



## Building institutions and markets for non-wood forest products from the Brazilian Amazon

*P.H. May*

**Peter H. May** is Forestry Officer (Non-Wood Forest Products), Forest Products Division, FAO Forestry Department.

*This article traces the institutional factors which have led to emerging alliances between forest dwellers in the Brazilian Amazon and progressive Northern businesses for the production and marketing of non-wood forest products. Potential roles for national forestry agencies and research institutions in the process of commercial expansion are suggested.*

The importance of non-wood forest products (NWFPs) to forest-dwelling peoples is increasingly apparent and well documented (Balick, 1985; Falconer, in press; Posey, 1984; see also other articles in this issue of *Unasyuva*). Furthermore, a number of recent studies suggest that the value of products extracted from particular forest areas could, over time, exceed what could be gained if the land were converted to pasture or crops (Peters *et al.*, 1989; Hecht and Schwartzman, 1988; Rose, 1988). However, the practical realization of this theoretical potential depends on the existence of appropriate institutional mechanisms, covering all phases of product development, production and marketing. In their absence, from the perspective of local people, the argument for sustainable management of tropical forest resources as a development opportunity breaks down.

Population growth, frontier occupation and permanent forest-land conversion in Brazil and other tropical nations are creating increasing concern among governments, organizations and individuals committed to conservation of forest resources.

Some analysts even suggest that the process of regional occupation and devastation has taken on a dynamic of its own, driven along by land speculation, gold fever and the drug trade (Hecht and Cockburn, 1989). Among others, however, there is increasing optimism that it may be possible in certain areas to conduct sustained management of natural forests not only for timber but also for production of non-wood goods and services.

In effect, this tactic would seek to harness the very market forces that have kindled deforestation, and put them to work for forest management and rejuvenation.

### Institutional issues in non-wood forest product development

In the Brazilian Amazon, as in other tropical forest areas, a wide range of NWFPs are extracted by local riverine populations, both for personal use and as part of cottage industries. However, NWFPs have only recently been adopted as a focus by national forestry administrations. Hence, the institutional frameworks for resource management, product and

enterprise development, marketing and fiscal administration tend to be inadequately developed.

The few governmental research and enterprise development activities over the years with respect to NWFPs have been "top-down" efforts geared primarily toward domestication of selected species for introduction into more intensive production systems. Forest dwellers in the Amazon, as elsewhere in the tropics, have been conveniently disregarded in planning for regional development. Local populations have not been involved in identifying areas for research or in testing technical alternatives.

As a result, these efforts have focused on species which have fairly well-developed market channels founded on years of cottage-level extraction in the wild - for example, guaraná powder (*Paullinia cupana*), Brazil nut (*Bertholletia excelsa*), babassu palm fruit (*Orbignya phalerata*) and pupunha (*Bactris gasipaes*) for palm heart and oil. Even though the results of experimental trials have often been promising, they generally have not reached the forest-dwelling communities which depend on NWFP extraction for a significant share of their livelihoods.

Forestry agencies and research institutions cannot bear all the blame for this situation. In part this failure to disseminate scientific research results is due to the "invisibility" of such populations to policy-makers. Loosely knit, widely dispersed and often highly mobile forest-dwelling communities have had little organizational capacity to demand public support in the past. In recent years, however, new institutional structures and channels for communication with government have arisen in the context of forest peoples' movements to secure rights to land, improved economic conditions and social services.

In Brazil, the institutional thrust of these movements is typified by the actions of rubber-tapper and Indian organizations. The rubber tappers began their organizing work in the mid- 1970s with the help of the popular education and rural workers' union movements. These efforts sought to reduce illiteracy and strengthen tappers' ability to monitor their accounts at merchants' stores, where they received unfair terms of trade for the latex and Brazil nuts which are their principal cash products.

In 1985, workers' union leaders and tapper educators from several states held a meeting in Brasilia to consolidate a broad-based programme designed to ensure protection of forest resources, improved prices and the adequate provision of social services. At this meeting, a National Council of Rubber Tappers was created, and this was later legally constituted as a representative organization.

The Union of Indian Nations, founded in the early 1980s to secure constitutionally guaranteed land rights for the nation's 220000 remaining Indians through demarcation of tribal lands, also has a basic interest in conservation and development of forest resources. Both of these grassroots organizations are committed to the improvement of transport, processing and marketing of NWFPs under local management. To this end, they have brought pressure to bear on public agencies for assistance in resource demarcation and protection, as well as technical and economic research on resource management, processing viability and market opportunities.

[Efforts to organize Brazilian rubber tappers began in the mid-1970s](#)

[The Union of Indian Nations was founded in the early 1980s to secure/and rights for Brazil's remaining Indians](#)

## Land rights and local organization

One important result of this pressure has been the demarcation of so-called "extractive reserves" by the federal and state governments. Extractive reserves are established as public lands for which long-term collective use rights are granted to groups of households engaged in NWFP activities. These reserves integrate respect for historical forms of land occupation with development efforts that seek to advance objectives for residents' social and economic improvement while retaining permanent public control and responsibility for conserving the native forest. To date, more than 3 million hectares of the Brazilian Amazon have been designated as extractive reserves. Similar "user-friendly" reserves have been created in Peru and Bolivia.

The establishment of these extractive reserves has not been easy. Much of the land for them had been privately held by large-scale absentee landlords who had an interest in converting large areas of natural-forest rubber estates into extensive pasture for beef cattle ranching. In comparison, rubber tappers propose to limit clearing for pasture or cropland to less than 5 percent of the area within extractive reserves.

Although the former landowners have been compensated by the government, this compensation has not been equivalent to the short-term gains that could have been achieved by the sale of valuable hardwoods cut in the process of land conversion to pastures, and the sale of the beef raised on this land. In other cases, reserve establishment threatens members of the entrenched traditional merchant elite who had collected rent and taken a profit on trade with rubber tappers. Therefore, reserve denomination of former rubber estates has resulted in intense and often conflictual negotiation among forest residents, other land claimants and government agencies. Indeed, the establishment of one such extractive reserve in the state of Acre was the root cause of the slaying of labour leader and environmentalist Chico Mendes.

## **Promoting research on indigenous technologies**

Once reserves have been established, residents need to decide how best to manage and make economic use of the forest resources; sharing of benefits entails a corresponding shading of responsibilities to ensure sustainability of the resource. To counter the lack of "off-the-shelf" technologies, due to prior neglect by research institutions, rubber tappers and Indians have taken upon, themselves the sharing of local and acquired knowledge of resource management. A Centre for Indigenous Research was created by the Union of Indian Nations and tribal leaders, in conjunction with faculty at the Catholic University of Goiás in central Brazil, to train young community-based facilitators to organize pilot forest-management, product-processing and marketing programmes in their villages. A similar Research Centre for Forest Peoples is being jointly established in the western Amazon by Indian organizations and the National Council of Rubber Tappers. Private-sector and bilateral donors as well as international non-governmental organizations have endowed the centres with funds for residential facilities and scholarships, installation of areas for experimental agroforestry plantations, and semi-captive raising of wild animals and fish to increase food resources, as well as funding for trainees to develop pilot projects in their home communities.

### **[Chino Mendes, Brazilian labour leader and environmentalist, assassinated in 1988](#)**

Both centres are envisioned primarily as a locus for training and demonstration, as well as for exchange among forest dwellers from different backgrounds and environments. They are also trying to achieve financial autonomy by improving the processing and marketing of NWFPs produced by participating communities, but it is too early to assess the economic Viability of this proposition.

## **[Processing Brazil nuts](#)**

In response to these grassroots efforts, a range of universities and public research institutes

have chimed in with agreements to conduct participatory research among forest communities within extractive reserves. These agreements aim principally to improve resource management within reserves, and aid in local organization and training. Among these: are the national Agricultural Research Centres for the Humid Tropics and for the Cerrado, coming under the Brazilian Corporation for Agricultural Research (EMBRAPA), and state universities in Acre, Rondonia and São Paulo, as well as the University of Florida, Gainesville, USA. These efforts are initiated by innovative individuals within agencies who actively seek interlocutors at the community level. But they also reflect changing donor priorities toward research and training with more immediate relevance to organized user groups. Many of these collaborative efforts are being supported with pilot funding from the Ford Foundation and the Canadian International Development Agency.

## Steps toward market expansion

Rubber tappers and Indian leaders soon realized that land rights, resource protection and management, while essential first steps toward local development, are not enough. In order to improve their living conditions, forest dwellers need to ease the difficulties of getting their goods to market and to receive better prices for their products.

Forest peoples' movements are increasingly focusing on the economic targets of improved product pricing, diversification of NWFPs to cushion against overdependence on insecure commodity markets, and development of cooperative processing, storage and marketing networks.

Through a combination of lobbying for improvement in rubber prices, which are set by government, and cooperative marketing arrangements that have pressured local merchants to improve terms of trade, the rubber tappers' movement has begun to meet these targets. For example, in response to the failure of government to adjust the subsidized price for raw rubber to cope with inflation, rubber tappers found themselves in a steadily worsening economic position. In 1989, the leaders of the National Council of Rubber Tappers successfully lobbied the Brazilian Institute of Renewable National Resources and the Environment in Brasilia; prices were brought into line, bringing benefits to hundreds of thousands of tappers. However, the need for product diversification in the face of competition from plantation sources of natural rubber, although apparent to the organization, has not been adequately tested.

## Tying in to northern markets

Producer groups have been encouraged by the enthusiasm among progressive entrepreneurs from developed nations who are interested in exploring new market opportunities for NWFPs, particularly those produced by organized forest peoples. These businesses appreciate that a "green" product image has potential to offer a market premium, i.e. Northern consumers who are sensitized to the desirability of reduced Amazon forest depletion are willing to pay more for a product derived from sustainable sources. The underlying philosophy is that expanded markets for these products could help to conserve resources of global concern and generate profits for both forest peoples and Northern businesses.

### Development of forest products must not be at the expense of the resource base

In 1989, a new marketing chain was forged through the intermediation of Cultural Survival, an indigenous support organization based at Harvard University. With the help of local research groups and consultants in Brazil, the project identified samples of more than 350 forest products and brought them to the testing laboratories of over 90 businesses. Immediate new product prospects under test include copaiba (*Copaifera officinalis*), andiroba (*Carapa guianensis*) and essential oils, cupuassu (*Theobroma grandiflora*), assaí (*Euterpe oleracea*) and buriú (*Mauritia flexuosa*) fruit pulps.

### **Non-wood forest products from secondary forests: the case of the babassu palm**

A strong case can be made for increased utilization of less fragile secondary forests as a basis for NWFP marketing. Arguments for use of secondary successional vegetation as a focus of rural development include the facts that much land converted to pasture has already returned to second growth, and that such areas are already occupied or near to settlement areas (Hecht *et al.*, 1988). Development in such areas would thus reduce pressures on primary forest, but would also require that land and tree tenure be defined, and that marketing structures be organized so as to benefit local forest communities.

One species with particularly high potential, both for reforestation and for NWFPs, is the babassu palm (May *et al.*, 1985a). *Orbignya phalerata*, locally known as babassu, occurs widely in Brazil along the transition belt between the central savannahs and the Amazon forest. Cutting and burning associated with shifting cultivation or forest-land conversion liberate growth of numerous babassu seedlings contained in understorey vegetation. These quickly choke out competition, leading to formation of monospecific high-density stands that dominate the landscape. Such stands have thus formed in settled areas, and their products play an integral role in the local and regional economy (May *et al.*, 1985a).

Babassu palm leaves furnish fibre for thatch, walling, fencing and basketry to the vast majority of residents of the palm forests. When felled, the stems are used for bridge construction and the palm heart given as feed to animals. But by far the most important economic uses and potential for babassu rest in their fruit. Coconut-like in shape, the multilayered babassu fruit is used for oil, fuel, starch and fibre. To date, only the oil kernels, charcoal and fruit husks have entered into market circuits. The kernels are extracted manually by beating the fruit repeatedly on an upturned hatchet blade. It is estimated that as many as 450000 rural households derive up to 40 percent of their incomes from babassu product sales and use, principally based on the labour of women and children (May *et al.*, 1985b).

Today, efforts are under way in conjunction with rural workers' unions and land reform beneficiaries in the state of Maranhão to test and improve community-level babassu fruit-processing equipment. This project was initiated under the auspices of the state agricultural research agency, and involves collaboration with International Development Enterprises, an appropriate-technology organization based in the United States. Processing options under test include mechanical breaking and separation of fruit components for further processing at the community level into oil, charcoal and feed, or their sale to regional industries. Oil from cottage production is being actively considered for import by natural-cosmetics firms. At the same time, with assistance from the New York Botanical Garden's Institute of Economic Botany, studies are under way to improve productivity of babassu stands, by a combination of management and enrichment. These activities seek to strengthen regional and grassroots institutions and improve household incomes while ensuring local resource control and management.

### **Fruit from the babassu palm (*Orbignya phalerata*) is used for oil, fuel, starch and fibre**

The most immediate result of this collaboration, however, has been the creation of a new ice-cream flavour called "Rainforest Crunch" and a nut brittle candy with the same name by the US ice-cream chain Ben and Jerry's Homemade. Consumer interest grew rapidly as the project was widely described in the international press as a contribution by Northern business to protecting tropical forests and indigenous peoples; profits derived from initial sales have been estimated in the range of 1 million dollars. Some of these revenues have been ploughed back into development of "sustainable development" projects, including the establishment of cooperatives to set up processing enterprises under the direct control of rubber tappers and Indian communities.

The initiation of this marketing link, primarily with Brazil nuts, a product only obtained from natural forest stands, has ensured that the primary beneficiaries are forest peoples. Further profits from Brazil nut trade are being used to help bring new products into the marketplace, sponsor further investment in processing facilities, and train local resource and enterprise managers. The critical factors for products to become serious contenders to occupy new market niches include reliable supply, uniform quality, and affordable prices or unique appeal in relation to competitors. The FAO Forestry Department is currently providing technical and financial support to the Institute of Amazon Studies in Brazil to develop a data bank of

promising products and assess the market potential for several of the more immediate options.

## Is it really "sustainable"?

The question arises, though, whether expanding markets for NWFPs from the tropical forest is a sustainable option for the forest dwellers. The term "sustainable" refers to processes of development that respond simultaneously to biological, economic and social objectives and that can be maintained indefinitely, so that future generations as well as immediate resource users may benefit and species survive. A number of possible impediments to sustainable growth in forest product marketing bear mentioning.

One risk is that expansion of market demand for tropical forest products could encourage development of forest-based crops concentrating on more valuable or faster-growing species at the expense of natural vegetation. This could eventually drive natural-forest-dwelling producers out of the market by undercutting costs.

If new market opportunities are captured principally by large landowners or merchants who already dominate commercial channels, this could cut into the benefits to forest peoples. The danger exists that large-scale merchants may be able to capture the bulk of the price differential created by innovative marketing tactics, thereby undermining cooperative marketing efforts. In the experience of Brazil's National Council of Rubber Tappers in the state of Acre, however, this problem has not materialized. On the contrary, the offer of better prices by a local cooperative in Xapuri founded in 1988 forced other local intermediaries to boost their prices, having a ripple effect that benefited hundreds of households not yet associated with the cooperative.

Research into the impacts of commercialization of forest products by Amazon peoples suggests that market development can be a two-edged sword. There is the risk that forest dwellers may become overspecialized and hence vulnerable to market shifts if they concentrate on only one or two commodities, or dependent on commodities obtained through the newly developed trade channels (Colchester, 1989).

In addition to financial risks, an excessively rapid growth in market demand can be responsible for degradation of forest resources if local communities are not able to maintain control over the rate and intensity of extraction (Repetto and Holmes, 1983; May 1990). In eastern Guatemala, for example, market penetration in extractive economies has increased the rate of harvesting of native palm leaves used in a multimillion-dollar floral industry. There, the absence of land rights or local organization of palm harvesters demonstrates that unmanaged open-access resources can rapidly become subject to overexploitation when markets expand (Nations, 1989).

## Conclusions

The principal issue in NWFP development is how to ensure that forest peoples benefit from expanded markets, and that a biologically diversified resource base is sustained. On the basis of the foregoing discussion, it is apparent that alliances between forest peoples and entrepreneurs in developed countries represent a practical and perhaps widely replicable model of international cooperation for development of new markets for non-wood forest products while encouraging sustainable management of the resource base. This should go a long way toward allaying fears that "increasing the economic productivity of forest-based societies... is a vain dream, a Faustian pact with the devil; that the commercialization of forest products will undermine and destroy the very societies it is intended to save" (Colchester, 1989).

However, progress in developing institutions for resource management, product processing

and marketing of NWFPs is still in an incipient stage. Until recently, NWFPs have only rarely been considered central to forestry agency programming, and then only for a few of the more industrial or internationally traded commodities.

Now, the relationships between forest peoples and other protagonists in trade and technical-assistance partnerships are undergoing definition. In Brazil, NGOs and progressive entrepreneurs have played crucial roles in developing new marketing arrangements that represent a promising step toward achieving sustainable forest utilization while providing a greater share of benefits to forest dwellers.

Governmental agencies, on the other hand, have taken a more reactive stance. This posture must change; governmental cooperation is critical in securing resource control and ensuring long-term support for collaborative research to intensify and diversify NWFP production systems in tropical forest regions. The extent to which producers possess secure usufruct rights over trees or land, and the structure of marketing channels through which NWFPs make their way to the consumer, will affect the sustainability of their production systems. Public-agency officials should be called upon to participate in and, in some cases, mediate negotiations leading toward new institutional arrangements among forest peoples' organizations, and universities, research institutes and international assistance groups.

## Bibliography

- Balick, M.J.** 1985. Useful plants of Amazonia: a resource of global importance. In G.T. Prance and T.E. Lovejoy, eds. *Key environments: Amazonia*. Oxford, Pergamon Press.
- Barbier, E.** 1987. The concept of sustainable economic development. *Environmental Conservation*, 14(2): 101-110.
- Colchester, M.** 1989. Indian development in Amazonia: risks and strategies. *The Ecologist*, 19(6): 249-256.
- Falconer, J.** (in press). *The major significance of "minor" forest products: local people's use and values of forests in the West African humid forest zone*. Rome FAO/SIDA Forests, Trees and People Programme.
- Hecht, S., Anderson, A. & May, P.** 1988. The subsidy from nature: shifting cultivation successional palm forests and rural development. *Human Organization*, 47(1): 25-35.
- Hecht, S. & Cockburn, A.** 1989. *The fate of the forest*. London Verso.
- Hecht, S. & Schwartzman, S.** 1988. *The good, the bad and the ugly: extraction, colonist agriculture and livestock in comparative economic perspective*. Masters thesis. Los Angeles, Calif, Graduate School of Architecture and Urban Planning, UCLA.
- May, P.** 1990. Palmeiras em chamas: transformação agrária e justiça social na zona do babaçú. São Luís, Maranhão, Brazil, EMBRAPA/FINEP/Ford Foundation.
- May, P. et al.** 1985a. Babassu palm in the agroforestry systems in Brazil's Mid-North region. *Agroforestry Systems*, 3: 275-295.
- May, P. et al.** 1985b. Subsistence benefits from the babassu palm (*Orbignya martiana*). *Economic Botany*, 39(2): 113-129.
- Nations, J.** 1989. Xateros, chicleros, and pimenteros: harvesting renewable tropical forest resources in the Guatemalan Petén. In *Proceedings of the workshop on traditional resource use in neotropical forests*. Gainesville, Fla., Center for Latin American Studies, University of

Florida.

**Peters, C. et al.** 1989. Valuation of an Amazonian rainforest. *Nature*, 339: 655-656.

**Posey, D.A.** 1984. Indigenous ecological knowledge and development of the Amazon. In E. Moran ed. *The dilemma of Amazon development*. Boulder, Colorado, Westview Press.

**Repetto, R. & Gillis, M.** 1988. *Public policies and the misuse of forest resources*. Washington, D.C., World Resources Institute.

**Repetto, R. & Holmes, T.** 1983. The role of population in resource depletion in developing countries. *Population and Development Review*, 9: 609-632.

**Rose, D.** 1988. *Economic assessment of biodiversity and tropical forests*. Washington, D.C., International Institute for Environment and Development.

**Schwartzman, S.** 1989. Extractive reserves: the rubber tappers' strategy for sustainable use of the Amazon rainforest. In J. Browder, ed. *Strategies for management of fragile lands in Latin America*. Boulder, Colorado, Westview Press.

**World Commission on Environment and Development.** 1987. *Our common future*. Oxford, Oxford University Press.

