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Marketing of Extractive Products in the Brazilian Amazon

"What most deeply impressed me in my visit to the Amazon is the futility of reform by outsiders. . . . No darker picture exists anywhere of what in more progressive countries we choose to call corruption and exploitation. Yet the established society, with its century-old tentacles stretching up all the thousands of tributaries, was totally ignored in our earlier rubber program. The river trade is the bloodstream of this feudal social organization. We have attempted to cut across these arteries expecting that the body would not only survive but be useful to us.

We have failed to consult those, who through long experience have accumulated the only accurate knowledge of the region. We have entered someone else's property and ignored the owner. We have made decisions not only in Belem and Manaos, which is bad enough, but also in Rio and Washington, which is worse, on problems with whose character we have not the faintest familiarity. . . . Local business men and local officials continue suspicious and sullen. These Amazon people, during our period of maximum energy and mistakes, and of minimum results, did not content themselves with being cut out of the deal, but actively sabotaged even our wisest measures. . . .

We have planned in a vacuum, on a large scale, without knowledge of local conditions and somehow expecting that a man whose right hand we cut off will offer us his left."

Memorandum by the Second Secretary of Embassy in Brazil (Walmsley), Amazon Rubber Program, October 18, 1943. Foreign Relations of the United States 1942 Volume V, the American Republics

"Quem nao fez grandes besteiras, e nao foi roubado, se deu bem com a castanha", [Trans. "Anyone who hasn't done anything really stupid, and wasn't robbed, has done well in Brazil nuts."]
M.J.B., Amazon river trader and Brazil nut exporter, Belem, August 1990.

0.1 Introduction

This report discusses research completed in the second semester of 1990 on markets and production of "extractive" (1) products in the Brazilian Amazon. Research was carried out in Rondonia, Acre, Brasilia, Belem, Santarem, Obidos, and Manaus. The study focuses on several non-wood forest products, excluding native rubber (2), seeking to identify constraints and opportunities for international (and national) initiatives to expand markets for sustainably produced tropical forest products and raise the incomes of forest communities.

The report discusses four areas of research. First, export values for extractive products are reviewed. Second, production and value of selected extractive products are examined to establish market trends, and the marketing process for selected products, is examined. Third, characteristics of the market that may affect direct marketing initiatives are discussed. Fourth, the report surveys the situation of Brazil nut, cumaru and copaiba producers in the Baixo Amazonas region of Para.

The study concludes that reports of the demise of extractive production in the Amazon have been exaggerated (cf Parfit 1989). Frequently, such reports are based on the misapprehension that rubber is the only extractive product of economic significance and fail to take into consideration the importance of other extractive products in providing employment and income on the regional level, especially for populations that identify themselves as agriculturalists but that earn an important part of their income from extraction. Certain products have indeed declined or disappeared from official production statistics (e.g., andiroba, ucuuba) because of predatory development, substitution by synthetics, or changes in local and regional labor markets and land tenure patterns. But others remain important sources of regional and local income and employment while also generating export earnings (Brazil nuts, copaiba, cumaru, palm hearts) and some thought to have fallen into irrevocable decline have recovered (rosewood oil).

Efforts to increase international (and national) markets for selected products, guarantee their sustainable production, and increase the share of value that forest communities get from them, offer an important alternative for the future of the Amazon. Some characteristics of regional markets will, however, make the direct marketing of extractive products by local producers a slow and risky proposition. A few exporters control supply of the commercially most attractive products, through their established infrastructure in the region, as well as through paternalistic personal ties with large networks of local level intermediaries, developed over generations. This means that the established exporters can exercise inordinate control over markets and prices. Efforts to create new marketing mechanisms must proceed slowly, cautiously, and above all must rest on strong, highly motivated and well trained local organizations of producers. Such organizations are relatively few, small, dispersed over a very large geographic area and in many cases have only incipient capacity to administer large scale commercial transactions. Strengthening of local organizations must then be the highest possible priority in marketing initiatives.

1.0 Exports

Exports of extractive commodities continue to generate significant foreign exchange earnings. In 1985, extractive products accounted for over US$ 58 million in export earnings. This represents an increase of more than 900% over 1975, when about US$ 6 million were exported. Not all of the extractive products exported come from the Amazon. Brazil nuts and palm hearts from the Amazon accounted for 60% of the total export value in 1985. Some

extractive products are not at present sustainably harvested. Some products diminished after 1985 (babacu, balata, macaranduba for example) but others have increased in quantity and in unit value (palm heart, rosewood oil, copaiba oil).

Figure 1 - Export of Extractive Commodities from Brazil, 1985 - Quantities and US$ FOB

Commodity	Quantity (kg)	US$ FOB
Copaiba oil	50,148	125,426
Babacu oil		
(raw)	5,617,500	4,183,650
(refined)	53,287	74,701
Oiticica oil		
(raw)	400	337
(refined)	51,000	35,600
(cooked)	16,920	16,484
piacava fiber	382,650	474,745
urucu (coloring agent)	1,800	2,067
balata (non-elastic gum)	4,593	10,151
macaranduba (non-elastic gum)	5,928	8,270
sorva * (non-elastic gum)	1,138,000	3,775,000
cumaru (aromatic)	45,700	381,995
rosewood oil ** (aromatic)	39,386	713,984
Ipecac (medicinal)	500	7,000
(extract)	5	1,912
Jaborandi (medicinal)	18,240	54,854
Barbatimao (tannant)	3,612,000	816,000

Ouricuri wax	4,585	18,754
Carnauba wax	9,416,760	12,697,332
Brazil nuts		
(in shell, raw)	2,000	3,608
(in shell, dried)	17,854,558	13,975,465
(shelled, dried)	7,058,190	11,175,759
Palm hearts (canned)	5,136,000	10,220,000
Total		58,773,094

(Sources - Cacex - Banco do Brasil 1985; * - Lescure and Castro 1990; ** - Cacex Banco do Brasil 1987)

Figure 2 - Export of Extractive Commodities from Brazil, 1975 - Quantity and US$ FOB

Commodity	Quantity (kg)	Value (US$ FOB)
Copaiba oil	10,440	23,809
Babacu residues	4,440,560	361,763
Piacava fiber	160,500	160,155
Cumaru (aromatic)	700	1,700
Rosewood oil (aromatic)	180	1,764
Palma rosa (aromatic)	720	10,872
Ipecac (medicinal)	1,186	20,376
Jaborandi (medicinal)	5,572	8,933
Carnauba wax	780,003	1,460,794
Brazil nuts		
(in shell, raw)	1,516,244	811,233
(in shell, dried)	3,514,960	1,496,246
(shelled, dried)	1,224,340	1,536,483
Palm hearts (canned)	156,320	187,252
Total		5,894,128

(Source - Cacex - Banco do Brasil, 1975)

1.1 Origin of products and sustainability

Of the major extractive products exported in 1985, babacu (Orbignya spp), a palm nut processed for oil, is produced principally in Maranhao, that is, in the Legal Amazon but not the north region, and is produced in the area (more than half the state) that is either savannah or already deforested. That babacu does not come from the rainforest does not mean that it has no importance for the fate of the forests. Smallholder babacu production historically provided a crucial margin of survival for peasant families in the region, and its decline is a result of the enclosure of large areas of common-property babacu forest for extensive cattle ranching (Anderson and May 1985). Maranhao suffers amongst the most acute land conflicts anywhere in Brazil, as a consequence of the same process of land concentration, and migrants from the state are to be found in goldmining areas and official and spontaneous colonization schemes around the Amazon. The extension of the extractive reserves concept to babacu producing regions in Maranhao, as well as improved marketing mechanisms could make an important local contribution to addressing underlying causes of migration and deforestation.

Carnauba wax, valued at more than US$ 12 million in 1985, is produced from the carnauba palm nut, in northeastern Brazil. Its production makes an important contribution to the regional economy in Piaui, Rio Grande do Norte and Ceara in particular. No production comes from the Amazon. Cashew nuts are a similar case; they are listed in agricultural census data as extractive commodities because historically all production was collected from native, wild cashew trees in the northeast. Cashew nuts had an export value of over US$ 103 million in 1985. About a third of this came from wild trees; the rest was cultivated, much of it on large plantations (Dr. Jason Clay, personal communication). Virtually all production is from the northeast. Cooperative processing by smallholders for cashew export (as well as for carnauba wax) could help to stabilize precarious rural smallholders in the northeast.

Of the other export products listed, oiticica, ipecac, barbatimao and urucu are produced largely in the northeast. Ipecac was formerly produced in Rondonia. The other products come from the legal Amazon.

Palm heart (the heart of the acai palm, Euterpe oleracea) generated 17% of all extractive exports in 1985, US$ 10 million. In 1986, exports were valued at US$23.5 million, and in 1987 US$35.5 millions. Some 95% of the production is from the Amazon, largely Para, with some from Amapa. Palm heart is largely, if not entirely, predatorily extracted. Crews of contract laborers, engaged by canners, descend on extensive stands of acai in the floodplain forest (varzea) of Para and Amapa and cut the tops from entire stands of the multistemmed acai palm. According to Amapa forest dwellers, if the palm is selectively harvested, taking only a few stems and leaving the rest, and cutting from the base rather than taking only the thinner and more desirable tops, it lives and produces more shoots. If the tops of all the stems of a palm are cut, it dies. Since laborers hired by the canneries are

paid for quantity produced rather than an hourly wage, and have no tie to the forest they exploit, they do not practice slower and more labor intensive sustainable harvesting. Palm heart production is a clear case in which security on the land and increased control over marketing for forest communities could make a substantial difference to the sustainability of the product. Cooperative marketing of palm hearts, or cooperatively controlled processing plants, in an extractive reserve, where residents have a direct interest in long term production and have security on the land could lead to increased income and protection of forest. The National Council of Rubber Tappers and the Institute for Amazon Studies are pursing this approach in extractive reserves in Amapa.

1.2 Price trends for selected export products

Price trends for extractive export products vary from product to product, but are by no means all negative. Prices may fluctuate considerably from year to year, or more rapidly. The following table shows export unit prices for selected products.

Table 1

Export Volume, Value FOB, and Price for Selected Extractive Products: 1975, 1985, 1989 *

	Babacu		
	Quantity (kg)	Value (US$ FOB)	Price (US$/kg)
1975 (residue)	4,440,560	361,763	0.08
1985 (oil)	5,670,787	4,258,351	0.75
1989 (oil)	114,510	108,743	0.95

	Cumaru		
	Quantity (kg)	Value (US$ FOB)	Price (US$/kg)
1975	700	1,700	2.43
1985	45,700	381,995	8.36
1989	39,600	151,907	3.84

	Rosewood Oil (Pau Rosa)		
	Quantity (kg)	Value (US$ FOB)	Price (US$/kg)

1975	180	1,764	9.80
1987	39,386	713,984	18.13
1989	76,045	2,084,079	27.40

Copaibia Oil

	Quantity (kg)	Value (US$ FOB)	Price (US$/kg)
1975	10,440	23,809	2.28
1985	50,148	125,426	2.50
1989	61,925	249,772	4.03

Palm Heart

	Quantity (kg)	Value (US$ FOB)	Price (US$/kg)
1975	156,320	187,252	1.20
1987	9,615,078	35,539,417	3.70
1989	5,448,374	19,348,949	3.55

Brazil Nuts (all types)

	Quantity (kg)	Value (US$ FOB)	Price (US$/kg)
1975	6,255,544	3,843,962	0.62
1985	24,914,748	25,154,832	1.00
1989	13,360,528	21,289,494	1.59

(source - Cacex - Banco do Brasil 1975, 1985, 1987, 1989)
* - all 1989 figures are for January - November

Babacu export has virtually collapsed, probably due to competition from substitutes. Cumaru (Dipteryx odorata), a nut from which coumarin is extracted by soaking or heating the dried nut in alcohol, is used to fix odors in cigarettes as well as in perfume. It has declined in export volume as well as price since the early eighties. Some exporters claim that national buyers (Souza Cruz Cia.is the largest buyer) are not only buying more, but producing coumarin for export. Traders also argue that coumarin has been labelled carcinogenic in cigarettes and its import to the US restricted. National production of cumaru, however, grew substantially from the early eighties

on--from 1974 to 1982, average annual production was 31 tons, while from 1983 to 1987, the average was 362 tons.

Copaiba (Copaifera multijuga) oil, like Brazil nuts, in reality has fluctuated in price and volume considerably more than the table shows. (see p.13 below)

Brazilian rosewood oil, (pau rosa, aniba rosaeodora and aniba duckei), is an oil extracted from the rosewood tree, which contains linalol, a key ingredient of fine perfumes. It is produced in the state of Amazonas, particularly on the Madeira and Purus rivers. Rosewood oil has several notable advantages as an extractive export product. It is a low volume, high price commodity, and is locally processed. Demand and price have varied considerably over the last two decades, however, and under present conditions rosewood is predatorily extracted. Most production is exported, and four or five firms in Manaus control a large part of the market, if not the whole market.

Rosewood oil appeared only recently to be in irrevocable decline. Production fell from the mid sixties on, and the number of processing plants declined from 103 in 1966 to less than 20 in 1986 (Lescure and Castro 1990). Predatory exploitation of the trees was widely held responsible. Six to twelve trees are needed to supply the 15 to 30 tons of wood required to make a 180 kilo barrel (tambor) of rosewood oil (Ibid.), (that is, a single processed tree yields from 15 to 30 kilos of oil). Natural regeneration of the trees in the forest is slow and precarious. One trader in Manaus claimed that trees take from 20 to 30 years to regenerate, although traders commonly argued that extraction is not damaging to the natural population, since for every tree removed various seedlings spring up in the clearing left. Botanical sources lend little credence to this scenario (Araujo 1972).

Decline in demand, according to the traders, is also explained by the invention of synthetic linalol and by US importers stockpiling in the early 80s. The effects of general economic crisis and inflation especially over the last decade are also important. Before about fifteen years ago, according to one exporter, many factories operated in the region, prices rose and fell, and the factories started and stopped production accordingly. Subsequently, with worsening economic conditions, fewer and fewer producers were able to weather periods of low price, and closed.

Exports of rosewood oil in recent years have recovered. In 1987 39 tons were exported, in 1988, 57 tons, and in 1989, 76 tons. Prices have increased as well (see table 1). In September 1990, exporters quoted prices FOB in Manaus between US$ 30 and US$ 35 per kilo. The US importers' stockpiles appear to have dissipated. In addition, synthetic linalol is reportedly unsatisfactory for fine perfumes, and manufacturers have returned to the natural product.

Actual production of rosewood oil may be higher than official export figures. According to one of the largest traders in Manaus, the largest exporter is a smuggler who works through Guyana to avoid taxes. Actual production (and export) may be from 30% to 40% higher than official export

statistics.

Government environmental regulation may limit production in the future. The Brazilian Environmental Institute (IBAMA) now requires a reforestation plan from rosewood oil exporters, who in theory can no longer take rosewood from locations other than the private property licensed by the agency. This of course runs completely contrary to the way the market has functioned, with patrons, landowners or middlemen organizing workers to extract wood in the interior (undoubtedtly often from public land, or land occupied by untitled occupants) and selling it to oil factories.

The National Institute for Amazon Research (INPA) is conducting research on sacaca, Croton cajucara which also produces linalol and can be pruned for sustainable harvesting. INPA has also conducted research on linalol production from leaves and branches of the rosewood tree. If commercially viable quantities of linalol can be extracted from sacaca or through sustainable harvesting of rosewood, this could be an important addition to agroforestry or fallow improvement systems in extractive reserves or for smallholder farmers.

2.0 Production and Value of Selected Products

A consultant was contracted to survey and systematize existing data on production and value of 17 extractive products (Moraes Jardim 1990). Products were selected to include products of various categories (latexes, waxes, oils, foods, medicinals, aromatics, coloring agents) as well as to include products of potential interest for international marketing. Data exist for an additional 35 non-wood extractive products. Sources are the Servico de Estatistica da Producao, of Ministry of Agriculture, starting in 1944, which in 1974 was transferred to IBGE, the Brazilian Institute for Geography and Statistics. All seventeen products surveyed appear from 1974 to 1985; from 1950 onwards ten products were counted, and four were counted from 1947. Starting in 1986 three products formerly surveyed, were dropped. With exception of rubber, for which IBGE has further historical data, the data from these sources appear to be all that exists in official, government statistics for the production and value of these products.

This survey lists quantities of each product in tons and value in Brazilian currency per year. Prices are the "average price paid to the producer" Moraes Jardim 1990: p.6), collected according to IBGE throughout the area of all producer municipalities. The survey lists production per state; it would be possible to discriminate to the level of the municipality.

2.1 Reliability of Official Statistics

Given the large geographic area, broad dispersion of production, and interests of producers in some cases of undereporting or not reporting sales for purposes of tax evasion, the IBGE statistical data are not entirely reliable. In 1985, for example, the IBGE figures for national copaiba production are 14 tons less than CACEX (Carteira do Comercio Exterior, Banco do Brasil--the Bank of Brazil's export control agency) data for the export of the same product. IBGE data for Sorva production nationally (from three

states) in 1986 are less than production from Amazonas state listed by CODEAMA (Development Company of Amazonas) by more than 700 tons; in 1987 there is a similar discrepancy of about 60 tons (Ibid: p. 58; Lescure and Castro, Table 4). The IBGE and Ministry of Agriculture data are nonetheless the most comprehensive that exist, and very likely depict broad trends in production and price accurately. Production for local markets, rather than for export, industrial processing, or interstate trade, while important for some products (see 2.21 below), is probably underrepresented.

It is virtually impossible to determine, without interviewing IBGE agents in the field on a representative sample of products, which "producer price" the prices recorded represent. Certainly these are not export prices, but most if not all of the products surveyed are marketed through at least one intermediary before reaching the exporter or commercial trader. An exporter in Manaus purchasing copaiba oil for export or sale to Sao Paulo, for example, buys from an agent who buys from the direct producers. In some cases there may be two or more intermediaries between the exporter in Manuas and the producer. The IBGE prices for copaiba probably represent prices paid to an intermediary.

2.2 Trends - Selected Products

A good example of exaggerated reports of the demise of extractive production is found in Anthony Anderson (1989). Anderson argues, "Of 15 major extractive products for which data are available between 1974 and 1986 in the Brazilian Amazon, only four showed an increase in production . . ." (Anderson 1989: 3). The table he presents, however, shows that 9 of the fifteen products listed increased production between 1974 and 1986, as our data confirm. (Anderson 1989: Table 1) It is nonetheless the case that extractive products are subject to substitution by synthetics, competition from economically more efficient plantation production, degradation of the resource base when predatorily exploited, (cf Homma 1989), as well as changes in labor markets and land tenure relations.

2.20 Balata, Macaranduba, Sorva (inelastic gums)

Several of the products reviewed exemplify these tendencies. The inelastic gums, balata, (Mimusops bidentada) and macaranduba,(Manilkara huberi), show declining production. Sorva,(Couma utilis), another inelastic gum used principally in chewing gum production, as is macaranduba, has suffered competition from synthetics, but remains an important export product. Between 1984 and 1988 sorva generated from US$6 million to US$ 3 million annually in exports from Manaus, and maintained a price between US$3.18 and US$3.38 FOB per kilo (Lescure and Castro 1990). Balata, used for golf-ball cores and electrical insulators has declined because of substitution. Macaranduba latex production may have declined because macaranduba wood gained a larger market, such that the source of latex has become scarce.

2.21 Andiroba and Ucuuba

Data on andiroba (Carapa guianensis) and ucuuba (Virola spp), produced largely in the Tocantins region of Para, were not collected by IBGE after 1986. Both trees produce from oil-bearing nuts or seeds that were collected and sold to merchants or to soap factories. Andiroba oil was used for soap production as well as an illuminant; ucuuba was also used for soap production and to make candles. Ucuuba seed was exported on an experimental basis to Europe, but since its oil does not produce a white soap, no regular export market was established (Pesce 1985 [1941]: 149).

Interviews with commodities traders in Belem suggested that these products have virtually disappeared from the commercial market. In the case of ucuuba traders argued that the tree had been so over-exploited for timber (ucuuba is, as a hardwood, known as virola--a popular commercial hardwood) that the source has all but disappeared. A single trader in Belem claimed that ten to fifteen years ago, he bought some 167 tons of andiroba oil per year, and a ton of ucuuba seed, but that ucuuba had virtually vanished from the market, while andiroba had declined to less than 10% of its former volume. Curiously, andiroba production did not decline in the IBGE records.

Table 2 - Andiroba Production (nuts)

Year	Quantity (tons)	Price (US$/kg)
1974	325	.038
1978	276	.045
1984	352	.108
1985	363	.106

Neither quantity nor unit price declined from 1974 to 1985: to the contrary, unit price increased. It is probable that the IBGE data do not reflect a decline in production that actually occurred. IBGE lists production that varies between 67 and 140 tons per year of andiroba nuts from 1974 to 1985 for the state of Para. According to traders at Agropastoril Arara, in Belem, 6.25 kilos of nuts are required to produce a kilo of oil, so that the 167 tons of oil reported purchased per year by that firm would mean 1,043 tons of nuts--considerably more than reported for annual production in that period.

It is probably not the case that andiroba production has fallen off simply because andiroba has been entirely logged out. With deforestation and logging, andiroba probably travels a greater distance, increasing transportation costs. With rural to urban migration (and underlying changes in land tenure relations), there are also fewer producers, as some traders also noted.

The very low price of andiroba purchased by commercial traders is probably a major reason for decline in production. The Belem trader cited above paid Cr$0.50/kilo of aniroba nuts, or US$0.00625/kilo. At Cr$0.50 per kilo, a small producer would get Cr$500, or US$6.25 per ton of seed. At present prices this would buy two cans of condensed milk in the interior. Clearly these are not attractive terms of trade; neither do the prices to the producer in the IBGE series offer much stimulus to production.

Andiroba continues to have a significant regional market for medicinal purposes, however, and this is probably related to higher prices in regional markets. It is sold by herb and medicinal retailers, and in popular Condomble and Macumba religious paraphenalia shops, as well as in pharmacies in Belem. In the central open air market there are 80 retailers selling medicinal herbs, barks, oils and other medicinals, and andiroba is a staple. It is held to be effective against inflammations. Interviews with traders in Belem indicate that 5 to 6 kilos per month per trader is a reasonable estimate of andiroba sold, suggesting that this market alone accounts for between 4 and 6 tons per year of andiroba, without considering sales from shops. Interviews in the interior city of Santarem suggest that some medicinal retailers there sell as much as 35 kilos per month. Considering retail estimates only from Belem, the state of Para then consumes at least between 14 and 20 tons per year, (or the equivalent of 87.5 and 125 tons of seed) extrapolating from the population, given that Belem has about 29% of state population.

Retail prices in local markets are much higher than the price to the producer listed in the official statistics. Retail prices in street markets ranged from Cr$400 to Cr$1,000 per liter, and averaged Cr$625, or $7.80, per kilo. Prices for preparations such as andiroba pills in shops and pharmacies are considerably higher. Producers in the interior received about Cr$100, or US$1.25 per liter ($1.04/kilo). Producers receive more in the rare cases that they bring their own product to the city and sell it directly to a retailer rather than to a middleman. Based on the the low estimate of regional consumption of 14 to 20 tons per year, this represents between $109,000 and $156,000 in retail value per year in street markets in Para.

Ucuuba shows a precipitous decline in the last two years data were collected: from 142 tons of seeds in 1983, production fell to 10 tons in 1984 and 12 in 1985. It was formerly used in soap production and for making candles. Like andiroba oil, ucuuba continues to appear in regional markets as a medicinal, where it commands a higher price than commercial buyers pay. The apparent disappearance of ucuuba from commercial trade is probably a result of rural to urban migration and introduction other income generating possibilities for rural families (wage labor, commercial agriculture), as well as very low prices: in August 1990, traders in Belem were paying Cr$ 2 per kilo, or US$0.025. Logging of virola may also be an important factor since seeds were collected when they fell into the water in floodplain forest. Since trees closest to water courses are among the first to be logged out, the supply of ucuuba in areas where seed can be easily gathered is reduced.

2.23 Copaiba

Copaiba (Copaifera spp) has fluctuated in volume and price since 1974 (from 160 tons produced in 1974 to 19 in 1980, and from US$0.72/kilo in 1976 to US$2.80 in 1981, in terms of IBGE price to producers.) The trend is one of oscillation rather than decline. Export prices have increased steadily since 1985, from US$2.50/kilo in 1985 to between US$5.00 and US$6.50 in 1990.

Copaiba is used as a medicine, in the perfume industry, and in varnish. It is very widely used in the Amazon as a medicine for colds, cough, sore throat, as well for inflammation and on sores and lesions. It is retailed throughout the Amazon in markets and pharmacies, and is sold in pharmacies in the south of Brazil. Most of the production comes from the Madeira and Purus rivers in Amazonas state. Some copaiba actually produced in Rondonia in the upper Madeira river probably appears as production from Amazonas because it is sold there.

Copaiba is harvested by tapping the tree, typically using a hand drill to drill a hole 4 or 5 centimeters in dialeter into the trunk of the tree. The oil then runs out and is collected in a kerosene can. This method does not damage the tree. Copaiba is at times extracted by cutting a hole in the tree with an axe, which may damage or kill the tree. Production varies from tree to tree--some trees yield nothing, while others may yield up to 20 or more liters, according to rubber tappers and copaibeiros. It is said that copaiba oil production increases in certain cycles of the moon. If the hole is plugged with a wooden plug, the tree is said to produce a sustained yield, that is, it can be tapped repeatedly. Some rubber tappers claim that the copaiba tree, once oil is extracted, must be left alone for 5 to 10 years before being tapped again; other say that 3 to 4 years is sufficient. Sustained production then depends on the density of the population and the time necessary between tappings. These points require further research, particularly in light of interest in creating new markets for copaiba in cosmetics.

One of the four firms that exports copaiba from Manaus reported buying more than 40 tons in 1989, indicating that national production increased over 1988. The same firm was selling a large part of its production within Brazil on a fixed-price contract, paying a higher price per kilo than the export price, signalling competition between internal and foreign buyers.

Several traders in Belem noted that they had attempted to buy copaiba oil without success this year, and suggested that the Manaus exporters must be paying more. At present the demand for copaiba appears greater than the supply.

Table 3 - Copaiba Production

Year	Quantity (tons)	Price (US$/kg)

1974	160	2.11
1978	120	1.47
1984	84	1.30
1987	99	1.30

In 1984, 1985, and 1987, IBGE data for total copaiba production are less than the Cacex data for export, by an average of about 28%. (cf Lescure and Castro 1990, Table 3; Table 1 (above); Annex 1 p. 79) Neither Cacex nor IBGE reports record production of copaiba for the regional market.

A Manaus trader furnished the following breakdown of costs for copaiba commercialization:

Table 4 - Costs of Marketing Copaiba Oil

(Price FOB Manaus, Sept. 1990 (to Sao Paulo)	- US$6.50/kg)
Price to intermediary, Manicore, AM	- US$4.25/kg (65%)
Shipping, Manicore - Manaus	- US$.16/kg (2.5%)
Taxes (ICM, FUNRURAL)	- US$0.76/kg (12%)
Handling, Manaus	- US$0.10/kg (1.5%)
Packaging	- US$0.31/kg (4.8%)
Cost to Exporter -	US$5.58/kg (86%)
Profit -	US$0.92/kg (14%)
Retail cost, Sao Paulo -	US$40.97/kg (630%)

(percentages of Price FOB in Manaus)

The direct producer--the small farmer or rubber tapper who taps the tree--received between US$0.62 and US$1.25/kg (based on interviews in Obidos, Para, and Machadinho, Rondonia, June 1990, and August 1990) for copaiba oil, a miniscule fraction of its eventual value. Retail cost in Sao Paulo is based on the price of Cr$236 for 60 ml. (Cr$80 = US$1; 1 kilo copaiba = 1.2 litres), found in a natural pharmacy chain store in September 1990. In June, 1990 copaiba in a pharmacy in Rio Branco Acre cost US$24.50/kg retail, cost US$23/kg in the Porto Velho airport, and some US$5.88/kg in the street market of Porto Velho.

The largest cost to the exporter in Manaus, the price paid to the intermediary, of course includes the price paid to the producer or the next-level intermediary. The intermediary, or regatao has costs in maintaining a boat, and makes long trips up the river, buying produce and selling supplies, up to thirty or forty days at a time. The transport costs are thus considerable before the product reaches Manicore, but obviously not insuperably high for a cooperative marketing venture. The major obstacle to be overcome is that of distance: the copaiba exported from Manaus is produced all along the Madeira river up to Rondonia, as well as from the Purus. The exporter in Manaus who bought 40 tons of copaiba in 1989 has 15 "clients", or intermediaries with whom he works; most of these have 10 to 20 "customers" (fregues) from whom they obtain copaiba and to whom they advance supplies and/or cash. Some have as many as 50 "customers". These approximately 300 (at a guess) producers are spread over an area larger than the smaller European countries.

It is exceptionally unlikely that anyone makes all of his cash income extracting copaiba oil at present, although where populations of the tree are dense, it may be an important supplement to household income for forest dwellers. The former president of the rural workers union of Nova Aripuana, in Amazonas stated that rubber tappers on the upper Madeira river extract copaiba in the rainy season, in the off season for rubber. Copaiba is produced in some colonization projects in Rondonia. According to a buyer in Machadinho, Rondonia, this municipality (formerly a colonization project) produces nearly 5 tons per year of copaiba. The producers here are largely colonists from the south, who extract copaiba (as well as rubber) as a supplement to precarious agricultural income.

2.24 Cumaru

Cumaru, (Dipteryx odorata), has been marketed as an aromatic to perfume and tobacco industries since the beginning of the century. The cumaru seed is collected when it falls, between August and December, extracted from a hard outer shell, and dried. Soaked or cooked in alcohol, it yields coumarin,(cumarina), used in perfume and as an odor-fixing agent in tobacco. It is noteworthy that Celestino Pesce, writing in 1941, argued, ". . . with the development of synthetic coumarin, demand for the natural product has declined sharply, along with its market value." Exporters in Belem in August 1990 used virtually the same words in explaining reduced export prices for cumaru as compared to the mid-eighties. As noted above, volume and price of exports have declined since 1985, but national production has increased, perhaps because Brazilian buyers are making and exporting coumarin.

Virtually all cumaru production in Brazil is concentrated in Para state, in the municipalities of Alenquer, Obidos, Oriximina, and Santarem, the area regionally known as Baixo Amazonas. In 1987 95% of national production was from Alenquer. Hamoy Companhia, in Belem and Obidos, accounts for some 90% of the exports. Cumaru was also exported from Venezuela and Suriname.

Pesce states that prior to 1910, exports of cumaru seeds did not exceed 10-15 tons per year, but rose to 42 tons in 1913 with the start of US imports. Between 1935 and 1939, exports varied from 25 to 232 tons. (Pesce 1985 [1941]:136).

Table 5 - Cumaru Production

Year	Quantity (tons)	Price (US$/kg)
1974	24	0.79
1978	42	1.68
1984	312	5.90
1987	333	0.71

Exporters in Belem stated that the price has attained US$12/kg, but that at present (August 1990), was between US$5/kg and US$6/kg. In Obidos, at the exporter's door, producers or intermediaries received US$1.87/kg, (Cr$150), but in the interior producers got US$1.00/kg (Cr$80).

Transport costs from Obidos to Belem (the major port of export) are low--about 0.45% of the price FOB per kilo (Cr$2,000 per ton, or Cr$2/kg). Ocean-going ships dock at Obidos, and load Brazil nuts from several processing plants for direct international export.

Cumaru is not a primary cash source for anyone, but a supplement to the incomes of small farmers in the Baixo Amazonas, many of whom also collect Brazil nuts for sale to the same traders who buy cumaru.

2.25 Acai

The fruit of the acai palm (Euterpe spp) while not exported and hardly consumed outside the Amazon region, has an important regional market and has increased consistently in volume and unit price over the last 15 years. The most important source of acai fruits is Euterpe oleracea, a "suckering palm which grows in clumps of five or six trees" (Pesce 1985 [1941]: 56). In the Amazon estuary acai "wine" (a drink or porridge made by soaking the ripe fruits in water, pounding in a mortar or grinding in an electric grinder, and passing the gruel through a seive) is a staple food, and is used to make ice cream as well. Acai fruits are highly perishable and must be taken to market within 24 hours. Families within this distance of marketing centers (particularly Belem) make much of their family income from sale of acai, and can generate relatively high incomes from small areas of land (Anderson 1990). In 1987, about 94% of national production was from Para, with small quantities in Amapa, Acre Rondonia and Maranhao. Acai fruit production in the floodplain is entirely sustainable, and with minimal managment is compatible with

exploitation of palm heart, since the palm recovers when selectively harvested for palm hearts.

Year	Quantity (tons)	Price (US$/kg)	Value (US$)
1974	134	0.07	10,380
1978	50,071	0.13	6,748,006
1984	92,983	0.19	17,310,872
1987	145,881	0.30	44,086,235

Since marketing is entirely for local markets, and distances are much smaller than for export production, and some producers bring their fruits directly to market, it is likely that much more of this value accrues to the producer than is the case with other extractive products. The above figures do not include the value added in processing (i.e. sales of acai "wine" or ice cream). Nonetheless, in 1987 acai generated over US$7 million (estimated) in tax revenues (ICM) in Para and the other states where it was produced.

3.0 Characteristics of the Regional Markets

Several general characteristics of the markets for extractive products emerge from interviews with traders and producers. Even the largest volume export products from the Amazon are controlled by few actors. Some 70% to 80% of the Brazil nut market are controlled by three firms, owned by three cousins, the Mutrans of Belem. There are some six others that account for the remaining 20% to 30%. Copaiaba is exported by four firms from Manaus, and five or six other small companies sell within Brazil. Four firms export rosewood oil in Manaus, and three or four in Belem, although the latter have had difficulty in gaining access to the market in recent years. One firm controls 90% of the export of cumaru. As the traders point out, the Mutrans can drive competitors out of business through flooding the Brazil nut market at strategic moments, since their share of the market, coupled with a limited number of buyers internationally, allows them to manipulate prices.

The export, and most of the national market for the smaller volume products considered above (copaiba, cumaru, rosewood oil, sorva), is controlled by three or four firms in Manaus and Belem. These include Hamoy Companhia (Belem), I.B. Sabba (Manaus), Ciex (Manaus) and Proreg (Manaus). These also account, with the addition of few smaller firms in Belem, for the 20% to 30% of the Brazil nut market not controlled by the Mutrans. All of these firms are relatively diversified, and have more invested in other areas than in extractive products. Ciex, started by the father of the present director, began trading in skins and extractive products, moved into fabrication of jute bags, then into electronics, now its biggest area. Hamoy and Proreg do more business in black pepper than any extractive product. I.B. Sabba has mining interests. All also deal in timber. Extractive products are still profitable for these firms, but they are, with the exception of Brazil

nuts, a sideline. The larger of the exporters have their own processing and transport infrastructure. They are well positioned to maintain, or increase their respective shares of the extractive markets in which they operate.

Traders state that to obtain large quantities of any of these products, it is necessary to finance production in advance, that is, advance money or goods to middlemen, each of whom in turn advances goods or money to a larger group who will then extract the product in question. Otherwise, the trader depends on small quantities of products collected over large areas and cannot guarantee supply. This is the aviamento system of in-kind credit and debt that has dominated markets for Amazon forest products at least since the rubber boom one hundred years ago. Advancing money or goods at the beginning of the harvest means that for the producer, or direct extractor, competition among buyers is nonexistent. In remote areas, there may be only a single buyer, and in any case, the producer, already obliged, cannot sell when the market is favorable. Traders argue that the financing cost of these operations is considerable, and that every year they make advances that are not recovered. The risk however, is passed on to the producer in terms of lower prices.

For larger volume products, particularly Brazil nuts, there are substantial networks of intermediaries and producers involved. One of the smaller export firms, Hamoy Co. in Obidos and Belem, claims to advance funds to 1,000 people for the Brazil nut harvest. If each has a (modest) average of five clients, then some five thousand people are employed during the harvest by this firm alone. The firm has been in the area over 80 years, and many of these relations (between Hamoy and the intermediaries, and between the intermediaries and their clients) are decades old. The larger firms (Ciex, I.B. Sabba, Hamoy) are now in their third generation in the region: the sons and grandsons of the founders are in charge. Attempting to create alternative marketing schemes in this context is laden with risk, and can only succeed if other forms of local organization exist to circumvent the patron-client links that dominate the market.

Other factors that influence the market are inflation and exchange rates. If inflation is high traders are liable to discount prices paid to the producer in advance to attempt to keep up. Export products depend heavily on exchange rates: the price FOB is denominated in dollars, but the exporter receives payment in Brazilian currency at the official exchange rate. The higher the official exchange rate (i.e., the higher the value of the Cruzeiro in dollars), the lower the price of the product paid in Cruzeiros. Rapid inflation and artificially high official exchange rates, characteristic of Brazil in the 70s and 80s, have contributed to deteriorating terms of trade for extractive producers. The prices of their commodities have fallen in relation to the cost of the goods they buy.

Producers and traders alike note that low prices to producers limit production. As is the case with primary agricultural products in the Amazon in general, the terms of trade for extractive products against industrialized goods, and even foodstuffs, is poor. If prices of extractive products decline in relation to the goods that extractors buy, as has been the case, it makes

little difference what export prices are. The rubber tapper's or small farmer's concern is what he can buy this year with the price of a hectoliter of Brazil nuts as opposed to last year, and this proportion has decreased. The same dilemma holds for agricultural products in general, and is held by rural union leaders and members to be a principal cause of the rural to urban exodus.

4.0 The Rural Workers Union of Obidos and the Community Association of Small Farmers of Obidos (ACOPAMO)

Rural activists in the Amazon at least since Chico Mendes began his career have argued that cooperative marketing of extractive products could help forest communities to improve their standards of living and escape the domination of patrons and exploitative middlemen. The preceding discussion of export and regional markets has shown that a number of products are sufficiently profitable to expect that direct marketing by producers would be economically viable. If international marketing initiatives for sustainably produced tropical forest products are to succeed in mobilizing the market to protect the forest, identifying organized constituencies that want to participate in such ventures is a very high priority. Cultural Survival's marketing project has supported the creation of the first producer-owned Brazil nut processing plant, in Xapuri, Acre, by the Agroextractive Cooperative of Xapuri. This plant can supply about 5% of the demand for Brazil nuts generated by Community Products, which markets Rainforest Crunch, used to make Ben and Jerry's Tropical Forest Crunch.

It is clear that, with the exception of native rubber, only a fraction of the extractive products on the market at present are produced by people who live on the land where the product is extracted and make all of their cash income from extraction. Nonetheless, extraction forms an important part of the household income of populations in all parts of the Amazon, at the least as a means of utilizing family labor and as a buffer against risk in precarious agriculture. Meeting new "green" demand for sustainable tropical products cannot be done exclusively through groups that identify themselves as extractivists, as do rubber tappers in Acre. But there are other populations, and other constituencies in the Amazon that are concerned with sustainable land use and improving the incomes of forest communities that may want to become involved in direct marketing initiatives. Key criteria are local organizing initiatives and local concern with finding sustainable production alternatives.

Rural workers unions in the Baixo Amazonas in Para, and the Community Association of Small Farmers of Obidos (ACOPAMO), are examples.

Obidos is a traditional city of the interior, on the Amazon river, founded by the Portuguese in the 17th century. On the north bank of the river, where the city is located, the land is <u>terra firme</u>, or upland forest, although most of the municipality is <u>varzea</u>, or seasonally flooded forest. Extraction of Brazil nuts, cumaru and timber were traditional mainstays of the local economy. In 1969 a road was built linking Oriximina with Prainha, and much of the roadside was converted to cattle pasture. However, since the road

simply links a number of towns on the north bank of the Amazon in Para to one another, and river transport continues to provide the major link to the rest of the state, relatively little deforestation has occurred. In the early eighties commercial fishing arrived and the two fish-freezers in the city now compete with the Brazil nut processing plants as the major employers. Logging has also increased, and there are several sawmills in town. The installation of the ALCAN bauxite mine on the Trombetas river appears to have affected Obidos relatively little--Obidos is about fifty kilometers downstream of the mouth of the Trombetas at Oriximinia, and 100 kilometers or more from the mine.

Obidos, and the neighboring municipalities (Alenquer, Oriximina, Faro, Juruti, Monte Alegre, Santarem) accounted in 1987 for almost 30% of national Brazil nut production, as well as virtually all of the cumaru. Obidos alone produced 10% of the national total of Brazil nuts. Small quantities of copiaba are also produced in the region. Hamoy Companhia ships some 15 medicinal herbs, oils, roots and barks to laboratories in Sao Paulo and Rio yearly, although in small quantities (100 to 200 kilos per product, at the request of the laboratories.) Extraction continues to be economically important here.

The municipality of Obidos has some 60,000 inhabitants, and the city between 30,000 and 35,000. Rural to urban migration has been steady. Rural union leaders estimate that 30% of rural population has left the countryside since the beginning of the eighties. They argue that if present rates remain unchanged, only 10% of the population will remain in the rural zone by the year 2000. Even if this estimate is somewhat high, rapid rural to urban migration is noted as a central trend by all actors in the region.

The majority of the rural population in Obidos, as in the neighboring municipalities, is a farming population--80% to 90%. (Information on the rural population was obtained from interviews with director of ACOPAMO and former president of the STR Obidos, Rudimar Cardoso de Oliveira, as well as with the current president of the STR Obidos, and the regional representative of the Unified Workers Center (CUT, a national labor union federation) for the Baixo Amazonas in Odidos, August 1990.) While migrants arrived in the region in the seventies and early eighties, receiving some support from the state government, colonization here was less evident than along the Transamazon highway across the river and to the south, and families from the region appear to remain the large majority of the rural population. Most migrants came from the northeast and Maranhao. Some 95% of the small farmers are <u>posseiros</u>, or peasant families that occupy the land, and have certain land rights according to the Brazilian Constitution, but do not have land title. The rural population lives in 100 communities of 20 to 200 families each, most of which congregate between 20 and 40 families. A majority of the the population is concentrated within 50 kilometers of the river.

Farming families in the floodplain plant manioc for manioc flour (<u>farinha</u>) production, corn, beans, and jute as well as tomatoes, squash and watermelon. In the uplands, rice is planted, but requires good soil (terra preta). Beans, bitter mancioc and sweet manioc are also planted in the

uplands, as is malva (for sale of fiber). A family occupies from about 35 to 200 hectares of land; each family plants a minimum of 1 to 2 hectares of new crop land per year and a maximum to 10 to 15 hectares.

Manioc flour is the chief agricultural product, but prices are low and falling in relation to other commodities. A family can make 150 kilos of manioc flour in a week (three sacks of fifty kilos), which sell at Cr$1,000 a sack. At Cr$1,000, a sack of manioc flour in August 1990 was worth about 4 cans of canned milk; in 1983 the same sack was worth 8 cans of milk. But in fact, a family in the interior must pay about Cr$800 to bring its three sacks of manioc flour to market, so buying power is further reduced. A kilo of jute was equivalent to a kilo of sugar in 1980; it is now worth 250 grams of sugar. Brazil nut and cumaru prices have declined similarly.

The Brazil nut harvest is from January to May in the region, that is, in the rainy season. Some informants say that formerly the harvest started in November, but has shortened in recent years because of climate change. In 1990 prices in Obidos varied from Cr$250 (US3.12) to Cr$420 (US$5.25) per barrica. (Exchange rate as of August 1990). In August of 1990 the price was Cr$480 to Cr$520, but few if any producers had nuts to sell. The tendency for the price to rise at the end of the harvest appears general. According to producers, a barrica equals 6 latas, or about 66 kilos. But the intermediaries take out 1 lata per barrica for themselves before delivering the nuts to the buyers, and so deliver 1 hectoliter, or about 55 kilos, for every 66 kilo barrica they buy from the producers. If the factory is paying US$5.25 per hectoliter, or US$0.095/kg, then the producer receives US$0.079/kg, or 17% less. In addition, middlemen also pay somewhat less per barrica in more remote locations in the interior, subtracting another 7% to 17% from the price paid at the processing plant. Intermediaries are similarly said to take 5 kilos of manioc flour from each 50 kilo sack they sell.

As opposed to rubber tappers/Brazil nut gatherers in the Acre river valley, most rural families in the Baixo Amazonas region do not have Brazil nuts on the land they occupy: people leave their homes, and live in camps in the Brazil nut groves (castanhais) during the harvest. Most receive money or staple goods in advance from intermediaries or patrons and pay in Brazil nuts at the end of the harvest. The difference is paid in money or goods. Exporters say that they own at least some of the Brazil nut groves, but the legal situation of these lands needs further research. The groves may be held on long-term use-grants (aforamento) from the state, as is the case in Poligino dos Castanhais in southern Para.

Families living on the floodplain can only work the land six months out of the year. The other half of the year, many engage in wage labor in the commercial fish plants, sawmills, or Brazil nut processing plants, or work as meeiros (sharecroppers), empeleiterios (temporary laborers) or day laborers for farmers on the uplands.

The Rural Workers Union of Obidos (Sindicato dos Trabalhadores Rurais [STR] de Obdios) was founded in 1971 by local politicians. In 1977, stimulated by the Ecclesiastical Base Communities (a grassroots movement promoted by

liberation theologians in the Brazilian Catholic Church) an opposition was formed to contest union leadership, with the intent of transforming the union into a more activist organization. In 1981, the opposition won the union elections, and Rudimar Cardoso was elected president. The STR Obidos now has 7,000 members, and 68 regional delegacies (as opposed to 3,000 members and 12 delegacies in 1980). Leadership in the union has been renewed --there have been three presidents of the union since 1980. The Obidos union, along with the Santarem union were instrumental in founding a regional branch of CUT (the national union confederation informally associated with the Workers Party) in the Baixo Amazonas in 1984. Some 15 municipal rural unions in the Baixo Amazonas region are affiliated to the CUT, and these were part of the movement that succeeded in 1987 in taking control of the Para state Federation of Rural Workers Unions.

Having control of the union, the former opposition recognized a need for the union, or union related organizations, to address the very grave economic problems facing rural communities, particularly in production and marketing. ACOPAMO grew out of this recognition, and discussions of such an association started in 1985. It was conceived as a means to address problems of production and marketing, stimulate communal or cooperative work initiatives (under the theory that cooperative efforts could allow members to work less to produce more), and address transport and warehousing problems. ACOPAMO was founded in 1987, and now has 300 members. It has received support from an NGO for the purchase of a Toyota truck and a small boat. The boat provides transport to the city for rural families in the floodplain. The major undertaking to date is a producers/consumers coop, which has five posts in the municipality. These buy manioc flour, corn and other agricultural produce and sell them in the city, and sell staples. These sell US$1,000 to US$1,250 of merchandise per month, and buy US$870 to US$1,000 per month of produce. The coop could buy Brazil nuts, but lacks funds to do so. ACOPAMO also has a building, and a piece of land that it intends to use for agricultural extention and training.

Similar initiatives have been undertaken by unions in neighboring municipalities. The union in Monte Alegre has six trucks, for communal transport, in Juruti there is a cooperative and a community center, and in Faro there is a communal work group planting oranges. The unions in the region have not only recognized a need for better production and marketing systems, they have begun to act on it. Sustainability of resource use is of major concern to the unions. They view with great concern predatory fishing practices of the commercial fisheries, which they argue are depleting fish populations and so affecting the diet of the local communities. They argue that small farmers who extract timber for sale to sawmills do so out of economic necessity, and view with dismay the depletion of commercially valuable species at very low returns to small producers. The unions share an overriding concern with finding agricultural models that will allow small farmers to stay on the land over the long term, and therefore are keenly interested in research and extension on sustainable agriculture.

The STR in Obidos, and the other unions of the Baixo Amazonas may very well be interested in participating in international or national direct marketing initiatives for extractive products. The importance of the region in

terms of extractive production as well as the local organization that exists make this region an excellent prospect for improved marketing of extractive products. It is unlikely that such initiatives alone will transform the rural economy of the region into a sustainable, prosperous, and equitable one, but they can make a contribution to improving incomes of the rural poor on an environmentally sustainable basis.

The situation of Brazil nut gatherers in Obidos raises interesting questions about extractive reserves. Rural union leaders argue that here, the primary problem is not so much control of the land, but rather the means to work it--credit, access to markets, adequate social services. In Acre and Rondonia, where the extractive reserves concept originated, the need to guarantee security on the land has been an overriding priority. But the need for access to markets, services and so on is apparent in Acre as well, and is incorporated into the concept of extractive reserves. If an extractive reserve in the Baixo Amazonas signified not demarcation of an area inhabited by Brazil nut gatherers for their long term use (which would in any case be impossible, since the Brazil nut groves are not inhabited by the rural communities), but provision of credit, access to market, and services to the communities that harvest Brazil nuts as well as granting use rights to Brazil nuts on public lands to associations of producers, it could generate considerable local support.

Notes

1. "Extractive products" follows the classification of the Brazilian Geographical and Statistical Institute. Since the concept of "extractive reserves" as elaborated by Brazilian rubber tappers and NGOs, and included in Brazilian conservation legislation, focuses specifically on environmentally and economically sustainable extraction, I do not disucss timber extraction. Whether or not sustainable timber extraction in tropical forest areas is possible and if so, under what circumstances, is a separate issue. The organizations responsible for creation of the extractive reserves (the National Council of Rubber Tappers and Institute for Amazon Studies) do not at present promote timber extraction in the reserves. I discuss here only non-wood tropical forest products.

2. Native rubber is excluded from this study since considerable research already exists on native rubber production in the Amazon. Finding economic substitutes for native rubber is indeed one of the priorities of the National Council of Rubber Tappers, since Amazon rubber is subsidized by the government and economically uncompetitive with plantation rubber produced in Southeast Asia. Brazil nuts, at present the most attractive option for international marketing initiatives of sustainable tropical forest products, are discussed in the context of the regional market in the Baixo Amazonas. No detailed discussion of the export market is included because this information exists elsewhere. (La Fleur, n.d. consulting report to Cultural Survival; Luis Fernando Allegretti, n.d. Comercializacao dos Produtos da Reserva Extrativista, Estudo Preliminar, Instituto de Estudos Amazonicos.)

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