

Storage techniques

| Method | Shelf life |
|-------------------------|------------|
| Sun dried | 3-6 months |
| Smoke | 3-6 months |
| Pressed on walls | 3 months |
| Sack | 3 months |
| Glass jar | 1 year |
| Open rack | 6 months |
| Paste | 6 months+ |
| Powder | 1 year + |
| Insecticide | unknown |
| Extract oil | unknown |
| Store with dried pepper | unknown |



Priority actions for a sustainable bush mango value chain

Adding greater value to the bush mango harvest could be achieved through a combination of initiatives by research institutes, enterprise, civil society and the State.

Develop new cultivars for domestication and agroforestry, which fruit more regularly (at least every 2 years) and produce larger seed kernels that are easier to crack;

Establish small transformation and storage units for kernels in the principal production zones and provide information on better storage methods and processing options;

Encourage higher prices and faster stock turnover by producers advertising, negotiating and selling collectively and by grading different qualities; Process into paste, 'cake', powder and other high value products such as oil to increase income and extend the storage potential;

Disseminate designs and advantages of improved cutting methods and machines to split the kernel, improve safety, reduce time and increase profits;

Expand on the success of the radio, newspaper and mobile phone based Marketing Information System piloted by SNV to connect harvesters to buyers, share information on market prices and increase access to markets for remote communities.

Processing equipment

SNV worked with NGOs CEREP and FONJAK to develop and test equipment to make fruit cutting easier. The equipment is now available at reasonable cost in Cameroon.

BUSH MANGOES IN CAMEROON



Mobilization and capacity building of Small and Medium Enterprises in Non-Wood Forest Products Value Chains in Central Africa



Bush mango in Cameroon

Ndo'o, also known as wild mango or bush mango, is a non-timber forest product used across Central Africa, especially in Cameroon. The tree has multiple uses: It is a hard wood, a nutritional source of protein and the bark and kernel have medicinal uses. Bush mango provides incomes for actors along the market chain from harvester to consumer. It is increasingly used in America and Europe as a weight-loss aid and a health supplement. Its rich oil is used in cosmetics.

What is bush mango?

The bush mango is a tall, woody tree with a round, straight trunk and evergreen leaves. There are two species in Cameroon, *Irvingia gabonensis* has a sweet fleshy fruit with seed kernels of about 200 g and grows up to 40 m tall and 1.20 m in diameter. The dry season bush mango *Irvingia wombolu* has smaller, bitterer fruit and seldom grows taller than 25 m high and 80 cm in diameter. Although its seed kernels are smaller, 85 g, they produce a more prized oil and paste.

Where do you find bush mango in Cameroon?

This African tropical species is found at low altitudes in humid, dense forests, especially in areas that have a long history of habitation. Bush mango is found in the South, Littoral, Centre, East and Southwest of Cameroon. Dry season bush mango is found mainly in the Southwest and, as its name suggests, fruits in the dry season, whereas bush mango ripens in the rainy season.

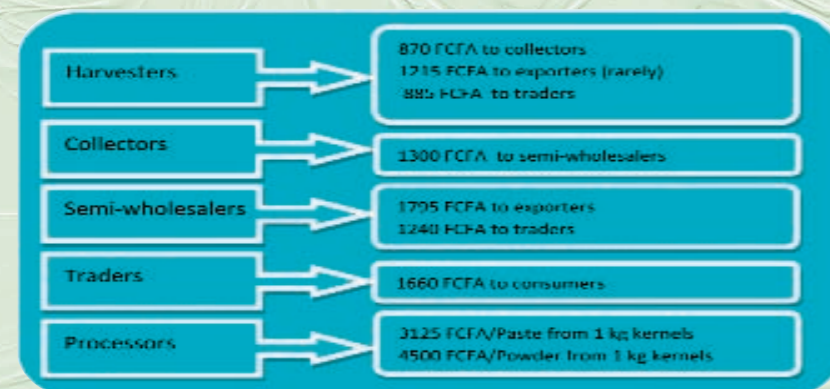
What is bush mango used for?

The majority of fruits harvested are sold, with 40% on average used by the collectors. In the East part of the production is exchanged as a social lubricant (11% by Bantu and 13% by Baka). In traditional medicine, it is used as anti-venom for snake bites and a paste made from the kernel is used to treat burns. Used as a shade tree in cocoa agroforestry, it is also used to retain water in soil, reduce erosion and increase soil fertility due to its leaf litter.

Who is in the bush mango market chain?

People, places and activities are intricately linked in the bush mango chain: The prices at these different levels per kilogram of *ndo'o* in Cameroon from 2007 to 2008 depend much on who is selling and where.

Producers. Generally harvesters sell on an individual basis, although



groups in the Centre and South regions show that higher levels of organisation and mobility can increase volumes sold and income. The average revenue of a producer in a group was around 99 000 FCFA (US\$198), whereas individuals earned 200 000 FCFA (US\$420). The average price for a 5 litre bucket of kernels in villages varies as well as in the season from 590 to 6000 FCFA. Average prices over the year range from 2000 to 4240 FCFA. It contributed on average 37% of household incomes. Extracting and splitting the kernel is one of the main difficulties in initial processing. Simple cutting equipment is now available that can reduce risk of injuries and halve the time required.

Retail. Nearly 5000 tonnes of *Irvingia* kernels, with a market value of approximately 4 billion FCFA, were sold in seven markets, including the major urban markets of Douala and Yaoundé, in 2007. The average price of a 5 l bucket varies enormously between markets and harvest seasons, from 4717 to 9632 FCFA.

Processing. In the Littoral, Centre and South regions, at least 12 small scale initiatives are processing *ndo'o* kernels and fruits. The 'cake' or 'ball' sold around Ebolowa is the best-known product. A 5 l bucket produces on average 8 balls of 400 g, with a value of 1000 FCFA each.

Export. In 2008, about 2600 tonnes of kernels were exported to Nigeria, and 302 tonnes to Equatorial Guinea and Gabon.

Consumers. Consumers mainly purchase bush mango to use in cooking sauces eaten in the forest zone of Cameroon. Its popularity is growing, with main consumer strongholds in the Centre, South, Littoral and Southwest regions and Nigeria. Average annual household consumption varies between 3.2 and 14.1 kg.

Constraints and opportunities in the bush mango chain

Constraints include a gradual disappearance of *Irvingia* in the natural forest, the high level of losses due to the product perishing, accidents that occur when splitting the kernels, the irregular production quantities each season, the low level of processing, a lack of knowledge about market prices and buyers, corruption during transport and the lack of unit measuring standards. A lack of knowledge of buyers and market prices in the season means that many harvesters, especially the Baka pygmies in the East, sell their products for very low prices.

However, there are many opportunities in the chain. Thanks to its economic, medicinal and food value, bush mango contributes to the Millennium Development Goals by meeting food security goals and health needs and raising incomes. The long shelf life of preserved kernels and large demand in markets in Cameroon and Nigeria offer good opportunities to increase sales. As traditional harvest rights often mean certain trees are reserved by specific families, this ensures that the tree is guarded and protected for future generations. Increasing use can be made of bush mango trees in agroforestry and plantations as a shade tree.

Undiscovered potential

Bush mango products

Kernel Fruit
Oil Juice
Paste Jam
Soap Wine
Butter Distilled alcohol
Powder
Pills

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Resources

Government
Ministry of Forests and Fauna
MIINFOF
Mr. Ebia Ndongo Samuel Ebes
Tel: 00(237)22239231
Fax: 00(237)22239231
Email: ebia_ndongo@yahoo.fr

Support and training

SNV www.snvworld.org
Tel: 00(237)22202772
FONJACK
BP 80, Ngoulemakong, Mvila
Email: fonjak@yahoo.fr
www.verein-gruenwerk.ch/fonjak/pages/fr/aktuell.html
Tel: 96828616
CEREP
cerrep2002@yahoo.fr
Tel: 94158968

Federations

STIEPS
Syndicat des Exploitants Transformateurs Industriels Exportateurs des Produits Spéciaux
Email: stiepfs@yahoo.fr
ONEPCAM
National Organization of Non-Timber Forest Product Operators of Cameroon
Email: onepcam@yahoo.fr

Research

CIFOR www.cifor.cgiar.org
World Agroforestry Centre
www.worldagroforestrycentre.org

Websites

FAO www.fao.org/forestry/43055/en

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Authors : Jean-Paul Eyebe, Abdon Awono, Verina Ingram and Jolien Schure
For further information, please contact: Abdon Awono at a.abdon@cgiar.org
Verina Ingram at v.ingram@cgiar.org