "in good health", on account of its curative properties. It contains active principles that make it a very interesting species, both scientifically and commercially (it is also used in perfumery). Most of its popular uses are fully justified by scientific research.

The major sage species are *Salvia officinalis* (common sage) and *S. lavandulifolia*, which is taxonomically close to *S. officinalis*.

Plants grown in experimental fields in Castilla-La Mancha (Spain) were studied for



Salvia lavandulifolia

their essential oil composition and yield. Plant material was harvested from crops belonging to the Agronomic Centre in Marchamalo, Guadalajara, dependent upon the Agriculture and Environment Delegation, sampling once monthly during the vegetative resting season and after flowering, and twice monthly during initial and full flowering.

In each sample, water content was determined by an azeotropic mixture of xylol-toluene. Volatile fraction was obtained by Clevenger water distillation and gas chromatography was analysed. Chromatography analyses were done by flame ionization detector (FID). Major constituents were identified on the basis of their retention times and Kovats rates, compared with adequate reference compounds.

Essential oil yield (percentage) is expressed as essential oil volume (ml) obtained for every 100 g of dry plant material. Yearly average yield was 2.2 percent. Yield at initial flowering was 1.6 percent and during full flowering it was 2.8 percent.

Chemical composition. Identified constituents are 1-8 cineol, limonene, camphor, α pinene, camphene, myrcene, borneol, β pinene, p cymene, viridiflorol, α humulene, bornyl acetate, terpinen-4-ol and γ cadinene. [Contributed by: Dr M.P. Arraiza and Dr J.L. de Pedro, Department of Forestry Engineering, ETSI Montes, Universidad Politécnica de Madrid, 28040 Madrid, Spain. E-mail: paz.arraiza@upm.es; joseluis.depedro@upm.es]

HONEY TRIALS ON CANCER PATIENTS

A Manchester (United Kingdom) cancer hospital is importing manuka honey from New Zealand to treat patients after surgery. The honey is believed to have healing powers and doctors at Christie Hospital plan to use it on mouth and throat cancer patients. They hope it may reduce the patients' chances of contracting methicillin-resistant *Staphylococcus aureus* (MRSA) and help lessen inflammation.

It has been used on special honey-coated dressings at the Manchester Royal Infirmary since May. Now 60 patients at the hospital are taking part in a study to see whether the honey can prevent infections that can be resistant to antibiotics.

The honey is produced by bees that mainly feed on the manuka bush. It can be expensive – up to £12 for a jar – but the hospital is

buying in bulk to help keep costs down and has so far imported 400 kg of honey for the clinical trials. [Source: BBC News [United Kingdom], 7 July 2006.]



ICE CREAM SPRINKLES

Sprinkles are those tiny chocolate sweets that transform plain ice cream into a fun treat. Chocolate sprinkles are made largely from sugar and cornflour, with a little fat to soften the texture and some cocoa powder to give them flavour and colour. The rainbow-coloured sprinkles have no flavour added whatsoever. To improve their appearance, sprinkles are coated with confectioner's glaze and wax.

Confectioner's glaze is the term for edible shellac. A thin layer of shellac puts a shine on the sprinkles just as it does on a polished wooden surface. Confectioner's glaze and wax give the shine to everything from malted milk balls to jelly beans. [Source: *The Capital Times* [United States], 1 August 2006.]

MARKETINGMAAP: MEDICINAL AND AROMATIC PLANTS MARKETING

The purpose of this group is to provide a forum for herb sellers and buyers at the international level. It provides an opportunity for members to post their trade inquiries and contact potential markets around the globe. The group also discusses the problems of herb trading.

For a subscription, send a request, with full address and contact details to: marketingmaap-subscribe@yahoo.co.in [Contributed by: P. Oudhia, Founder, Marketingmaap, 28-A Geeta Nagar, Raipur, Chhattisgarh, India. E-mail: pankajoudhia@rediffmail.com; <http://in.groups.yahoo.com/group/marketingmaap>]



MEDICINAL PILLOW

Mongolians use many species of medicinal plants to cure all kinds of chronic illnesses and have traditionally used pillows made from a wide variety of aromatic plants. The Mongolian company Khuvsgul-Ikh Taiga has produced aromatic pillows, using time-honoured methods. These pillows are now sold in shops in Ulaanbaatar.

The aromatic pillow has wormwood (*Artemisia*), thyme and juniper contents. It has a soothing effect and acts as a precaution against coughs and influenza. [Source: Mongolia Web News, 11 April 2006.]



NATURAL FIBRES TO SAVE A MILLION TROPICAL FOREST TREES

Coconut, jute, sisal, rubber and other permanent tree crops cause less soil degradation than many other agricultural crops and generally have a positive environmental impact. When sustainably produced from plantations and farms, they can substitute sawnlogs and fuelwood, otherwise exploited from natural forests. The economically available volume of these plants and trees corresponds to an amount of natural tropical timber that is harvested annually from an area of about 0.6 million ha. The production and utilization of these plants can therefore reduce the pressure on natural tropical forests and contribute towards biodiversity conservation.

The major available replacements for wood products in today's scenario are plastic, metals and a few other products. Given the close resemblance of coir and other hard fibres to wood in chemical composition and the availability of renewable fibre every 45–60 days, they would in all practical aspects be good replacements for tropical timber. Such new and innovative products could provide the entire range of wood products, by substituting wood with value-added natural fibres for sustainable development.

When calculated on an all-India basis, consumption by about 20 000 interior designers and architects would be approximately 5 460 000 trees per year, equivalent to clearing 50 753 acres (20 540 ha) of forest.

Poor rural areas need the means for socially and environmentally sustainable development. Coconut, jute, sisal and rubber plantations could be considered a production

system for small and marginal farmers that is socially desirable and environmentally positive, particularly if agroforestry principles are applied. The social and environmental benefits of plants and palms have clearly outweighed possible ecological problems. In particular, the socio-economic conditions of the agrobased industry mean employment potential for millions of the rural population, mostly women. [Contributed by: T. Mathew, Natur Fibertech Pvt Ltd, Aysha Complex, 3rd Floor, 1st Main Road, Jayamahal, Banagalore 560 048, India. E-mail: natura@naturaindia.com or Tommy@naturaindia.com; www.naturaindia.com]



NATURE-BASED ENTREPRENEURSHIP PROVIDES NEW BUSINESS OPPORTUNITIES IN RURAL AREAS

In Finland, as in many other European countries, there is a clear need for new business opportunities in rural areas because of the continually decreasing number of jobs in more traditional entrepreneurship sectors such as agriculture and forestry. One example of a potential new livelihood is nature-based entrepreneurship (NBE).

NBE can be defined as sustainable entrepreneurship based on the resources and experiences offered by nature. The sector offers, for example, tourism products, handicrafts and food products, which are based on nature and natural resources, or material or immaterial values (e.g. silence, clean air and water). The products can usually be described by attributes: nature-centred, responsible, domestic, local, handcrafted and individual. Typical examples of NBE are nature tourism activities (e.g. canoeing and hiking) and utilization of NWFPs. In NBE, nature is a significant factor and must be taken into account in an

ecological way. Therefore, the sustainability and environmentally friendly production processes, as well as social responsibility, typically have a major role in NBE.

The role of the sector has also been observed at the policy level, e.g. in national rural policy and forest policy programmes. One of the main reasons is that the income originating from NBE, especially from nature tourism, is consistently good throughout rural regions. NBE can offer livelihoods for rural entrepreneurs as a main business or a secondary occupation.

The growing trend of NBE can also be seen in education where its role is becoming more and more important in the educational programmes of vocational schools, polytechnics and even universities. In addition to the diversified farmers and other rural entrepreneurs expanding to the NBE sector, there is a coming new generation of entrepreneurs, who are educated specifically to be professionals in the sector. In the business development of these new entrepreneurs, the appropriate new technologies such as information computer technology (ICT) solutions could be essential aids to benefiting from both national and international information and in building international networks. [Contributed by: A. Matilainen, University of Helsinki, Ruralia Institute, Seinäjoki unit, Kampusranta 9, 60320 Seinäjoki, Finland. Fax: +358 (0)6 421 3301; e-mail: anne.matilainen@helsinki.fi; www.helsinki.fi/ruralia/seinajoki]



NEWSLETTERS

Biodiversidad

Biodiversidad es una revista trimestral independiente latinoamericana, producida en forma conjunta por GRAIN (España) y REDES (Amigos de la Tierra, Uruguay). *Biodiversidad* se publica en español, algunos artículos se traducen de *Seedling* y otros son contribuciones de colaboradores de la región.

Biodiversidad es una publicación informativa y de debate sobre diversidad biológica y cultural para el sustento de las comunidades locales. Cubre también el uso y la conservación de recursos genéticos, impacto de las nuevas biotecnologías, patentes y políticas públicas.

PARA MÁS INFORMACIÓN, DIRIGIRSE A:

Grain, Gerona 25, pral. E-08010, Barcelona, España. Tel.: (+34) 933011381; fax: (+34) 933011627; correo electrónico: grain@grain.org; www.grain.org/biodiversidad/

ForLive Highlights

ForLive Highlights is a new quarterly newsletter reporting on the ongoing activities and outcomes of the ForLive project "Forest management by small farmers in the Amazon: an opportunity to enhance forest ecosystem stability and rural livelihoods". This newsletter is also available in Spanish as *Destaques ForLive*.

FOR MORE INFORMATION ON THE PROJECT, PLEASE CONTACT: Inka Montero at inka.montero@waldbau.uni-freiburg.de or visit www.waldbau.uni-freiburg.de/forlive/Home.html

The ComForM Newsletter

The *ComForM Newsletter* is the official newsletter of the bilateral Programme for the Enhancement of Research Capacity in Developing Countries (ENRECA) project "Community-based natural forest and tree management in the Himalayas" (ComForM).

FOR MORE INFORMATION, PLEASE CONTACT: H.O. Larsen, Editor, ComForM office, c/o Dean's office, Institute of Forestry, Pokhara, PO Box 203, Nepal. E-mail: hol@kvk.dk; <http://nepal.sl.kvl.dk>

NON-PROFIT ORGANIZATIONS AND NGOS

Caravan – Forestry Conservation and Development Project

Caravan, a regional Northwest Frontier Province-based Pakistani NGO, is implementing a forestry conservation and development project in upper Swat in northern Pakistan with the objectives of introducing a community-based mechanism for sustainable forest resources and promoting NTFPs as an economic alternative for poor communities.

The organization had a breakthrough when three clusters of grassroots-level community organizations formed valley conservation and protection committees and a multistakeholder forum called the Kohistan Integrated Development Forum (KIDF) to facilitate and monitor the overall conservation, protection and development of forest resources in the area. KIDF has entered into an agreement with forest department local officials to collaborate in developing forest resources and has also assisted in the establishment of joint

community and forest department checkpoints to combat timber smuggling.

FOR MORE INFORMATION, PLEASE CONTACT: S. Jafar Shah (Executive Director), Illege Colony, PO Box 18, GPO Saidu Sharif Swat, Northwest Frontier Province, Pakistan. www.caravan-swat.org/

CALLING ALL NGOS AND NON-PROFIT ORGANIZATIONS

Is your NGO or non-profit organization involved in any aspect of NWFPs? Would you like information about your organization and its NWFP activities to reach a wider audience? If so, please contact us – we are interested in learning more about you and sharing the information with our readers. Articles not exceeding 200 words are welcome in English, French and Spanish and should include full contact details. Please send them to Tina Etherington at the address on the front page. We look forward to hearing from you!

Centre for Integrated Rural Development and Environmental Conservation (CIRDEN)

Created in 2003, CIRDEN is a registered non-profit community-based organization operating in the Northwest Province of Cameroon. CIRDEN's mission is: "Improving livelihoods through community empowerment for sustainable development" and their current projects include: environmental protection and agroforestry; ecotourism and museum promotion; and youth/women empowerment and microfinance projects.

FOR MORE INFORMATION, PLEASE CONTACT: N.R. Fru, Chief of Communication and Research, CIRDEN, PO Box 104, Mankon Bamenda, Northwest Province, Cameroon. Fax: (237) 336 20 18; e-mail: cirden200@yahoo.com or ntomnif@yahoo.com

Earthwatch Institute

Earthwatch Institute is an international non-profit organization that supports scholarly field research worldwide in the biological, physical, social and cultural sciences. This support covers a variety of topics and welcomes diverse scientific communities.

Earthwatch provides scientists with the funding and human resources they need in the form of motivated and dedicated paying volunteers. Preliminary proposals are accepted and reviewed throughout the year and should be submitted 18 months in advance of the anticipated fieldwork. Principal investigators must be present in the field and oversee all research activities. Professionals from any nationality, for work in any regional area, are eligible to apply. In particular, Earthwatch is interested in supporting typically under-represented groups, such as early career scientists, women in science and developing country nationals.

FOR MORE INFORMATION AND TO DISCUSS POTENTIAL PROJECTS, PLEASE CONTACT: Earthwatch Institute International, 3 Clock Tower Place, Suite 100, PO Box 75, Maynard, MA, United States 01754-0075. Fax: +1 978 461 2332; e-mail: research@earthwatch.org; www.earthwatch.org/research

Ecological Internet, Inc.

Ecological Internet, Inc., a non-profit charity formerly named Forests.org, specializes in the use of the Internet to achieve environmental conservation. Ecological Internet's mission is to empower the global movement for environmental sustainability by providing information retrieval tools, portal services and analysis that assist in the conservation of climate, forest, ocean and water ecosystems; and to initiate the age of ecological restoration.

Online since 1993 and one of the first 10 000 Web sites, the NGO has grown to be the most substantial and effective environmental conservation portal and action network in the world. Approximately one million users visit Ecological Internet a month. Ecological Internet's action network regularly helps achieve conservation outcomes, most recently in the Congo and Indonesia. Ecological Internet takes a biocentric approach, seeking ecological science-based policy responses adequate to address the range of environmental crises that threaten the Earth and humanity.

FOR MORE INFORMATION, PLEASE CONTACT: G. Barry, Ph.D., President, Ecological Internet, Inc., PO Box 433, Denmark, WI 54208-0433, United States. E-mail: GlenBarry@EcologicalInternet.org; www.ecoearth.info/campaigns/



MacArthur Foundation announces programme to recognize small non-profit organizations

The Chicago-based John D. & Catherine T. MacArthur Foundation has announced a new annual award of up to US\$500 000 for small non-profit organizations around the world that have shown unusual effectiveness and creativity.

The Foundation will not seek or accept nominations for the award, which will be in addition to any other funding MacArthur may provide to organizations. To qualify, organizations must demonstrate exceptional effectiveness and creativity; have reached a critical or strategic point in their development; have annual budgets of less than \$2.5 million; show strong leadership and stable financial management; work in one of the fields that MacArthur funds; and have previously received MacArthur support.

FOR MORE INFORMATION, PLEASE CONTACT:

The John D. and Catherine T. MacArthur Foundation, Office of Grants Management, 140 S. Dearborn Street, Chicago, IL 60603-5285, United States. Fax: +1 312 920 6258; e-mail: 4answers@macfound.org; www.macfound.org/site/c.1kLXJ8MQKrH/b.913959/k.BB2A/How_to_Apply.htm



PARASITISM OF AMLA, AN ECONOMICALLY SIGNIFICANT NTFP

Amla, the Indian gooseberry, is collected from two conspecific species, *Phyllanthus emblica* and *Phyllanthus indofischeri* (together formally *Embllica officinalis*). Collection in the Biligiri Rangaswamy Temple wildlife sanctuary in Karnataka, India, provides a significant proportion of annual cash income for the area's indigenous population and a substantial

amount of revenue for the Karnataka Forest Department.

Many amla trees in the sanctuary are heavily infested by hemiparasitic mistletoes. Infection leads to defoliation, reduced growth and productivity and eventually death. Recent research suggests the prevalence of infection in this area has increased rapidly in the last ten to fifteen years and that half of the total amla population may have already been lost. Harvesters consider mistletoe infection to be a major threat to sustainability. The impact of mistletoe parasitism on this species and therefore on the livelihood incomes of harvesters requires further investigation.

One major study in the sanctuary by scientists from Imperial College London's Division of Biology, in association with the local research organization Ashoka Trust for Research in Ecology and Environment (ATREE), has characterized spatial patterns in infection prevalence across the sanctuary and identified mechanisms behind mistletoe spread. This study will assess the full livelihood implications of mistletoe infection and assess the feasibility of specific management strategies.

It is hoped that the research will raise awareness that factors additional to harvesting can threaten the sustainability of important NTFP harvesting systems. (Contributed by: Lucy Rist, Imperial College, Division of Biology, Imperial College London, 4th Floor, Royal School of Mines, Prince Consort Road, London SW7 2BP, United Kingdom. Fax: +44 (0)20 7589 5319; e-mail: lucy.rist@ic.ac.uk or lucy.rist@imperial.ac.uk; www.iccs.org.uk)



PERSPECTIVAS DE LOS PRODUCTOS FORESTALES NO MADEREROS Y DE LOS SERVICIOS AMBIENTALES EN AMÉRICA LATINA Y EL CARIBE

La extensa superficie de los bosques de América Latina y el Caribe y su inmensa diversidad biológica representan un gran potencial para la participación de los productos forestales no madereros (PFNM) en los mercados locales, regionales e internacionales. Estos productos benefician a las comunidades locales y al igual que el pago por servicios ambientales (PSA) suelen ser herramientas que ayudan a financiar inversiones que persiguen el desarrollo sostenible. Entre los servicios ambientales

de mayor relevancia se encuentran los servicios hidrológicos; la protección de la diversidad biológica; el almacenamiento de carbono y la protección de la belleza del paisaje natural.

En los últimos decenios, ciertos PFNM han crecido en importancia para la economía en pequeña escala. Si bien la participación de estos productos en la economía formal por lo general no es significativa (debido a la escasez de datos acerca de la valoración económica y la falta de registros de estos productos), existen algunas excepciones que juegan un papel muy importante como fuente de ingreso para las poblaciones que viven en los bosques o en sus cercanías. Entre ellos se puede mencionar la castaña de Pará (*Bertholletia excelsa*), cuyos mayores productores en 2002 fueron el Brasil (30 mil toneladas), Bolivia (22 mil toneladas) y el Perú (2,9 mil toneladas). Otro valioso producto es el palmito (*Euterpe* spp., *Bactris gasipaes* y *Guilielma* spp.), el Brasil cuenta con una producción de 117 mil toneladas anuales (2002), el segundo productor regional es Bolivia, cuya producción proveniente del bosque natural está siendo paulatinamente sustituida por el palmito de plantaciones.

También en el Cono Sur (subregión que comprende: Argentina, Brasil, Chile, Paraguay y Uruguay) se encuentran productos que se elaboran en gran escala como la yerba mate (*Ilex paraguariensis*), el boldo (*Peumus boldus* o *Boldoa fragrans*) de Chile, el piñón (*Araucaria araucana*) y el palmito. Los mayores productores de yerba mate en 2002 fueron la Argentina (327 mil toneladas), Brasil (205 mil toneladas) y el Paraguay (24 mil toneladas), países donde este producto es de consumo tradicional. En Chile, el cultivo de mimbres, ha logrado cierta importancia en la producción de muebles y otros accesorios.

En Centroamérica (Belice, Costa Rica, El Salvador, Guatemala, Honduras, Nicaragua y Panamá) y en México los PFNM son de gran interés para las comunidades campesinas e indígenas. La población hondureña utiliza más de 300 especies de la flora para autoconsumo y comercialización de subsistencia con fines de alimentación, uso medicinal, ornamental y en algunos casos industriales (fibras, látex, resinas y taninos). En Honduras, desde 1960 se resinan los pinos con el fin de producir aguarrás, colofonia, dipenol y aceite de pino (en 2002 la producción fue de 15 mil barriles de resina).

En Guatemala, el chicle (*Manikara achras*), el xate (*Chamaedorea* spp.) y la pimienta gorda (*Pimenta dioica*) son los productos más importantes dentro de su economía. En los últimos diez años se han difundido nuevos PFNM pero menos significativos que los anteriores. En México, por ejemplo, se utilizan cerca de mil PFNM, de los cuales 70 son comunes en el mercado con una producción anual de 68 mil toneladas, entre éstos se destacan la goma, la cera, la fibra, los fritos, los hongos y las cortezas. En este país, la mayoría de estos productos son de uso doméstico; sin embargo existe una infraestructura industrial para los PFNM más importantes como ser la resina de pino, lechuguilla, palmilla, orégano y candelilla. En Costa Rica, entre otros países de esta subregión, se usan plantas medicinales tales como la cuculmeca (*Smilax domingensis*) y la uña de gato (*Uncaria tomentosa*) y en el Caribe prevalece el uso de diversos tipos de palmeras para la construcción.

El mercado de los servicios ambientales en América Latina y el Caribe es muy amplio. La demanda por servicios ambientales incluye los usos del bosque para el ecoturismo y recreación en áreas especialmente desarrolladas para estas actividades. Los consumidores de estos servicios son poblaciones locales, nacionales y extranjeras, y este subsector tiene un alto potencial para generar ingresos, impulsando el desarrollo económico regional.

Tanto en el mercado de los servicios como en la producción de los PFNM, los habitantes rurales juegan un importante rol, ofreciendo oportunidades de aumentar los beneficios económicos de los bosques, contribuyendo al mejoramiento de las condiciones económicas de los sectores más pobres de la población y promoviendo el manejo forestal sostenible.

Principales fuerzas impulsoras que afectan los PFNM

Las principales fuerzas impulsoras que afectan la producción de los PFNM son dos: 1º) la demanda en los mercados nacionales e internacionales y 2º) los programas y políticas nacionales y locales.

La fuerza número uno ha estimulado la producción de algunos PFNM a mayor escala, que han desarrollado canales apropiados de distribución. Es importante mencionar que la limitación para la expansión de la producción de los PFNM está relacionada con la disponibilidad de

los recursos, características de los productos, tamaño de los mercados y aspectos de logística de transporte y distribución en los mercados consumidores.

La segunda fuerza está relacionada con los programas y políticas nacionales y locales que han favorecido la producción sostenible de ciertos PFNM, como por ejemplo en las Reservas de Extractivos en Bolivia y en Brasil, que a su vez están estrechamente relacionadas a las instituciones y a las comunidades comprometidas con el desarrollo de este subsector.

Principales fuerzas impulsoras que afectan los servicios ambientales del bosque

Las políticas de desarrollo sostenible y de protección de los recursos forestales en algunos países de la región, junto a la implementación de programas nacionales y locales, son de estímulo para el desarrollo de los servicios ambientales del bosque. Mecanismos innovadores realizados en forma conjunta a estas políticas están creando una creciente demanda nacional e internacional de estos servicios. Algunos ejemplos concretos incluyen el turismo ecológico, el pago por servicios ambientales, los créditos de carbono, que están en línea con iniciativas globales de valoración de los usos múltiples y beneficios de los bosques como la protección de las cuencas hidrográficas.

PFNM y servicios ambientales del bosque: perspectivas para el 2020

Se hace difícil la descripción del escenario de la oferta de los PFNM y los servicios ambientales de los bosques en América Latina y el Caribe, ya que prácticamente no existen series estadísticas sistemáticas disponibles sobre los mismos, aún si se conoce un gran número de proyectos o trabajos en marcha que demuestran el potencial de estos segmentos.

Probablemente en las próximas décadas la producción de los PFNM y la oferta de servicios de los bosques en América Latina y el Caribe continuarán en aumento, sobre todo si los gobiernos de la región seguirán incentivando la producción y el desarrollo de los mismos. Aunque el impacto de estos programas en la economía sectorial en muchos casos es pequeño, a escala local tienen un efecto significativo, ya que en gran parte se integra a las necesidades de las comunidades y poblaciones locales.



MERCADOS DE PFNM

El desarrollo de los mercados internos e internacionales para ciertos PFNM específicos y el consecuente incremento de la demanda de los mismos, podrían crear nuevos estímulos para aumentar la producción comercial; aún así, para la mayoría de los PFNM, el grado de producción continuará siendo limitado y sus mecanismos de distribución (logística) permanecerán ineficientes para lograr mercados más grandes y más distantes. Solamente los PFNM cultivados a gran escala (mediante el desarrollo de plantaciones), tendrán un mayor potencial de expansión de producción y de mercado si se basan principalmente en precios más competitivos. Entre estos ejemplos se incluyen la producción de goma hevea (caucho), el cultivo de hierbas medicinales por haciendas farmacológicas, producción de palmito y yerba mate. Por otro lado, existe un gran potencial de utilización de la diversidad biológica de la región para fines comerciales y de turismo ecológico, así como la creciente investigación sobre la utilización de ciertos tipos de plantas comestibles y medicinales.

Se presume que la región de América Latina y el Caribe no quedará fuera del contexto global ya que nuevas leyes y regulaciones ambientales, como por ejemplo, la demanda creciente de tecnologías limpias y proyectos conservacionistas entre otros, crecerán en la mayoría de los países. Estas regulaciones podrían servir como incentivos a los programas de desarrollo relacionados con los PFNM y los servicios ambientales del bosque.

La mejora en la organización y la disponibilidad de la información y datos acerca de los PFSM (por ejemplo redes informativas regionales), la implementación de proyectos sobre la protección de los recursos forestales y de servicios ambientales, continuarán ofreciendo nuevas oportunidades para las inversiones y la valorización de la importancia socioeconómica y ambiental de estos productos y servicios. Si se crean canales de comercialización específicos y se promueven ventajas regionales, es probable que los PFSM produzcan a escala industrial verifiquen un crecimiento económico. (Contribución de: Sandra Rivero, Consultora, Dirección de Productos e Industrias Forestales, FAO. Correo electrónico: Sandra.Rivero@fao.org)

PARA MÁS INFORMACIÓN, DIRIGIRSE A:
Olman Serrano, Dirección de Productos e Industrias Forestales, Departamento Forestal, FAO, Viale delle Terme di Caracalla, 00153 Roma, Italia. Correo electrónico: Olman.Serrano@fao.org o Estudios sobre Tendencias y perspectivas del sector forestal en América Latina y el Caribe, www.fao.org/forestry/site/outlook/sp

POISONOUS TREE FROG COULD BRING WEALTH TO A TRIBE IN THE BRAZILIAN AMAZON

An indigenous tribe of the Brazilian Amazon is attempting to transform the presumed healing properties of the secretions of a venomous frog into a potential pharmaceutical product of value to the global community.

The tribe – led by Chief Fernando Katukina and located in the Campinas Indian Reserve of Brazil – has relied throughout its history upon the poisonous secretions (or “slime”) of a frog known as the kambô (*Phyllomedusa bicolor*) and also called the giant monkey frog, because it climbs high into the rain forest canopy, for healing purposes. Tribal shamans have used the slime as an ancestral remedy to treat illness, pain and even laziness. It is believed that the compound from the frog contains anaesthetic-like properties.

The Brazilian Government has announced its support of the tribe’s endeavour to introduce the kambô’s secretions into the country’s research and development profile, where the poison

could be transformed into a pharmaceutical product. It is known that these secretions have already been the subject of study by scientists who have acquired several of the frogs and attempted to analyse the healing properties of their secretions. However, one United States-based pharmaceutical corporation that has acquired multiple patents on the frog’s poison has yet to produce a viable product.

Thus, as a measure to prevent further acts of what has been deemed “biopiracy”, Chief Katukina and the Brazilian Government have engaged in a project (Project Kambô) to fund in-country scientists so that they can study the properties of the frog’s poison further so that it can be incorporated into a safe, effective medicine capable of being marketed on a global scale. The crucial ingredients are compounds with anaesthetic, tranquillizing and other medicinal properties. Scientists say the promise lies in isolating peptides from the frog’s slime and then reproducing them for medicines to treat hypertension, strokes and various illnesses. The kambô remedy is known as the *vacina do sapo* or frog vaccine (however, despite the term “vaccine”, the slime does not vaccinate against any specific germ or illness).

The project was launched last year after Marina Silva, Brazil’s Minister of the Environment, received a letter from Chief Katukina, denouncing the growing use of kambô poison by outsiders. Its perceived benefits in recent years have fuelled a pirate trade in the poison in cities across Brazil. Its use, the letter added, is nothing less than biopiracy; if economic gain is generated by the remedy, the Katukina tribe should receive a share. Ms Silva agreed and authorized a ministry project to study the kambô, stipulating that any profits derived from the research be shared with the Katukina.

The frog remedy is one of a handful of customs the Katukina preserve. After catching the frog in nearby trees, tribe members tie it spread-eagle style between two posts, collecting slime from its back and sides with a piece of wood, where it dries. They then release the frog and later, with water or saliva, rehydrate the dried poison before applying it. Once the body processes the poison’s toxins its compounds induce what users say is a prolonged sense of alertness and well-being. Because they believe it heightens their senses, Katukina hunters traditionally use it the most.

Fernando, one of only two tribe members to work outside the reserve, is convinced of the kambô’s value and adamant that the medication, if used by others, could improve a tribal economy that is currently at subsistence level. The vaccine belongs to us,” he said. “Science might help us develop it, but kambô knowledge is Katukina.” (Sources: *The New York Times*, 30 May 2006 and the American Association for the Advancement of Science [AAAS], 2 June 2006.)

(Please see p. 10 for more information on bioprospecting/biopiracy.)



PROGRAMME FOR THE PROMOTION AND DEVELOPMENT OF NON-WOOD FOREST PRODUCTS ACROSS AFRICA

The Women’s International Coalition Organization (WICO) Africa and the Women’s Global Green Action Network (WGGAN) are starting a Programme for the Promotion and Development of Non-wood Forest Products across Africa. Its aim is to improve the environmentally friendly, ecologically viable and socially equitable use of NWFPs in order to improve income generation and food security; contribute to the wise management of Africa’s forests; and conserve its forest biodiversity. The Programme’s target groups are women and youth.

One of the NWFPs developed is the raffia palm under the Raffia Renaissance Project, using raffia for food (raffia fruit) and drink (raffia wine alcohol production), using the leaves to produce household and fashion items and accessories, and the branches to produce furniture.

There are also projects on rattan, mushrooms, snail farming, etc. with local women's groups.

The Programme works across Africa and also promotes organic farming and fair trade. (Contributed by: Ms R.O. Mbone Enie, WICO Africa President and WGGAN Africa Coordinator, PO Box 1075, Limbe, Cameroon. E-mail: rosembone@gmail.com; www.wicohome.org; www.wggan.org)



REPTILE SKINS SEIZED

On 20 December 2005, over 55 000 reptile skins were seized by the Directorate of Revenue Intelligence at Mumbai port, India, representing one of the largest-ever seizures of snakeskins. The skins had been concealed in 80 jute bags that were booked for export to Singapore and marked as "red chillies". At least three species of snakes were identified – python (*Python*), cobra and rat snake (*Ptyas mucosus*) (CITES II). (Source: *TRAFFIC Bulletin*, 21(1), 2006.)



RESIN PRICES

Indonesia and China have agreed to maintain their resin price in the world market at over US\$900 per tonne, the Chief of state-owned forestry company Perhutani said. The company represented Indonesia during a meeting with representatives of the Chinese Chamber of Commerce and a Chinese forest products company. He said that they had agreed upon the need for the two sides to collaborate in boosting trade in the commodity and maintaining the price of resin at an advantageous level.

China is currently the world's biggest resin producer with a production of about 640 000 tonnes/year, of which some 50 percent are exported. Indonesia is currently the world's second biggest resin producer. The price of Chinese resin fell in May 2006 to \$840 per tonne from the previous \$1 300/tonne.

China has various species of pine trees that produce latex for resin and has in Hainan Province the *Merkusii* species of pine forest, a species also owned by Indonesia. But the resin production of this species is small, namely only 1 000 tonnes/year. (Source: Antara News [Indonesia], 10 July 2006.)



RIGHTS AND RESOURCES INITIATIVE

The Rights and Resources Initiative (RRI) is a new coalition of organizations dedicated to raising global awareness of the critical need for forest tenure, policy and market reforms, in order to achieve the global goals of poverty alleviation, biodiversity conservation and forest-based economic growth.

Many people who live in forested regions, which cover 30 percent of the world's land mass, manage to exist on a frugal US\$2 a day or less, and this includes some 350 million indigenous and tribal people who depend on forests for food, housing, heat and medicine. The Initiative seeks to reduce by half the proportion of people in forest areas who live in extreme poverty by 2015. This can only be done, the group argues, if these communities have clear rights to own and use forest resources.

Founding partners of RRI include the Indonesia-based Center for International Forestry Research (CIFOR); the Coordinating Association of Indigenous and Community Agroforestry in Central America (ACICAFOC); the Washington, DC-based Forest Trends; the Bangkok-based Regional Community Forestry Training Center for Asia and the Pacific (RECOFTC); the Foundation for People and Community Development, Papua New Guinea; and the World Conservation Union (IUCN).

The partners agree that it would be impossible for the world to reach the Millennium Development Goals on poverty and environmental protection without addressing the rights and improving the economic status of the 1.6 billion people – nearly one third of the planet's population – who depend on forests for their survival.

RRI is capitalizing on growing interest – from forest communities, industry, national governments and global development institutions – to shape policies and markets that can make forests integral to poverty reduction. It has assembled a global

network of organizations across the world, including community groups, NGOs, research institutions, government officials and market analysts in Africa, Asia and the Americas.

ACICAFOC in Central America believes that the situation in many countries is ripe for the kind of assistance RRI can provide. Members of this group now control some 14 percent of Central America's forests. Their progress has been accelerated by targeted policy and technical guidance, such as management plans that offer locally controlled and sustainable use as an alternative to total bans on commercial activities.

In Southeast Asia, communities of farmers conserve large areas of biodiversity-rich secondary forests independently of conservation programmes.

Village-managed forests in central and southern Africa house diverse species and ecosystems.

Forty million ha of forest in Mexico (seven million in well-organized community forest enterprises) and three million ha of forest in Central America are under community management, with some community timber enterprises investing double the amount for habitat protection as governments in adjacent state-protected areas.

Other countries in Asia and Latin America are conserving species and habitat while producing different marketable and locally consumed forest products – be they timber, non-timber, botanicals, fibre products or organic crops. (Source: Forest Policy Info Mailing List, 3 May 2006.)

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ROSIN BAGS AND BASEBALL

In baseball there is only one piece of equipment lying loose in the field of play – the rosin or resin bag that is placed near the back of the pitcher's mound. During the course of a baseball game at any level, the pitcher will often pick up the rosin bag and slam it back to the ground.

The general definition of the rosin bag is "a bag filled with rosin; used by baseball

pitchers to improve their grip on the ball". It was not until 1926 that the Major League Baseball Rules Committee agreed that pitchers could have access to the rosin bag.

It appears that a former Galesburg resident was the first player to use rosin as a pitching aid. During his younger days as a pitcher, Paul C. Mulberry was having trouble controlling his curve ball. One day when helping to thresh hay on the farm, he noticed that the farmer was applying a white powder to the fan belts of the threshing machine. On inquiry he was told that the substance was rosin. Mulberry speculated that the rosin powder might be the answer to his pitching problems. He bought some of the rosin (a by-product of turpentine) and the next day, 31 July 1916, he used the rosin during a game for the first time.

Initially, Mulberry would dip his pitching fingers into the powder contained in a paper bag in his trouser pocket. He soon decided that the paper bag was not satisfactory and switched to a salt sack. Not surprisingly, the opposition eventually complained to the umpires and forced an investigation. The umpires decided that the use of the rosin was acceptable but that the bag must be placed on the ground near the pitcher's mound. Mulberry felt that the secret of his curve ball was the strategic placing of the rosin on the fingers. [Source: Tom Wilson, *The Galesburg Register-Mail*, Galesburg [Illinois, United States], 9 May 2006.]



SPECIAL TOOLS FOR SAFE GUM TAPPING OF STERCULIA AND ACACIA TREES

[This article is in response to Non-Wood News 10, i) *News and Notes*, pp. 23–25, "Improved gum/resin tapping techniques in some species" by M.N.B. Nair; and ii) *Country Compass*, pp. 49–50, "Scientific harvesting of kullu [*Sterculia urens* gum]" by P. Bhattacharya.]

From time immemorial gum has been used locally, as well as in industry and trade but, with a growing population in India, the supply of gum is not keeping pace with demand. Gum in its natural form is collected from naturally regenerating forests in the form of exudate from stem wounds. All efforts are made to tap out the maximum gum and resin from the trees but little consideration is given to the extent of damage caused.

Axes have traditionally been used by gum tappers to make incisions on the trees; however, there are several disadvantages in their use.

- Gum tappers strike vigorously with their axes on practically the whole trunk of the tree. This means that there is no control over the depth of the incisions and they are likely to endanger the survival of the trees.
- Incisions are so narrow that some of the exuded gum remains within the trunk and is not collected.
- The exuded gum is in contact with the bark of the tree and takes on a dark colour from the tannins in the bark; the gum subsequently fetches a low price because of its inferior quality.

As a result of destructive and unscientific gum tapping, there has been significant mortality in commercially important gum-yielding species. Gum tapping has consequently been banned by some of India's state forest departments, which has resulted in falling revenue and declining foreign exchange earnings.

To overcome this problem the authors have designed some specific gum-tapping tools to save *Sterculia* and *Acacia* trees, on the basis of experimental gum tapping from 1970 to 1986 of *A. nilotica* and *Prosopis juliflora* in the Meerut and Mathura Forest Divisions of Uttar Pradesh and the Hissar and Ambala Forest Divisions of Haryana within a project of the Forest Research Institute, Dehra Dun.

Manufactured after certain necessary modifications, the new special tools should prove beneficial in the tapping of commercially important gum-yielding species such as *Sterculia urens*, *S. villosa* (gum karaya), *Anogeissus latifolia* (ghatti gum), *Lannea coromandelica* (jhingan gum), *Bauhinia retusa* (semula gum) and *Acacia senegal* (true gum arabic) as well as gum-oleo-resin from *Boswellia serrata*.

Experiments have shown that the tools manage to control the optimum depth of the incisions on the trees, thus helping to obtain the maximum amount of gum without causing damage to the trees. It has also been seen that gum ducts are generally formed about 15 cm from the incision. Whether gum ducts are lysigenous or schizogenous in origin, in both cases it is not necessary to make large or deep incisions at the initial stage. The subsequent depth of freshenings needs to be controlled in order to avoid unnecessary damage to trees. It is hoped that the tools

will prove successful in obtaining sustained gum production with no tree mortality.

The new gum-tapping tools

Details of the newly designed tools for making initial incisions and subsequent freshenings may be obtained from the authors. Since it was seen that the tools caused no damage to trees in gum tapping of *Acacia nilotica* and *Prosopis juliflora*, it is recommended that they may also be used safely for the commercial tapping of important species such as *Sterculia urens*, *S. villosa*, *Anogeissus latifolia*, *Lannea coromandelica* and *Bauhinia retusa*.

An added advantage of the tools is that they are not very heavy; tappers do not need to carry heavy loads to forest areas. They are all designed to overcome most of the difficulties in gum tapping; they cause minimum injury to trees and safeguard them against mortality. The tools can be used safely in tapping true gum arabic from *Acacia senegal* trees in place of the spear-shaped tool used at present in the Sudan. It is therefore recommended that the state Forest Departments switch over to the use of the newly designed tools in order to work efficiently with no significant detrimental effects on trees. [Contributed by: M.P. Shiva, N.P. Singh and F.R. Thakur, Centre of Minor Forest Products, Dehra Dun, India.]

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TRADE AND NWFPs

Global analysis of trade-related instruments

In August 2004, TRAFFIC International was engaged by FAO to carry out a global analysis of trade-related instruments influencing trade in NWFPs and their applications in and impacts on poverty alleviation and sustainable forest management. Case studies on specific NWFPs in international trade were carried out in Cameroon, Bolivia and Papua New Guinea by other, locally based NGOs and the results of these studies were incorporated in the global analysis.

Examples of NWFPs studied included the bark of the African cherry (*Prunus africana*) and African grey parrot (*Psittacus erithacus erithacus*) in Cameroon, and caiman (*Caiman yacare*) and Brazil nuts (of *Bertholletia excelsa*) in Bolivia. Funding for this important work was provided by the Norway Partnership Programme "Forests for Sustainable Livelihoods".

A comprehensive report has been produced and is to be published in February 2007 as an FAO working paper. (Source: TRAFFIC Bulletin, 21(1), 2006.) (Please also see p. 76.)



International trade in NWFPs

In the last issue of *Non-Wood News*, we presented the global import values of raw materials, as well as semi-processed and processed products, for 1992 and 2002. Tables 1 and 2 give the 2004 figures.

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TRADITIONAL ALLELOPATHIC KNOWLEDGE

The traditional healers of the Indian state Chhattisgarh believe that natural forests are an arrangement of Mother Nature. Although people consider that in forests trees grow in a haphazard manner, the healers believe that there is a specific reason for the presence of any tree with other trees and that biochemical relationships exist among these trees. Although the term "allelopathy" is new to the healers, as a student of this new branch of science I believe that they have always been aware of allelopathic relationships among plants. I have called this "traditional allelopathic knowledge" and have taken steps to document it.

This ancient knowledge is practised in many ways. I observed its use for the first time in northern Chhattisgarh. Before collecting any herb from the forest the

healers treat it with specific herbal extracts and leachate. This treatment starts from one month before to the day of collection. For different herbs, different extracts and leachate are used. According to need, the herbs are also treated for different lengths of time. The healers believe that this treatment enriches the herb with medicinal properties. Many solutions are used to "activate" the medicinal contents of herbs. In these cases the herbs are used fresh without any storage.

In Chhattisgarh thousands of herbs grow in the natural forest. The healers have specific treatment for every herb; for example, when neem (*Azadirachta indica*) bark is collected, the trees are treated with the whole plant extract of *Rungia repens*. The same extract protects the roots of old trees of *Bauhinia variegata* from fungal infection. In other regions the healers use the same extract to enrich *Putranjiva* roots with medicinal properties.

TABLE 1. Global import values of key NWFPs for which HS code refers to a single product (US\$ million)

HS code	Commodity description	Global import value 2004
060410	Mosses and lichens for bouquets, ornamental purposes	24.9
070952	Truffles, fresh or chilled	29.5
070959	Mushrooms other than <i>Agaricus</i> , fresh or chilled	427.3
071239	Mushrooms (excl. 071331/33) and truffles, dried	244.2
200320	Truffles, prepared or preserved, not in vinegar	12.7
080120	Brazil nuts, fresh or dried	106.2
080240	Chestnuts, fresh or dried	200.4
230810	Acorns and horse chestnuts for animal feed	0.1*
120792	Shea nuts (karite nuts)	1.4*
121110	Liquorice roots	29.7
121120	Ginseng roots	245.5
121190	Plants and parts, pharmacy, perfume, insecticide use n.e.s.	908.2
121210	Locust beans, locust seeds	22.6
130110	Lac	43.1
130120	Gum arabic	179.5
130190	Natural gum, resin, gum resin, balsam, not gum arabic	107.7
400130	Balata, gutta-percha, guayule, chicle and similar gums	13.0
130214	Pyrethrum, roots containing rotenone, extracts	26.3
140110	Bamboos used primarily for plaiting	55.7
140120	Rattan used primarily for plaiting	53.4
140210	Kapok	0.1*
170220	Maple sugar and maple syrup	137.4
200891	Palm hearts, otherwise prepared or preserved	64.9
320110	Quebracho tanning extract	47.0
320120	Wattle tanning extract	37.4
320130	Oak or chestnut extract	0
450110	Natural cork, raw or simply prepared	107.0
530521	Abaca fibre, raw (<i>Musa textilis</i>)	28.5
TOTAL		3 153.7

* 2001 value (as no longer in HS 2002).
 Source: UN Commodity Trade Statistics.

When bark is collected, especially the inner bark of old trees, the healers treat the trees at different stages. First they irrigate the tree with herbal solutions in order to prepare the tree to tolerate the shock of bark collection; after collection they apply the solution to the injured part to heal the wound. They subsequently visit the trees and monitor their growth. In the case of poor growth they apply different kinds of solutions, for they are aware that without such treatment the trees will die. This knowledge protects the trees from injury and can play a vital role in the replantation of old trees in urban regions.

Traditional allopathic knowledge is also used in crop cultivation, whereby the healers are able to repel insects and increase the initial growth of seedlings. Old trees are given new vigour. The healers' knowledge is also used to establish new forests.

During interactions with the healers I have tried to learn from them. They told me that the herbs present in the surroundings of any selected herb in natural forests play a vital role in enriching it with medicinal properties. They visit the forest regularly and try to learn from nature. Much of their knowledge has reached them from their ancestors. As very few healers are aware of this unique gift, it is in danger. In extensive summaries (over 9 000), I have put what I have learned on the Botanical.com and Ecoport.org Web sites, yet the healers' knowledge seems endless. I feel that a scientific base is necessary. I have successfully applied my learning to the commercial cultivation of Indian medicinal and aromatic crops.

In Chhattisgarh this knowledge is not used by herb traders and collectors so that the medicinal herbs coming to national markets are not as rich as they could be. I feel that the

knowledge existing in Chhattisgarh should also be present in other parts of the world. A forum is needed for healers worldwide so that they can share their experiences.

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TRADITIONAL LEATHER CRAFT

The Muir & McDonald Tannery in Dallas is one of only three tanneries left in the United States. It produces approximately 400 finished sides of leather per month, with about 40 percent of the sales going to a saddle company in Oklahoma. There are other large clients in the United States, but the company also sells to Canada, Germany and the Netherlands.

The Dallas location was ideal for obtaining the Douglas fir bark necessary for extracting tannins when the company was founded in 1863. The 143-year-old tannery maintains its current time- and labour-intensive method of converting animal hides into leather via the "vegetable" process.

Once a week, about 50 hides are collected from some of the company's contacts at 60 local beef or dairy cattle operations. These full hides are "covered liberally" with rock salt and put in a storage area, where they cure for about a month. They are then soaked in a lime-water solution for ten days and cut into two separate halves or "sides"; the hair is scraped away by hand. The resultant "rawhide" can be sold to make large drums, cover saddle-making forms ("trees"), or for other basic uses.

The bulk of the rawhide is started on a ten-week process to be converted to leather. Steps include soaking the hides in tannins made from fir bark and the extract – quebracho – from a South American plant, and then reintroducing oils back into the leather using steam and pressure.

Muir & McDonald says it is the oldest United States tannery using the vegetable process.

A "chrome process" is much quicker, less costly and produces a softer leather, Muir & McDonald said, but the sulphides and other acids used to burn off the hair can be toxic. They say that they have no environmental concerns with their process. [Source: Geoff Parks, *Statesman Journal* (Salem, OR, United States), 17 September 2006.] ♣

TABLE 2. Global import values of selected commodities for which HS code includes NWFPs among others (US\$ million)

HS code	Commodity description	Global import value 2004
010600	Animals, live, except farm animals	454.5
030110	Ornamental fish, live	271.2
040900	Honey, natural	771.8
041000	Edible products of animal origin n.e.s.	231.9
051000	Ambergris, civet, musk, etc. for pharmaceutical use	84.2
060491	Foliage, branches, for bouquets, etc. – fresh	492.3
060499	Foliage, branches, for bouquets, etc. – except fresh	117.1
071230	Mushrooms and truffles, dried, not further prepared	348.0
200390	Mushrooms n.e.s., preserved, not pickled	106.2
080290	Nuts edible, fresh or dried, n.e.s.	712.8
090610	Cinnamon and cinnamon-tree flowers, whole	60.4
090620	Cinnamon and cinnamon-tree flowers, crushed or ground	18.5
110620	Flour or meal of sago, starchy roots or tubers	9.1
120799	Oil seeds and oleaginous fruit n.e.s.	176.7
130232	Mucilages and thickeners, from locust bean, guar seeds	342.7
130239	Mucilages and thickeners n.e.s.	391.3
140190	Vegetable materials n.e.s., used primarily for plaiting	37.5
140200	Vegetable materials for stuffing/padding	3.7
140300	Vegetable materials for brush/broom making	27.3
140410	Raw vegetable material primarily for dyeing and tanning	20.8
140490	Vegetable products n.e.s.	155.6
320190	Tanning extracts of vegetable origin	65.6
320300	Colouring matter of vegetable or animal origin	393.4
330129	Essential oils n.e.s.	535.7
330130	Resinoids	33.0
380510	Gum, wood or sulphate turpentine oils	29.5
380610	Rosin and resin acids	232.8
410320	Reptile skins, raw	99.2
430180	Raw fur skins of other animals, whole	121.5
460110	Plaits and products of plaiting materials	0.4
460120	Mats, matting and screens, vegetable plaiting material	220.7
460191	Plaited vegetable material articles not mats or screens	143.0
460210	Basketwork, wickerwork products of vegetable material	1 078.8
660200	Walking sticks, seat-sticks, whips, etc.	62.1
TOTAL		7 849.3

* 2001 value [as no longer in HS 2002].

Source: UN Commodity Trade Statistics.