

**The importance of Brazil nut (*Bertholletia excelsa*)
harvesting and their uses in Suriname**

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**For the Unit for Sustainable Development and Environment of the
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Family:	Lecythidaceae
Genus:	<i>Bertholletia</i>
Species:	<i>excelsa</i>
Common Names:	Brazil nut, castania, castanheiro do para, para-nut, cream nut, castana-de-para, castana-de-Brazil
Parts Used:	Nut, Seed Oil

1. Summary

Aware of the potential for non-timber forest products (NTFPs) harvesting and marketing in southwestern Suriname, with specific focus on Brazil nuts and in full and close cooperation with the Trio indigenous community, ACT has been designing a culturally-appropriate management plan for the ecologically-sustainable exploitation of such resources based on the results of this analysis. It will also explore other possibilities for marketing non-timber forest products identified by the Trio community. The capacity built during the Brazil nut project can then be used in the future to market other NTFPs currently being identified and evaluated by Bruce Hoffman.

2. Justification/ Background

As the Trio assert control of their ancestral lands, they are also identifying potential economic opportunities that will complement their traditional agricultural activities, generating some monetary income and further tie them to the forest. The potential for the extraction and marketing of Brazil nuts (*Bertholletia excelsa*) is one income-generating activity that has received limited attention in Suriname despite its economic importance to the rest of the Amazon region. Brazil nut harvest is particularly attractive as it presents a sustainable opportunity for generating local income by placing shelling and some of the processing activities in the hands of local communities, while having a minimal ecological impact on the forest.

The importance of Brazil nut harvesting to the conservation of the greater area must also not go unnoticed. The economic benefits of Brazil nut extraction are well documented. It has also been shown to be a more profitable use of lands in comparison to timber extraction and the conversion of land to pasture for cattle grazing, both responsible for large-scale destruction of rainforests around the world. In addition, plantation production of Brazil nuts has proven unsuccessful thus far, reducing the domestication pattern that has made extraction of other non-timber forest products economically uncompetitive or transforming them into the cause of ecosystem destruction. As a new income earning strategy for local communities, it is particularly attractive because markets for the product already exist.

The income of the Brazil nut operation can be earmarked partially for the maintenance of health clinics and for general social improvements, in addition to providing income for members of the community. The conservation benefits of a viable Brazil nut project extend far beyond the area where the Brazil nut trees are located, by increasing the ability of the local indigenous population to sustain their lifestyle and earn a relatively significant income without having to resort to more ecologically destructive extractive activities such as the timber or wildlife trade.

Because Suriname sits in the outlying areas of the principal Brazil nut producing regions in the Amazon basin, there have been few detailed scientific or socio-economic studies that have examined the potential of this potential income-generating alternative. This is despite the fact that it has been estimated that up to one quarter of Suriname might be conserved and made economically productive through the implementation of sustainable extractive activities such as Brazil nut collection. We know little of the Brazil nut population and management ecology in Suriname, or the socio-economic role, if any, Brazil nut plays among forest communities. Nor is there good information about current marketing systems for Brazil nuts or other non-timber forest products in Suriname.

Through participatory research, both in terms of examining management ecology and key socio-economic issues, ACT is helping design and implement a management plan and building local capacity to sustainable harvest, process and market the Brazil nuts, linking this process to conservation and social strategies, and strengthening the ties between the Trios and their forest lands.

3. Context

In addition, for the past four years, the Trio Indians of southern Suriname have been asking ACT to assist them in obtaining title to their lands. The first step in the process, however, was to prepare a cartographically accurate map that could be submitted to the national government to formally initiate the request.

ACT assisted the Trios to create a detailed map of their traditional lands, including the location of Brazil nut groves. 17 spots have been located on the map with the following designations:

<i>Mirokohko eeku</i>	<i>Pahpaman patanpe</i>
<i>Aimara eeku</i>	<i>Pii eeku</i>
<i>Wikane eeku</i>	<i>Arimina eeku</i>
<i>Ariwe eeku</i>	<i>Kui eeku</i>
<i>Marawumi eeku</i>	<i>Mirokomin</i>
<i>Aropo sopo</i>	<i>Sakuru eeku</i>
<i>Tuhka eeku</i>	<i>Papaman Sarihhana entuman eeku</i>
<i>Toponpe</i>	<i>Kanamaman eeku</i>

With the map in hand, ACT is working with the Indians to acquire title to their lands.

4. Gender issues

The collection and processing of Brazil nuts (or most other NTFPs) consists of various activities that can be carried out either by men or women. As part of this project, special attention is being paid to past, present and potential future roles of women in this regard. This is being addressed both in the surveys and also through a specific appropriately facilitated workshop planned for 2005. These activities intend to gain a sound insight into the following crucial areas:

- Actual and traditional activities carried out by Trio women.
- The current situation and potential role of women as perceived by women.
- Relevant aspects of household economy.

5. Goals and objectives

5.1 Goals and objectives to improve Brazil nut exploitation and marketing

The ultimate goal is improved Brazil nut exploitation and marketing. This can be achieved by analysis of methods of Brazil nut collection and marketing through participatory scientific research on Brazil nut population ecology and socio-economic research on marketing systems; and subsequently, to design and implement a management plan through integrated resource management training as well as through direct assistance to cover the start-up phase of the operation. These objectives can be divided into the following:

- Make an assessment of the Surinamese Brazil nut stands: it is understood that there are three major locations (Alalaparú, 3000 trees [interview with Captain Shedde]; Coeroenie, 2000 trees [Shedde]; and Kutari, 1000 trees [Granman Asongo]) as well as many other minor locations. Make similar assessment of other potential NTFPs as identified.
- Facilitate the Trio extraction of Brazil nuts. The same transport equipment can be used for the research activities and other NTFPs.
- Provide infrastructure for: drying, storage, shelling of nuts and any other processing activities of NTFPs.
- Develop and structure the marketing of the nuts. Examine potential of other NTFPs as identified following structure developed for Brazil nuts.
- Develop the Tirio internal organization, and provide basic training in business management and administration.

5.2 Outputs

- a. Workshop to discuss project with tribal elders and the Trio community including development of a research agenda and identification of Trio apprentices to conduct biological and market research.
- b. Participatory research and training on population ecology of Brazil nuts and other potential NTFPs identified in workshop.
- c. Participatory analysis and training on market system and market identification.
- d. Research on small-scale industry, in-community shelling of Brazil nuts.
- e. Implementation of management plan: work with Trio 'harvesters', set-up collection and processing sites, storage of nuts, transport of nuts to local markets, and marketing of nuts.

5.3 Activities

A. Community engagement

1. Initial community workshops and appraisals
 - a. Situation analysis and needs assessments
 - b. Household and local economics inc. local markets and traders
 - c. Gender issues workshops/appraisal (women)
2. Community resource mapping/survey
 - a. Ecological survey of identified NTFPs with special focus on Brazil nut stands
 - b. Community resource use planning
3. Team evaluation

B. Marketing analysis of NTFPs identified in earlier stages

- a. Analysis of markets (national and international)
- b. Transport costs and options (local, national and international)
- c. Role and traders
- d. Processing options

C. Pilot project NTFP and implementation of management plan.

- Factors to be considered include: site selection; storage facilities; processing equipment; and transport and marketing strategies/procedures as appropriate.

6. Obstacles

The following obstacles are results of different factors discussed below:

- Lack of appropriate equipment – preliminary analysis indicates the need for additional outboard motors, Brazil nut processing apparatus, and communications equipment. These needs will be evaluated and addressed in 2005.
- Methods and equipment for drying Brazil nuts is needed to prevent fungal infections that cause spoilage. Proper processing is essential to ensure a quality product that can be sold in local and regional markets. Other materials needed include such things as spaces to hold workshops and training, basic mapping equipment to develop efficient routes for nut transport, and collection and gear to carry the Brazil nuts.
- Transportation costs must be reduced. Transportation is a very crucial element in developmental activities related to isolated and remotely located communities. Given the high costs of air transport, it is necessary to make optimum use of charter flights, i.e. making sure the airplane is filled to capacity in both directions.

7. Distribution of nuts from Alalaparu

Few people know that these nuts can be found in the Surinamese rain forest – in fact, the botanical literature indicates that there are no Brazil nuts in the Guianas! Major stands of Brazil nuts are present at Alalaparu, Kuruni and Kutari, whereas smaller stands can be found scattered over southern Suriname.

At this point, most of the nuts from Alalaparu that are coming to market in Paramaribo are being harvested by 14 men and 12 women. The harvesting season is in February till July. The collection, transport and cutting of the fruits and the drying and bagging of the nuts are all rather labor intensive, with both men and women involved in the activities.

The Brazil nut tree itself is enormous, frequently attaining the height of 40 to 50 meters or more, and can reach ages of 500-800 years old. The tree is called *castanheiro do para* in Brazil, and is found throughout the Amazon rainforest. The fruit is a large, round woody capsule or pod, about the size of a large grapefruit, and weighs up to 5 pounds. The fruit pods grows at the ends of thick branches, then ripens and falls from the tree from January to June—usually with a huge crashing sound as they fall 150 feet through the canopy like cannon balls. Inside each fruit pod, wedged in like orange segments, are 12 to 25 Brazil nuts within their own individual shells. Mature Brazil nut trees can produce approximately 300 or more of these fruit pods.

7.1 Production and distribution of the nuts

Alalaparu delivered 3856 kg of nuts this year 2004 with 24 workers (14 men and 12 women).

Weekly production/man = 3 bags (each 25 kg).

SURALCO (Suriname ALCOA) bought 1000 kg of nuts this year from the March harvest.

Price/kg of nuts = US\$2.10.

Below follows Table 1: total delivery of nuts at Alalaparú; Table 2: estimate costs and incomes of the total delivery from Alalaparú.

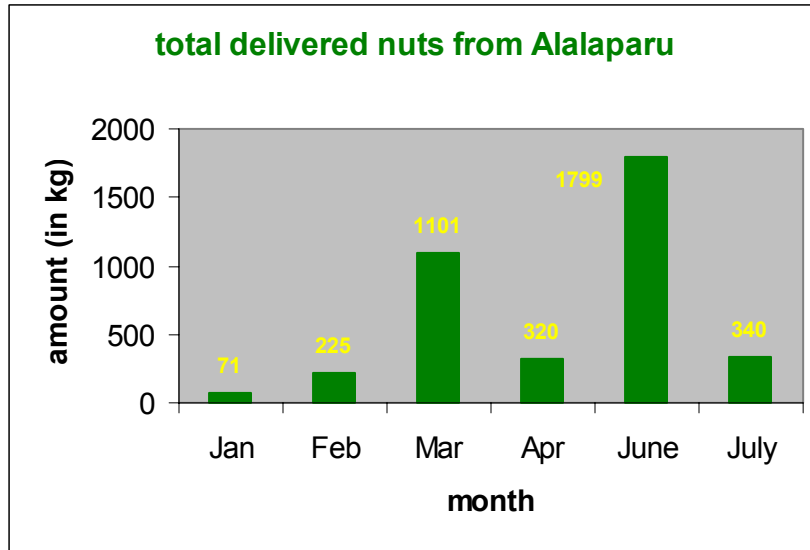


Table 1

Month	Delivered amount (in kg)	Total price \$2.10/kg	Total price paid to indigenous villagers / \$0.96/kg	Packing and labor cost/ \$0.2/kg	Revolve funds
jan	71	149.1	68.16	14.2	66.74
feb	225	472.5	216	45	211.5
mar	1101	2312.1	1056.96	220.2	1034.94
apr	320	672	307.2	64	300.8
june	1799	3777.9	1727.04	359.8	1691.06
juli	340	714	326.4	68	319.6
aug					
sep					
oct					
nov					
dec					
total amount	3856		3701.76		3624.64

Table 2

8. Sustainability

The Trio Indigenous community and ACT have a long-standing relationship, spanning many years and various projects. This Brazil nut project is aimed at

creating a greater amount of autonomy for the Trios in the face of pressures from companies to mine and extract timber in the area. The income from the sale of the nuts will allow the Trio to fund the continuation of the project while producing income for the community. The foreseen training workshops in business management and administration will enable the Trio to fully manage the project and the income generated from the sale of Brazil nuts. This capacity can then be extended to any future ventures with NTFPs or other ecologically sustainable income-generating activities. This project intends to identify potential NTFPs in the area for such future projects building on the capacity built with Brazil nut production and marketing. The management plan produced can also be relevant to other sites in the region and provide a model for the potential sustainable exploitation of other NTFPs. The potential for cross-border cooperation between indigenous communities on the transport and marketing of Brazil nuts is a further asset to the region.

9. The uses of Brazil nuts

The Brazil nut is a three-sided nut with white meat or flesh that consists of 70% fat and 17% protein. For centuries the indigenous tribes of the rainforest have relied on Brazil nuts as an important and significant staple in their diet—so important that it has even been used as a trade commodity, much like money. Indigenous tribes eat the nuts raw or grate them and mix them into gruels.

At Kwamalasamutu, the Trio villagers make “chappa,” a bread of graded nuts and manioc flour. Some of the indigenous people grate the nuts with the thorny stilt roots of *Socratea* palms (Trio name: “puwrah”) into a mush and then stir this into manioc flour. This food is a valuable source of calories, fat and protein.

With such a high oil content, Brazil nuts will even burn like miniature candles when lit. The oil is extracted from the nuts and used by indigenous and rural people for cooking oil, lamps, soap, and livestock feed. The empty seed pods, often called “monkey's pots,” are used to carry around small smoky fires to discourage attacks of black flies, and are also utilized as cups to collect rubber latex from tapped trees and as drinking cups. The husks of these seedpods have been used in Brazilian folk medicine to brew into tea to treat stomachaches, and the tree bark is brewed into tea to treat liver ailments and diseases.

Brazil nut oil contains mainly palmitic, oleic, and linoleic and alpha linolenic acids and small amounts of myristic and stearic acids and phytosterols. In addition to protein and fat, Brazil nuts are the highest natural source of selenium (one single Brazil nut exceeds the U.S. Recommended Daily Allowance of selenium). The proteins found in Brazil nuts are very high in sulfur-containing amino acids like cysteine (8%) and methionine (18%) and are also extremely rich in glutamine, glutamic acid, and arginine. The presence of these amino acids (chiefly methionine) enhances the absorption of selenium and other minerals in the nut.

Since the Brazil nut has long been a common food rather than an herbal remedy, it has not been the subject of any clinical research outside of its selenium content. Anyone using it “therapeutically” employs the nuts for their high content of natural selenium. Selenium is an essential trace mineral in the human body with antioxidant, anticancer, and cancer-preventative properties (especially, the evidence suggests, for prostate cancer).

Brazil nuts and its oil are mainly used as a food in the United States. Brazil nut oil is a clear, yellowish oil with a pleasant, sweet smell and taste; notably, it makes an excellent light oil for salad dressings. In addition, Brazil nut oil is often used in soaps, shampoos, and hair conditioning/repair products in South America. It provides detergent-stabilizing properties and helps clean the hair. Brazil nut oil in skin creams helps lubricate and moisturize the skin, provides antioxidant benefits with its high selenium content, and helps prevent dryness.

10. Conclusion

The economic potential of Brazil nuts for the Trios of southern Suriname is enormous. The successes ACT has achieved so far are just the tip of the iceberg. First of all, we have been marketing just a small percentage of the nuts that are already being produced in these remote forests. Second, the Trios have a monopoly in the sense that Brazil nut trees are found only on their lands and nowhere else in the country. Finally, as a member of CARICOM, Suriname can export and market commodities in the Caribbean without paying export duties, something no other Brazil nut-producing country (Brazil, Peru, etc.) can do. We firmly believe that the progress ACT has already made—helping increase indigenous income based on protection and sustainable utilization of the rainforest—bodes well for future efforts of this type.