AGARWOOD

Agarwood is considered "wood of the gods" in Bhutan

When agarwood (*Aquillaria* tree) – commonly called aloe wood and eaglewood – gets infected, naturally or artificially, it produces a resin with a strong musky smell, which is highly sought after in the international market.

Locally called *ogur*, agarwood is valued in many cultures because of its distinctive fragrance. From Saudi royalty to Bhutanese monks, it is used widely in perfumes and incense.

An expert from Bhutan, Chang Dorji, calls the tree a treasure. "In the Buddhist community, it is known as *ogur sang shing* (agar incense wood) and considered wood for the gods," he said. "The dark wood is used to make special incense that is offered only to Bhutan's chief protective deity Palden Lham."

One kilogram of the infected tree's chips costs about USD190 (about Nu8 400), with better grades fetching USD10 000/kg. The cheapest *oud* oil, distilled from agarwood, can cost about USD20/kg, while the finest *oud* oils distilled from agarwood can cost as much as USD7 000/kg.

In Bhutan, the National Institute of Traditional Medicine is the only organization that currently buys agarwood for medicinal use. It costs about Nu60 for 1 kg of agar. According to pharmacists, they use about two trees.

The *Aquillaria* tree is native to Southeast Asia and grows in eight countries: Myanmar, Bhutan, Thailand, the Philippines, Viet Nam, Malaysia, India and Indonesia.

In Bhutan, it grows in the subtropical foothills, especially in Samdrupjongkhar, Sarpang, Samtse and Zhemgang. According to sources, the late Dasho Nishoka accidentally discovered it in Bhutanese forests. "Two people felling trees illegally in Panbang were caught and, on investigation, they were found smuggling agarwood," recalled a colleague of the late Dasho, adding, "Dasho used to say that there was a lot of poaching of the tree in southern Bhutan by people from across the border". A study carried out by the Department of Forests, with assistance from the World Wide Fund for Nature, found that the *Aquillaria* trees were almost extinct because of uncontrolled exploitation. "When the late Dasho learned about the value of these trees, he collected seeds and planted 3 000 of them."

But agarwood was not new to the Bhutanese living at the foothills. Tenzingla, a Bhutanese expert on plant genetics, recalls how a Bhutanese businessman approached him with an idea of extracting agarwood oil. "I found out that the tree produced the oil as a by-product of a microbial fungal reaction," he said. "The tree as such has no value. It becomes valuable only when it gets infected."

The Department of Forests says that the tree is nearing extinction in Bhutan, which Tenzingla said is a result of smuggling.

Agarwood has been identified as an endangered species, and because the market for agarwood is increasing, some countries have adapted measures to control the overexploitation of the tree. In anticipation of the growing international market, valued in billions of United States dollars, 55 million agarwood trees have been planted in Assam (India), 1.5 million in the Lao People's Democratic Republic and 2 million in Thailand.

In 1995, CITES listed the *Aquillaria* tree as a potentially threatened species in the world. At the recent CITES conference, the need to protect *Aquillaria* trees was also discussed. (*Source*: www.kuensenonline.com [Bhutan], 18 April 2010.)

Agarwood needs protection

The GCC (Gulf Cooperation Council) countries should make the right choice immediately to protect depleting agarwood resources. The agarwood trade industry with its billion dollar value is in need of proper management for its sustainable continuation, according to James Compton, Asia-Pacific Programme Coordinator for TRAFFIC, the wildlife trade monitoring network. "The CITES conference is an important turning-point for agarwood conservation and trade as some of the major consumers are in the region," he told *The Peninsula*. "There should be a collaborative management between both the consumer countries and the producers. If consumer countries such as the GCC states, Taiwan (Republic of China), Japan and others make the right choice and commitment now, a long-lasting change will happen. If something is not done, in five years the chance of a sustainable trade is very low."

Agarwood, an aromatic wood, is at threat of depletion in the wild. In 1995, one species of agarwood was listed in CITES Appendix II, meaning that trade could continue, but a CITES export permit is required. Later, in 2004, all agarwood species were also added to the list.

Although overall trade volumes of the wood may appear small in "timber trade" terms, they are not small in monetary terms. Agarwood chips and segments may sell for several hundred to several thousand United States dollars per kilogram. In the Qatar market, 18 g of the wood can cost QR500.

The wood is mainly used to make customary perfume and for other cultural purposes in the region. The demand for the wood is high because of its medicinal, religious, cultural and aromatic value throughout the world, mainly within Asia.

"The trade history of the wood goes back centuries, and hence there is a huge mismanagement as it does not look into having a trade system that can ensure the conservation of the agarwood reserves. This is a key CITES issue," said Compton.

The quality and quantity of agarwood from the wild are also going down because of extreme exploitation. "People are looking to make money out of this kind of harvesting; hence that is also another challenge for CITES to differentiate between wild and the domestic species," he said.

Consumer countries, including Qatar, should work together with producers to ensure an agarwood industry that encourages legal and sustainable trade and curbs the black market. (*Source*: *The Peninsula* [Qatar], 15 March 2010.)

BAMBOO

Bamboo nations prepare to shoot into carbon markets

Interest in using bamboo for climate change mitigation is picking up in Southeast Asia. The Philippines and Cambodia, both rich in bamboo, used the opportunity offered by the United Nations Framework Convention on Climate Change (UNFCCC) last year to open up the definition of "forest" for bamboo and palms. The two countries have taken a

national decision to broaden their forests to bamboo and palms, and have communicated this to the UNFCCC (clean development mechanism [CDM] Executive Board). Technically, this enables CDM afforestation/reforestation (A/R) projects with bamboos and palms. Viet Nam is taking a similar decision in the immediate future.

While the potential of bamboo in carbon sequestration is considered high, the standard A/R methodologies designed for tree forests need adjustments to accommodate the peculiarities of bamboo. It is anticipated that the voluntary carbon markets are providing better opportunities for bamboo, with their wider range of accepted mitigation activities.

Integrated bamboo carbon projects can be designed to: (i) plant bamboo on eligible lands for sequestration; (ii) improve stand management to enhance carbon stocking; (iii) make long-lasting products for locking up carbon; and (iv) promote fuel switches from coal and diesel to the use of dead culms and processing waste in generating rural electricity. All such activities can generate carbon offset credits, which can be sold and revenue collected. A payment for environmental services (PES) scheme would provide a robust mechanism for engaging farmers with bamboo in carbon finance. (***Contributed by***: Mr Jukka Tissari, Forestry Officer [Forest Products Trade and Marketing], Forest Products and Industries Team, Forest Economics, Policy and Products Division, FAO Forestry Department. Fax: +39-06-570 55137; e-mail: jukka.tissari@fao.org)

Desarrollo y uso del bambú como una alternativa agroecológica

El bambú, patrimonio de la humanidad, es la especie vegetal de más rápido crecimiento en la naturaleza. Dependiendo de la especie, en Asia se utiliza para alimento, materia prima para extracción de celulosa, artesanías, medicinas, laminados, refrescos, licores y mil usos más, la mayoría de estos usos se realizan a nivel industrial. El bambú ha sido utilizado en América de diferentes formas desde tiempos precolombinos, y hoy se vislumbra su uso de manera industrializada. Entre los centenares de especies de bambú endémicas de América, se destaca el género guadua, y entre ellos la especie *Guadua angustifolia*, considerada como una de las variedades más importante para la construcción por sus propiedades físico mecánicas. Con la edificación del Pabellón Zeri, en la feria de Hannover 2000,

la guadua alcanza su punto culminante como material, hoy denominado «Acero Vegetal».

En la industria papelera en Brasil, se destaca el grupo Joao Santos, y la industrialización de las chusqueas (bambúes de altura) en Chile, son dos buenos ejemplos de seguir. En la actualidad, todos los países del mundo fijan su atención en el recurso bambú y su potencial, que ya no es futuro, sino un presente.

Aproximadamente, el 50 por ciento de las especies de bambú existentes en la naturaleza, se hallan en América. Se encuentran prácticamente en todos los países americanos, desde los 40° de latitud norte hasta los 47° de latitud sur, y desde el nivel del mar hasta los 4 000 m de altura en los Andes. Cabe mencionar algunos aspectos referentes a la *Guadua angustifolia*, una de las más valiosas especies de la naturaleza, endémica desde Venezuela hasta las selvas amazónicas del Perú, aproximadamente 50 millones de personas en el continente americano, utilizan bambúes en su vida diaria, ya sea de manera tradicional o en usos modernos.

A principios del Siglo XX llegaron los nuevos materiales, como el cemento y el acero. Sin embargo, el uso del bambú en las comunidades rurales y en las áreas periféricas de pequeñas y grandes poblaciones, se convirtió en el «material de los pobres», encontrado en infinidad de aplicaciones industriales, desde alimentos hasta medicinas, pasando por tejidos, artesanías, bebidas y construcciones entre otras.

La construcción de 1000 casas anuales de bambú con material proveniente de 60 h de una plantación de *Guadua*, equivale a la madera de 500 h de valiosos árboles tropicales.

A mediados de la década de 1990 fue que se comenzó a hablar del cultivo organizado del bambú por medio de la gestión promocional de la Sociedad Civil Habitat-Cuba, a través de un trabajo sistemático que comenzó por la divulgación y capacitación, así como las experiencias en países del área que revelaron resultados positivos. En el 2003 se celebró el Primer Taller Nacional de Bambú organizado por la ACTAF y patrocinado por el Fondo Canadá-Cuba para iniciativas locales, donde se presentó el Programa Desarrollo de Alternativas Agroecológicas para el uso del bambú en Cuba. En la actualidad, se continúa con el desarrollo de este programa en siete provincias, patrocinado por la ONG COSUDE.

La regeneración natural de los bambúes ocurre estacionalmente por medio de semillas y por la activación asexual de las yemas del rizoma y de los culmos. Estas vías de propagación son limitadas, aún más cuando se desea introducir la especie a la producción. Una alternativa a la propagación vegetativa es la regeneración y multiplicación de plantas *in vitro*. Esta técnica ha sido utilizada para la propagación de otras especies de bambú, utilizando primordios foliares de ápices, semillas maduras y hojas inmaduras.

El cultivo *in vitro* ofrece varias ventajas en la propagación de las plantas, los bambúes no escapan de esta posibilidad. La propagación en laboratorio de este grupo de plantas de diferentes especies, se ha desarrollado en varios países. En Cuba, se trabaja en el establecimiento de protocolos de propagación en el laboratorio de algunas especies de interés para los programas de reforestación que se están desarrollando en algunas provincias. Sin lugar a dudas las tasas de multiplicación que se alcanzan con estas técnicas, en tan poco tiempo, no se pueden lograr por ninguno de los métodos de propagación referidos para estas especies.

Los bambúes son de vital importancia para los programas de construcción y de fabricación de muebles que se están llevando a cabo en las provincias de Granma y Holguín, entre otras. La *Guadua angustifolia* y la *Bambusa bambos* son bambúes con ciertas características particulares, y de crecimiento rápido, lo cual es de interés para estos programas de reforestación y de construcción.

Aunque los trabajos de propagación *in vitro* fueron iniciados con *Guadua angustifolia*, esta especie se comportó recalcitrante, por lo que se continuaron los trabajos con otras especies de bambúes. En el Centro de Bioplantas de la Universidad de Ciego de Avila, se han

logrado, en sólo dos semana de cutivo *in vitro*, altas tasas de proliferación para *Bambusa bambos*.

El bambú ha sido, es y será un valioso recurso natural de América, por lo que es necesario su estudio, su manejo, su explotación sostenible, su aprovechamiento industrial, así como su protección para las generaciones presentes y futuras.

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EU releases Ghana ¢28million to promote bamboo as an alternative energy source in Ghana and Ethiopia

The European Union (EU) has released 28 million Ghana cedis to support a project that seeks to promote bamboo as a new source of energy in Ghana and Ethiopia. The project, dubbed: "Bamboo as a Sustainable Biomass Energy – A suitable Alternative for Charcoal and Firewood Production in Africa", aims at increasing the use of bamboo as a source of energy for the poor, while providing a more sustainable, environmentally friendly and economical option to firewood and charcoal.

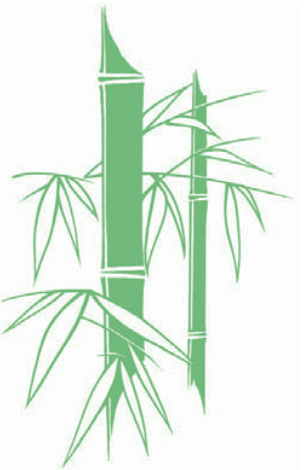
The 48-month project launched in March 2009 is being coordinated by the International Network for Bamboo and Rattan (INBAR), in collaboration with the governments of Ghana and Ethiopia.

A statement issued by the EU said it was absolutely critical that the processes of the project in both Ghana and Ethiopia respect existing government policies and help proactively in promoting sector governance issues and raising awareness of environmental aspects and consequences of the project.

In this respect, people should be mindful of the deforestation taking place in both countries and must understand the causes for this and be aware that simply introducing a new energy source may not necessarily in itself solve all the problems. (*Source*: Ghana News Agency, 19 February 2010.)

Labelling and marketing "bamboo" textiles

Bamboo is becoming more popular in commercial usage and is often marketed as a "sustainable" and "green" product in many countries. There are now many



clothing and other textile products – such as towels, socks and T-shirts – on the market, which hail the virtues of bamboo and are labelled "made from bamboo".

However, with the increase of such products, the scrutiny of the labels and claims made about the origins of the fibre have increased and, in many cases, the authorities have concluded that such claims or labelling practices do not comply with the relevant laws and regulations.

Bamboo fabric can be produced from bamboo fibres. If the natural fibres are used and made into yarn, the fabric is made from bamboo and in some countries can be labelled as such.

However, most "bamboo fabric" is actually viscose or rayon, a regenerated cellulose fibre that is chemically manufactured from bamboo, by a very similar process used to make rayon from wood or other biomass and waste by-products.

In the largest markets for these textile products – the European Union (EU), the United States of America (USA) and Canada – the authorities have all issued specific rules on the labelling and marketing of "bamboo" textiles.

For the EU market, the European Commission has issued a directive on textile names. The Directive, published on 14 January 2009, addresses labelling requirements and textile fibre names, describing conditions and rules for the labelling of textile products to be placed on the EU market.

Also, in the USA, the Federal Trade Commission (the USA's consumer protection agency) has ruled that unless a product is made directly with bamboo fibre – often called "mechanically processed bamboo" – it cannot be called "bamboo". This means that if the product is not made directly of bamboo fibre, but is a manufactured fibre for which bamboo was the plant source – it should be labelled and advertised using the proper generic name for the fibre, such as rayon.

In Canada, the Canadian Competition Bureau (CCB) requires importers and retailers to comply with the country's Textile Labelling Act (TLA) and the Textile Labelling and Advertising Regulations (TLAR). The correct generic name depends on the cellulose process used. If the product is made of commercially produced rayon fibres derived from bamboo, the generic fibre name must first make reference to either "rayon" or the corresponding process outlined in the TLAR, followed by the words "from bamboo". (*Source*: INBAR, 15 April 2010.)

FTC CRACKS DOWN ON "GREENWASHING" IN THE UNITED STATES OF AMERICA

Seventy-eight companies nationwide have received Federal Trade Commission (FTC) letters warning that they may be breaking the law by selling clothing and other textile products that are labelled and advertised as "bamboo", but are actually made of manufactured rayon fibre. The letters make the retailers aware of the FTC's concerns about possible mislabelling of rayon products as "bamboo", so the companies can take corrective steps to avoid FTC action.

The FTC has a publication designed to help businesses that sell clothing and textile products that are labelled as bamboo to market their products in ways that are truthful, non-deceptive and in compliance with the law. "Avoid bamboozling your customers" can be found at www.ftc.gov/bamboo. The FTC also has an alert entitled "Have you been bamboozled by bamboo fabrics?" that provides useful information for consumers shopping for bamboo-based fabrics. It can also be found at www.ftc.gov/bamboo. (*Source*: *Wall Street Journal*, 3 February 2010.)

Bamboo bikes: the ultimate ecofriendly ride

Craig Calfee is known as the master of bamboo-bike builders. In his workshop on the Californian coast, the frame designer builds breathtaking bikes out of the fast-growing bamboo, the largest member of the grass family.

Bamboo is native to all the Earth's continents, including North America, and for the new bike prototype Calfee used Californian bamboo. He found that the bike had impressive impact resistance and was tougher than carbon fibre and less prone to fracturing. These results were confirmed after the bamboo frames were tested at the EFBe bicycle testing laboratory in Germany.

Calfee has now found a whole new area of operations for his bamboo bikes: Africa.

"In developing countries, bicycles are enormously important for transporting goods and going to school or to the market," he says. And the big advantage that bamboo bikes have over steel bikes is that the raw materials to make them are growing right there.

Calfee founded Bamboosero, an initiative supported by, among others, the Earth Institute of Columbia University, which supports sustainable development benefiting the world's poor. The Bamboosero project endeavours to teach locals in developing nations how to make their own bicycles, with the long-term goal of eventually founding a bicycle-making business.

In February 2008, Calfee helped teach three groups in Ghana the basics of bamboo bike frame building. There are now several projects ongoing in that country. And further projects are planned, everywhere from Uganda and Liberia to the Philippines and New Zealand. (*Source*: Spiegel Online, 8 January 2010.)

Philippines town turns taxis green

The Philippine town of Tabontabon, in the province of Leyte, has commissioned taxis with bodies made of indigenous bamboo. Not only, they burn biodiesel fuel made from locally available nut oils.

Tabontabon mayor Rustico Balderian is the inspiration behind these "ECO taxis", which are 90 percent bamboo. They provide employment opportunities for local youth, and safer transport for families who otherwise ride four or five together on a single motorcycle. (*Source*: www.greencarreports.com, 19 March 2010.)

BERRIES

***Açaí* – global super fruit – is dinner in the Amazon**

Clustered high up in the slender, tilting palms of the eastern Amazon, the little purple orbs known as *açaí* (from the *Euterpe oleracea* tree) look mighty. Virtually unknown outside the Amazon two decades ago, and until 2000 not exported from Brazil – its major producer – *açaí* is now an international celebrity, riding the wave of the antioxidant craze and rain forest chic.

But for families who live here along the winding, interlaced rivers at the hub of *açaí* production, the fruit has long been a vital part of their diet, a cheap way to fill up and a taste of home. And now, for some, it is a source of newfound prosperity.

In places such as Cametá, a town of about 117 000 people, and Belém, the capital of Pará state, a bowl of *açaí* pulp is a filling side dish especially valued by poorer families. Unlike the pulp used in Rio's smoothies, the kind here is not pre-sweetened or frozen, but fresh from cylindrical machines known as *batedores de açaí*, "*açaí* beaters", which remove the thin layer of fruit from the pit. Almost every neighbourhood has stands or small stores where customers get a daily or weekly supply. Belém's most famous *açaí* market, the *Feira do Açaí*, bustles before dawn as wholesalers stack baskets of the fruit on the cobblestone square.

Açaí's international reputation as an energy booster and diet aid tickles those who grew up with it as a caloric side dish.

While the old ways of eating *açaí* continue in the Amazon, increased demand elsewhere in the world has driven up prices and made life easier for people such as 53-year-old Orisvaldo Ferreira de Souza; his younger brother, Josivaldo; and their elderly parents. The de Souzas live in a battered wooden home on stilts on Itanduba Island, about an hour by boat from Cametá's town centre. Like the families who live up and down the river from them, they make much of their living from the *açaí* harvest, which they calculate is 8 000 *açaí* palms on 35 acres (14 ha). "Two or three years ago, we had a lot of trouble selling the product," Orisvaldo Ferreira de Souza said. "We had to bring it to town, and sometimes we came back without selling it." Back then, he said, a standard *lata*, or 14 kg basket, brought about two or three Brazilian reais, or roughly five cents a pound (0.45 kg) at today's exchange rates. But now, the harvesters don't even have to leave their land: buyers ply the river right up to their rickety wooden pier offering ten reais or more. "Just yesterday, six buyers came by," he said. "We sold ten baskets each to two of them."

Exact export figures are hard to come by, but in Pará, which produces almost 90 percent of Brazil's *açaí*, the export category that essentially refers to *açaí* pulp surged from 380 tonnes in 2000 to 1 700 tonnes in 2005 – to 9 400 tonnes last year.

For the de Souzas and families around them, added income has meant that they can buy meat and chicken in town, attach motors to their boats, purchase power generators or solar panels and afford parabolic antennas and televisions.

The fruit was traditionally collected from wild palms. Now companies have *açaí* plantations, and collectors are raising more *açaí* palms on their land, according to Antônio Cordeiro de Santana, an agricultural economist at the Rural Federal University of the Amazon. With cultivation more concentrated, resistance to disease and productivity have decreased, he said, even as the number of *açaí* palms in Pará has exploded. (*Source*: *The New York Times* in Amazon News, 24 February 2010.)

***Maqui* berry, super berry**

Another year, another super berry. It used to be said that *açaí* berries packed the most powerful antioxidant punch, but research now suggests that the *maqui* berry (the fruit from the *maqui* tree or *Aristotelia chilensis*), which grows in Chile and Argentina, is even more potent.

The deep purple colour of the fruit suggests incredibly high level of antioxidants and it also boasts an ability to prevent premature ageing, aid weight loss and boost the immune system.

The *maqui* has long been used by the Mapuche Indians for its amazing health benefits. It is also believed to have powerful anti-inflammatory properties that can help

to alleviate the pain of sore joints, aching muscles and swelling.

Maqui extract is also widely used as a colouring for Chilean wines. (*Source*: www.liverpool.echo.co.uk, 22 February 2010.)

BUSHMEAT

Bushmeat trade creates new luxury market in Europe

Traders sell an array of bushmeat: monkey carcasses, smoked anteater, even preserved porcupine. But this is not a roadside market in Africa – it is the heart of Paris, where a new study has found more than five tonnes of bushmeat slip through the city's main airport each week.

Experts suspect similar amounts are arriving in other European hubs as well – an illegal trade that is raising concerns about diseases ranging from monkeypox to Ebola, and is another twist in the continent's struggle to integrate a growing African immigrant population.

The research, the first time experts have documented how much bushmeat is smuggled into any European city, was published on Friday in the journal *Conservation Letters*.

"Anecdotally we know it does happen ... But it is quite surprising the volumes that are coming through," said Marcus Rowcliffe, a research fellow of the Zoological Society of London and one of the study's authors.

In the Chateau Rouge neighbourhood in central Paris, bushmeat is on the menu – at least for those in the know.

For the study, European experts checked 29 Air France flights from Central and West Africa that landed at Paris Roissy-Charles de Gaulle airport over a 17-day period in June 2008. Of 134 people searched, nine had bushmeat and 83 had livestock or fish. The people with bushmeat had the largest amounts: one passenger had 51 kg of bushmeat – and no other luggage. Most of the bushmeat was smoked and arrived as dried carcasses. Some animals were identifiable, although scientists boiled the remains of others and reassembled the skeletons to determine the species. Experts found 11 types of bushmeat, including monkeys, large rats, crocodiles, small antelopes and pangolins, or anteaters. Almost 40 percent were listed in the Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES).

Based on what officials seized – 188 kg of bushmeat – the researchers estimated that about five tonnes of bushmeat gets into Paris each week. They also noted that penalties for importing illegal meats are light and rarely imposed. Under French law, the maximum penalty is confiscation of the goods and a USD556 (450 euro) fine.

Bushmeat is widely eaten and sold in Central and West Africa, with the Central African Republic, Cameroon and the Republic of the Congo being the main sources. It is typically allowed where people are permitted to hunt, as long as their prey is not endangered and they can prove the animals were killed in the wild.

A bushmeat ban is enforced in Kenya, but it is legal in most parts of the Republic of the Congo, where hunters may stalk wildlife parks that are not heavily guarded.

Even after several outbreaks of the deadly Ebola virus linked to eating bushmeat, the practice remains widespread. Scientists warned that eating bushmeat was a potential health hazard. Malcolm Bennett, of the United Kingdom's National Centre for Zoonosis Research at the University of Liverpool, said bushmeat had a high risk of bacteria like salmonella and might also be carrying new diseases.

Nina Marano, chief of the quarantine unit at the United States Centers for Disease Control and Prevention, said similar underground markets for bushmeat exist across America. "We have to be culturally sensitive and recognize this is important for some African communities," she said. "But there are no regulations for the preparation of meat from wildlife to render it safe."

The scale of Europe's illicit bushmeat trade suggests the emergence of a luxury market. Prices can be as high as USD18/pound (30 euros/kg), double that of more mundane supermarket meats. (*Source*: *Business Daily* [Kenya], 23 June 2010.)

Bushmeat: beyond the ecological crisis

Contemporary African societies are a mix of modernized Western society and traditional African roots. Those traditions mean that people – rural and urban – still consume bushmeat for reasons linked to culture, taste and attachment to healthy, natural products.

However, the scale of hunting occurring in Central Africa poses a threat to many tropical forest species. The response to this has typically been legal: ban the trade in bushmeat and criminalize the hunters and consumers.

This, said Nathalie Van Vliet, bushmeat strategic advisor for TRAFFIC, has not been terribly effective. The trade continues to flourish but in a hidden economy that makes it more difficult to manage or control.

"Those in the bushmeat trade who make money out of the commercialization of rare species for the healthy urban markets need to be strictly controlled. However, those who eat bushmeat for their own nutrition or sell bushmeat to pay for medicines or school fees, should not be presented as criminals," she says.

Dr Van Vliet will coordinate a session dealing with the hunting of bushmeat in Central Africa at the 2010 IUFRO World Congress in Seoul. She hopes her session will reach beyond conservationists to integrate the input of social, health and economic stakeholders to help develop more integrated bushmeat strategies and policies. (*Source*: *IUFRO News*, 29: 2, 2010.)

Rare animals being "eaten to extinction" in the Congo Basin

Research in the Congo Basin in Africa has found that more than three million tonnes of bushmeat are being extracted from the area every year. Most of the animals are small antelopes such as the blue duiker or rodents such as porcupines, but larger mammals such as monkeys and even gorillas are also taken.

The study published in *Mammal Review* found the rate of hunting is higher than ever because of malnutrition in the area and is calling for more funding to help the local community find alternative sources of food.

Bushmeat is one of the most important sources of protein for many people around the world, especially in Africa. But in a 500 million-acre (202 343-ha) region of the Congo Basin stretching into eight countries, hunting has reached an unprecedented scale.

Researchers from the Overseas Development Institute calculated that 3.4 million tonnes of bushmeat are removed every year from that area alone, equivalent to the weight of 40.7 million men.

John Fa, Chief Conservation Officer at the Durrell Wildlife Conservation Trust, said it

was "unsustainable". He pointed out that illegal logging is also destroying habitats, and predators such as leopards will be unable to survive without prey. "People are taking rare animals out of the forest at an enormous rate yet we know very little about them," he said.

The animals most vulnerable to extinction by hunting include the Drill baboon, red colobus monkey, black colobus monkey, Preuss's guenon monkey, moustached guenon monkey, crowned guenon monkey, gorillas and chimpanzees. (*Source*: *The Telegraph* [United Kingdom], 23 March 2010.)

CAMEROON REGULATES TRADE OF BUSHMEAT

In an attempt to preserve endangered animal species in Cameroon, the Ministry of Forestry and Wildlife has authorized the sale of wildlife meat, or bushmeat, on designated markets. The government hopes to get a grip on the rampant selling, trading and trafficking of bushmeat in Cameroon.

The authorization of the bushmeat sales on designated markets will allow sellers to distinguish themselves from those who are illegally trading in seriously endangered wildlife species.

The Last Great Ape (LAGA), a wildlife law enforcement organization that fights "the commercial poaching with its related trade of protected species", applauds the decision to regulate the bushmeat trade. "I believe that it will go a long way to start better enforcement of the wildlife law for the benefit of all; the benefit of wildlife in the country and the benefit of the sellers themselves," said Ofir Drori, Director of LAGA.

The hunting and trading of bushmeat are ingrained in society to the extent that these activities have become the sole source of income for many local residents. The government has set up projects to offer alternative ways to make a living. Drori says that it is in fact the rich people who benefit from the illegal trade, whereas the poor are exploited. (*Source: Epoch Times* [United States of America], 17 February 2010.)

Carissa

CARISSA

***Carissa:* a neglected fruit of the forest**

India is rich in plant diversity. An estimated 15 000 species can be found in different climatic zones, 1 000 of which are edible. Many of them are popular fruits among tribal and forest dwellers.

Carissa is a genus of 20–30 species of shrubs or small trees native to the tropical and subtropical regions of Africa, Australia and Asia. It belongs to the Apocynaceae family. The species can range between 2 and 10 m in height, with spiny branches. The leaves are thick and waxy, typically between 3 and 8 cm long. The flowers are produced throughout most of the year; they range between 1 and 5 cm in diameter, with a five-lobed white or pink corolla. The fruit is a plum-shaped berry, and can be red or dark purple depending on the species. It can contain as many as 16 flat brown seeds. Only the fruit of the plant is edible.

Conservation strategies ought to include the protection of less popular fruits such as *Carissa*, because they are an important source of nutrition for forest peoples.

The most important *Carissa* species commonly consumed by tribal peoples include *C. acuminata, C. arduina, C. bispinosa, C. boiviniana, C. carandas, C. macrocarpa, C. oblongifolia, C. opaca, C. septentrionalis* and *C. spinarum*.

The uses of some of these *Carissa* plants are described below.

- ***Carissa bispinosa*** can grow up to 5 m tall. The plants need moderate watering and grow best in partial shade and sunny conditions. They are particularly resistant to windy conditions, are moderately drought resistant, and are best suited for warmer and coastal areas. Traditionally, the plants are not only valued for their edible fruits, used in jams and jellies, but also for their roots, which traditional peoples have long used to treat toothache.
- ***Carissa carandas*** is commonly known as *caronda* and is eaten raw and in jams, jellies and sherbet. The sweeter fruits may be eaten raw but the more acidic ones are best boiled with plenty of sugar. The fruit produces a gummy latex when cooked and the rich red juice is used in cold beverages. In India, the ripe fruits are utilized in curries, tarts, puddings and chutney. When the fruits are not yet mature, they are often picked to make a jelly.
- ***Carissa macrocarpa***, commonly called the Natal plum, is a shrub native to South Africa, where it is known as the large *num-num*. It grows well in salt-laden winds, which makes it well-suited for coastal areas. It is commonly found in the coastal bush of the Eastern Cape and Natal. It grows to heights of 0.6–2.15 m, reaching a width of 2.15–3.05 m. Natal plums produce shiny, deep green leaves and snowy white flowers, whose scent intensifies at night. Like other *Carissa* species, this is also a spiny, evergreen shrub containing latex. The plump, round, crimson fruit appears in summer and autumn when it blooms. In moderate, coastal areas the fruit can appear throughout the year. It can be eaten freshly picked or made into pies, jams, jellies and sauces. The fruit is the only part of the plant that is edible.

(*Source*: Kavya Dashora, Reshma Shaheen, Anjali Gupta and Meenakshi Bhardwaj in *MFP News*, XX: 2, 2010.)

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CORK

Cork, plastic or twist? The cork industry tightens the screws on the wine industry

More wineries are moving towards plastic bottles and aluminium caps and away from cork stoppers.

Some would say this is unfortunate for a host of reasons. Harvesting cork is an ancient practice that keeps a cluster of cork trees – which are almost entirely in Portugal and Spain – alive.

More winemakers around the world, however, are turning to synthetic alternatives. Wineries in Australia and New Zealand gravitate towards metal caps because importing cork is expensive. Some would argue that synthetics avoid cork mould that can taint wine while providing an easier way to seal a bottle.

While many high-end vintners still use cork, synthetics are still gaining in popularity, so now the cork industry is pressuring winemakers and distributors to stay with cork for environmental and economic reasons.

Corticeira Amorim, a leading Portuguese cork manufacturer, has launched a Web site detailing all sorts of facts and statistics. The company touts a PricewaterhouseCoopers study explaining that synthetic corks create a carbon footprint exponentially higher than that of naturally derived cork. Other studies explain that cork taint is overhyped, outline Amorim's efforts to reduce greenhouse gas emissions and articulate how cork recycling is increasing and how the results of this are beneficial for the planet. All these reports and campaigns have the purpose of pressuring winemakers to turn away from synthetics and return to cork.

The environmental and social impacts of cork's decline are clear: cork provides some of the world's few remaining high-paying agricultural jobs. A decline in cork production could devastate cork forests, which house trees hundreds of years old and contain rare ecosystems that would disappear should cork production cease. Finally, much of the Mediterranean has suffered from drought – cork trees protect local soil from drying out and halt erosion. (*Source*: Environmental News Network, 23 July 2010.)

Key facts about cork and its use

Following are some key facts about cork and its main applications, from bottle stoppers to the aerospace industry.

- Cork is made from the bark of the cork oak (*Quercus suber*) – the predominant tree species in Portugal. Portugal accounts for just over half of the world's cork output, producing 157 000 tonnes annually. There are also plantations in France, Spain, Italy, Algeria, Morocco and Tunisia.
- Over 100 000 people depend on cork growing and processing in these countries.
- The bark is harvested for the first time when the tree is 25 years old. It is then removed every 9–12 years without ever damaging the tree, which lives for more than 200 years. Cork only has the qualities needed for the production of wine bottle stoppers – its main application – after the third harvesting.
- The ancient Greeks and Romans used cork in combination with natural resins to stopper wine and oil amphorae. Now, some 70 percent of all cork produced is used to make wine bottle stoppers. Portugal alone makes 40 million stoppers per day.
- The tree's acorns are used to feed the pigs that make some of the cured ham for which Spain and Portugal are famous.
- Thanks to cork's cell-like structure, the material is elastic, resilient and highly impermeable.
- Ground-up cork is "baked" and compressed to make floor and wall tiles, good for acoustic isolation. Granulated cork is added to concrete for thermal insulation and reduced weight. Shredded cork is used in ablative thermal protection coating on booster rockets, including the Space Shuttle's external tank, which is jettisoned as it leaves the Earth's atmosphere.

(*Source*: Reuters India, 1 February 2010.)

Cork aeroplanes could prop up bottle-shocked industry

The old pilot's rule of "eight hours from bottle to throttle" will take on a new meaning if researchers in Portugal find a way to make aeroplanes out of cork. With the wine industry turning to alternative ways of capping a bottle, Portugal is scrambling to find new markets for its huge cork industry. The country produces about half of the world's cork supply. Because the material is lightweight and naturally resistant to fire, one idea is to redirect the country's USD1.4 billion cork industry from wine bottles to aeroplane parts.

The French aircraft manufacturer DynAero hopes to develop two- and four-seater aeroplanes, using cork as a substitute for other composite materials, according to Reuters. While the idea of flying in a cork aeroplane may not inspire much confidence, we are not talking about a rickety ultralight model. DynAero plans to wrap a cork core with carbon fibre, in much the same way as lightweight plastic foams are wrapped in aircraft today.

With decades of interesting ideas having come and gone, it is surprising that cork – which is used as insulation on the Space Shuttle's external fuel tank – has not been used more often. DynAero, which has a factory in Portugal's central-south Alentejo region, says the carbon fibre-cork composite could be used in airframe parts such as the fuselage and wings. The material would be lightweight and fire retardant, two important, if not obvious, factors in aeroplane design. (*Source*: www.wired.com, 4 February 2010.)

FERNS

Breakthrough breast cancer treatment

The next treatment for breast cancer could stem from a fern. "The fact is ferns had to adapt to land conditions and make some major biochemical adaptations for purposes of protection from predators," explained Dr Sarah Crawford, who oversees research at Southern Connecticut State University (SCSU) in New Haven (Connecticut, United States of America).

So far, the medicinal properties of the fern are showing promising results in the fight against aggressive forms of breast cancer. "What we've found is that our concentrated extract works at least as well, conservatively speaking, if not better than Taxol and some of the standard chemotherapy currently used in the treatment of the disease," Dr Crawford explained.

In short, the highly concentrated fern extract interferes with cancer cells.

"Attachment is essential for viability of the cells, so if the chemicals in the plants interfere with that attachment, that will then start to kill the cancer cells," said Deana Diamond, SCSU.

The evidence is in the tumours, which are grown outside the body in a laboratory practice that is becoming standard. "It actually disrupts the solid mass that we see in the dish, we can actually see it broken apart," said Rafaela Penarreta,

SCSU. And it appears the extract has a less toxic side effect.

Next week, Dr Crawford and her students will travel to Washington, DC to present their findings before the American Association for Cancer Research. (*Source*: www.wtnh.com, 8 April 2010.)

FRANKINCENSE

Could frankincense be a cure for cancer?

Oman's land of frankincense is an 11-hour drive southwards from the capital, Muscat. Warm winters and showery summers are the perfect conditions for the *Boswellia sacra* tree to produce the sap called frankincense. These trees grow wild in Dhofar. Wadi Dawkah, a valley 20 km inland from the main city of Salalah, has a forest of them.

"Records show that frankincense was produced here as far back as 7 000 BC," says tour guide Mohammed Al-Shahri. Most of the *B. sacra* trees grow on public land, but custom dictates that each forest is given to one of the local families to farm, and Wadi Dawkah is his turf.

Immunologist Mahmoud Suhail is hoping to open a new chapter in the history of frankincense. Scientists have observed that there is some agent within frankincense that stops cancer spreading and induces cancerous cells to close themselves down. He is trying to find out what this is.

"Cancer starts when the DNA code within the cell's nucleus becomes corrupted," he says. "It seems frankincense has a reset function. It can tell the cell what the right DNA code should be. Frankincense separates the 'brain' of the cancerous cell – the nucleus – from the 'body' – the cytoplasm, and closes down the nucleus to stop it reproducing corrupted DNA codes."

Working with frankincense could revolutionize the treatment of cancer. Currently, with chemotherapy, doctors blast the area around a tumour to kill the cancer, but that also kills healthy cells and weakens the patient. Treatment with frankincense could eradicate the cancerous cells alone and let the others live.

The task now is to isolate the agent within frankincense which, apparently, works this wonder. Some ingredients of frankincense are allergenic, so you cannot give a patient the whole thing.

Dr Suhail has teamed up with medical scientists from the University of Oklahoma, United States of America, for the task. In his laboratory in Salalah, he extracts the essential oil from locally produced frankincense. Then he separates the oil into its constituent agents, such as Boswellic acid.

"There are 17 active agents in frankincense essential oil," says Dr Suhail. "We are using a process of elimination. We have cancer sufferers – for example, a horse in South Africa – and we are giving them tiny doses of each agent until we find the one that works."

"Some scientists think Boswellic acid is the key ingredient. But I think this is wrong. Many other essential oils – such as oil from sandalwood – contain Boswellic acid, but they don't have this effect on cancer cells. So we are starting afresh."

The trials will take months to conduct and whatever results come out of them will take longer still to be verified. But this is a blink of the eye in the history of frankincense.

Nine thousand years ago, Omanis gathered frankincense and burnt it for its curative and cleansing properties. It could be a key to the medical science of tomorrow. (*Source*: BBC News, 9 February 2010.)

HONEY AND BEE PRODUCTS

Doctors find the health benefits of manuka honey to be buzz-worthy

Since the dawn of time, honey has been used for medical purposes. Honey is an ideal natural medicine, mostly because of its antibacterial properties. In the mid-1940s, when antibiotics were invented, doctors assumed they were a better treatment option than honey. Even today, most Western doctors are trained to believe in pharmaceuticals, not natural alternatives. However, with the dilemma of infections caused by antibiotic-resistant strains of bacteria, the medical community is desperate for other solutions.

In addition to antibiotic resistance and an array of negative side effects, antibiotics have another downside. They are indiscriminate killers, destroying as much bacteria in the body as they can. This removes the good bacteria along with the bad. The body contains intestinal flora that is necessary for normal functioning. Honey offers a better solution by destroying only the harmful, infectious bacteria and leaving good bacteria.

There are many different types of honey. It is important to know that some honeys have more healing properties than others; this depends on the floral nectar used by the bees that produced it. Manuka honey from New Zealand has been found to have a significantly higher level of antibacterial activity than any other type of honey.

However, even manuka honey should be chosen wisely. In New Zealand, a rating system exists for manuka, e.g. manuka honey with a unique manuka factor (UMF) rating of between 10 and 16 is ideal for medicinal use; less than UMF 10 it is not potent enough; and more than UMF 16 is too potent and usually overpriced. Using manuka honey without an active UMF rating is not recommended.

When using an active, medical-grade manuka honey, it is possible to treat effectively conditions such as sore throats, strep throat, stomach ulcers, cold and flu symptoms, acid reflux disease, heartburn, irritable bowel syndrome and gastritis. Manuka honey can also be used topically on the skin to treat infected wounds, acne, ringworm, cold sores, pressure sores, skin ulcers and MRSA. (*Source*: SBWire.com, 12 January 2010.)

Bee decline linked to cell phones

London, United Kingdom. A new study has suggested that cell phone radiation may be contributing to declines in bee populations in some areas of the world. Bee populations dropped 17 percent in the United Kingdom last year, according to the British Bee Association, and nearly 30 percent in the United States of America, says the US Department of Agriculture.

Parasitic mites called varroa, agricultural pesticides and the effects of climate change have all been implicated in what has been dubbed "colony collapse disorder" (CCD).

But researchers in India believe cell phones could also be to blame for some of the losses.

In a study at Panjab University in Chandigarh, northern India, researchers

fitted cell phones to a hive and powered them up for two 15-minute periods each day. After three months, they found the bees stopped producing honey, egg production by the queen bee halved, and the size of the hive was dramatically reduced.

Andrew Goldsworthy, a biologist at the United Kingdom's Imperial College, London, has studied the biological effects of electromagnetic fields. He thinks it is possible that bees could be affected by cell phone radiation. The reason, Goldsworthy says, could hinge on a pigment in bees called cryptochrome. "Animals, including insects, use cryptochrome for navigation," Goldsworthy told CNN. "They use it to sense the direction of the earth's magnetic field and their ability to do this is compromised by radiation from [cell] phones and their base stations. So basically bees do not find their way back to the hive."

Goldsworthy has written to the United Kingdom's communications regulator OFCOM suggesting that a change of phone frequencies would stop the bees being confused. But the United Kingdom's Mobile Operators Association – which represents the country's five mobile network operators – told CNN: "Research scientists have already considered possible factors involved in CCD and have identified the areas for research into the causes of CCD which do not include exposure to radio waves".

Norman Carreck, Scientific Director of the International Bee Research Association at the University of Sussex in the United Kingdom says it is still not clear how much radio waves affect bees. "We know they are sensitive to magnetic fields. What we don't know is what use they actually make of them. And no one has yet demonstrated that honey bees use the Earth's magnetic field when navigating," Carreck said. (*Source*: CNN, 30 June 2010.)

RESOURCES FROM BEES *FOR* DEVELOPMENT

Bees *for* Development helps beekeeping projects and groups in developing countries by sending out resource boxes – a pack of publications and materials for use for a training course or workshop.

Beekeeping Training Modules are new. Designed for use by trainers in Africa, each one is a 16-page booklet that provides one day of training on one topic. These are: (i) value and life of the honey bee; (ii) choosing and making a beehive; (iii) harvesting and processing beeswax; (iv) harvesting and processing honey; and (v) honey bee colony management.

The modules are accompanied by **Training Cards**. The set of nine double-sided A4 cards provides over 60 illustrations and plans. These are laminated to provide durability for long-term use. The subjects covered are pests and predators; biology of the honey bee; choosing a beehive; beekeeping diary; comb; separating honey; rendering beeswax; hives in Africa; and top-bar hive dimensions.

In addition, there are the **Beekeeping and Development Guides** – 32-page illustrated booklets, also intended for use in Africa. These address *Market access for beekeeping* and *Information for honey packers*.

Resource boxes also include copies of the *Bees* for *Development Journal*, information posters (available in English, French, Mandarin, Portuguese and Spanish) and other booklets.

Projects and associations in developing countries can apply for a sponsored resource box by completing an application form available on the Bees for Development Web site or by requesting a form by post or e-mail. Projects in other areas can purchase resource boxes and the items described above through the Web site store.

For more information, please contact: Bees *for* Development, PO Box 105, Monmouth NP25 9AA, United Kingdom. E-mail: info@beesfordevelopment.org; www.beesfordevelopment.org

DVD – Honey hunters of the Blue Mountains, India

Honey hunters of the Blue Mountains is a film that has been shot over three years to document in detail the lives of the last honey hunters and their intricate relationship with *Apis dorsata* (giant rock bee), in the Nilgiri hills of southern India. The film has been made by Riverbank Studios, a professional group from New Delhi. It is headed by Mike Pandey, a noted wildlife film-maker.

The Kurumbas of the film have been associated with the Keystone Foundation – a group that works with indigenous bees and people in the Nilgiri hills – since 1995. Keystone has tried to understand them closely in order to design and implement appropriate interventions for development. This film project is an outcome of that interaction – to bring to the world a whiff of the lives of these indigenous people, who are struggling to keep in tune with forests.

The film tries to capture the very essence of living with bees and the myths surrounding the honey hunter. On the natural history aspect, the film has some breathtaking images of *A. dorsata*. The film is of interest to the bee lover, scientist and the development planner wanting to address the issues of indigenous people in a changing environment. It will also appeal to others interested in learning, looking and understanding a little more about this Earth and its people.

Part of the proceeds from the sale of the film will go towards "The Honey Hunters Development Fund" set up by Keystone.

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MAPLE SYRUP

Research reveals impact of climate change

Even though the maple syrup you drizzle on your stack of pancakes may taste as sweet as ever, the tasty condiment is actually undergoing changes that may shed light on the impact of climate change.

According to a new study by William Peck, Colgate University Associate Professor of Geology, and student co-author Stephanie Tubman, the burning of fossil fuels is altering the chemical composition of syrup as well as other

foods. Their research, funded by Colgate's Upstate Institute, was published in the *Journal of Agricultural and Food Chemistry* and reported recently in *Nature*.

What began as a laboratory demonstration to teach Colgate students about isotope analysis led to the findings, which could have implications for food quality control. The students got a surprise when they compared the samples against isotope values of maple syrup from the late 1970s and early 1980s. Their research revealed a change in the chemical composition of the syrups, which Peck suspected could be attributed to environmental factors. Upon further analyses of samples from a 36-year time period, Peck's suspicion was confirmed. The research team found increased amounts of carbon-12, the isotopic form of carbon that is released through burning fossil fuels.

This research is significant because isotope analysis plays a key role in food regulation; regulators use the isotope makeup to determine whether fillers have been added to foods such as maple syrup, honey and fruit juices.

As a result of the impact of environmental change on the chemical composition of food, it may become more difficult for regulators to determine the quality of food products. The *Nature* article noted that "the findings raise the possibility that producers of foods that are monitored ... might be able to add cheap sweeteners without being caught". (*Source*: Ascribe Newswire, 18 February 2010.)

Scientists highlight health benefits of pure maple syrup

Scientists have revealed that pure maple syrup is good for health, encouraging its use.

Researcher Navindra Seeram from the University of Rhode Island (United States of America), who specializes in the research of medicinal plants, has discovered that there are over 20 compounds in Canadian maple syrup that can be directly linked to human health, with 13 of these compounds being discovered for the first time ever. Also, eight of the said compounds have been discovered in the *Acer* (maple) genus for the first time.

Many of these antioxidant compounds that have been discovered in maple syrup reportedly contain anticancer, antibacterial and antidiabetic properties as well. (*Source*: www.topnews.us, 22 March 2010.)

Mild weather zaps sap of maple syrup farmers in New England, United States of America

The unusually tepid spring in New England has been a problem for maple syrup producers. The quick warm-up this spring switched sugar maple trees from sap producing to bud popping, lowering maple syrup production.

In New York, there was a 30 percent decline in maple syrup production from last year, and Maine's production dropped 22 percent. In Vermont, maple syrup production suffered a 3 percent drop. (*Source*: USA Today, 28 June 2010.)

MAYA NUT

Maya nut: an ancient food for a healthy future

Maya nut (*Brosimum alicastrum*) – or *ramon, ojoche, masica, ujuxte, ojushte, ojite, ash, ox, capomo, mojo* and breadnut – is a delicious, nutritious, abundant Neotropical rain forest tree that provided a staple food for pre-Columbian hunter gatherers.

Maya nuts are exceptionally nutritious, providing high-quality protein, calcium, iron, folate, fibre and vitamins A, E, C and B. They are also one of the best native forage species and show great promise to provide ecological alternatives to pasture for cattle ranches in the Neotropics.

In recent history, the Maya nut has been critical to rural food security; thousands of villages throughout Central America and Mexico have survived drought and famine by eating the nuts when no other food was available.

Unfortunately, knowledge about Maya nuts is being lost as globalization, export crops, and deforestation negatively impact indigenous cultures and the forests that sustain them.

As a result of this loss of indigenous knowledge, people cut Maya nut trees for firewood and burn forests to plant maize, beans and other crops. The Maya nut tree is in danger of extinction throughout its range, a situation that threatens the food security of both human and animal populations.

The Equilibrium Fund's Maya Nut programme is working to rescue lost traditional knowledge about the tree for food, fodder and ecosystem services. Since its inception in 2001, the programme has trained more than 8 000 women from 450 communities in Honduras, Nicaragua, Guatemala, El Salvador and Mexico. It has resulted in the conservation of more than 400 000 ha of Maya nut forests and the planting of more than 800 000 new seedlings.

The programme focuses on women as the caretakers of the family and the environment, and addresses key factors for sustainable livelihoods – sociocultural, environmental and economic – by creating leadership, educational and economic opportunities for women and girls.

The Equilibrium Fund's newest programme, "Healthy Kids, Healthy Forests" (Bosques Sanos, Niños Sanos), aims to provide Maya nut-based school lunches for rural children. Starting in Guatemala in 2008, it is feeding 8 124 children from 46 communities in the Petén region of Guatemala. These communities are planting more than 300 000 new Maya nut trees as "food forests" to sustain the programme in the future. (*Source*: Eco-Index, 7 January 2010.)

MORINGA OLEIFERA

Seeds from the *moringa* tree can be used for water purification

Pure water is a key requirement for good health and alternative cheap and safe methods are required in many countries. In a paper that has just been published in the leading American Chemical Society Journal on interfaces, *Langmuir*, researchers from Uppsala University, Sweden, in cooperation with the University of Botswana, describe how extracts from seeds of the *Moringa oleifera* tree can be used for water purification.

Flocculation of particulate impurities is a common first stage in purification of water. This often uses addition of either aluminium or iron salts. Aluminium,

particularly, has undesirable health implications. An alternative procedure that uses a natural extract from seeds of the *M. oleifera* tree is used in Africa.

Cooperation with the University of Botswana, where there is a long interest in exploiting natural products, has led to a research project that provides important insights into the way that protein molecules from *M. oleifera* seeds interact, binding strongly both to each other and surfaces so as to cause aggregation into large lumps that are readily removed from the water.

"It is nice to see how the basic interactions of molecules can play a role in solving practical problems," says Adrian Rennie, Professor at the Department of Physics and Astronomy at Uppsala University. "Understanding of the process may lead to further development in water purification with materials that are locally available and environmentally friendly." (*Source:* Uppsala University News [Sweden], 18 February 2010.)

Fight malnutrition by eating *moringa*

Veena S. Rao, a former secretary to the Government of India, in her book *Malnutrition, an emergency: what it costs the nation*, estimated that malnutrition has led to a loss of 4 percent in the gross domestic product (GDP) of India. Stressing that malnutrition was a huge human resource calamity, she called for making "high-energy, low-cost food" available to the poor.

This is precisely where *Moringa oleifera*, the "miracle tree", our humble drumstick tree, has a role. The tree is increasingly considered one of the world's most valuable natural resources, since its main constituents have several nutritive ingredients. Its leaves, pods and flowers are considered good sources of vitamins A, B, B_2, B_3, B_6 and C, folic acid, ascorbic acid, beta-carotene, calcium, iron and amino acids. More important, its leaves are highly nutritious, being a significant source of beta-carotene, vitamin C, protein, iron and potassium.

It has been claimed that the *moringa* tree provides seven times the Vitamin C in oranges, four times the calcium in milk and Vitamin A in carrots, twice the protein in milk and three times the potassium in bananas.

A versatile plant with a multitude of natural attributes, *moringa* is great food for humans and animals alike. Its leaves, flowers and fruits are all edible. Its leaves, dried and powdered, when added to the diet of undernourished children enhance their appetite and increase their weight. Among nursing mothers it markedly increases lactation, providing greater nutrition for infants. It also makes great fodder for cattle. Studies have revealed that the weight of livestock increased up to 32 percent through *moringa* feed, increasing their milk by 43 percent.

Native to India and widely distributed in the country in virtually every region, it can grow quickly and under any conditions. It is drought resistant and has remarkable survival instincts. *Moringa* can also grow in the semi-arid regions of the country, rendering several benefits for local communities. (*Source*: *Central Chronicle* [India], 12 March 2010.)

POOR MISSING OUT ON THE WATER-PURIFYING POWERS OF *MORINGA* SEEDS

Michael Lea of Clearinghouse, a Canadian organization that investigates low-cost water purification technologies, has published a step-by-step procedure online (www.jalmandir.com/moringa/moringa-seeds.html) that shows how the seeds from *Moringa oleifera* can be crushed to produce a natural flocculant – a substance that aggregates suspended particles. He hopes that making the technique freely available in this way will facilitate dissemination to those who need it the most; the role of the seeds in purification has been known for centuries but use has been limited.

Writing in *Current Protocols in Microbiology*, he said that the seeds can provide a low-cost, accessible purification method for poor communities where diarrhoea caused by waterborne bacteria is the biggest killer of children aged five and under. "*M. oleifera* is the only indigenous treatment technology that addresses poverty and nutrition while also providing potable water."

Vallantino Emongor, a *M. oleifera* expert at the University of Botswana, said: "What is exciting is that this tree is drought resistant and is accessible throughout Africa and India. Communities need to learn what the seeds can do". Some countries, including Burkina Faso, Benin, Ghana, Ethiopia, Kenya and Uganda, have formed associations to facilitate this. (*Source*: SciDev.Net, 24 March 2010.)

MUSHROOMS

Rare fungus on Tibetan plateau faces extinction

Every summer since he was 18, Ma Youcai has combed the craggy, barren slopes of the mountains that surround his village in rural Qinghai province for *dongchongxiacao*, a rare, insect-like fungus used in traditional Chinese medicine.

A parasite that attacks and eventually kills moth larvae on the Qinghai-Tibet plateau, just a few grams of the fungus can be ground into powder and dissolved to make a tonic that is believed to boost energy.

But as Ma prepares for yet another summer search, the 40-year-old goat herder fears this valuable fungus, which provides almost half of his annual income, is in danger of disappearing forever. Last year, he found only half as many fungi as he did a decade ago. In some areas, the population has dropped almost tenfold in the last five years, according to Guo Jinling, an expert on medicinal plants and a professor at the Chengdu University of Traditional Chinese Medicine.

Scientists say the decline is largely a result of habitat loss and overharvesting, which is being driven by skyrocketing demand for costly and exotic herbal remedies among China's growing middle and upper classes. "Animals and plants need time to grow. When demand causes them to be harvested too fast, they can't keep up and their populations decline," said Long Chunlin, a professor at the Kunming Institute of Botany in Yunnan province.

Although classified as a mushroom, caterpillar fungus (*Cordyceps sinensis*) – or *dongchongxiacao*, which literally means "winter insect, summer grass" – is a parasite that attacks moth larvae. It slowly grows inside them until it kills and mummifies them, eventually producing a fruiting body that releases spores that infect other caterpillars. The fungus is harvested in May and early June, just before the spores are released. If consumed, it is said to boost stamina, as well as strengthen the immune system, lungs and kidneys.

Caterpillar fungus only grows at high altitudes on the Tibetan plateau in an area that stretches from Nepal, through northern Sichuan province and into Qinghai province. However, warming temperatures and overharvesting have caused populations to fall by nearly 90 percent in some areas, say experts.

As a result, it is one of the most valuable medicinal products on the market today. One jin – roughly equal to 500 g – sells for up to 80 000 yuan (USD12 000), with some experts claiming prices can top 100 000 yuan. The largest markets for the fungus tend to be in South China and around Shanghai. (*Source*: *China Daily* in China Tibet Online, 16 April 2010.)

Japanese delicacy grows like weed in Sweden

DNA analysis has revealed that Japan's second-most expensive gourmet mushroom is actually pretty common in Sweden.

The *hon-shimeji* mushroom – *Lyophyllum shimeji* – costs about USD5 000/kg in Japan, and is by all accounts jolly tasty. Until this discovery, it was thought to grow nowhere else. But, it seems, people had been trampling the things underfoot in Sweden under the impression that they were another related species.

"We were visited by a Japanese mycologist who found a fungus on a pine heath outside Skellefteå which she thought was similar to *hon-shimeji*," says Henrik Sundberg, a student at the University of Gothenburg. "Using molecular techniques, we've now been able to show that this northern Swedish fungus is identical to the Japanese one."

Hon-shimeji has become rarer and rarer in Japan, probably because of pests attacking host trees and changes in forestry. Wild *hon-shimeji* is currently sold only by a few specialist dealers and served at the very smartest restaurants.

But if the fabulous fungi are found in Japan and Sweden, says the team, they might grow in forests at similar latitudes everywhere else as well. (*Source*: www.techeye.net, 28 June 2010.)

PALMS

Nutty jewellery made from the tagua palm

In the village of Ivoryton (United States of America), small images of elephants adorn shop signs. For almost 100 years, some 90 percent of all the ivory imported to the country from Africa was shipped to factories in Ivoryton or the nearby Deep River. By 1850, a few small companies were using elephant tusks to make combs, toiletries, billiard balls and sewing implements. The business grew into making piano keys, fuelled by a national demand for a piano in every parlour during the Victorian period.

These days, plastic materials have replaced ivory in manufacturing many of these products, but consumer demand for ivory remains in some parts of the world. Although the international commercial ivory trade was banned in 1989, poaching continues to threaten the endangered animals.

Ivoryton resident Desiree Richardell could help change that. Originally from Ecuador, Richardell is part of a family business that is marketing "vegetable ivory" as an alternative to the real thing.

Richardell makes jewellery from the tagua palm tree (*Phytelephas aequatorialis*) that grows in the forests of South America. It is the only plant product that produces a material so white, durable and pure, she says. The plant version, however, is lighter, harder and less porous than real ivory. During the First and Second World Wars, tagua was used for buttons on United States army uniforms, making it a major industry in

Colombia and Ecuador. It, too, fell out of use in lieu of plastic, but it is coming back into use for various crafts.

When Richardell's family came to the United States of America about ten years ago, her aunt wanted to start a business that would also help their home country. She discovered the tagua nut. Her extended family, along with six other families, lives in the rain forest and collects the tagua seeds, which fall naturally so the harvest does not harm the trees. The seeds then have to dry in the sun for six to ten months.

The nuts are sent to her aunt, whose husband is a woodcarver. He carves them into pieces, polishing some, dyeing some and leaving others in a natural form. Richardell then turns the pieces into chunky bracelets, necklaces, earrings and rings, some wrapped in wire designs.

Richardell said the families in Ecuador are paid a salary, so they have a monthly income, which is important to her because the poverty rate in her home country is about 38 percent.

"I know I'm not changing the world, but this is something that can help," Richardell said. (*Source*: *The Day* [United States of America], 21 March 2010.)

The new economics of babassu palm forests in Brazil

Contemporary societies everywhere live under the aegis of convergence, where all systems and processes may be integrated as one. This new kind of complexity is daily present in economy and markets, science, research, technology and even in political institutions.

In economy and markets, convergence has blurred sectorial divisions towards an integrated system of management. Integrated forest and land-based industry respond to this new technological imperative where the same economic cluster processes wood and other materials for timber, non-timber, energy, chip pellets, composites, carbon sink and other environmental services.

In this way, after 30 years of crisis and decline, the market for products from the babassu palm (*Orbignya* spp.) forests of the Brazilian tropics has been reborn and is growing again, led by new demands, such as activated charcoal, green markets, biofuels, veneers and chip pellets.

This large set of demands requires a refined system of pricing and marketing strategies. There are many market segments and niches that intertwine,

interchange and trade off, which in turn require sophisticated business strategies to position both product and service. Therefore, it is not so simple to put babassu products into this new set of converged market opportunities. New technologies, innovation of old products and services, and the creation of new ones are needed.

Technology innovation is the keyword for the construction of a new forestry based on sustainable patterns of management – innovation from procurement and harvest to sales and delivery of forest products. That is the entire supply and value chain.

Below we analyse seven new trends of the babassu pod markets in the Brazilian Amazon.

The ban in burning the entire pod. Addressing the claims from industry, Tocantins state bans by law the industrial processing of the entire babassu pod for charcoal-making and chip pellets for heating. It is mistaken since this law creates a negative market distortion. Free prices for the babassu pod and its parts could signal correctly to markets. In this way, industrial demand to process the pod separately should have to compete with charcoal-making and other energy demands that process the pod entirely.

Today large amounts of pods are left aside and rot in the forest because of a lack of markets. However, charcoal from the entire pod has much tar because of the high content of oil, which makes it less efficient for heating.

The charcoal manufacturing cluster. After the crisis of the oil industry resulting from the increasing open market for importing palm oil from Asia and the boost to *Elaeis guineensis* palm crops in Pará state, babassu pods have been largely used to prepare charcoal to fuel the production of pig iron and alumina in the mineral cluster of Grande Carajás. There is today a new cluster of small- and medium-sized enterprises involved in the manufacturing of charcoal from babassu pods. This must not be seen as a problem but a new opportunity to trade the pods. Charcoal from the endocarp (lignin) of babassu pods could produce 615 MW of energy yearly.

Minimum price security policy. In September 2008, the Brazilian Government launched a new price policy to subsidize NTFPs by making their harvest and commercialization financially worthwhile for the extractive population of the Amazon. The price for the trade of babassu pods is regulated at R$1.46 (USD0.60) per kilogram of nut debarked. It is twice the price of R$0.50 (USD 0.20) per kilogram paid by markets today for pod-break women. However, this price will be paid by the National Company of Food (Conab).

The new demand for biodiesel and special oils. In February 2008, a Virgin Atlantic aircraft made a test flight between London and Amsterdam fuelled by biodiesel from the babassu nut. The technology to use babassu oil as feedstock for jet fuel, as a way to increase combustion and reduce carbon emissions was developed by Professor Expedito Parente, from TecBio. This project is funded by a consortium formed by Boeing, General Electric Aviation, NASA and Imperium Renewables. The B20 from babassu nut oil is the result of a blend with 80 percent of kerosene by transesterification.

The potential of babassu for biodiesel is huge, since its productivity and production per hectare is very competitive in comparison with other oleaginous crops.

Activated charcoal and market niches. Activated charcoal for industrial filters has also been addressed by babassu pod industrialization. This is the principal market niche for Tobasa AS. However, in Brazil this is a very small market niche and is not enough to require a large amount of pods.

New technologies for small- and medium-sized enterprises (SMEs). The unique competitive and worthwhile technology to process babassu nuts entirely is used by Tobasa AS in the city of Tocantinópolis, Tocantins. This process is patented and is an industrial secret. However, the Mussambê Foundation, in the northeastern state of Ceará, promoted the creation of a new technology for SMEs to process the nut entirely and so extract the epicarp separately to produce fibres; the endocarp to produce flour, amid and starch; the mesocarp to produce charcoal; and the nut to produce oil.

This new process has been successfully implemented in the state of Ceará. The challenge now is to make this new technology or industrial process widely available to be transferred and absorbed by others interested in processing babassu pods.

It is known that technology innovation by disruption or radical organizational change is not easy. Especially in areas such as the Amazon, where market asymmetries are huge, information is very costly, and knowledge and human capital are not adequately managed by enterprises and industry. Besides, Brazil has no national or regional innovation system and policy to make these changes faster, safer and competitively efficient for stakeholders.

Land conflict and natural resources management. These new markets and utilities for babassu pods have brought up ancient social problems concerning the use of natural resources in the Amazon. Around 400 000 women still have income expectations from the breaking of babassu pods and the extraction and sale of the nut. In addition to the classic problem related to access to the land and its resources, they now face competition from alternative uses for babassu pods: charcoal, liquid biofuels and chip pellets.

Today, land conflict between the charcoal industry, landowners and pod collectors on the one side, and pod-break women on the other, has been increasing. Charcoal companies have rented large areas of babassu to collect the pods, which reduces the stock of pods to be broken by the women, as well as reduce the prices of the nuts of the pods they sell.

Conclusions. The sustainable management of the babassu palm forest requires new technologies, market perspectives and marketing and business strategies. We believe that all these already exist. What is lacking is making this innovation happen in practice.

To do this would need a regional entrepreneurial system of innovation and technology transfer directed to make this new cluster of babassu businesses solid, competitive, lucrative and for jobs, investments and people, able to create and distribute wealth and well-being in the region.

It is clear that is not easy to conciliate multiple land uses, land rights, social fairness and sustainable natural resources management. However, it is also clear that efficient technologies are the vector to

reconcile use, protection and conservation everywhere.

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(***Contributed by***: Vag-Lan Borges, Forest Life; Mônica Sousa Ferreira, Forestry Student, Federal University of Tocantins [UFT]; and Gustavo Félix, Environmental Technician Student, Technical Federal School of Maranhão, Brazil.)

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Palm fronds point the way to integrated forest management

In the days leading up to Palm Sunday, planes loaded with greenery take off from Guatemala bound for the United States of America and Canada. Every year, 30 million *xaté* palm fronds (*Chamaedorea* spp.) are exported from Guatemala to North America. Demand peaks around Palm Sunday, when congregations decorate their churches with fronds; the floral industry also uses palms all year. The trade contributes millions of dollars to the Guatemalan economy.

Xaté fronds are one of an increasing number of products, besides timber, being profitably harvested from forests. In Guatemala, the financial benefits of *xaté* collection have long been recognized. When community forest concessions were set up in the department of Petén in the early 1990s, multiple forest use, harvesting both timber and *xaté*, was explicitly incorporated into management plans. (*Source*: *Thinking beyond the canopy*, 5 March 2010.)

RATTAN

Rattan used for transplants

Scientists are working on a process that turns rattan into a bone-like material that is almost like human tissue and can bond to human bone.

Italian scientists say that a method for creating replacement bones for humans might be only a few years away. Right now, the scientists are doing trials involving sheep that have had the new material implanted.

The scientists use tubular sections of rattan wood that is cut into smaller pieces and then heated in a furnace in a process that adds carbon and calcium to the wood. Then the wood is heated under pressure with a phosphate solution. After ten days, the material is bonelike and ready to be used.

Scientists say that the material eventually fuses to bone and is capable of carrying loads without breaking, just like real bone. In addition, because rattan is porous, it is able to have blood and nerves travel through it.

Sheep with the transplanted rattan have had the material fuse to their existing bone within a matter of a few months with a barely perceptible seam. The fused rattan material has functioned just like the sheep's original bone, scientists say.

Funding for the project is being provided by the European Union. (*Source*: AllHeadlineNews [United States of America], 12 January 2010.)

Vietnamese rattan companies learn about sustainable farming in the Lao People's Democratic Republic

Nine rattan companies from Viet Nam, where rattan availability has fallen dramatically because of high demand and unsustainable exploitation, visited the Sustainable Rattan Management Area in the Lao People's Democratic Republic earlier this month. The area is maintained by the Agriculture and Forestry Office (DAFO), Khamkeut district, Borikhamxay province and the World Wide Fund for Nature (WWF).

The sustainable rattan model has proved such a success that DAFO plans to replicate it in other areas to improve local livelihoods, support poverty elimination and achieve sustainable rattan management.

WWF plans to have this area certified by the end of 2011 and will share its successes and achievements with partners in the rattan industry around the world.

Viet Nam imports more than 40 percent of its needs from the Lao People's Democratic Republic and also sources significant amounts from Cambodia. It has a significant shortage of commercially valuable rattan species such as those available in the Lao PDR, particularly those in the rattan project areas.

"Normally we import 5–7 000 tonnes of rattan a year from the Lao PDR, but none is from sustainable management areas," Nguyen Truong Thien, Director of the Au Co Rattan – Bamboo Export Enterprise, said. "After learning about WWF's rattan project, we understand more about sustainable harvesting."

WWF's Viet Nam Rattan Project Manager, Vu Que Anh, said: "The important species of rattan are now rare and often bought from the Lao PDR. Rattan processors in the south of Viet Nam have now started to subcontract to northern processors, or stop operations altogether". (*Source*: Viet Nam News Online, 29 May 2010.)

SAFFRON

Saffron: hard to produce and more costly than gold, but there's nothing else like it

Saffron is the stigma of a very pretty crocus native to a strip of west Asia. The modern plant is sterile, the hard-won result of cross-breeding and human-led Darwinism. Every year, people have to dig it up, split the bulb-like corms that form part of its root and replant them. The flowers bloom in October, pushing out two or three fragile, wispy stigmas that can only be harvested by hand, and pickers work throughout the night to catch these at their best.

It is punishing, fiddly work. So saffron is notoriously the most expensive spice, its retail price, pound for pound, often exceeding that of gold.

For as long as there have been people, people have known about saffron. A dye from its stigmas colours 50 000-year-old cave paintings in what is now Iraq. Ancient frescoes on the Greek island of Santorini depict a goddess watching – or perhaps blessing – a woman picking saffron, presumably for medicine. The spice also appears in the sybaritic verses of the Song of Solomon and in Chinese writings dating back to 1600 BC.

The Romans grew saffron in Gaul but when the Empire fell, so did the civilized taste for the spice. The Moors reintroduced saffron to a benighted continent in the eighth and ninth centuries. Basel was the centre of the European saffron industry in the Middle Ages, and unscrupulous dealers would,

under local law, be burned alive for selling an adulterated product. Then, as now, cheap imitations based on turmeric and safflower tempted the chancers and cheats.

Saffron's popularity had waned by the eighteenth century as foods such as vanilla, cocoa and coffee emerged to titillate the palates of the rich. That is why comparatively few classic European dishes feature saffron – and those that do, such as paella and bouillabaisse, almost invariably come from saffron-producing regions, as in Provence or Valencia.

Cornish saffron cake, however, is a classic English dish with an uncertain history. Saffron grew most successfully in the east, particularly in Norfolk, Cambridgeshire and Essex (Saffron Walden is named after the crop that, for a time, made it rich, and a crocus still appears on its coat of arms). Nobody knows why saffron cake should have come from Cornwall. It has been posited that the Cornish, who were trading tin with foreign merchants – possibly Phoenicians – as early as 400 BC, bought saffron at the time and retained it in their cooking. If this is true, England is almost unique in Europe, having cooked with saffron for more than two millennia.

The Islamic Republic of Iran now produces around 90 percent of the world's saffron. The EU has tried and largely failed to persuade Afghan poppy farmers to switch to saffron; although the spice is quite lucrative and well-suited to most Afghan land, farmers earn only half as much for it as they do for opium. Producing saffron has always been difficult, and few countries do not even attempt it today. (*Source*: www.guardian.co.uk, 29 June 2010.) (*Please see page 41 for more information on saffron in Afghanistan.*)

Saffron (*Crocus sativus*) antioxidant properties may reverse age-related macular degeneration (AMD)

Saffron (*keshar*) is well known for its use in colouring food, as a spice and in traditional medicine for its antioxidant properties. Researchers have now found that saffron also helps keep vision sharp, and can prevent AMD – a common cause of blindness in people of 60 years of age and older.

Professor Silvia Bisti of the University of Sydney is the first to look at saffron's effect on eyesight. Patients suffering from AMD were given a saffron supplement daily for three months followed by a placebo for a further three months. A second group took the supplements in reverse order. When individuals were tested with traditional eye charts, a number of them could read one or two lines smaller than before assuming the pill, while others could read books and newspapers again.

All patients experienced improvements in their vision while taking the saffron supplement. But when they stopped taking it, the benefits quickly disappeared.

AMD is a disease affecting the macula (the part of the eye that allows one to see), associated with ageing that gradually destroys vision. There are few treatments for the disease. Saffron affects the amount of fat stored by the eye, making vision cells tougher and more resilient. It has been used in traditional medicine for centuries to treat a range of ailments including cancerous tumours and depression. The spice also has properties that encourage oxygen flow and prevent cell death. (*Source*: The Times of Doon, 11 April 2010 in *MFP News*, XX: 2, 2010.)

SEA BUCKTHORN (*HIPPOPHAE RHAMNOIDES*)

Sea buckthorn to green cold deserts in Himalayan states

The cold deserts of the Indian Himalayas where the survival of many flora species is minimal may soon see massive plantations of sea buckthorn, a medicinally rich plant, in a move that is expected to help check soil erosion and benefit farmers economically.

A long-term national policy aims to start sea buckthorn plantations in high-altitude areas of India spanning 75 000 km² in Himachal Pradesh, Uttarakhand, Jammu and Kashmir, Sikkim and Arunachal Pradesh.

The policy has been prepared jointly by scientists of the Defence Research and Development Organisation (DRDO) and the Palampur-based Chaudhary Sarwan Kumar Himachal Pradesh Krishi Vishwavidyalaya. According to Virendra Singh, a senior sea buckthorn scientist at the Vishwavidyalaya, "sea buckthorn afforestation will not only help in the conservation of the Himalayas by checking soil erosion but its commercial cultivation will also be economically beneficial for farmers because of its medicinal properties. Its extract is used for making life-saving drugs for cardiovascular diseases, ulcer and cancer". The problem of soil erosion is acute in most rivers originating from the Himalayas such as the Satlej, Indus and Chenab, especially during the rainy season, he said.

Globally, some 40 countries have in the past 20 years joined in the race for sea buckthorn development and its commercial utilization.

"Huge chunks of barren land in the possession of forest departments in the Himalayan states would also be used for sea buckthorn plantations and it would accelerate the ecological rehabilitation of degraded mountainous lands," Singh said. Aerial seeding, participation of the local communities in the programme and commercial utilization for the benefits of the farmers are among the issues to be discussed in finalizing the national plan, he added.

Forest ministers of the five beneficiary Himalayan states, together with officials, vice chancellors, directors and sea buckthorn experts of various research and development institutions have been invited for a 25 June meeting to formulate the sea buckthorn development plan. (*Source*: Bombay News.Net, 8 June 2010.)

Hippophae rhamnoides

Tibet boasts ancient sea buckthorn forest

Along the Niangmu river valley in the Cona county of Lhoka Prefecture, lies the sea buckthorn forest, covering 2 000 mu (more than 3 000 acres/1 214 ha) with trees over 15 m high and thousands of years old.

Nyima, leader of Chomo village in Cona county, said: "In ancient times, Tibetans protected the sea buckthorn forest, which had been called in Tibetan '*La xin*' (the plants with souls). I hope in future, the fruits of sea buckthorn could bring profits for local Tibetans". (*Source*: China Tibet Online, 1 June 2010.)

SHEA NUT

Shea production vital to women's incomes

Across the semi-arid Sahel region of West Africa, the shea tree (*Butyrospermum parkii*) is prized by women who produce a butter from its nuts that is a key ingredient in food and cosmetics. However, drought and diseases threaten this source of income.

"Shea represents 80 percent of rural women's income," says Fatoumata Coulibaly, explaining how women go out to collect the nuts and later process them to make shea butter. Coulibaly is a member of La Maison du Karité ("the House of Shea"), a women's group in Siby, a village in southern Mali. IPS spoke to the young woman during Global Shea, an international forum on shea trade that took place in mid-March in Bamako, the Malian capital.

Shea trees grow wild in West Africa. According to experts, they take 25 years to reach maturity and their lifetime can span two centuries. In the rainy season, women pick the fruit: a sweet pulp wrapped around an oily kernel. In the dry season, they sell a portion of their nuts to international companies and process the rest themselves for sale on the local market.

In West Africa, shea butter is used in cooking by nearly 80 percent of the rural population. It is also used in traditional medicine, and the wood from the tree is prized as fuel.

The many uses of the trees have assured its protection for centuries by local populations, some of whom even consider it sacred. "We treat shea with respect. That is why we organize ceremonies when shea trees reach maturity," said Nayouma Coulibaly, a woman from Tioribougou, a village in southern Mali.

But now, according to the Albert Schweitzer Ecological Centre, a Swiss-based NGO, shea trees face many threats such as drought, diseases and overuse as a source of firewood.

Not all observers agree that there is a problem. "I don't think there's cause to worry. Actually, the number of shea trees is on the rise, because people have now started planting them. I've done so myself," said Seydou Kone, a trade technician with AMEPROC, Mali's association of exporters of agricultural products, headquartered in Bamako. AMEPROC is combating shea tree disappearance and disease by conducting public education in rural areas where shea trees are threatened, training local populations on shea planting and protection.

Among the roughly 16 countries where shea grows, Burkina Faso, Mali, Benin and Nigeria represent the bulk of world production. Mali occupies an important position in the market. "With nearly 150 million shea trees, Mali is ranked the second largest producer after Burkina Faso with an output of about 60 000 tonnes per year," said Kadidiatou Lah, a shea butter exporter based in Bamako. She is also the President of Mali's National Federation of Shea Exporters, which trains rural women in shea tree planting.

The growth of international demand for shea outside Africa is explained in part by its expanded use by the food industry in some developed countries. In 2000, a decree came into effect in Europe allowing chocolate manufacturers to use a limited amount of fat other than cocoa butter in their products, up to five percent.

This change in regulations, which had previously been the case in Japan, the United States of America and Eastern Europe, has opened up new opportunities for shea. "Today countries from all continents import shea butter or shea nuts to extract butter," confirmed Lah.

Local shea producers have no influence over the price fetched by shea nuts and butter internationally. "The prices change frequently on the international market, but at the moment a kilogram of shea nuts costs between 500 and 600 CFA francs (just over USD1)," said Kone.

Large companies prefer to buy their shea nuts from villages through local buyers who roam the countryside. However, these intermediaries make far more profit from the trade than rural women producers. (*Source*: Inter Press Service News Agency [IPS], 9 April 2010.)

Global Shea

Global Shea, the Trade Hub shea brand, represents industry aspirations: improved quality and expanding markets. With Trade Hub assistance, the shea industry is expanding, creating jobs and improving livelihoods.

Just a year after Sekaf Ghana inaugurated its first shea butter village near Tamale in northern Ghana, creating 40 jobs for women, the facility now employs 250 women. And Sekaf is building two others like it in collaboration with international buyers. "Buyers like our approach," Senyo Kpelly of Sekaf Ghana said. "We have our own improved method of processing for the butter. We've seen things getting better and a lot of repeat customers."

Kpelly's experience is just one reflection of how well the shea industry is doing. Trade Hub shea expert Dr Peter Lovett, a biochemist intimately familiar with the product's valuable properties, has helped dozens of companies and producer groups across West Africa improve the quality of

SHEA BUTTER: A NATURAL MOISTURIZER THAT'S FOOD FOR THE SKIN

Shea butter is fantastically versatile, especially the raw unrefined variety. A real skin food, it is good for dry and sensitive skin, soothing for sore, cracked skin and its anti-inflammatory properties make it useful for sunburn, itchiness, insect bites, rashes and eczema. It is rich in natural vitamins that promote healthy skin and cell repair.

Derived from the nuts of the African karité tree (*Butyrospermum parkii*), shea butter has been used as an African skincare and healing ingredient for centuries. Now a widely used cosmetic ingredient, it is an important resource and source of income for local communities.

Historically, the women who gather shea nuts have received very little pay for their labour, particularly when the nuts are exported and processed abroad. Increasingly, however, shea butter is available to buy as a certified fairtrade or as a "fairly traded" ingredient.

In its most pure, untreated state, virgin shea butter looks like lumps of hard caramel ice cream. Just warm it up in your hands until it melts and softens and massage it gently into the skin.

When buying branded body butters or creams containing shea, beware: not all shea is the same quality. Most shea butter on the market has been extracted with a chemical solvent and "refined", which not only removes the natural scent and colour of the natural butter but also many of its beneficial properties. The best shea is obtained using a traditional method of extraction, cold pressed without the use of solvents. (*Source*: *The Ecologist*, 1 June 2010.)

their shea butter and link to international buyers.

Indeed, major international buyers of shea nuts and makers of speciality fats are looking closely at opportunities in Nigeria. In October 2009, a new exporter from Benin attended her first trade show. And shea stakeholders in Mali established an association in November 2009 as Trade Hub began organizing the third annual international conference for the industry, which took place from 16 to 19 March in Bamako, the country's capital.

Kpelly's company employs women who make shea butter much as it has been for generations. Elsewhere, several high-technology processing facilities are producing tonnes of shea butter for the international speciality fats industry. 3Fs, an international speciality fats manufacturer, opened its facility in 2009 in Ghana; it now employs over 600 people.

Trade Hub efforts have improved the quality of shea butter made by women's groups in villages and of shea nuts traded in international markets, and expanded markets for producers through participation in international trade shows. Trade Hub's access to finance programmes has opened banks' doors to the shea industry. And Trade Hub is developing branding to bring the industry together and increase consumer demand in end markets. The result is more jobs and higher incomes over the past three years.

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STEVIA

EU could approve stevia sweetener by 2011

Stevia (*Stevia rebaudiana*), a natural sweetener derived from the sunflower plant, could receive European Union (EU)-wide approval for use in food by next year, an EU executive said on Friday.

The European Commission and EU countries will begin discussing whether to authorize stevia in the coming weeks, after an opinion from the European Food Safety Authority (EFSA) on Wednesday said that it was safe for human consumption.

The Commission will "take note" of EFSA's warning that its "acceptable daily intake" level of 4 milligrams per kg of body weight set for stevia could be exceeded by both adults and children if the sweetener is used at the maximum levels proposed by its makers.

The value of the global sweetener market was estimated at about USD58.3 billion in 2009. The current global stevia market is worth about USD500 million, but is expected to reach USD2 billion by the end of 2011. (*Source*: Reuters, 16 April 2010.)

TRUFFLES

Truffles serve up environmental information

Truffles play a part in environmental research by attracting animals that scientists need to observe.

Quality truffles can sell for more than USD1 000 a pound (0.45 kg). They are also valuable in environmental research, work that is discussed in an article called "The hidden life of truffles" in the April issue of *Scientific American* magazine, by Oregon State University's James Trappe and Andrew Claridge, Visiting Fellow at the University of New South Wales in Australia.

Claridge is getting better estimates of Australian endangered species populations, thanks to truffles. Some marsupials are as crazy for truffles as some humans. Claridge soaked foam pads with olive oil infused with the scent of European black Périgord truffles, and left the pads near motion-sensing cameras. The animals came in droves, with 50 times as many individuals counted as with other techniques. Claridge used the European truffle product because it was easy to get; his team will next see the reaction of the animals to native truffles.

Meanwhile, if you want spotted owls in the Pacific Northwest, you need flying squirrels, the bird's favourite food. Which means you need an environment rich in the squirrel's favourite food: truffles. (*Source*: *Scientific American*, 6 April 2010.)

Researchers unlock truffle genome

The genome of the black, golf ball-sized edible mushroom known as the Périgord truffle (*Tuber melanosporum*) has been successfully decoded by French and Italian researchers, a step that experts believe will cut down in fraudulent sales of *T. melanosporum* impostors.

In a 28 March press release, officials from the French National Institute for Agricultural Research (INRA), who worked alongside officials from the Universities of Lorraine and the Mediterranean and scientists at laboratories in Turin, Parma, Urbino, Rome and elsewhere in Italy, announced that they had published a paper discussing the sequencing and decoding of the "black diamond" fungus.

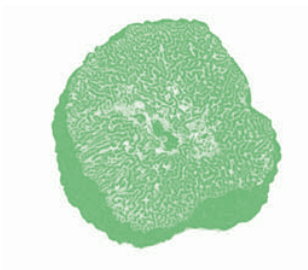
The paper, which was published online in *Nature*, found that 6 000 of the truffle's 7 500 protein-coding genes were similar to other mushrooms, but that "several hundred genes are unique to the truffle and play a fundamental role in mushroom formation and symbiosis with the host plant".

"Studying them will reveal the mechanisms behind the formation of this peculiar underground fructification," INRA officials said in their press release. "The relevance of the study goes beyond the purely academic," the researchers claim. "Full sequencing of the black Périgord truffle genome has also allowed the development of specialized diagnostic tools for genetic polymorphism of this valuable product."

"DNA sequencing also made it possible to spot several thousand genetic markers in the genome. About a dozen of these are currently being used to create a DNA fingerprint file of some 50 populations of *T. melanosporum* from Italy, Spain and France," they added. "The DNA fingerprints make it easier to carry out 'typing' of the geographic origin of harvested truffles, and allow the use of product certification and fraud detection tools."

Truffles can reach prices of more than US1 300 per pound (0.45 kg), and they are often the target of fraud as individuals try

to pass off cheap imitations as the immensely valuable *T. melanosporum*. (*Source*: www.redorbit.com, 29 March 2010.)



The trouble with Oregon's truffles

Truffles and Oregon are becoming synonymous – at least on the West Coast of the United States of America. This is where many chefs appreciate the culinary value of Oregon truffles – and harvesters their cash value. But is this resource sustainable?

In Oregon, and elsewhere across the country, commercial harvesters rake truffles from the soil with a garden cultivator, sometimes called a potato fork, in a mostly indiscriminate fashion. This method procures more truffles in the shortest amount of time, and with the least effort. But it yields both mature (ripe) and young (not so ripe) truffles. For culinary purposes, only mature truffles are worth their full value, both monetarily and gastronomically.

The reason commercial harvesters use this method is twofold. First, it is about the money – more truffles mean higher cash returns. Second, there is no other method readily available. Unscrupulous truffle hunters hurt the land with their metal forks. A walk through any accessible, coastal tree farm reveals the scars: trenches run deep along tree roots; dirt mounds, piled in high rows, look like a battleground cemetery; the once-sparse vegetation is gone; and erosion is severe. In some forest stands, the truffles are gone, too. Decades of abuse have devastated the truffle's mycorrhizal network. That abuse also threatens the continuance of Oregon's truffle industry.

But there is hope. Oregon truffles, despite decades of haphazard harvest methods, finally have a reprieve: the increasing use of dogs to locate truffles is replacing the potato fork. Using dogs instead of rakes ensures that only truffles at their peak ripeness are dug up.

But the use of dogs to find truffles in the United States of America is in its infancy, and places that train and sell dogs for the purpose are rare.

Recent news stories about truffle thieves and the damage they cause to young forest stands highlight the need for state-wide regulation of this resource. Stricter trespassing laws will not help alleviate theft; truffles, apparently, are worth the risk. Nevertheless, new laws and regulations are needed and must focus on truffle buyers, sellers and harvesters.

A state-mandated Oregon truffle season, in tandem with a permitting system akin to hunting and fishing licences sold by the state, is necessary. Without adequate regulations and enforcement of truffle resources, on both public and private lands, landowners will continue to incur damage to their property and lost revenues in the form of dead trees. (*Source*: www.oregonlive.com, 19 March 2010.)

WATTLE

Wattle (Australian *acacia*) comes to Africa

A traditional Aboriginal food has become part of the staple diet of African communities. The seeds of Australian *acacia*, commonly called wattles, are tasty, high in protein (25 percent) and carbohydrates (40 percent) and easily made into flour.

In the Niger, wattle has become a local legend. The seeds are used in over 40 local dishes. In fact, village consumers say that eating wattle increases strength, improves eyesight, cures night blindness and stimulates milk let down in new mothers.

Since the global food crisis of 2008, a heightened sense of urgency has driven the search for better sources of nutrition. Following a famine in 1984, the Christian organization Serving in Mission (SIM) began a concerted effort to promote wattle-growing in the Niger and *acacia* seeds became popular. Between 2006 and 2009, over 50 000 *acacia* trees were planted on 480 farms in 33 villages and more trees are being planted each year.

World Vision is now promoting wattle seeds in Senegal, Mali and Chad. Many of these projects have been funded through child sponsorship from World Vision Australia. (*Source*: http://eternity.biz, 9 April 2010.)

WILDLIFE

Coping with raiding elephants and hippos. FAO tests toolkit to lessen human and wildlife conflict

Rome. Are raiding elephants bothering you? No problem. Drive them off with pepper spray. Are lions, cheetahs or spotted hyenas attacking your farm animals? Consider a guard donkey. Marauding baboons giving you a hard time? Offer them a snake sandwich.

These are some of the colourful tips contained in a toolkit produced by FAO to help resolve, prevent and mitigate the growing problem of conflict between humans and wild animals. And while the measures suggested may raise a smile, there is nothing light-hearted about the problem they are designed to address.

With the world's population growing at some 75 million a year, humans and wildlife are having to squeeze ever more tightly together, increasing the risk of conflict between them. The result is a growing threat to people's lives and livelihoods and to their health from animal-borne diseases.

Competition between humans and wildlife goes back to the dawn of humanity. Fossil records show that the first hominids fell prey to the animals with which they shared their habitats.

"But now," says FAO Forestry and Wildlife Officer René Czudek, "things may be getting worse, particularly in Africa". The population of the continent, which has the world's largest reserves of wildlife, is set to double from one to two billion in the next 40 years. Africans will not only be packing more tightly into the cities – they and their crops will also be increasingly pressing up against territory populated by wildlife.

FAO's human-wildlife conflict mitigation toolkit thus largely focuses on problem-solving in Africa. It is designed not only to help protect people, their livestock and their crops from animals but, just as important, to safeguard animals from people. It suggests policies, strategies and practical tips to make increasingly tight cohabitation safer for everyone.

According to the Southern African Development Community's (SADC) Technical Committee on Wildlife, wild animals represent the number one problem for Africa's rural populations both in terms of personal security and because of the economic damage they can cause.

Generally speaking, however, the best way to reduce the problems that humans face from wildlife, and vice versa, is to educate farmers and villagers – and also policy-makers – to perceive wild animals as an asset rather than as a threat to be eliminated. Awareness and training in how people can live better – alongside wild animals – are fundamental to the use of human-wildlife conflict tools and in building local capacity for conflict prevention and resolution.

But obviously villagers will only stop seeing wild animals as a nuisance or worse if rural communities receive some tangible advantage from living cheek by jowl with animal populations. Paying them a percentage of the revenue derived from tourism would be one way, while payments for the environmental services they provide is another. Compensation for damage to crops, injury or loss of life should also be considered.

"Whatever the specific measures taken, it is important that they are introduced soon and properly implemented," says Czudek. "The alternative could be the progressive loss of wildlife as we know it across much of Africa – representing a tragic loss to us all."

The human-wildlife conflict toolkit, currently being tested in southern Africa, was prepared in collaboration with CIRAD (the Agricultural Research for Development Centre), WWF (World Wide Fund for Nature), CAMPFIRE (Communal Areas Management Programme for Indigenous Resources) and other partners. (*Source*: FAO Media Centre, 19 July 2010.)

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Internet is biggest threat to endangered species, say conservationists

The Internet has emerged as one of the greatest threats to rare species, fuelling the illegal wildlife trade and making it easier to buy everything from live lion cubs to wine made from tiger bones, conservationists said today.

The Internet's impact was made clear at the meeting of the 175-nation Convention on International Trade in Endangered Species of Wild Fauna and Flora (CITES). Delegates voted overwhelmingly today to ban trade of Kaiser's spotted newt, which the World Wide Fund for Nature says has been devastated by the Internet trade.

Trade on the Internet poses one of the biggest challenges facing CITES, said Paul Todd, a campaign manager for the International Fund for Animal Welfare. "The Internet is becoming the dominant factor overall in the global trade in protected species," he said. "There will come a time when country to country trade of large shipments between big buyers and big sellers in different countries is a thing of the past."

Most of the illegal trade is in African ivory, but the group has also found exotic birds along with rare products such as tiger-bone wine and pelts from protected species such as polar bears and leopards. "As the Internet knows no borders, it causes several new problems regarding the enforcement of the protection of endangered species," the group said in its report.

"The Internet itself isn't the threat, but it's another way to market the product," said Ernie Cooper, who spearheads the investigation for TRAFFIC Canada. (*Source*: www.guardian.co.uk, 21 March 2010.)

How the pet trade's greed is emptying Southeast Asia's forests

Countries across Southeast Asia are being systematically drained of wildlife to meet a booming demand for exotic pets in Europe and Japan and for traditional medicine in China – posing a greater threat to many species than habitat loss or global warming.

More than 35 million animals were legally exported from the region over the past decade, official figures show, and hundreds of millions more could have been taken illegally. Almost half of those traded were seahorses and more than 17 million were reptiles. About one million birds and 400 000 mammals were traded, along with 18 million pieces of coral.

The situation is so serious that experts have invented a new term – empty forest syndrome – to describe the gaping holes in biodiversity left behind.

"There's lots of forest where there are just no big animals left," says Chris Shepherd of TRAFFIC. "There are some forests where you don't even hear birds."

Vincent Nijman, a researcher at the United Kingdom's Oxford Brookes University who has investigated the trade, said that "in Asia, everybody knows the value of wildlife, so people go into the forest and, whatever they encounter, they know it has a value and that there is someone they can sell it to".

Nijman's research offers the first glimpse of the size of this widespread trade. While most people are aware of illegal sales of rhino horn and ivory, he says it is the scale of the movement of lesser-known species that is most disturbing.

The bulk of seahorses traded were in the form of dried specimens for Chinese medicine. "The moment you look into the wildlife trade in Southeast Asia, China is the biggest challenge, because they can use everything and they will use everything." (*Source*: *The Guardian* [United Kingdom], 21 February 2010.) ♣

There is one thing alone that stands the brunt of life throughout its length: a quiet conscience.

Euripides