

 ARMENIA

Armenian tea isn't appreciated in Armenia

When the thyme leaves blossom, residents of nearby villages begin to harvest the herb from the lofty meadows around Sisian, Kapan and Goris. The fragrance of the thyme is pronounced in these areas and the oil content of the herb is rich.

"Bio Universal" LLC, purchases the thyme from the residents in its dried state and produces tea, oil, syrup, tinctures and seasonings from the herb. "Some 3 200 herbs grow in Armenia, of which 1 500 are medicinal plants. Many such plants are only to be found in Armenia," says Yuri Chilingaryan, the firm's director. "Based on this fact, we've decided to select the better-known varieties and produce teas, essential oils and condiments from them."

Tea is produced from thyme flowers and oil from the stems. The rest of the herb is used to make seasonings for appetizers and cheese that is aged underground. One gram of thyme essential oil can cure 100 kg of meat. It neutralizes the meat's odour and prolongs its shelf-life.

These products are also used for curative purposes. Thyme tea regulates the body's metabolism, cleanses it of the negative properties of alcohol and narcotics and stabilizes blood pressure. Thyme oils refresh and rejuvenate the skin. Joint pain can be eased when the affected areas are massaged with thyme essential oil. These items are also used to produce medicinal remedies since the herbs contain potassium, calcium and magnesium, among other elements.

Bio Universal began operations two years ago. During this period, teas, syrups and oils made from blackthorn, hawthorn, rose hips, mint, peppermint and other medicinal herbs have been added to the product list sold under the Manana brand name.

While these herbs were traditionally used in Armenian medicine, Armenian consumers today are more attracted to the black and green tea varieties more commonly found on the market. One of the reasons is that Armenian teas are expensive when compared with other tea types. One packet of thyme tea, for example, has an intrinsic value of 1 300 drams and is sold in stores for 1 560 drams. One gram of thyme essential oil is valued at around US\$5. This cost factor does not allow for large quantities of the product to be sold on the Armenian market.

In addition, 20 percent VAT (value-added tax) is also tacked on. This further complicates matters for the small-scale producer, says Chilingaryan. "We have packaged and stored away much of our product line but it's been a year already that we haven't been able to sell it. Our thyme and rose hip items are stored but haven't yet been packaged. At the same time we're ready to produce more and expand our production that today only amounts to 25–30 percent of total capacity."

The Armenian market for Bio Universal's product line is fairly small. Thus, the company views any future growth solely linked to the foreign market and orders with foreign buyers are at present being negotiated. [Source: Hetq Online [Yerevan, Armenia], 4 February 2008.]


 AUSTRALIA

Europe a weak link in the native food chain

Indigenous Australians have eaten them for tens of thousands of years and scientists are now telling us they are among the world's best sources of vitamins and antioxidants. But sales of Australian native foods are being hindered by stringent international laws that treat them as "novel foods" alongside genetically modified crops and food engineered by state-of-the-art nanotechnology. It is one of the reasons, say industry experts, that a dozen Australian "superfruits" are still a novelty on menus from Paris to London and Montreal.

Sibylla Hess-Buschmann, a native foods grower and researcher, has spent the past 18 months collecting documentation to prove that ancient Australian foods such as lemon myrtle and Kakadu plum are not novel exports to the European Union (EU). Since the establishment of the EU and the

mad cow disease scare, stringent food safety regulations have required importers to prove that products are not new, or face shipments being impounded. South American countries have called the EU's policies protectionist and appealed to the World Trade Organization for fairer access to EU markets for traditional foods.

The rarity of native food exports has created uncertainty for sellers and buyers and hobbled the export trade, Ms Hess-Buschmann said. But she hopes her research, combined with regulations expected soon, will open up the gate.

Not all barriers to the rise of native foods have been international. Australians have also been guilty of what some call a culinary cringe when it comes to our indigenous produce.

The Commonwealth Scientific and Industrial Research Organization (CSIRO) has estimated the industry's value "at the farmgate" at \$A14 million a year, not including the macadamia industry. But an industry spokeswoman, Martha Shepherd, said this figure was growing. An industry group, Australian Native Food Industry Ltd, began life only last year. It is now focused on getting about a dozen of the most commonly available native foods registered with the EU – a list that includes lemon myrtle, the quandong, the bush tomato, wattle seed and the desert lime. Some of these "priority foods", such as the Tasmanian pepperberry and the Kakadu and Illawarra plums, are among a list identified by Food Science Australia as having vitamin and antioxidant contents up to five times that of blueberry.

The chef Mathew Cribb says that the industry is a victim of its infancy, which means the prices of emu and crocodile can run to \$A70/kg. "Some of the ingredients are so expensive to buy that no one wants to take the risk."

Once that cycle is broken, they are confident that the times will suit Australian native foods – here and abroad. [Source: *Sydney Morning Herald* [Australia], 27 December 2007.]

 AZERBAIJAN

Originating centre and domesticating history of sea buckthorn (*Hippophae rhamnoides* L.) in Azerbaijan

The Genetic Resources Institute of the Azerbaijan National Academy of Sciences is one of the leading institutions in the region

and houses, among others, a Fruit, Berry and Grapevine Laboratory. The laboratory works on collections, reproduction studies, documentation and conservation of the gene pool of local resources of berry plants, including sea buckthorn.

There are natural brushwoods of sea buckthorn within 15 regions of the country Sheki-Zagatala, Quba-Khachmaz, Shirvan, Karabakh and Nakhchivan zones are especially rich in sea buckthorn. These ancient floristic regions of Azerbaijan are the origin of several families and genera, including oleaster (*Elaeagnus* L.) and sea buckthorn, which are representatives of the Elaeagnaceae Lindl. family. It is thought that migration to the north of these genera started from here.

Sea buckthorn used to be a tree-shaped plant in subtropical conditions. As a result of a colder climate in the Pleistocene and later periods, the bush shape began to develop. However, sea buckthorn kept its biological and morphological peculiarities, which are characteristic of tropical aboriginal wooden plants. Towards the end of the Cretaceous period, the Caucasus with its humid climate was covered by tropical and subtropical forests, but during freezing periods these tropical forests were nearly destroyed. However, the Talysh Mountains were not very exposed, which resulted in conditions to maintain the tropical forest components of the Hirkan flora. This is the reason why the Talysh Mountains play an exceptional role in the country's present very rich vegetation cover. Taking into account Hirkan flora's autochthonous origin, we believe that sea buckthorn has spread throughout Azerbaijan and to neighbouring countries directly from the Talysh region.

Like other fruit berries, sea buckthorn exists in many wild forms. Despite the large variety of sea buckthorn in Azerbaijan, there were no cultivated species. To meet individual demand, local people harvested wild brushwoods of sea buckthorn. Taking into account the small fruits, thorny bushes and the inaccessible locations of the natural brushwoods, fruit collection resulted in massive destruction of the wild varieties.

In order to meet both the people's and industry's demand, Siberian varieties of the sea buckthorn were introduced into Azerbaijan. However, testing of Altai varieties in three climate zones (Apsheron, Karabakh and Sheki) did not meet the expected results: the varieties were found

to be less fertile, with a short vegetation period and with low tolerance to diseases and pests.

Because of its national economic importance as a source of biologically active substances, the Genetic Resources Institute of the Azerbaijan National Academy of Sciences has begun to resort to the gene pool collection of 1972, in order to create high-yielding and qualitative varieties of sea buckthorn from local forms and introduced Altai varieties. The use of ecologically separated forms of sea buckthorn for hybridization allowed us to create a rich hybrid material. As a result, and appropriate to local soil and climatic conditions, the following cultivars have been created: Shafa, Zafarani and Tozlayan. These are high-yielding varieties (18–25 tonnes/ha), big-fruited (the weight of each fruit is 50–60 g), weak-thorned (Zafarani and Tozlayan) and even without thorns (Shafa).

In the natural brushwoods of Azerbaijan, sea buckthorn fruits mature towards the end of October. The new cultivars have different maturation periods (beginning of August to the second half of October) and are resistant to diseases and pests. These new sea buckthorn varieties are of universal character: they can be used as fresh fruits, to prepare jam, juice, liqueur, stewed fruit and much more. Thanks to their positive bioeconomic peculiarities, the profitability level is high (414–448 percent).

From a recent hybridization between forms of different origin (Siberia x Azerbaijan), three varieties of sea buckthorn with early maturation (ultra scope matured) fruits (July) and oil content (7.1 percent) have been obtained. Taking into account the economic efficiency of growing the above-mentioned varieties of sea buckthorn, we believe they can have great potential, not only in Azerbaijan, but also in countries with similar climatic conditions such as Turkey, the Islamic Republic of Iran, Bulgaria, Spain, Portugal and the southern regions of China. (Source: article by Mirza Musayev, in *GFU Update*, October 2007.)

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Valorización de productos forestales no madereros utilizados para crear artesanías

Los recursos forestales no madereros existentes en la amazonía boliviana alcanzan un potencial poco estudiado. Los pocos productos no madereros que se conocen tienen buena aceptación entre la gente. Al ser valorados representan una alternativa para generar ingresos económicos adicionales para muchas personas que dependen de estos recursos naturales.

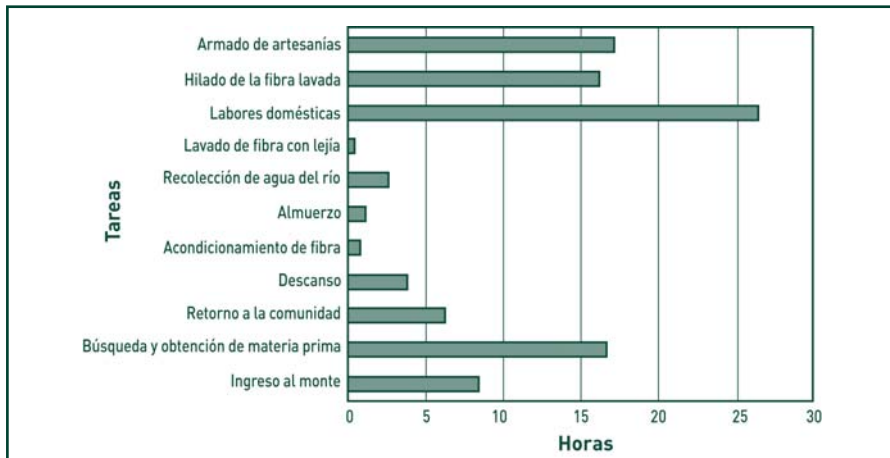
Las etnias indígenas que habitan las zonas bajas de la llanura tropical han aprendido a manejar sus recursos de forma sostenible. Un ejemplo de ello es que para facilitar varias actividades cotidianas han adoptado productos de origen vegetal, entre ellas se señala el uso de las fibras vegetales.

El uso de estas fibras ha permitido facilitar distintas actividades domésticas. Un buen ejemplo son algunos productos artesanales que elabora la etnia Yuqui, habitantes de la zona del trópico de Cochabamba (Bolivia), entre éstos se destacan las bolsas creadas con fibras de Ambaibo (*Cecropia concolor*) y Llausamora (*Abutilon purpusii*).

Este material vegetal proviene de la corteza de las especies antes mencionadas. Tanto el Ambaibo como la Llausamora poseen un filamento que se encuentra entre el ritidoma (corteza) y la parte interna del tronco (duramen). El aprovechamiento de estos filamentos conlleva una larga y ardua tarea, ya que algunas plantas como el género *Cecropia* vive protegida gracias a la simbiosis con hormigas agresivas que habitan en el interior del tronco.

Una vez aprovechada esta fibra pasa a ser transformada de forma artesanal en

Actividades regulares que intervienen en la transformación de bolsones. Las mismas fueron cuantificadas en horas promedio para bolsones medianos (25 x 22 cm.) elaborados en 5 días



pitás trenzadas. No existe una la tecnología adecuada para este trabajo, por lo tanto, los Yuquis lo realizan manualmente generalmente lo trabajan con las piernas. Este proceso conlleva mucho tiempo ya que este material es de textura dura y astillada.

Una reciente investigación realizada por E. Almanza y E. Sanzetenea tuvo como objetivo general valorizar de forma estratégica los productos artesanales de origen forestal no maderera de la comunidad indígena Yuqui. Los objetivos específicos fueron: a) registrar la cadena de transformación de un producto artesanal (bolsones) en dos zonas del trópico cochabambino; b) determinar el peso de los filamentos obtenidos de las especies aprovechadas en función de su desarrollo y ambiente, y c) determinar el peso de la fibra hilada (procesada) con relación a 100 gr. de fibra en bruto.

Entre las actividades que intervienen en la cadena de transformación, las tareas domésticas son las que ocupan mayor parte del tiempo. Los Yuquis se dedican más que todo a la caza, pesca y por ende a la atención del hogar ya que no son agricultores por tradición. Desde que empezaron a relacionarse con la cultura occidental influenciada por la migración colona, su cosmovisión sobre sus productos comenzó a tener un matiz más comercial y ello representa, hasta la fecha, extraer en mayor cantidad la biomasa del lugar.

No existe mucha abundancia de biomasa de Ambaibo (*Cecropia concolor*) y Llausamora (*Abutilón purpusii*) alrededor de la comunidad. Por referencias etnobotánicas hasta hace algunos años

atrás existía abundancia de biomasa en Bia Recuaté para elaborar bolsones de distintos tamaños. En los barbechos abandonados de sectores colonos (colindantes de la TCO Yuqui) se constató una mayor presencia de esta especie. En los lugares donde anteriormente hubo bastante intervención humana es donde se observó que el Ambaibo se desarrolla con toda tranquilidad. En predios de la comunidad San Marcos (vecina de la TCO), se encontraron manchas grandes de pura *Cecropias* ya que nadie le da importancia a estas plantas. En cuanto al *Abutilón purpusii* sucede algo similar.

En los lugares próximos a Bia Recuaté no se pudo encontrar esta especie, probablemente por las condiciones biofísicas del lugar. Al acercarse a la comunidad de puerto San Marcos, la Llausamora comienza a tener presencia en los barbechos abandonados. A unos 8 km al noroeste de San Marcos se encuentra el sector colono de Estaño Palmito, es ahí donde la abundancia de la Llausamora es mayor, aunque las plantas no presentaban mucho desarrollo sea en diámetro que en altura, a esa zona no es posible acceder por las diferencias entre colonos e indígenas. El Ambaibo y la Llausamora no son las únicas plantas tropicales que poseen fibras.

En otros bosques, algunas comunidades usan fibras de distintas especies como la Balsa (*Ocroma lagopus*), Jipi Japa (*Cardulovica palmata*), entre otros. La comunidad Yuqui particularmente, tienen más familiaridad con el comercio, ya que las fibras que ellos trabajan son bien aceptadas en el mercado local y a costos medianamente bajos.

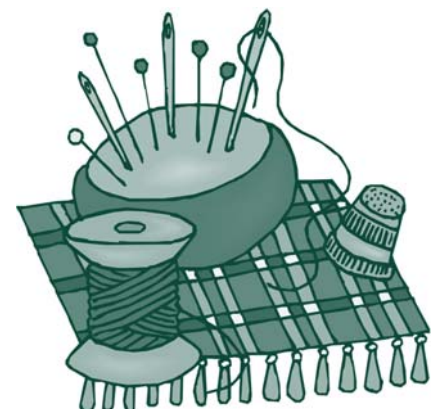
Al existir una buena aceptación del mercado sería interesante hacer ensayos de silvicultura de plantaciones, por ejemplo se podrían hacer ensayos de domesticación de las dos especies consideradas en este estudio bajo distintos tratamientos a fin de tener mayor materia prima a corto plazo.

Aportación hecha por Eddy Almanza Cadima, Proyecto Manejo Forestal Sostenible en Tierras Bajas de Bolivia (FOMABO-ESFOR/UMSS), Av. Atahualpa final norte, Temporal de Cala Cala, B. Prefectural, Casilla 447, Cochabamba, Bolivia. Correo electrónico: eddy_a_c@hotmail.com y Edward Sanzetenea Terceros, Escuela de Ciencias Forestales (ESFOR - UMSS), Av. Atahualpa final norte, Temporal de Cala Cala. B. Prefectural, Casilla 447, Cochabamba, Bolivia. Correo electrónico: e.sanzetenea@umss.edu.bo

Jipi japa resource

Jipi japa palm (*Carludovica palmata*) is extensively distributed throughout the lowland tropics, extending from the centre of Bolivia northwards into the Amazon basin. Generally it is found within forest fringes of foothills and around river banks. It grows in clusters of individual plants, and harvesters target young unfurled leaves from which to extract plant fibre to weave hats and for other diverse crafts.

Resource scarcity is considered to be largely a result of habitat loss – deforestation and mass land conversion to agriculture – rather than overharvesting. According to the National Protected Areas Service (SERNAP), people wishing to harvest jipi japa must ask for a permit related to its function and future use, i.e. either domestic or with a commercial aim. The law states that while individuals may own the land upon which jipi japa grows,



they do not own the actual resource. However, national regulation has little impact and, in reality, this government department receives a negligible number of requests for extraction permits.

As a result of depleted natural resources, some communities have attempted to domesticate the species, with the most promising results coming from growing it with other plants and under shade. (Source: *Commercialization of non-timber forest products: factors influencing success. Lessons learned from Mexico and Bolivia and policy implications for decision-makers*, eds. E. Marshall, K. Schreckenberg and A.C. Newton.)

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BURKINA FASO

Village Tree Enterprise – supporting development of small enterprises based on NWFPs

NWFPs are an important part of traditional livelihoods and culture in the West African Sahel and remain popular not only with rural people, but also with recently urbanized populations. Villagers generally have free access to communal forest resources. NWFPs are already an important source of income for rural households – especially for women, as NWFP harvesting and marketing are traditional preserves of women in Africa. Although official statistics are rare, informal evidence indicates that trade in NWFPs has grown in recent years, both domestically and internationally.

Yet isolation from marketing opportunities remains a familiar characteristic of rural livelihoods in the Sahel. TREE AID, an NGO based in the

United Kingdom, has developed a series of initiatives to help rural populations in the region take fuller advantage of opportunities for commercial trade in tree and forest products.

In January 2005, various departments of the Burkina Faso Government, local NGOs, TREE AID and FAO joined forces to launch a pilot project for the promotion of small business development based on tree and forest products: the Village Tree Enterprise. The pilot project adopted a Market Analysis and Development (MA&D) approach to entrepreneurial organization and capacity building at the village level to improve local processing and marketing of NWFPs. (Source: *Unasylva*, 228(58), [2007; <http://www.fao.org/forestry/8707/en/>]

Collection of wild plants for household consumption

In Burkina Faso, and throughout the West African Sahel, rural women carefully collect the fruit, leaves and roots of native plants such as the baobab tree (*Adansonia digitata*) and red sorrel leaves (*Hibiscus sabbarifa*), kapok leaves (*Ceiba pentandra*) and tigernut tubers (*Cyperus esculentus* L.) for use in the family diet.

These supplement the agricultural grains (millet and sorghum) that provide only a part of the nutritional spectrum and may fail in any given year. More than 800 species of edible wild plants have been catalogued across the Sahel. (Source: IK Notes 23 in *Building on gender, agrobiodiversity and local knowledge. A training manual*. FAO.) (Please see page 73 for more information.)



CAMBODIA

Life of people in community forests in remote areas

Farmers living in mountainous areas do not have sufficient land to produce rice. They live in hope of collecting NTFPs in both the wet and dry seasons.

At present, Cambodians living in rural and remote mountainous areas have more understanding thanks to awareness-raising efforts by both local NGOs and international organizations. Through these networks, communities have made improvements in organizing themselves to manage and protect natural resources and forest areas, which they believe are valuable for their children and the generations to come.

CAMBODIA NTFP WORKING GROUP

The Cambodia NTFP Working Group is an informal network of individuals and organizations working towards the promotion of forest conservation and sustainable NTFP livelihoods in Cambodia. They produce a monthly newsletter, *Forests, People and NTFPs*.

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Many communities living in the remote mountainous areas earn a livelihood by collecting NTFPs such as vines, rattan, wild fruits and honey. They also keep cows and buffaloes for labour exchange with the more affluent. The creative use of NTFPs helps to improve the living conditions of these communities and provide them with a brighter future.

The Vice Chairman of Taop Cheang Mountain Community Forestry said that in his community forest area there were plenty of honeybees this year, yet community members collected very little honey annually: they found it difficult to sell and it was cheap because the buyers assumed that it was not pure. No matter how hard the sellers try to explain that their honey is pure, the customers do not usually believe them.

People from Taop Cheang Mountain community rely on NTFPs, especially rattan. In general, the life of rattan collectors is extremely hard. They go to the forest in the wet season and have to set up camp to stay in the forest for many days. Since the water rises in the wet season, it is easy for boats to access and transport rattan canes. Rattan collectors have to go down deep valleys to look for rattan because these types of creepers grow in parallel with big trees. So the rattan collectors take many risks and spend a lot of money in transport. Sometimes, after dealing with all expenses, they end up having nothing left at their disposal. This makes collecting NTFPs hopeless for them. Yet they have no alternative.

There are five kinds of rattan canes (*phdao*) the traders need: i) *phdao ach moan* (*Calamus guruba*) is used for basketry and chair seats; ii) *phdao chhveang* (*C. palustris*) is excellent for

furniture frames; iii) *phdao saom* (*Daemonorops jenkinsiana*) is usually used for low-quality furniture and for coring and binding; iv) *phdao dambong* (*C. rudentum*) is used for handicrafts; and v) *preah phdao*. Every time collectors sell rattan to traders they are bought for a low price, with prices for one piece ranging from 200 to 300 riel (for *phdao ach moan*) to 1 000–1 500 riel for *preah phdao*. Sometimes the traders say they will buy only if the rattan is 5 m long. Prices are usually dictated by the traders and have no clear reference.

Therefore, there is little incentive for community people to collect rattan in the forest: rattan collection can be dangerous with the wild animals in the forest, and the price of rattan is low. If traders continue to lower the prices at their will, Cambodia's forest products may be of no use to communities in the future.

However, the community at present has hope in the local NGOs and international organizations that helped train them in techniques to process rattan for furniture and handicrafts and to find export markets. This is instrumental in order to improve the living conditions of the people in the Taop Cheang Mountain community and in other communities. [Source: *Forests, People and NTFPs*, Year 1, Issue 1, November 2007.]



Diversity of plants in cocoa agroforests in the humid forest zone of southern Cameroon

In the humid forest zone of southern Cameroon, farmers generally associate cocoa with native and exotic trees in complex agroforestry systems. Despite the socio-economic and ecological importance of these systems, few studies have investigated their plant composition. We investigated the tree composition of these cocoa agroforests along a gradient of market access, population density and resource use intensity in the subregions of Yaoundé, Mbalmayo and Ebolowa. Market access, population density and resource use intensity all decreased from the first to the third subregion.

We quantified the diversity of tree species associated with cocoa within individual agroforests, among agroforests in the same region and among the three subregions, and classified the tree species according to their main uses. A total of 9.1 ha belonging to 60 cocoa agroforests were

inventoried in 12 villages. We encountered a total of 206 tree species with an average of 21 tree species per agroforest. In the more urbanized area around Yaoundé, agroforests were less diverse than in the other subregions.

In all the agroforests, food-producing tree species tended to be more frequent than other species. Two-thirds of the food trees were native forest species and one third was introduced. From Ebolowa to Yaoundé, the density of food-producing trees doubled and the density of exotic food-producing species increased relative to native species. Some local species producing high-value NTFPs were found in the agroforests, but their density was far lower than that of exotic tree species. The agroforests also provide medicine, charcoal and other products for household consumption and sale.

We conclude that unless there are specific efforts to promote local forest tree species in cocoa agroforests, these will progressively lose importance with increasing market access, population pressure and land use intensity. [Source: D.J. Sonwa *et al.* 2007. Diversity of plants in cocoa agroforests in the humid forest zone of Southern Cameroon. *Biodivers Conserv.*, 16: 2385–2400.]

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Le Cameroun: les PFNL et la biodiversité forestière

Parmi les composantes de la biodiversité forestière, les produits forestiers non ligneux (PFNL) sont d'une manière générale les produits forestiers autres que le bois d'œuvre, désignant l'ensemble des biens et services pouvant être vendus, autoconsommés ou être utilisés par l'industrie comme source de matières premières provenant des ressources renouvelables de la biomasse. Alors, l'on ne pourrait savoir combien de fois les PFNL jouent un rôle important dans la satisfaction des besoins des communautés camerounaises et celles du bassin du Congo en général, comme étant leur moyen de subsistance, de maîtrise de la gestion de l'environnement sur le plan agro-sylvo-pastoral.

Dans le bassin du Congo, le Cameroun est l'un des pays ayant une potentialité considérable en biodiversité forestière. De ce fait, on y trouve un massif forestier dense et humide couvrant environ 60 pour cent de son territoire national, soit environ 20 millions d'hectares (classé au deuxième rang en Afrique). Par la richesse naturelle qu'offre sa biodiversité, on y trouve près de 297 espèces de mammifères sauvages (cinquième rang africain), 183 espèces de reptiles (sixième rang africain), 39 espèces de papillons (deuxième rang africain), 280 espèces d'oiseaux. Tout cela fait du Cameroun, le deuxième pays d'Afrique en matière de biodiversité forestière.

En plus de ce potentiel, il faut ajouter les plantes médicinales, les plantes alimentaires et les plantes de service. On compte près de 8 000 espèces de plantes parmi lesquelles près de 150 espèces sont endémiques au Cameroun; ce qui le place au deuxième rang africain.

Dans le cadre de cette étude, la collecte des données s'est faite pour certaines catégories de PFNL classés dans le sens latéral selon l'ordre décroissant de leur importance:

- les plantes médicinales, les plantes aromatiques et les plantes fourragères;
- les plantes médicinales, les exsudats et les produits apicoles;
- les plantes médicinales, les plantes comestibles, les plantes ornementales et les animaux sauvages vivants;
- les plantes médicinales, les plantes comestibles, les rotins et le gibier;
- les plantes médicinales, les plantes comestibles et les ressources halieutiques.

Grâce à ces travaux, certains PFNL (plantes médicinales et plantes comestibles) ont revêtu une grande importance socioéconomique à l'échelle nationale, alors que par l'absence de la vulgarisation d'une technique industrielle de conditionnement, d'autres PFNL pour le moment n'ont pas encore assez d'importance connue de tous pour une exploitation soutenue et durable. C'est l'un des problèmes majeurs liés à la gestion des PFNL et se posant dans la plupart des pays en développement, dans le bassin du Congo et au Cameroun en particulier.

Des expériences faites dans ces régions ont montré que les PFNL sont utilisés au niveau local pour la subsistance et/ou pour la génération des revenus économiques supplémentaires des populations; d'où la nécessité de leur commercialisation.

Présentation de quelques PFNL bien connus et trouvés au Cameroun

Nom commercial ou commun	Nom scientifique	Parties utilisées
Pygeum	<i>Prunus africana</i>	Écorce, feuilles, racines
Bush onion	<i>Apostyrax le pidophyllus</i>	Bulbes
Voacanga	<i>Voacanga</i>	Graines, feuilles, latex
Noisette (komol)	<i>Coula edulis</i>	Graines
Yohimbe	<i>Pausinystalia</i>	Écorces
Arbor à ail (Olom)	<i>Scorrodipheus zenkeri</i>	Ecorces
Rauwolfia	<i>Rauwolfia vomitoria</i>	Racines, écorces
Eru, Okok	<i>Gnetum africanum</i>	Feuilles
Strophantus	<i>Strophantus gratus</i>	Graines, feuilles
Bidou	<i>Saccogiotis gabonensis</i>	Ecorces
Moambe jaune	<i>Enanthia chlorantha</i>	Ecorces
Saringang	<i>Terminalia glaucescens</i>	Graines, écorces
Emien (Ekuk)	<i>Alstonia boonei</i>	Ecorces, racines, feuilles
Candle stick	<i>Carpolobia tues</i>	Tiges, écorces
Gomme arabique	<i>Acacia spp</i>	Exsudats
Atui (dabema)	<i>Piptadeniastrum afromomum</i>	Ecorces
Noix de kola (kola nut)	<i>Colonidita colacuacciminata</i>	Noix
Bambou de chine	<i>Arundunaria alpina;</i> <i>Oxytenanthera abyssinica</i>	Tiges
Aiele (abel)	<i>Canarium schweinfurthii</i>	Fruits, exsudats
Fromager	<i>Ceiba pentandra</i>	Racines, feuilles écorces,
Poivre sauvage (Bush pepper)	<i>Piper guineensis</i>	graines
Essesang (Indjanssang)	<i>Ricinodendron heudoletii</i>	Graines fruits
Bitter kola	<i>Garcinia kola</i>	Noix
Fève de Calabar (Calabar beans)	<i>Physostigma venenosum</i>	Graines
Divers afromomum	<i>Afromomum spp</i>	Graines, feuilles, fruits
Bush mango (andok)	<i>Irvingia gabonensis</i>	Ecorces, amandes
Charbon de bois	Tout bois	Bois carbonisé
Akpa	<i>Tetrapleura tetraptera</i>	Ecorces, racines, fruits
Dambala	<i>Discoglyprena</i>	Bois
Bilinga	<i>Nuclea diderrichii</i>	Fruits, racines écorces
Chewing stick	<i>Garcinia manii</i>	Bois
Padouk	<i>Pterocarpus soyauxii</i>	Ecorces
Ebene (Eboni)	<i>Diospyros spp</i>	Bois
Iroko	<i>Millitia excelsa</i>	Ecorces, graines, feuilles, exsudats
Wengue	<i>Milletia laurentii</i>	Bois
Bubinga (Essingan)	<i>Guibourtia tessimanii</i>	Ecorces
Rotin	<i>Calamus spp liagne</i>	Tiges
Moabi (adjap)	<i>Baillonela toxisperma</i>	Graines, écorces
Funtumia	<i>Funtumia spp</i>	Latex, bois

an ecosystemic vision that does not consider the forest just as a wood source, but as a benefit for the community, since it sets funds for forest recovery and for its non-lumber management," says Antonio Lara, Dean of the Forestry Science Faculty at the Austral University in Valdivia, Chile, and involved in the negotiations since 1992.

A key aspect of the law is the creation of an initial fund of US\$8 million a year for forest conservation, recovery and sustainable management projects. The text of the legislation mentions the establishment of an additional annual fund to "boost scientific and technological research related to the native forest and the protection of its biodiversity, soil, water sources, flora, fauna and the associated ecosystems". The law will also protect water sources by banning the felling of native forests located near springs, rivers, glaciers, wetlands and lands with steep slopes.

An advisory council will be set up – involving government authorities, forestry and biology academics, NGOs and native forest owners – to advise on the law's application and propose modifications.

Chile has more than 15 million ha of forest, 13.4 million of which are native. According to a press release from the Chilean Ministry of Agriculture, the law is likely to allow 500 000 ha of native forest to be preserved over the next 15 years, 600 000 ha to be recovered for productive use and 38 000 new jobs to be created in and around the forestry sector. Furthermore, the Ministry suggested that biomass from forest waste could also provide a potential source material for biofuel. [Source: SciDev.Net, 31 December 2007.]

Cette analyse montre que la biodiversité forestière est constituée d'un ensemble de ressources dont les PFNL sont les plus abondants et sont susceptibles de contribuer efficacement à l'atteinte d'un réel développement économique et durable en milieu tropical. Cependant, il serait souhaitable que tous les acteurs impliqués dans la gestion des ressources naturelles puissent trouver des moyens rapides et fiables pour une pérennité, afin de pouvoir concilier la protection de l'environnement et l'amélioration du cadre de vie des communautés riveraines des forêts.

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CHILE Chile approves Native Forest Law after 15 years

Santiago. The Chilean parliament has unanimously approved a law to preserve the country's forests, promote their sustainable use and foster related scientific research.

The Native Forest Law has been in negotiation for 15 years – the longest any law has taken to pass in Chile – and members of the scientific community, environmental organizations and government authorities have expressed great satisfaction with its approval this month (19 December). "This law introduces



DEMOCRATIC REPUBLIC OF THE CONGO Indigenous peoples map their forests with GPS in an effort to save them

This week over 500 villagers in the Democratic Republic of the Congo's rain forest will employ GPS (global positioning system) technology to map their forests in an effort to preserve their territory from logging companies. This large-scale community initiative is being managed by the Rainforest Foundation UK (RFUK), which has trained 66 "Master Mappers" to aid the villagers in mapping their territories, using motorbikes and canoes. The villagers are mapping their full

territory in the country, but are also employing GPS to mark significant areas including their villages, sacred places, and fishing and hunting areas.

The Congo Basin has the world's second largest rain forest. It has suffered greatly from the two civil wars in the Democratic Republic of the Congo (DRC) from 1996 to 1997 and from 1998 to 2003. During these devastating wars, militias and armies exploited the rain forest and its indigenous peoples with impunity. Since the end of war, the political stabilization of the country has meant that its forests are under new pressure, this time from industrial and often international logging companies.

"There is a rush for the trees," according to René Ngongo, from the local NGO, Organisation Concertée des Ecologistes et Amis de la Nature (OCEAN), which is working with RFUK. "What is at stake is enormous. Two-thirds of the people in the Congo Basin depend on this forest to provide food, medicines and building materials. It is critical for the survival of the people and animals."

The natives of the forest have largely been left out of forest policy thus far; the hope is that these maps will change all that. "It is going to be the first time that anybody in DRC sees on paper that these forest-dependent communities exist," Cath Long, RFUK Project Director, said. "Their maps will be a vital tool for the communities to negotiate with the government. It will allow them to demonstrate that they are there, and that they need to be taken into account when decisions are made about the forest they live in."

The maps are to be completed by 8 May, in time for a meeting where the government will decide how various territories of the forest are to be used. The meeting could affect forest policy in the country for decades. For indigenous villagers, who have already seen portions of their territory handed over to logging companies, this is an opportunity to make their voice heard.

Simon Counsell, RFUK Director, adds that the preservation of the rain forest, or the lack thereof, could no longer be considered purely a regional question. "This is an issue that affects us all because not only are rain forests home to an estimated 50 million indigenous forest peoples and more species of plants and animals than all the earth's other ecosystems combined, but also because

protecting the forests is essential in the fight against climate change." (Source: Jeremy Hance, mongabay.com, April 13, 2008.)

(Please see page 25 for more information on the Democratic Republic of the Congo.)



EL SALVADOR

El bálsamo de El Salvador: tradición y alternativa sostenible

El proyecto "Mejora, recuperación y promoción del bálsamo (*Myroxylon balsamum*) en cinco comunidades de la Cordillera del Bálsamo en El Salvador" es realizado por Intervida gracias a la contribución de la "Fondazione CARIPLO" de Milán, Italia. La idea del proyecto nació en 2003 cuando, visitando las zonas de intervención de Intervida en El Salvador, se tuvo la oportunidad de conocer las condiciones de vida de las poblaciones de la cordillera del Bálsamo. Se trata de una zona montañosa ubicada en los departamentos de La Libertad y Sonsonate, entre la carretera del Litoral y la carretera Panamericana que une la capital San Salvador a Sonsonate. Dichas comunidades viven en una de las zonas menos deforestadas del país, con gran vocación forestal y hasta hace pocos años dedicadas casi exclusivamente a la producción cafetalera.

Desde la introducción del café, el bálsamo, alto y majestuoso árbol, ha sido utilizado para dar sombra. A causa de la reciente crisis del precio del café, las comunidades rurales de la zona se han visto obligadas a buscar alternativas de generación de ingresos. Una de las más interesantes ha sido el regreso a la extracción de la resina del bálsamo; sin embargo, volver a esta producción supone toda una serie de problemas a los que los técnicos no tenían soluciones ni recomendaciones: no había literatura ni experiencia formalizada y estructurada. Es por esta razón que en el marco de un proyecto piloto se decidió proponer la realización de estudios que orientaran –

valorizando la tradicional experiencia de los productores – la formulación de propuestas técnicas que permitieran llegar a un aprovechamiento sostenible de este recurso forestal.

Un reciente libro (*El bálsamo de El Salvador: tradición y alternativa sostenible*, de Alessandrello, Marco; González, José Mardoqueo y de la Escuela Nacional de Agricultura, publicado en el marco de la ejecución de este proyecto, está estructurado en cuatro partes. Las dos primeras están basadas en investigaciones bibliográficas que presentan la historia del árbol y sus características, las técnicas de cultivo y extracción, calidad y usos de la resina. La tercera parte, basada en un trabajo experimental, presenta la investigación de campo sobre el cultivo del bálsamo en las cinco comunidades del proyecto y una guía del cultivo a partir de este estudio. La cuarta parte, dedicada a la comercialización de la resina, es fruto del estudio sobre el mercado nacional e internacional y las labores de investigación.

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EQUATORIAL GUINEA

Oil boom fuels bushmeat trade in Equatorial Guinea

Interdisciplinary research in continental Equatorial Guinea shows the impact of changing national economics on bushmeat hunting and trade. The economy has recently boomed following the discovery of offshore oil in the mid-1990s. A study of consumers, markets, households, hunters and offtake in the regional capital, Bata, and the village of Sendje, 41 km to the south and a major supply of bushmeat to Bata, has shown that the resulting increase in incomes is increasing demand for fresh meat and fish, with all fresh meat and fish types registering positive income elasticities. With few alternative sources of fresh animal protein (fish is favoured, but fisheries are underdeveloped and current supply is inadequate), and few alternative rural livelihoods, commercial hunting is increasing to feed this demand.

Over 10 000 animals (40 000 kg) were hunted in Sendje in 2003. Of these, relatively little bushmeat was bought or consumed by Sendje households, since its high cost meant it was more profitable to sell most of it (89 percent) to the Bata market and use the profit to buy cheaper dried fish or frozen alternatives. Across the village, hunting was the second highest-earning livelihood activity after wage-paying jobs (with hunting the sole livelihood for 55 of 93 adult males), but the median monthly income from hunting was less than half that of waged employment. Although one particularly prolific hunter had the highest per capita income in the village, in general men preferred the security of a regular wage, and nearly all said that they did not like hunting. Hunting tended to be a "fall-back" option, providing a source of income in the absence of preferable alternative livelihood opportunities.

Increasing the availability of alternatives at the urban level would decrease demand for bushmeat, but without provision of alternative rural income-generating opportunities as well, low opportunity costs mean that hunting will continue and hunting households will simply get poorer. Feasible solutions that address both demand and supply are therefore urgently needed to improve food security, livelihoods and conservation simultaneously.

[Source: N.F. Kümpel, 2006. *Incentives for sustainable hunting of bushmeat in Río Muni, Equatorial Guinea*. Institute of Zoology, Zoological Society of London and Imperial College London, University of London (Ph.D. thesis). Available at: www.iccs.org.uk]

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ETHIOPIA

Wild food plants in southern Ethiopia

The rural people of Ethiopia are endowed with a profound knowledge of the use of wild and medicinal plants, some of which are consumed and used particularly during

droughts, wars and other hardships. Elders and other knowledgeable community members are the key sources or reservoirs of plant knowledge. The consumption of wild food is still very common in rural areas, particularly among children. Of these, the most common wild plant fruits are those of *Ficus* spp., *Carissa edulis* and *Rosa abyssinica*.

The consumption of a wide range of wild plants is more common and widespread in food-insecure areas; the linkage has given rise to the notion of famine-foods, plants that are eaten only in times of food stress and are therefore an indicator of famine conditions. Local people know the importance of wild plants and the contribution that they make to their daily diet, although they also know about the possible health hazards, such as an upset stomach after eating certain wild plants. For example, *Balanites aegyptiaca* (*bedena* in Amharic), an evergreen tree 10–20 m tall, is typical of this category. Children eat its ripe fruit at any time as do adults when there are food shortages. The new shoots, which are always growing during the dry season, are commonly used as animal forage. During food shortages, however, people cut the newly grown succulent shoots and leaves and cook them like cabbage. People in the drought-prone areas of southern Ethiopia also apply these consumption habits to the fruits and young leaves of *Solanum nigrum* (black nightshade), a small annual herb, and *Syzygium guineense* (water berry tree), which is a dense, leafy forest tree about 20 m tall.

In parts of southern Ethiopia, the collection and consumption of wild food plants are key to important local survival strategies and have intensified because of

the repeated climatic shocks that have hampered agricultural production, leading to food shortages. Increased consumption of wild foods allows people to cope better with erratic, untimely rains, while they are also able to face several consecutive years of drought, without suffering severe food shortages, famine and general asset depletion, as is the case in other areas of Ethiopia. Although wild plants are found in uncultivated lowland bush, forest and pastoral areas, in the more densely populated and intensively used upper lands, a great variety of these indigenous plants and trees has been domesticated for home consumption and medicinal use. Konso, Derashe and Burji special *weredas* (administrative districts) and parts of the Southern Nations, Nationalities and People's Region (SNNPR) may still be considered part of the biodiversity hotspots of southern Ethiopia. [Source: Y. Guinand and D. Lemessa in *Building on gender, agrobiodiversity and local knowledge. A training manual*. FAO.] [Please see page 73 for more information.]

Ethnomedicinal plant knowledge and practice of the Oromo ethnic group

An ethnomedicinal study (by Haile Yineger, Delenasaw Yewhalaw and Demel Teketay in *Journal of Ethnobiology and Ethnomedicine*, 2008, 4:11) was undertaken from December 2005 to November 2006 to document indigenous medicinal plant knowledge and use by traditional healers in southwestern Ethiopia. Data were collected at random from 45 selected traditional healers using semi-structured interviews and observations.

Sixty-seven ethnomedicinal plant species used by traditional healers to deal with 51 different human ailments were identified and documented. The indigenous knowledge of the healers was positively correlated with their reported age but not with their educational level. A high degree of consensus was observed among traditional healers in treating tumours (locally known as *tanacha*), rabies (*dhukuba seree*) and insect bites (*hadhaa*). The use of more than one species was particularly cited for remedy preparations.

The reported abundance of the ethnomedicinal plant species varied significantly with regard to the presence of multiple uses of the reported species. Results showed that ethnomedicinal plant species used by healers are under serious threat owing to several factors, which



Balanites aegyptiaca

indicates the need for urgent attention towards their conservation and sustainable utilization. [Source: 7thSpace Interactive (press release) [New York, United States], 29 April 2008.]

GERMANY

German herbal cure market under strain

Germany has become the €1.6 billion a year global leader in herbal medicines, but the green lobby may be pruning back future profits.

Some 45 000 tonnes of plants, roots, shoots and leaves are harvested every year, more than in any other industrialized country. About 75 percent of customers in German pharmacies choose a natural product when buying non-prescription medications, and Germany is the world's largest exporter.

But conservationist Uwe Schippmann warns that excessive harvesting and unregulated trade pose a threat to the existence of 4 000 medicinal plants worldwide, about 150 of them in Europe. For about a decade, Schippmann's conservation group BfN (German Federal Agency for Nature Conservation) has been working with the World Wide Fund for Nature on a comprehensive protection plan for medicinal and aromatic plants. [Please see page 27 for more information.]

Growing these plants industrially is not an option – it is either impossible or requires too much effort to domesticate them. So unless ways can be found to replicate Mother Nature, natural medicines could become scarcer. [Source: This is Money [UK], 11 February 2008.]

GHANA

Bushmeat hunting and forest degradation in Ghana

Tropical forests play an important role in supporting the livelihoods of 21 million Ghanaians, particularly the rural communities. However, the combined effect of overexploitation of forest resources, unsustainable farming practices, bush fires and mining have significantly reduced Ghana's forest area. Continued forest loss, which is currently at an annual rate of 1.3 percent, threatens the existence of many valuable indigenous tree species such as African mahogany (*Khaya ivorensis*). In order to address this concern, the



Government of Ghana has embarked upon community-based forest rehabilitation and landscape restoration through the development of plantation and agroforestry systems, using indigenous tree species.

Determining the impacts of rehabilitation interventions on the livelihood structures and sociocultural practices of local communities in Ghana will be the main socio-economic subject of the Finnish-Ghanaian forestry research project "Restoration of Indigenous Forest Landscape in Ghana: Interdisciplinary Approach" between 2008 and 2011.

In Ghana, there is currently a "bushmeat boom" and people are encouraged to farm grasscutters instead of hunting animals. [See pages 25–27 of Non-Wood News 14 for more information on bushmeat and the boom in Ghana.] Bushmeat hunting can also cause deforestation if it is undertaken by starting bushfires to scare animals out of their natural habitat. FAO's *State of the World's Forests 2007* also indicated that commercial trade in bushmeat for consumption is probably the single most important cause of the decline in wildlife populations in many parts of Africa, ranging from insects, birds and turtles to primates, antelopes, elephants and hippopotamuses. However, what would be the socio-economic impacts if bushmeat hunting were to be prohibited in the project areas?

It is not clear how important bushmeat is for maintaining standards of living and as a source of protein in Ghana. For example, earlier studies in the United Republic of Tanzania suggest that the causes of hunting are connected with poverty and low dietary standards. Therefore, assessing the variation in forest use and dependence on all forest resources (and especially bushmeat) of different socio-economic backgrounds will be covered in this study. The empirical investigation of dependence on forest

resources may help to improve macrolevel poverty estimates and policy planning and execution. The quantification of environmental income may serve as an important factor in encouraging forest restoration or reforestation, input into the conservation policy and particularly establishment of protected areas, by determining the potential loss to rural dwellers of reduced access to environmental resources. [Contributed by: Dr Tapani Tyynelä, Finland.]

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Standardization and legalization of moringa leaf powder trade

Moringa is a tropical tree (*Moringa oleifera*) that can be intensively cultivated for leaf production. The leaves are extremely rich in proteins and micronutrients (vitamins, minerals and antioxidants) and can be dried and grounded into a powder, to be used as a food supplement. This product is becoming more and more popular for individual use or in schools and during maternities to fight micronutrient deficiency. African companies manufacturing cereals are also interested in enriching their products with this low-cost, locally available source of vitamins and minerals.

In 2006, the Moringanews network organized an international workshop on *moringa*, financed by CDE (Centre for the Development of Enterprise) and CTA (Technical Centre for Agricultural and Rural Cooperation ACP-UE). The workshop created a high level of interest in this plant. Demand for *moringa* leaf powder exploded, and prices reached €150/kg in February 2007. Production followed quickly and prices went down to more reasonable levels, around €40/kg (November 2007).

The Moringa Association of Ghana (MAG) was founded in January 2007, in the presence of the Minister of Health, by the main producers, processors and traders of *moringa* leaf powder. The question of product registration was quickly raised and MAG established close relationships with the regulating bodies concerned: the Food and Drug Board, Ghana Standard Board and

Food Research Institute. These bodies provided training for MAG members on sanitary issues, processing, packaging and labelling. However, the novelty of *moringa* leaf powder as a food, and in particular the absence of product standards, hindered the certification process.

In November 2007, CDE and Ex-Change agreed to finance a short mission at the request of the Paris-based Moringanews network. The objectives were to facilitate the certification of *moringa* products and identify the needs of MAG to carry out its role as an intermediary organization.

As a result of the mission, the Ghana Standard Board is ready to prepare the gazetting of Publicly Advisable Specifications, i.e. provisional product standards, until the full certification procedure is carried out. The missing data for the product standards will be researched by the Food Research Institute – shelf-life and maximum moisture content. The Food and Drug Board is ready to accept the registration of *moringa* leaf powder as a food if MAG controls the processing, packaging and labelling. Moringanews and CDE are committed to continue to support the development of the *moringa* market. [Source: Underutilized Species Update, April 2008 [Global Facilitation Unit].]

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Government taking action to reduce pressure on forests

The Government of Ghana has embarked on forest plantation development, including development of the bamboo and rattan industry, to reduce the pressure on natural forest and slow the process of deforestation.

The Bamboo and Rattan Development Programme (BARADEP), has been adopted as a national policy to complement the President's Initiative on Forest Plantations with a secretariat to coordinate issues on

THE SHEA TREE CAN BE USED TO FIGHT DESERTIFICATION

The shea tree (*Vitellaria paradoxa*) has environmental significance for Ghana, particularly in the fight against desertification. Ghana's total land area of 238 539 km² is at risk of desertification, which claims about 20 000 ha of the country's land annually. The most severely affected areas are the northern and upper regions of the country. Land in these parts of Ghana is arid and the climate is hot and dry. The land in these regions is covered in sparse vegetation and is mostly grassland, conditions which make it susceptible to desertification.

Therefore, in the fight against desertification in these areas, the shea tree, which has been described as the "cocoa of the north", could be a suitable ally. Although several efforts have been made to propagate the shea tree scientifically over the years, no significant results have yet been achieved. However, like all scientific efforts, it is only a matter of time before a solution is found. [Source: Joy Online [Ghana], 3 December 2007.]

bamboo and rattan development, processing and marketing. [Source: Modern Ghana [Ghana], 25 April 2008.]

A viable shea nut industry can curb migration of girls

A recent study, conducted by a group of researchers at the University of Ghana, has concluded that: "It is possible that if the shea nut and shea butter industry is given special attention, it could be a more lucrative source of income for young girls and make migration to the south less attractive to them". This conclusion is based on the fact that most of the young girls who migrate to the south initially engage in the shea nut trade to secure their fare to travel to the south only to engage in menial jobs. Details of the report revealed that many teenage female migrants were exposed to reproductive health risks in the south, which could have been avoided if the shea nut industry had been developed as a sustainable source of income.

The Government of Ghana in its 2008 budget promised to invest 550 000 cedis in

the shea nut industry in the north. According to the budget, a steering committee to revamp the shea nut industry, which is one of the major preoccupations of the three northern regions, has been established.

This newspaper thinks that the development of the shea nut industry should be a broad component of the Northern Development Fund, which was also announced in the 2008 budget with the commitment of seed money of 25 million cedis. [Source: Public Agenda [Accra, Ghana], 15 January 2008.]



La contribución de los productos forestales no madereros al derecho a la alimentación

En Honduras, los principales productos forestales no madereros (PFNM) utilizados y aprovechados comercialmente son la resina de pino y la resina de liquidámbar. Otros PFNM que también tienen importancia comercial son las semillas forestales, las flores, musgos, animales silvestres y una gran diversidad de cortezas y hojas utilizadas como productos medicinales.

El reglamento de la Ley de Modernización y Desarrollo del Sector Agrícola (Acuerdo 1039-93-LMDSA), contiene disposiciones en línea con tales exigencias, al establecer que el cumplimiento del plan de manejo dará al propietario el derecho a disponer de los productos forestales que se obtengan del bosque (Art. 38).

Por otro lado, el artículo 46 establece que la Administración Forestal del Estado, es decir la AFE-COHDEFOR ahora denominado Instituto de Conservación y Desarrollo Forestal, de Áreas Protegidas y Vida Silvestre, programará trabajos de reforestación combinados con trabajos agrícolas en áreas forestales nacionales desarboladas donde sea técnicamente factible, y los efectuará por contrato con cooperativas, empresas asociativas o cualquier otra forma de organización societaria legalmente reconocida por el Estado, quienes se beneficiarán en su totalidad del rendimiento agrícola y participarán en los beneficios que deriven de la explotación del bosque.

Cabe mencionar que la nueva ley forestal, de áreas protegidas y vida silvestre, aprobada por el Congreso Nacional el 13 de Septiembre 2007, establece una reforma institucional del

sector forestal muy marcada, entre las cuales se destaca que el subsector forestal será elevado a sector forestal denominado Instituto Nacional de Conservación y Desarrollo Forestal, Áreas protegidas y Vida Silvestre (ICF) en sustitución de la AFE-COHDEFOR.

El ICF promoverá también la incorporación de estos grupos "a labores" de producción y conservación de los bosques y a su aprovechamiento, incluyendo la extracción de resinas.

En relación a la comercialización interna y externa de la madera y "demás productos forestales", el artículo 68 dispone que es completamente libre, pudiendo efectuarse por cualquier personal natural o jurídica, sin necesidad de autorizaciones o permisos administrativos previos, sujetándose únicamente a la aplicación de las disposiciones vigentes en materia forestal, aduanera, tributaria, cambiaria, de sanidad vegetal y a los convenios internacionales que regulen su comercio.

Lo anterior no incluye sin embargo la comercialización de especies o productos de flora y fauna silvestre prohibidos o restringidos por convenios internacionales.

En cuanto a la producción y procesamiento de semillas forestales, estará sujeta a lo dispuesto en el Artículo 15 de la LMDSA, para lo cual la AFE-COHDEFOR (* ICF), como parte integrante del Sector Público Agrícola, emitirá los respectivos planes indicativos.

En particular, la ley establece que toda persona natural o jurídica podrá realizar actividades de investigación, producción, procesamiento o comercialización de semillas, con sujeción a las disposiciones legales vigentes y la SERNA (Secretaría de Recursos Naturales y Ambiente) establecerá y aplicará las normas de calidad de las semillas producidas y comercializadas.

El artículo 71, por fin, establece que las sociedades mercantiles u otras personas jurídicas que se dediquen al corte, aserrío, o impregnación de la madera, extracción o destilación de resinas, la industria primaria o secundaria de los recursos forestales y su comercialización interna o externa podrán contar con socios, socias y capital extranjeros de conformidad con el artículo 336 de la Constitución.

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Uttar Pradesh tribals demand forest rights

About 10 000 tribals in Uttar Pradesh's Sonbhadra district have demanded land and forest rights to sustain themselves. Over 7 000 women protesters took part in the event.

More than 40 million people live in the country's resource-rich forest areas, which include protected wildlife reserves and dense woodlands, eking out a meagre living from simple farming, picking fruit and collecting honey. For generations, they have had no legal entitlement over the land or the use of forest resources. They claim they are treated as "encroachers" and "criminals" on their own land and forced to leave it by forestry officials, mining and logging companies. (Source: *The Times of India*, 17 March 2008.)

Women and NTFPs in Western Ghats

We obtain three-quarters of our income from NTFPs," Ms Subbi Gowda, a tribal NTFP collector said, without wavering. The Appiko-Prakruti movement's decade-long study and sharing knowledge with local communities also revealed the same. In the Uttara Kannada district, Karnataka state of India, forest dwelling communities earned a maximum of 95 percent of their total income and an average 33 percent income from NTFPs. However, with the loss of habitat, overharvesting and limited knowledge regarding harvesting, processing, marketing, policy and

Contribution of NTFPs to overall household income

Total annual income (Rs)	NTFP income (%)
More than 50 000	1-10
20 000-49 000	10-20
Below 20 000	21-95

Income details per NTFP type

NTFP	Income details per type			Overall contribution (%)
	Max.	Min.	Average	
Flowers	1 875	117	620	3.10
Resins	1 660	600	1 130	0.09
Leaves	1 400	40	320	0.69
Fruits	39 000	60	4 500	76.70
Insect products	10 000	150	1 500	10.90
Rattan	35 000	100	7 700	5.79
Pods	1 275	25	350	1.60
New stem nodes	20	10	1.2	0.01
Seeds	1 500	500	900	1.07

US\$2 MILLION BAMBOO PROJECT FOR NORTHEAST INDIA LAUNCHED

An ambitious and innovative four-year project, which aims to strengthen India's role as a leader in the world cane and bamboo industry, was launched here on Wednesday. The US\$2 million project will be implemented with effect from May 2008. The United Nations Industrial Development Organization (UNIDO) will be the executing agency, with the Department of Industrial Policy and Promotion (DIPP), Northeastern Council (NEC) and Development Commissioner (DC) (Handicrafts) as the coordinating and counterpart agencies.

Of the total project cost of US\$2 307 373, the donor contribution of India is US\$1 868 472 from DIPP, NEC and DC (Handicrafts); UNIDO's contribution was US\$196 000. (Source: *The Financial Express* [India], 9 April 2008.)

cultivation aspects, the resource is depleting and collectors are not getting the desired benefits.

As an alternative to conventional development activities, Prakruti is promoting the sustainable use and development of NTFPs together with the forest-dwelling communities. Activities include resource mapping, nursery raising, cultivation, enterprise development and promotion of sustainable use of the resources. (Source: *Voices from the Forest*, 13 [October 2007].)

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Bamboo industry eyes slice of US\$7.5 billion world market

Bamboo is gradually engaging the attention of the Indian Government, which has planned to diversify its uses to reap the benefits from the US\$7.5 billion global bamboo product market.

India is the second richest bamboo resource country in the world, next only to China. In terms of genetic diversity, India has 136 bamboo species under 75 genera. About 89 bamboo species of the 126 recorded in India under 16 genera grow naturally in different forest areas or are cultivated. Although India has bamboo resources in about 9 million ha, the yield is low at 3 tonnes/ha/year since cultivation is not intensively managed. China, on the other hand, has engaged in intensive commercial cultivation of bamboo and has increased average yields to 25 tonnes/ha/year. Within two decades of this initiative, China has been able to convert its traditional bamboo-based handicrafts sector into a mechanized one.

However, the situation is changing in India with the launch of the National Bamboo Mission (NBM) a year ago. The mission is encouraging farmers to grow the right type of bamboo and facilitating bamboo-based industries. NBM works in coordination with the Cane and Bamboo Technology Centre (CBTC) and the Bamboo Technology Support Group (BTSG) in 12 states, including eight northeastern ones, in Bihar, Jharkhand, west Bengal and Orissa.

Two sites have been identified in Assam for the development of model bamboo clusters. BTSG has been entrusted with the task of certifying bamboo nurseries in northeastern India and the same is being done by CBTC in other states. (Source: *The Financial Express* [India], 21 April 2008.)

Indian bamboo trade stuck in century-old practice

Ranchi. Take a walk near Circuit House in the Lalpur area to find out how the state still lives in the past. Here, one finds any number of bullock-cart drivers transporting hundreds of bundles of bamboo every day. These are the same *gariwallahs* whose forefathers carried bamboo from remote villages to the city for more than a century.

For many decades, the forests of Jharkhand have abounded in the production of bamboo. Yet, even after so many years of independence, trading still takes place through the private *gariwallahs*. One bullock-cart driver from Angara, whose ancestors were also involved in the same trade, says:

"We collect bamboo from Ormanjhi, Bero, Angara and Namkum where it is grown on *raiyati* land and bring it near the Circuit House for sale. It is our means of livelihood."

The remote pockets from where these *gariwallahs* bring bamboo are Jumlabeda, Sikidri, Pipratoli, Hajnet, Pansekam, Husrihatu, Rajadera, Getalsud, Beesbandag, Nabagarh and Kunte. "It takes two full days and nights to reach the capital from these interior villages. The journey is quite arduous and a lot of hardship has to be borne," says another *gariwallah*, who is returning home after spending days in the city to sell his entire stock. The practice of using bullocks to carry bamboo makes them old in a mere three to four years. It is, therefore, indisputable that the real sufferers behind the practice are the native *gariwallahs*, whose lifestyle has not changed even after so many years.

The state forest department is silent on this issue of the bamboo trade whereby city business people sell at exorbitant rates after purchasing bamboo at very low prices. The *gariwallahs* demand that the Government develop this bamboo trade in a planned manner so that they get their "fair" share.

Bamboo, which is used mostly for construction, painting and other high-rise building work, yields high margins for big traders here. "We have to sell a bamboo stick at Rs30 which the city businessmen sell for Rs80, making a profit of Rs50," said one *gariwallah* who comes here every week. (Source: *Calcutta Telegraph* [India], 25 April 2008.)



India's first silk park

Nagpur. Taking a lead of sorts, the Sericulture Directorate (SD) of the Maharashtra Government is setting up the country's first-ever silk park near Amravati. In an area of 36 acres (14.6 ha) at a cost of Rs6 crore, the park will be completed in three phases by 2012. It will be divided into three

sections – the soil to silk section, the silk to fabric section and the fabric to garments section. "Besides having plantations of all the six silk varieties, it will have live demonstration units to display the rearing, reeling and weaving units – showing the formation of silk yarn from the cocoons to making silk cloth – and the pilot-scale units for designing, printing and producing garments from the fabric," said Capt. L.B. Kalantri, Director of the SD.

The plantation will include all the germplasm available in the country: the mulberry plantation – both trees and shrubs – tussar plants, *Termemallia arjunalia* (white) and *Termemallia tomentosa* (black), the Eri silk castor plantations and muga silk. "Muga silk trees grow only in Assam, but we are cultivating them in controlled conditions in the park just to showcase every variety in one place," Capt. Kalantri added.

In the second phase, the park will promote the concept of silk-to-milk, which is being universally promoted by SD. Under this project, cows are expected to be fed with the defoliated stem of the mulberry bushes, which have a very high protein content and should bring additional income for farmers. (Source: *The Times of India*, 17 February 2008.)

Lac farming boost to tribal families

Dhanbad. Lac, known for its use in making bangles, will soon be helping 250 families in the tribal areas of Dhanbad. The divisional forest department here is undertaking the cultivation of lac on palaash (*Budea monosperma*) trees in a three-year project costing Rs29 lakh. The project will involve support, cultivation and marketing of the product. Spread over 12 villages, selected families will undertake cultivation by forming self-help groups. The project plan has been sent to the state government for approval, while 50 selected farmers are undergoing a two-day training at the Indian Lac Research Training Institute in Ranchi.

Divisional forest officer (DFO) Sanjeev Kumar said that palaash is a very common tree in this part of Jharkhand, growing mostly in degraded soil. At least 10 per cent of the forest cover here comprises palaash. "We planned using the trees to generate income for the poor villagers in the tribal areas. Lac cultivation is easy and reaps profits in a short time," the DFO said.

The 250 families comprising both women and men in the 12 villages will be given a target of cultivating lac in 25 000 trees with a support of Rs10 000 each in the first phase. The forest department has arranged for

brood lac at the rate of Rs70/kg. Availability and quality of brood lac is highly uncertain but the department has promised its unhindered supply.

Lac is a secretion from the body of an insect called *Laccifer* or *Kerria lacca*. The insect secretes lac resin and forms hard resinous layers as it goes into the pupa stage. This resin is scraped off, dried and processed to form lac or shellac. (Source: *Calcutta Telegraph* [India], 21 April 2008.)



Tectona grandis

NTFPs as source of livelihood for local communities: a case study from the Aravalli hills of Rajasthan, India

Rajasthan is the largest state of India, with only 9.54 percent of its geographic area classified as forest area. Per capita forest area (0.06 ha) in the state is low. More than 50 percent of the forest area lies in the Aravalli range. The state has about 5 percent of the country’s human population but a cattle population of 11 percent; its livestock population is 20.57 percent of the entire livestock population of the country. There is tremendous pressure on the state’s forests for fodder for livestock and

cattle, and for fuelwood, small timber and various NTFPs for the human population.

A study was carried out at the request and with the financial support of the Rajasthan Forest Department, in Pratapgarh, Udaipur (central) and Banswara forest divisions, where Joint Forest Management (JFM) activities are already ongoing. The tropical dry deciduous forests of the Aravalli hills house natural resources that can rightly be called livelihood assets for the local rural communities, since they collect not only fuelwood and fodder grasses from the forests but also a great variety of other NTFPs (see Table) for their own consumption as well as for sale.

An assessment of the availability/potential of NTFPs in the Aravalli hills and the value of these products was needed so as to establish a sound and ecologically viable policy for the subsistence of forest dwellers and for the overall conservation and development of the forest resources of the region. It was also necessary to quantify the annual financial value realized per household through collection of these NTFPs, and for sustaining the livelihoods of local communities. The total forest area under study was approximately 4 000 km², covering about 1 295 villages.

Three main types of forests are found in the region, namely, teak forests, *Anogeissus* forests and mixed dry deciduous forests and grasslands. Biotic interference is the main factor responsible for changes in natural vegetation in some areas. *Tectona grandis* is the main species (30 percent) followed by *Acacia catechu*, *Anogeissus latifolia*, *Azadirachta indica*, *Boswellia serrata*, *Butea monosperma*, *Diospyros melanoxylon*, *Embelica officinalis*, *Holoptelia integrifolia*,

Lannea coromandelica, *Madhuca longifolia*, *Milusa tomentosa*, *Terminalia bellirica* and *Wrightia tintoria*.

Important tree species known for their edible fruits near habitation areas include *Mangifera indica* and *Zizyphus* sp., *Tamarindus indica* and *Phoenix sylvestris*. *Dendrocalamus strictus* is the main bamboo species of these forests, whereas *Dichanthium annulatum*, *Aristida depressa*, *Heteropogon contortus*, *Schima nervosum* and *Themeda quadrivalvis* are the main fodder grass species.

Salient research findings from the study include the following.

- Significant quantities of NTFPs are gathered in the three forest divisions of the Aravalli region of Rajasthan and the annual estimated values of NTFPs realized per household are Rs2 765, Rs794 and Rs478 in Udaipur (central), Pratapgarh and Banswara forest divisions respectively, ignoring the collection of fuelwood and fodder grass.
- Villagers in the Aravalli ranges collect NTFPs all year and their average income varies from Rs20 to Rs100/day, depending on the kind of NTFP collected and the season. The most common types of NTFPs collected are *Diospyros melanoxylon* leaves (tendu), *Madhuca longifolia* (mahua flowers and fruit), *Embelica officinalis* (aonla fruit), *Terminalia bellirica* (bahera fruit), *Cassia tora* (puwar seed), *Jatropha curcus* (ratanjot), *Butea monosperma* (khakra patta), honey and gum.
- There is a serious depletion of some NTFP species in the region (up to 50–60 percent) compared with the situation 15–20 years ago. These include the following important commercial and

NTFP availability, collection season and status in the forest study area

Scientific name	Local name	Part(s) used	Collection season	Status in local forest
<i>Aegle marmelos</i>	Bael	Fruit pulp, leaves	Oct–Nov and all year	Common
<i>Anogeissus latifolia</i>	Dhawda	Gum	Dec–Feb	Occasional
<i>Annona squamosa</i>	Sitaphal	Fruits	Nov–Dec	Abundant in some areas
<i>Boswellia serrata</i>	Salar	Leaves	All year	Abundant
<i>Butea monosperma</i>	Khakhra	Leaves	Winter	Abundant
<i>Cassia tora</i>	Puwar	Leaves, seeds	Mar–Apr	Abundant
<i>Carrisa carandus</i>	Karanda	Fruits	May–Jun	Abundant in some areas
<i>Diospyros melanoxylon</i>	Tendu	Leaves, fruits	Apr–May	Common
<i>Embelica officinalis</i>	Aonla	Fruits	Oct–Dec	Common
<i>Helicteres isora</i>	Marodphali	Fruits	Oct–Feb	Occasional
<i>Jatropha curcus</i>	Ratanjyot	Seeds	Aug–Sep and Mar–Apr	Abundant
<i>Madhuca indica</i>	Mahua	Flowers, fruits	May and July	Occasional
<i>Momordica dioica</i>	Kikoda	Fruits	May	Occasional
<i>Syzygium cumini</i>	Jamun	Fruits	Jun–July	Abundant in some areas
<i>Terminalia bellirica</i>	Bahera	Fruits	Nov–Jan	Occasional

medicinal plant species: *Acacia catechu* (khair), *Boswellia serrata* (salar), *Lannea coromandelica* (godal), *Sapindus trifolatus* (aritha), *Anogeissus latifolia* (dhavra), *Madhuca latifolia* (mahua), *Chlorophytum borivillianum* (safed musli), *Withania coagulans* (paneer bandh), *Tylophora indica* (dama bel), *Dendrocalamus strictus* (bamboo) and *Embelica officinalis* (aonla).

Local communities living near forest areas in Rajasthan state are allowed free access to the forest and collection of NTFPs by the state government. This is in accordance with government policy to provide livelihood support to local communities in a welfare state such as India.

Based upon the findings of the study, efforts need to be made by the Rajasthan Forest Department to undertake plantation activities for those NTFPs and medicinal plant species in the Aravalli hills that are being collected by local communities and harvested to a dangerous extent in order to sustain their livelihoods.

(Contributed by: Dr Rameshwar L. Srivastava, Dr Pradeep Chaudhry, Mr Arvind S. Apte and Dr Pramod Kumar, Arid Forest Research Institute, Jodhpur, India.)

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Conserving forests through eaglewood cultivation – the wisdom of the Dayak Punan of Malinau, East Kalimantan

The Dayak Punan community has spread throughout the Bulungan Regency, Berau and Malinau, a result of the Indonesian Government's resettlement programme from 1972 to 1973. Prior to this programme, the Punan were concentrated

in territories of the river upstream with primary forest. Despite the many changes in the Punan way of life, their dependence on the forest remains strong.

Consequently, they continue to hunt and seek out forest products despite being far from forested regions.

Punan life is entwined with that of the forest. They view the forest not only as their source of life, but as their home – a place where they feel safe and protected. The Punan are hunter-gatherers and thus cultivation activities are alien to their culture. However, through greater interaction with other communities, they have learned to engage in farming, planting sweet potatoes, bananas and other crops. They have also acquired skills in gold panning and rattan crafts. Eaglewood (or *gaharu*) and rattan are their main sources of income. Proceeds from the sale of these commodities are used to buy sugar, salt, tobacco and clothes, as well as televisions and parabolic aerials.

The Punan believe that eaglewood (*Aquilaria* spp.) has magical qualities and it is highly valued in traditional Punan life. It is treated as a special commodity, with a traditional ceremony held before its harvesting, when the Punan implore the spirits for high-quality resin.

Punan culture is characterized by being conservation conscious. For example, local wisdom does not allow hunting and killing of wildlife when meat supplies are still available. This principle also holds true for eaglewood harvesting. The Punan have long been harvesting eaglewood in a sustainable way; they know which trees contain eaglewood resin so that trees without resin are marked and left to grow.

Unfortunately, this wisdom is not shared by outsiders who have carried out indiscriminate harvesting of eaglewood, resulting in a drastic decline of the resource.

Today, eaglewood is on the way to extinction because of large-scale forest exploitation by pulp and paper companies, massive land-clearing in the development of oil-palm plantations, and illegal logging. This situation is worsened by the government's lack of attention to forest conservation activities.

Faced with this situation, the Punan have been forced to adapt, their gathering culture becoming slowly a cultivation culture. They have realized that it is only through cultivation that they will be able to protect the forests that they own. By

cultivating eaglewood and contributing to its conservation, their rights and ownership over their traditional land will be consolidated. Moreover, they have realized that they can obtain two profits at the same time – both from naturally growing eaglewood and the planted trees.

Initially, it was difficult to convince many of the Punan that planted eaglewood trees would produce the much-sought after resin, since they traditionally believe that this resin is available only in eaglewood trees growing naturally in the forest. In order to convince them to the contrary, LP3M (Institute of Rural, Coast and Societal Studies) invited the Punan to visit the garden of Pastor Wan Ibung N. Berkingheri, OMI. He has successfully developed resin-producing eaglewood through the process of inoculation and continues to cultivate eaglewood seedlings from these trees.

In the UN Climate Change Conference held last December 2007 in Bali, LP3M and the Punan community had the opportunity to tell their story – that through eaglewood cultivation the forest can be rescued and continue to be the source of life for the Punan and the Indonesian people. (Source: *Voices from the Forest*, 14 [March 2008].)

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Artificial rattan gains favour

Global furniture manufacturers are using more artificial rattan in their products because of short supply in the naturally occurring equivalent, the Indonesian Furniture Industry and Handicraft Association (Asmindo) said on Monday. Asmindo chairman Ambar Tjahyono said that artificial rattan, which is made of plastic, accounted for 35 percent of all global furniture containing rattan. "In the last four years, the demand for furniture made of artificial rattan has been very high, despite its higher price compared with that of the natural kind," he said.

Natural rattan producers, he added, should immediately raise production in order to be able to take advantage of the high price of artificial rattan and the rising demand for the commodity in the international market. He said the supply of natural rattan for local furniture

manufacturers had declined because of the Ministry of Trade's regulation in 2005 that had allowed for rattan exporting. He added that as of the end of last year, the scarcity had bankrupted 144 out of 426 furniture firms in Cirebon, West Java, where the majority of rattan centres are located, and that more would follow.

The central statistics agency showed a drop in rattan exports last year to US\$219 million from \$343 million in 2006.

Industry Minister Fahmi Idris said the Government would establish new rattan centres to complement those in Cirebon. [Source: *The Jakarta Post* [Indonesia], 29 April 2008.]



Plans to turn bamboo into money-maker for farmers

The Kenya Forestry Research Institute (KEFRI) plans to train farmers on the commercial gains of planting bamboo trees, setting the stage for their entry into a lucrative market. Under the training programme, artisans will learn how to make chairs, tables, pen holders, sofa sets, coat hangers and baskets using bamboo – all products for which demand has increased both locally and internationally. Most of the products on sale in Kenya are imported from Asian countries such as Japan, Thailand and China. Concerns have been raised over these large imports of bamboo products, which are thwarting efforts to expand the industry internally.

The training, which begins later this month in central Kenya, aims to create a vibrant bamboo products industry with the expectation that the sector will grow to attract the international market. Trainees are expected to help promote product-making techniques in their localities. The training programme is being funded by the United Nations Development Programme (UNDP) and the Kenyan Government.

Over the past two years, forestry officials have been promoting bamboo as an alternative to wood trees to ease the growing pressure on forests. KEFRI has also been training farmers on the artificial propagation of bamboo to expand the supply in anticipation of a steep rise in demand.

In Kenya, bamboo is mainly grown in the Aberdares, Olengurueni, Molo, Kakamega and parts of the coastal region. [Source: *Business Daily Africa* [Kenya], 4 April 2008.]



Orang Asli couple happy with income from wild plants

Pekan. The Orang Asli are known for their ability to turn plants grown wild in the jungle into traditional medicines, handicrafts and decorative items.

Budiman Saiman and his wife, Salmiah Abdullah, of Kampong Landai use their expertise to generate a source of income to support their family. The couple has a stall selling homemade handicrafts along the Pekan-Rompin stretch near Kampong Tanjung Batu, Nenasi, and it attracts a large number of passers-by, especially during the weekends. The couple believes that their exposure to the jungle environment during their younger days is a blessing. "As Orang Asli kids, we were trained to follow our elders whenever they went into the jungle looking for rattan, unique tree barks and roots. The roots are used for traditional medicine while the rest of the plant is carved into decorative items," said Budiman.

Salmiah said they normally ventured into the jungle near Tanjung Batu here once a week to search for material for their handicraft items. "After we have gathered our jungle harvest, we clean the roots and separate the ones with unique shapes which we then paint to make them look more elegant. But some will also be left with their original colour because some customers prefer the natural look."

The couple earns about RM400 a month from the sales of the jungle roots and rattan. They also make and sell colourful flowerpots for between RM5 and RM20, which are a favourite among the customers and they weave *mengkuang* mats and sell them for between RM30 and RM50.

Budiman expressed concerns that the younger Orang Asli youths were not interested in earning a living like him and instead preferred to work in towns and factories. "This is an inheritance of the Orang Asli for several generations. I am worried that one day there will be even fewer Orang Asli who are self-employed," he said. [Source: *New Straits Times* [Malaysia], 13 April 2008.]



Herbal park set up to promote traditional medicines

Myanmar has set up the first national herbal park in the new capital of Nay Pyi Taw to grow herbal and medicinal plants. The herbal park is part of the Government's efforts to protect and preserve the time-tested herbs from depletion and extinction and to keep alive the country's traditional system of medicines.

Over 20 000 herbal and medicinal plants of more than 700 species from some ten states and divisions are being grown in the 81-ha park for producing medicines used in treating diseases such as cholera, diarrhoea, dysentery, hypertension, diabetes, malaria and tuberculosis.

The Government has urged the practitioners of traditional medicines to strive for promotion of the standard of the country's traditional medicine.

According to the health authorities, Myanmar has made arrangements for the development of traditional medicine in line with set standards, initiating diploma and practitioner courses to train skilled physicians in the field. [Source: *Indian Muslims* [California, United States], 6 January 2008.]



Mushroom varieties disappear

Mushrooms are declining in number in woods in the Netherlands because of the use of fertilizers, increasing acidity and soil disturbance, according to Meetnet, which tracks the threats to landscapes for the Ministry of Agriculture. Nitrogen-sensitive fungi such as the drumstick truffleclub and the dappled webcap are disappearing, despite reduction in fertilizer use since 1981, says Monday's Trouw, the Nutrition International company.

The Netherlands has 3 500 varieties of mushroom and fungus of which 500 are listed as endangered. Nearly 200 varieties have already disappeared. [Source: DutchNews.nl [the Netherlands], 1 April 2008.]



Camu-camu: a sustainable option for agroindustry in the Peruvian Amazon

Camu-camu (*Myrciaria dubia*, Myrtaceae) is a small tree native to the blackwater floodplain environments of Peru, Colombia, the Bolivarian Republic of Venezuela and Brazil. Over the last 35 years, the use and production of camu camu has developed into an export industry in the Peruvian Amazon. The main product is the pulp derived from the very nutritious fruit. This expanding industry is linked to the adoption of the species as a component of floodplain agroforestry systems by smallholders practising traditional agriculture in these seasonally inundated environments. The water-loving trees are also seen by policy-makers as a way to improve socio-economic conditions in rural areas while at the same time increasing international trade for Peru.

Camu-camu contains the highest concentration of vitamin C in any fruit known (2 800 mg per 100 g of fruit pulp); about 1.5 times that of acerola (*Malpighia punicifolia*), or 30 times that of an orange (90 mg/100 g), with far more iron, niacin, riboflavin and phosphorus. These nutritional characteristics have created a demand for camu-camu in international health food markets and as an ingredient in cosmetics and shampoos. In Peru, camu-camu is popular in ice creams, drinks and yoghurt.

The Instituto de Investigaciones de la Amazonía Peruana (IIAP; Peruvian Amazon Research Institute) has promoted the cultivation of the trees in floodplain fields to sustain production and alleviate harvest pressure on wild stands of camu-camu. Approximately 1 050 ha of camu-camu grow naturally in the Amazon Basin of northeastern Peru, with another 776 ha planted between 1997 and 1998. Smallholders who have maintained their plantings of camu-camu have found that intercropping these productive fruit trees with their traditional mix of annual crops (such as manioc, melons and beans) provides them with important additional income when floodwaters cover their fields. With fields of just 1–2 ha, their incomes

have risen by as much as US\$1 000/year through camu-camu sales, with the largest fields (10 ha) earning almost US\$20 000 in the peak year of 2007.

While demand and prices have fluctuated, the price of the fruit paid to harvesters and producers has increased over time, from US\$0.14/kg in 1997 to a high of US\$1.75 in 2007. The increase in both demand and prices for the fruit has opened opportunities for agroindustrial development in the region and brought socio-economic gains for rural inhabitants of the Peruvian Amazon. Most of the fruit that is marketed still comes from natural stands, which is an environmental concern, but there has been an increase in plantings in recent years.

Export revenues from camu-camu products have risen from less than US\$500 000/year from 1996 to 2001 to more than US\$1 million in 2005 and US\$4.8 million in 2007.

Demand for the fruit by processors is now far greater than harvests from the wild or production by smallholders. In 2007, 3 785 tonnes of camu-camu were marketed, yielding 1 000 tonnes of fruit pulp, with the remainder of the fruit sold for local consumption. Japan is currently the main market, but domestic demand for camu-camu continues to increase, providing needed economic and nutritional benefits for Peruvian society.

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Camu-camu

Manejo forestal participativo para la producción de plantas medicinales en el Perú

Después de haber terminado la primera fase del proyecto en diciembre 2007, se ha publicado un libro en cuatro idiomas para el uso de las comunidades, y de ese modo ofrecer un modelo del plan de manejo para que otros puedan efectuar trabajos similares. El plan de manejo puede ser bajado en español en el sitio: www.eci.ox.ac.uk/research/humaneco/peru-medical.php

Se está buscando financiación para comenzar la segunda fase del proyecto, la cual tendrá como destinatario a dos comunidades que quieren poner en práctica el plan de manejo, y que se han comprometido a establecer negocios comunales para la producción sostenible de plantas medicinales.

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Silkworms give Philippine farming town a makeover

Kapangan. Hundreds of white mulberry trees have started to cover mountain slopes deep in the Cordillera region of the northern Philippines, changing not just the landscape but also making over the image of a poor farming town. Up until the early 2000s, the upland villages of Kapangan, a vegetable-growing town of 18 000 people in Benguet province, were widely known for one of the country's largest cultivation areas of an illegal plant – marijuana.

"We're determined to be known as something else, perhaps, the silk capital of the country," said Roberto Canuto, a public attorney in the province, who was elected mayor in 2007.

Canuto said that some farmers have started growing mulberry trees, the main food of silk-producing worms from China and Japan, after sericulture was introduced in nine of Kapangan's 15 villages in late 2004. "We're expanding the mulberry plantation to accommodate more farmers willing to go into silkworm operations," he said, adding that many farmers got excited after initial trials

produced about 25 kg of raw silk, sold at US\$50/kg early this year.

Wilbur Teofilo, leader of a 33-member farmers' cooperative in Kapangan, said they have started upgrading 11 "rearing houses" and building nine more to raise raw silk production to 250 kg every two months this year. "We can easily produce about 500 kg of raw silk every two months when our operations go on full blast," Teofilo said, showing a box containing thousands of fresh cocoons, leftovers from last month's production.

An official from the Fibre Industry Development Authority reported that the silkworm project could produce as much as 2 000 kg of raw silk every year once operations expand in two years, bringing in an extra 4 million pesos (US\$95 690) for the farmers.

The head of the Philippine Drug Enforcement Agency said antinarcotics agencies had pledged to sink in more investments in the sericulture project if silk-making succeeds in cutting marijuana supply.

Teofilo stated that farmers in his village were willing to give the silkworm project a try because the potential for providing them with extra cash was huge, based on initial experiments since 2004. (Source: Reuters Canada, 21 April 2008.)

PORTUGAL

A revival of the region's cork-producing history

São Brás de Alportel has developed two projects that aim to raise awareness among residents and visitors to the region about the cork industry and the products that can result from recycling.

São Brás has a long cork-producing history with more than 80 factories having been dedicated to the industry. Now the volume of production continues to be the same because of industrialized machinery but only about ten factories are left.

On 12 March, the São Brás Câmara (chamber) hosted their third discussion entitled "Around the Cork Oak" to support the launch of the cork route (*Rota da Cortiça*) in July, aimed at highlighting the decline of cork manufacturing and plans for the future of the industry in São Brás de Alportel. The next discussion, which will take place on 5 May, will focus on the investigation and new applications for cork. These discussions, ending in July, coincide

with a national conference about the industry, as well as the inauguration of the São Brás cork route, which will be officially presented to the public during the council's *Feira da Serra*.

As well as the cork route, São Brás Câmara has already launched a project to collect and recycle used corks from bottles. There are currently 30 *rolhões* (cork recycling units) in public spaces throughout São Brás and others have been given to restaurants. For the moment, the cork collected is being transformed into objects such as heat-proof kitchen mats and notice boards. (Source: Algarve Resident [Portugal], 3 April 2008.)



RUSSIAN FEDERATION

Development of sustainable NTFP-based businesses for people living in protected areas in the Russian Federation

In January 2008, the International Union for Conservation of Nature (IUCN)-World Conservation Union project "Assessment of Non-Timber Forest Products Market Use as an Alternative Livelihoods Strategy for Local Communities at the Protected Areas in the Russian North West" came to an end. It had started in August 2006 and was funded through the BBI-Matra programme. The project's goal was to develop a sustainable model for the ecologically and economically sound market use of NTFPs by communities living in or near protected areas (PAs) that could be implemented in the future in other PAs in other regions of the Russian Federation.

The project sufficiently improved the cooperation of PAs in the Russian North West with communities and other stakeholders to promote sustainable rural development in the country and to create alternative livelihoods and additional income-generation opportunities for

communities living in biodiversity hotspots by decreasing poaching, illegal logging and other unsustainable practices of natural resource use.

The project was implemented in the Leningrad region (Veppski Les Nature Park) and in the Arkhangelsk region (Kenozerski National Park). These PAs represent different sets of priorities and objectives of functioning, different levels of biodiversity protection, different administrative schemes of management and different interactions with regional and federal authorities.

During the project, a round of consultations was organized with the principal regional partners: representatives of the Leningrad Region Administration, Regional Forest Service and NGOs, the Saint Petersburg Society of Naturalists and the Association of Protected Areas of the Russian North West. A set of analytical reviews on the assessment of NTFP harvests and their influence on the biodiversity of PAs was also developed.

From October 2006 to December 2007, training courses were organized for stakeholders in seven communities located in the PAs. Training included the organization of NTFP business and optimization of marketing strategy, and the standards of the European market for NTFPs.

Sustainable practical results were achieved through the project. A practical model for small business support in remote traditional communities, based on the sustainable use of biological resources was developed in Kenozerski National Park. This model is applicable to other biodiversity hotspots in Russia. Relations were strengthened and improved between local communities and the parks. Local communities became better informed on, and more closely involved in, natural resource management. The government of the Leningrad region upheld an initiative to support NTFP small business development in the Podporozhski district. The Khanty-Mansiisk and Vladimir regional authorities are also interested in application of the model developed by the project.

As a result of the project, local production of about 20 types of NTFPs was generated, including different crafts using birch bark, several varieties of herbal teas, dried forest mushrooms, wild berries, *chaga* mushrooms and honey, etc. Local people are now marketing these products

very successfully at local and regional fairs and to tourists through the park visitors' centres. So far, demand exceeds supply: all 2007 products were sold. Local women were very actively involved in producing and marketing the products.

Kenozerski National Park continues to invest its own funds in guaranteed purchasing of all products of sufficient quality, assessed by the park's experts on compatibility with sustainability harvesting practices.

NTPF development will be continued in this region. In January 2008, the next IUCN project on NTPF development – "Sustainable Development Models for Local Communities of Protected Areas in the North West of Russia" – will start, funded by the Ford Foundation. The project will assist stakeholders to develop PA-oriented small community-based traditional businesses and relevant support programmes/projects. Local stakeholders will be empowered by knowledge and ability to support effective use of their traditional knowledge for local economic development, compatible with the conservation objectives of the PAs.

The project will develop additional employment in the most vulnerable and fragile areas of the Russian North West, contributing to sustainable rural development of the region.

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The Republic of Karelia Forest Plan

The development of the principal forestry document of Karelia, its Forest Plan, is to be completed by 31 May 2008, according to the Minister of Forestry, Vladimir Yuriev. "Last year in the Republic, 13 norms and

regulations were developed that were necessary to introduce the Forestry Code," the Minister noted.

"Laws of the Republic have been passed on the order and regulations of harvesting of wood by citizens for their own needs; on the order of procurement of food forestry products by citizens and gathering herbs for their own needs; and also the law on the order of procurement of non-wood forestry products by citizens for their own needs," the head of the timber industry of Karelia said. (Source: *News of the Republic of Karelia* [Russian Federation], 11 February 2008.)



Country to produce silkworm eggs

Rwanda has a target to produce about 700 million silkworm eggs by the end of this year. This stock is sufficient to supply all cooperatives in the industry countrywide. The silkworm egg production is to cover 25 ha at Nyandungu site in Kigali where 300 000 mulberry cuttings imported from Uganda have been planted. In a long-term plan, the Rwandan Government aims to have 600 000 ha of mulberry planted in the next three years to benefit 60 000 poor families.

Peter Muvara, chairman of the sericulture project, said that imports of eggs for silk production are costly and at times lose viability in transit. Rwanda has been importing eggs from the Republic of Korea and India, so that making them locally is now the priority. "The challenge that constrains the project is the marketing aspect, where the private sector is still moving at a slow pace compared with production," he said.

Another challenge to the project is the cost of eggs, since each box costs from US\$15 to US\$20; processing silkworm eggs locally would save about RF383.6 million from 35 000 boxes. The Rwanda Investment Group (RIG), as a service provider in the industry, has also pioneered as a private investor in the industry with 20 ha in Rusizi, Western Province, and a local textile company, UTEXRWA, is in position to manufacture silk products.

The Government has allocated about RF154 million, in particular for training about 60 people to handle production, training in various sericulture activities including mulberry farming activities, silkworm rearing and weaving to ensure

that they produce quality silk products. Jointly with the Rural Sector Support Programme (RSSP), Silk Culture has established the Gasabo Silk Culture Cooperative to handle production and marketing.

Farmers are supplied with free mulberry cuttings because the project is still in the pilot stage, but the facilities will put sale targets in place to recover egg costs. (Source: *The New Times* [Kigali], 4 January 2008.)



Ceylon cinnamon a money spinner

The medicinal value of Sri Lanka's cinnamon has widened market opportunities in the international market, said a senior research officer of the Industrial Technology Institute (ITI), K. R. Dayananda.

True cinnamon or Ceylon cinnamon (*Cinnamomum zeylanicum*), produced only in Sri Lanka, has a promising opportunity in this emerging market. However, two challenges need to be addressed at once.

First, the traditional fumigation method used in the industry has to change immediately to meet international standards. The sulphur residual level of our cinnamon is higher than European standards and today the market has a temporary respite.

Second, true cinnamon has to be separated from cassia, or Chinese cinnamon, because both are traded commonly as cinnamon. This is a disadvantage for Ceylon cinnamon because cassia has a high percentage of coumarin, a toxic substance. ITI conducted research on the coumarin content of Ceylon cinnamon and the results were impressive, Dayananda said. This is the first comprehensive analysis on Ceylon cinnamon for its coumarin content. The results of the study confirmed that Ceylon cinnamon contains less coumarin compared with cassia and it is within the safe limits recommended by FAO/WHO guidelines.

Recent research has proved the medicinal and nutraceutical value of cinnamon. Scientists have isolated and characterized several polyphenolic polymer compounds from cinnamon bark that could one day become natural ingredients in products aimed at lowering blood sugar levels.

Today Ceylon cinnamon dominates the world market in terms of value and fetches a very high price compared with cassia. According to 2006 trade statistics, Sri Lanka has exported 10 685 tonnes of cinnamon and earned US\$5 509/tonne, which is much more than the US\$925/tonne received for cassia.

However, a large quantity of cassia is coming on to the market and it is a close substitute. We can promote the advantage of low coumarin content to compete with cassia, Dayananda said. (Source: *Sunday Observer* [Sri Lanka], 4 May 2008.)

SURINAME

Medicinal plants of Suriname: changes in plant use after migration to the Netherlands

Apart from contributing to their health, the sale of wild-harvested medicinal plants provides a significant income for rural people in Suriname. Almost half of the Surinamese population migrated to the Netherlands over the last three decades and many immigrants continued their use of medicinal plants and traditional health care (*winti*) in the country.

Hardly any information exists on the scale and ecological effects of the trade in medicinal plants from Suriname. Which species are sold in Paramaribo, which are exported to the Netherlands, where and how are they harvested, who is using them and why?

This research project will clarify the role that medicinal plants play in traditional health care among the various ethnic groups in Paramaribo and assess the principal factors influencing people's choice to use traditional medicine, whether or not in combination with conventional medicine (in both Suriname and the Netherlands). How does medicinal plant use change after migration?

It is expected that when people migrate from rural areas to Paramaribo and onwards to the Netherlands, their focus of herbal medicine shifts from the treatment of the basic health problems of a forest dweller to sexual and gynaecological disorders and psychosocial ailments typical of immigrants.

By investigating the importance of Suriname's biodiversity for the country's citizens and overseas immigrants, this study will bridge the gap between biological research on floral diversity and

conservation in the Guianas, anthropological research on the *winti* religion and health studies on Surinamese immigrants. Sustainable harvesting is not only essential for the conservation of medicinal plant species, but also for the livelihoods of many forest-dwelling communities. The study will not pronounce hard judgement on the sustainability of current harvesting practices, but will look for possible indications of overharvesting of medicinal plant resources in Suriname, which can form the basis for further sustainability and conservation studies. Apart from scientific publications, the results of the study will be made available by means of an online database and an illustrated field guide of Surinamese herbal medicine.

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TUNISIA

Some aspects of forestry in Tunisia

Extending the woodland area from the 400 000 ha at independence to the roughly 1.25 million ha today (latest figures from the July 2007 inventory) has entailed good organization at every level. In percentage terms, this progression in total woodland area has grown from 4 percent to the present-day 12.5 percent. Privately owned woodlands in Tunisia amount to 54 000 ha. This growth is the result of adequate structuring that has taken into account all the factors impinging on the sector, in particular the economic, social, environmental and developmental aspects.

Given the fact that there are more than one million Tunisians resident in forests and woodlands, Decree No. 2373 of 9 December 1996 set up the Public Interest Forestry Associations (PIFAs) (*Associations forestières d'intérêt collectif*) in order both to implement decentralization and foster a participatory approach. Major schemes have been established to favour, encourage and provide training for these PIFAs. This initiative proved to be a success and legislation in the form of umbrella law No. 43 of 10 May 1999 officialized these associations as Agricultural and Fisheries Development Groups (ADGs).



Tunisia encompasses most of the main climatic zones: humid, subhumid, semi-arid, arid and desert. Thus, biological diversity is extremely rich and varied: some 2 200 plant species, of which 360 are rare or under threat of extinction; 80 species of mammals; 70 species of reptiles and amphibians; and numerous invertebrates. Furthermore, wetlands can be found throughout the country, including coastal areas, *chotts* (depressions), lakes, *oueds* (intermittent rivers), *sebkhas* (salt marsh deposits), dams, springs and oases. These areas are home to a great diversity of plant and animal life.

The conservation policy for natural areas that has guided the Tunisian authorities since independence highlights clearly the importance of sustainable development for future generations in the conservation of natural resources. Moreover, eight national parks and 16 nature reserves have been created to date. They are located across the country, include all the various ecosystems and cover some 197 000 ha. Tunisia is a signatory to all the International Conventions concerning nature conservation and protection of the environment.

The main native forest tree species in Tunisia are:

- *Pinus halepensis*, Aleppo pine: in the west-central region of the country, covering some 200 000 ha, of which

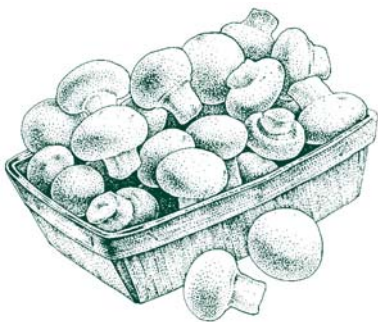
about 160 000 have been improved and exploited for wood and seeds (used in pastries and desserts);

- *P. pinaster*, maritime pine: some 5 000 ha, in the far north of the country, often combined with cork oak;
- *Quercus suber*, cork oak: in the north of Tunisia, covering around 60 000 ha – about 12 000 tonnes of cork are harvested annually;
- *Q. faginea*, zeen oak: specific to North Africa, covering about 10 000 ha – it can grow to 30 m.

The other widespread species are:

Quercus coccifera, *Q. ilex*, *Cupressus sempervirens*, *Callitris articulata*, *Fraxinus oxyphylla*, *Populus* sp. and *Acacia radiana*.

The principal native bush and shrub species are: *Pistacia lentiscus*, *Myrtus communis*, *Capparis spinosa*, *Rosmarinus officinalis*, *Artemisia herbaalba*, *Thymus capitatus*, *Calligonum arich*, *Arthrophytum scoparium* and *Rhus tripartita*. [Source: extracted from an article by H'maïed Kouki, Head of Manouba Forestry District, Tunisia in *The latest on Mediterranean Forests*, 8, December 2007.]



UKRAINE

Mushroom prices are 1.5 times higher than in 2007

According to the analysts of *Fruit-Inform weekly*, there is at present a dynamically increasing demand on the Ukrainian market for cultivated mushrooms.

Ukrainian producers are unable to satisfy demand and so prices for champignon and oyster mushroom rise rapidly on the domestic market.

As of 21 April, the wholesale prices for champignon are 62 percent higher than in the same period last year; the prices for oyster mushrooms are 46 percent higher.

According to Andriy Yarmak, the head of the *Fruit-Inform* project, the price increase for mushrooms directly relates to the

sharply increased prices for all major fruits and vegetables in a new season. Moreover, the increased price of meat has an impact on demand and prices for cultivated mushrooms, since they compete with meat for consumers.

In addition, the 2007 harvest of wild mushrooms was much lower than usual because of droughts and the hot summer. Consequently, the demand for cultivated mushrooms also shot up because of this factor. Increased expenses for energy and labour costs have their impact as well.

During the III international conference-exhibition "Mushroom Industry 2008", leading experts in Poland, Ukraine, the Russian Federation, the Netherlands and other countries will speak in detail about the prospects of Ukraine's mushroom industry in the coming years and also about the technological novelties of the mushroom business. [Source: Agricultural Marketing Project [Kiev, Ukraine], 21 April 2008.]

UNITED REPUBLIC OF TANZANIA

Combretum and *Terminalia* species in traditional medicine in Mbeya region, southwestern Tanzania

The Mbeya region, situated in southwestern Tanzania, also called the Southern Highlands, has not been well explored for its traditional medicine, although a certain amount of research has been undertaken. It is estimated that more than 60–80 percent of the population in the United Republic of Tanzania is dependent on traditional medicine for primary health care. A study in the Mbeya region revealed that people older than 55 and non-Christians tend to choose traditional medicine for their health care even when modern medicines are available, whereas Christians and younger people tend to use modern medicine.

Traditional healers, *waganga*, among the Nyakyusa and some other tribes in Mbeya region use various species of *Terminalia* L. and *Combretum* Loefl. (Combretaceae) in their traditional medicine.

Combretum molle, *mlama* (Swahili), *mpula* (Nyakyusa). Powdered dried roots, stem bark and leaves and a plant called *muwofi* are mixed with maize porridge, *ugali*, to treat gonorrhoea and syphilis. Roots and leaves are used to treat diarrhoea, influenza, severe colds and

oedema, as well as malnutrition in children. Dried root powder mixed with sheep fat is applied to the skin for wounds and infections. Skin diseases caused by fungal species are common among the population in the Mbeya region and these conditions are possibly treated with ointments of *C. molle*, among other herbal remedies available. Crude extracts of the roots and leaves have good antifungal and antibacterial effects. The antifungal triterpenoid, mollic acid-3-β-D-glucoside and the antimycobacterial ellagitannin punicalagin are the only antimicrobial compounds from *C. molle* characterized to date.

C. fragrans F. Hoffm., *hansebwe* (Swahili). Hot water decoctions of powdered roots and roots mixed with maize porridge are used to treat diarrhoea. This species is used for the treatment of infections in other African countries as well. Crude extracts of the roots have excellent antibacterial effects, but the active principles are unknown. Leaf extracts of this species have been found to contain antifungal tannins, flavonoids and saponins. Crude extracts of the leaves are excellent inhibitors of the growth of HeLa cervical cancer and T 24 bladder cancer cell lines. The cytotoxicity active compounds are yet to be elucidated. *Terminalia sericea* Burch ex. DC., *mpululu* (Swahili), *namatipo* (Nyakyusa) grows abundantly in the Mbeya region. All parts of this plant are used in medicine, except for the flowers. *T. sericea* is sometimes mixed with other plants for medicine. Diarrhoea, fever and hypertension are treated with hot water decoctions or infusions of dried leaves, roots and stem bark. Alternatively, the dried plant organs are powdered and mixed with maize porridge for the same



Combretum molle

purpose. *T. sericea* is claimed to be poisonous in large doses. Root and leaf extracts are strongly antibacterial and antifungal; the roots contain polar antibacterial compounds, whereas the leaves contain fewer polar or non-polar antimicrobials. Screenings of the antibacterial potential of different kinds of extracts of *T. sericea* have revealed that hot water decoctions are as effective as extracts made from methanol or acetone. This is an interesting result since *T. sericea* is often used as hot water decoctions for medicine in various African countries and thus antimicrobial compounds are clearly extracted by this kind of medicinal preparation technique. The lignan anolignan B is to date the only antibacterial compound characterized from *T. sericea*. *T. kaiserana* F. Hoffm., *mpululu* (Swahili), *bena* (Nyakyusa). Roots, leaves and stem bark are used for medicine and made into hot water decoctions to treat diarrhoea, gonorrhoea and vomiting. *T. kaiserana* roots are also, together with *Combretum molle*, used to treat diabetes. *In vitro* screenings of the antibacterial and antifungal effects of extracts of *T. kaiserana* justify the traditional uses of this plant in the Mbeya region for treatment of infectious diseases, since both roots and leaves contain antibacterial and antifungal compounds.

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Agroforestry systems for sustainable livelihoods and improved land management in the East Usambara Mountains

Forest destruction for agriculture continues to be a major threat to the rich biological diversity of the East Usambara Mountains in the northeastern corner of the United Republic of Tanzania. The highest ratio of endemic plant and animal species found on 100 km² anywhere in the world is dependent on the remaining natural forests. Forests are vitally important for the local population in many different ways, and nationally they are an important source of water and hydroelectricity. The soils, of low fertility and mostly acidic ferrasols, mainly have nutrients in the topsoil. After clearcutting, the soils soon become poor when the topsoil is eroded. High-value cardamom is



nowadays cultivated unsustainably in the natural forests of the East Usambaras.

The general aim was to study the possibilities of developing new profitable and sustainable agroforestry systems for the benefit of the local people and which would contribute to relieving the pressure on the remaining natural forests in the East Usambara Mountains.

Results from a spice crop agroforestry trial, established in cooperation with a local farmer, showed a clear advantage of intercropping cardamom (*Elettaria cardamomum*) and black pepper (*Piper nigrum*) with trees, especially with *Grevillea robusta*. The nitrogen-fixing tree species *Gliricidia sepium* also improved the nitrogen and organic matter content of the soil over levels found in the natural forest. With improved agroforestry methods for spice production, households generated as much as 13 times the net income obtained with traditional forest cultivation practices.

There are thus sustainable and profitable ways to cultivate spices as cash crops in well-managed home gardens. However, farmers need stable markets, access to credit and comprehensive extension services. The soil fertility depletion should be reversed with organic manure application and an enabling policy environment for the smallholder farming sector. Strong farmers' organizations and equal rights to resources and decision-making are needed. Organic spices have an increasing demand, and their export would be profitable for farmers. What, however, is most needed for change is the political will of a government that understands the importance of agricultural and forestry development for poverty reduction. [Source: Teija Reyes, [Ph.D. thesis]. Download at: www.fao.org/forestry/35667/en/]

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Fruits of the soil

Conserving indigenous and wild trees is now a viable economic venture in the United Republic of Tanzania. In Tabora, Uyui and Sikonge districts, women are cashing in on species such as *ntonga* (*Strychnos cocculoides*), *ntalali* (*Vitex mombassae*), *mbula* (*Parinari curatellifolia*) and *furu* (*Vitex doniana*), which they have planted on their farms alongside traditional crops. Other trees popular with farmers are *mbuguswa* (*Fracourtia indica*), *ng'ong'o* (*Sclerocarya birrea*), *zambarau* (*Syzyium guineense*), *mmbuyu* or baobab (*Adansonia digitata*) and *ukwaju* or tamarind (*Tamarindus indica*). The fruit from these trees is processed into jams, juices and wines.

So passionate are the farmers about conservation projects in the area that they have taken to policing the vast woodlands against loggers. Mwadawa Luziga spends much of her day in the woodlands and she does not regret it. She says it is now rare to see anyone destroying wild and indigenous trees because women conservation groups have taught the community at large that it is important to conserve these trees. Government institutions have also introduced incentives to encourage private landowners to protect dwindling natural forests from further destruction. The conservation projects were conceived to address problems facing the Tabora region, such as widespread poverty, food shortages, malnutrition, HIV/AIDS and the degradation of renewable resources.

The region is dominated by miombo woodlands, which have plenty of edible fruit trees. Production of value-added products such as jams and juices started with the development of a fruit processing technology by the Agricultural Institute in Tumbi (ARI-Tumbi) in April 2004. The project received a grant of £60 000 (US\$78 000) from Farm Africa's Maendeleo Agricultural Technology Fund.

David Mayanga, an extension officer at Inara village, said: "Sustainability of these trees is vital. Most of the world's virgin forests are diminishing at a rapid rate and people must rely more and more on man-made managed forests. That's why we have been encouraging local people to manage the remaining virgin forests."

Apart from preserving large areas of indigenous forests, the success of the conservation effort is reflected in the standards of living of the surrounding communities. From processing jam and juice and wine-making, many families have seen

their incomes increase threefold. Various women's groups, each with at least 40 members, are now involved in fruit processing projects. These projects are empowering women financially and family incomes have been raised by an average of TSh30 000 a month (US\$28.5), reducing women's financial dependence and increasing their access to capital goods and social services, such as education and health for their families.

The projects have further contributed to household food security – fruits have replaced staple food such as maize in local brewing – and improved nutrition for the processors and their families.

However, the projects have created new problems of storage since most indigenous fruit trees produce one bumper crop in a year. Lack of proper packaging materials has also hampered the transportation of the indigenous fruit tree products. And since most of the areas experience electrical failures, the products can be spoiled very quickly. The conservation groups have plans to purchase solar-operated refrigerators for preservation purposes. They are also working with the Tanzania Bureau of Standards to ensure quality processed products.

The project at large has shown that it is not just fruit trees, but also a large number of other indigenous plant treasures of the miombo woodlands that need preserving. (Source: *The East African* [Nairobi], 24 March 2008.)



Native medicinal herb could become New Mexico cash crop

Alcalde. Through the centuries, settlers in the southwest have discovered the medicinal benefits of the native plant *yerba del manso* (*Anemopsis californica*), commonly called swamp root or lizard-tail. With the renaissance of medicinal herbs in the United States, a New Mexico State University (NMSU) agronomist believes that the plant could become a cash crop for New Mexican organic farmers. A feasibility study conducted by the NMSU College of Agriculture and Home Economics indicates that some herbs, depending on market demand, could provide an above average per acre (0.4 ha) gross income for small-scale farmers.

Native Americans first introduced the native herb to Spanish settlers. The Europeans learned that the plant's antiseptic and antibiotic properties had many uses. *Yerba del manso's* benefits have been passed down from generation to generation. The plant with the large white flower spikes found in riparian habitats of northern Mexico and the southwest United States can be used as a remedy for colds, sinus infections, gum diseases, toothaches, ulcers and upset stomachs.

"Traditionally, people dig up the roots or harvest the crown of the plant from wild stands in high watertable areas, such as river *bosques* (forests). But with the riparian areas in New Mexico shrinking because of urbanization, the habitat for this useful plant is rapidly disappearing," said Charles Martin of the Sustainable Agriculture Science Center in Alcalde. Since it has been plentiful and easily available to the traditional medicinal herb community, it has never been commercialized or thought of as a commercial crop. Martin anticipates a need for commercial cultivation of this plant in the future as *yerba del manso* becomes popular among herbalists.

Since 1998, Martin has studied the plant to determine how to transplant the native species into a cultivated environment. His findings have been published in NMSU's Research Report 758, *Cultivation of Anemopsis californica under small-scale grower conditions in northern New Mexico*, available from: www.cahe.nmsu.edu/pubs/research/agronomy/RR-758.pdf (Source: *El Paso Times* [United States], 21 April 2008.)



The great cork experiment

A recent article by David Taylor highlights the historic, economic and sometimes national security importance of NTFPs such as cork. It outlines the campaign waged in the 1940s by Charles McManus, head of the Crown Cork & Seal Company, an immense bottle-cap and container company then headquartered in Baltimore, to put an end to the dependence of the United States on foreign cork through the supply and planting of millions of cork oak (*Quercus suber*) acorns.

McManus had commissioned a United States map showing the climate zones most favourable for growing cork (the Eastern Shore and Tidewater Virginia appeared in a promising green). His vision was to turn these areas – and indeed anywhere else in the United States where the climate was right – into a cork-growing region that rivalled those of southern Europe and northern Africa. He distributed millions of cork oak acorns and seedlings to all takers, persuading governors in 11 states to endorse the campaign by planting seedlings on their capitol grounds.

The campaign continued for a while after his premature death but cork, once the dominant material for gaskets, seals, stoppers and dozens of other mechanical and industrial uses, would soon become obsolete. The millions of seedlings planted as part of the McManus Cork Oak Project would be forgotten. And most of them, especially in Maryland and Virginia, would succumb to the cold winters. Taylor describes his search to find any of the surviving *Quercus suber* that had been planted in the late 1940s and early 1950s.

The cork oak, one of many evergreen or "live" oaks (not to be confused with the

ornamental cork tree of Asia), is native to Mediterranean forests, and has proved adaptable to moderately warm climates everywhere. The tree's unusually light and resilient bark can be peeled off in huge sheets without damaging the tree and its combination of low density and surprising elasticity give it remarkable sealing ability and buoyancy. [Source: *Chesapeake Bay Magazine*, March 2008.]

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Multipurpose moringa tree to grow on Molokai, Hawaii

Moringa plants may soon cover 1 000 acres (404.7 ha) of Molokai land, according to an aim discussed at a recent meeting. Jim Schelinski, who spearheads the operation, noted that the target might be met within the next eight months, as those involved begin to plant the supplied seeds. The tree would provide a variety of opportunities and advantages, including 40–50 jobs.

The benefits of the multipurpose *moringa* do not, however, stop with its economic advantages. According to some sources, the leaves of the tree may prevent up to 300 diseases. Furthermore, the fertilizer derived from the plant may be used by local farmers; the oil can be shipped to the mainland, while the powder can be made into several products. Schelinski's wife is equally enthused about the project. "My biggest interest would be an emergency food supply in Molokai," she said, noting that the plants would provide even more greenery to the island.

Future goals may also include the formation of a cooperative for local farmers. [Source: *Molokai Times* [Hawaii] 8 January 2008.]



Local scientists extract cancer drug from native plant

After almost four years of research, Vietnamese scientists at Ho Chi Minh City University of Technology have successfully extracted mimosine, a toxic non-protein amino acid used in cancer treatments, from the plant *Mimosa pudica*, also known as the "sensitive" plant. Viet Nam could save thousands of import dollars by refining expensive cancer drugs, and one

area to start with is the country's abundant sensitive plant.

One obstacle that the researchers had to overcome was the matter of funding. The university provides the researchers with facilities but the materials required must be procured through private funds. Despite the benefits of mimosine extraction, the researchers were unable to secure funding and paid for the materials out of their own pockets.

Viet Nam currently imports alkaloid mimosine, which is expensive. Therefore, if Vietnamese scientists can mass produce mimosine from the sensitive plants growing wild in the country, not only will there be medicinal benefits, but there will be financial benefits as well.

The research team successfully produced a medicinal tea using the dried leaves of the sensitive plant. The tea stimulates the immune system and helps prevent bone diseases such as osteomalacia, which is common in women, and reduces the risk of cancer. [Source: *Thanh Nien Daily* [Viet Nam], 1 January 2008.]

Anticancer pines virtually wiped out

Illegal loggers have felled half the remaining stand of Viet Nam's unique *thong do* trees in the Tay Nguyen (Central Highlands). Their destruction has so shocked scientists that they have broken a 100-year-old oath to keep the location of the trees – renowned for their medicinal qualities – secret in an effort to save the last 65. They want people to know about the trees so that they can be protected.

The *thong do* (*Taxus wallichiana* Zucc.) pine is treasured for its resin, which is used to treat cancer and other diseases. The perennial trees are believed to have first grown at Nui Voi, Elephant Mountain, in the Lang Bian highlands, 2 000–5 000 years ago.

"My colleagues and I have spent more than 15 years trying to protect their original genes," says Tran Van Tien of the Lam Bong Silviculture Research Centre. "Our objective in nurturing the young pines was to reproduce the species to help cancer patients. It's high time for us to act to protect these precious trees and their 'green drug' to treat cancer."

Biologist Doan Nam Sinh, who works to replicate species for the pharmaceutical industry at Xuan Truong, believes that *thong do* trees are confined to the Lang Bian highlands.

Scientists say it takes 100 years for the tree's diameter to grow to the thickness of a human calf. Many of the felled pines were from one to two metres in diameter. But trees just 15 cm in diameter were not spared. The scientists fear that the last pines on Elephant Mountain are close to extinction because their ability to reproduce is very weak and there are no intermediary generations. [Source: VietNamNet Bridge [Viet Nam], 18 February 2008.]



Ecotourism development to protect forest biodiversity

At a seminar held in Da Lat, participants established that ecotourism could be a helpful way to protect natural resources in Viet Nam's national parks and reserves. However, the dependence of people dwelling near the forests on the parks' natural resources has resulted in the unfavourable loss of biodiversity in these areas.

Delegates noted that because forest-dependent people live in poverty, improving their living conditions is necessary in order to reduce their reliance on and resulting exploitation of the forest resources desired for conservation. These speakers emphasized that the needs of local communities must thus be addressed before plans for ecotourism and preservation can be successful. [Source: VietNamNet in RECOFTC Community Forestry E-News, April 2008.] ♣

If what you have done is unjust, you have not succeeded.

Thomas Carlyle