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# Açaí Branco: Maintaining Agrobiodiversity through a Local Seed System in the Amazon Estuary

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## Introduction

In a rural community situated along a tributary to the Amazon river in the Brazilian state of Amapá, a farmer pointed out two varieties of the açaí palm, (*Euterpe oleracea*, Mart.), his primary cash crop, growing side by side. While he called one açaí branco and the other açaí preto, I struggled to comprehend the differences between the palms, both laden with dense clusters of jade fruits. The difference was subtle, I would learn, and virtually indiscernible to all but the farmer responsible for harvesting the fruit of these palms. The oily palm fruits of the common variety açaí preto would first ripen to a deep shade of purple-black, then continue to develop on the tree until the dark fruits obtained a dusty silver sheen. The fruits of açaí branco however would remain a pale shade of green as they ripened and would finally develop a light silvery gloss over what otherwise appeared to be an unripe fruit, a difference that was virtually undetectable from the ground 20 meters below these tall palms. With no other identifying features than the fruit's lack of purple pigment, the identification of açaí branco versus unripe açaí preto represents a highly localized form of knowledge, as only the harvester who regularly ascends the trees to collect the fruit in their açaí stand can definitively identify the variety. Locally valued forest product varieties such as açaí branco can offer valuable insights into the processes of selection, adaptation and diffusion and the role that small holder producers play in domestication of crop and forest product resources. My research explores the seed exchange networks and management practices associated with the production and diffusion of açaí branco in this community.

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## Background

The role of açaí branco assumes greater significance in the context of the global açaí boom of the last 10 years, which has made the word açaí and its trademark purple color a household term. The transition that açaí has taken from local staple food to international commodity, or 'fashion fruit' (Brondizio 2008), began once açaí had already become well established in the urban centers of Amazonia. From there, it permeated to other urban centers in Brazil in the form of a sorbet desert or energy food, exported in frozen pulp and mixed with guaraná syrup and other fruits to supplement it with sugars and caffeine while disguising its unusual earthy flavor. Although export demand for açaí is quickly growing, the largest demand for açaí is still regional where the food retains its cultural and dietary importance.

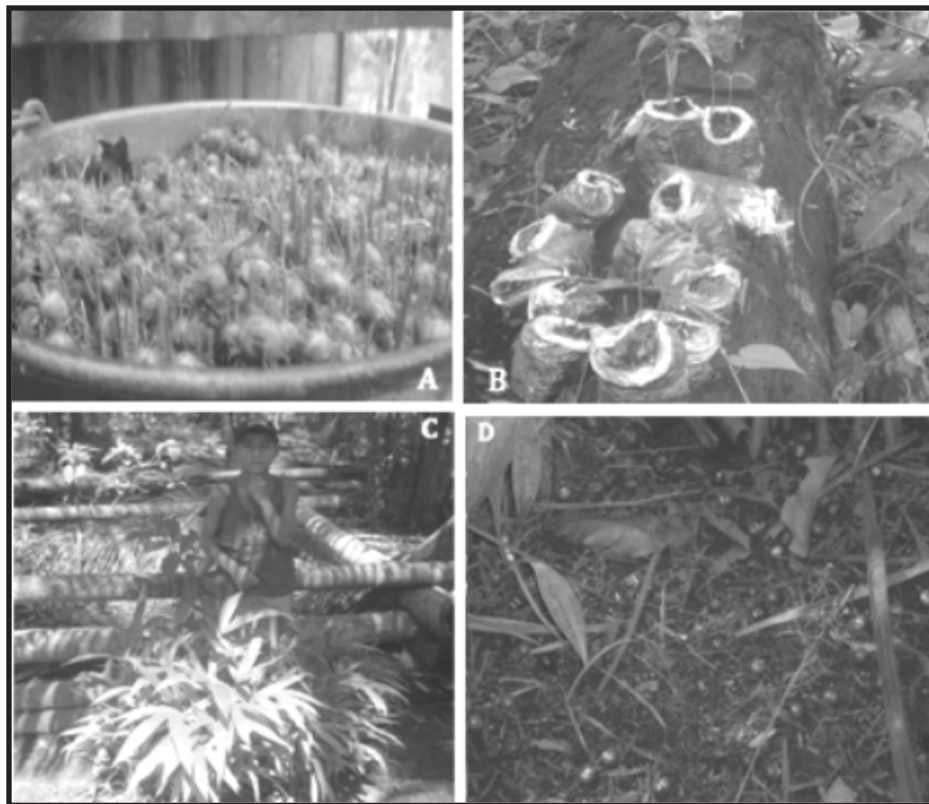
Açaí branco is neither grown nor marketed outside of the Amazon estuary. Its production is so regional that açaí producers in the Amazonian state of Maranhão refer to it as 'açaí branco of Pará', and vendors in the açaí stalls of Macapá report that most is imported from Pará. Açaí branco is frequently described as 'more delicious' than açaí preto, with a flavor similar to 'avocado with milk' (Weinstein 2000). Furthermore, it is claimed to lack the heavy, lingering, and sleep-inducing effects that açaí preto is renowned for, including the characteristic distended 'açaí belly' and in this regard is often referred to as 'açaí lite'. Those who process açaí claim that the pulp is of thicker consistency, a sign of higher quality (personal observation 2009). Many of these claims are supported by the differences in composition between açaí branco and preto. As its color would appear to indicate, açaí branco lacks the anthocyanin content of its purple counterpart, although it has higher oil content (Rogez 2000). Açaí branco also has a reduced iron content, a quality believed to account for its ability to be mixed with other foods and not cause indigestion. In the context of a staple food, the higher digestibility and fewer dietary restrictions associated with more oil and less iron serve an important function.

Açaí branco has been noted in various written

accounts for the last 35 years (Calzavera 1972), though rarely meriting more than a line or two about its presence in the urban marketplaces of the Amazon estuary such as the Feira de Açaí, and its relatively higher prices (Weinstein 2000, Azevedo 2005, Brondizio 2008, Smith 2002, Xavier et al 2005). Despite its persistent regional demand and local importance, açaí branco has merited little of the formal study or genetic improvement work and breeding that the predominating purple variety has been receiving. While EMBRAPA, the Brazilian Agricultural Research Agency, began genetic evaluations of açaí branco, the work was discontinued citing 'lack of interest or a viable market' (personal communication, S. Padilha June 2009). To date, no study has been conducted on the management, production, and exchange of açaí branco and little remains known about this evasive variety. Açaí branco is not necessarily a new variety in Macapá – while açaí branco has been present for as long as the urban açaí venders interviewed could

remember, it has always been primarily imported from Pará, becoming available only in the months that correspond with the growing season of Pará (personal communication, August 2009). Due to its extreme rarity, the pricing has always been a little higher than the purple counterpart, and for the last two years the price of açaí branco in Macapá remained fixed between R\$60-80 for a sack, while the price of preto bottomed at less than R\$20 during peak season. Despite its regionally limited market, there exists a strong financial incentive to plant açaí branco.

In the context of this paper, açaí branco is explored in the theoretical framework of an informal seed system. While the formal seed sector represents the vertically organized production and distribution of approved and tested seeds, with the intention of improving yields based on standardized spacing and inputs, informal seed systems are locally organized, based upon traditional knowledge, and guided by



**Figure 1.** Açaí Branco Planting Techniques: (a) Seeds of açaí branco are set aside in buckets to germinate after the pulp has been removed. (b) Seedlings of açaí branco are separated into plastic bags until they are large enough to transplant in the ground. (c) Seeds of açaí branco are dumped in a pile to germinate in a sunny environment close to the house. (d) Seeds of açaí branco are cast onto the forest floor and left to germinate.

prevailing market forces (Douglas 1980). Informal seed systems often perform an important role in the distribution of new varieties, maintenance of crop genetic diversity, and in meeting local needs. The two systems, formal and informal, can be viewed as complementary, often by necessity (Almekinders et al. 1994). Around the world and particularly in rural regions, the formal seed system rarely surpasses 10% of a farmer's supply, leaving farmers to develop all other seeds and planting material (Heisey 1990, Wierema et al. 1992). According to Almekinders et al. (1994), the three most important components of a dynamic seed system for small farmers for small farmers in developing countries include (1) variety use and development, (2) seed production and storage by farmers under local conditions, and (3) seed exchange mechanisms. These three components will serve as the foundation for an analysis of açai branco as a dynamic informal seed system.

### Site Selection

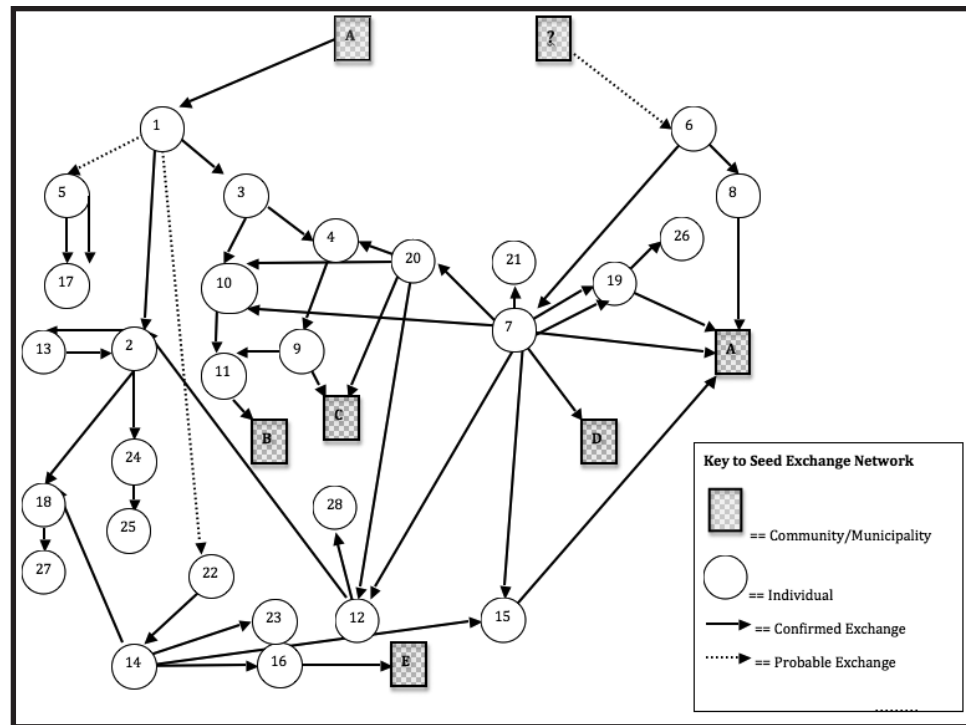
The community where this study took place is located in the state of Amapá in Northern Brazil, 37 km from the capital city of Macapá where community members transport açai to be sold 6 days a week. This community consists of 37 households, and has a very recent land history and well-documented land

cover transitions since it was converted from ranch to predominantly açai-managed agroforest in the last 50 years (Raffles, 2002). Furthermore, the community members all maintain secure land tenure, and the majority rely upon açai as their primary source of income, though often supplemented with other activities such as shrimp and fishing or retirement and fishing pensions.

### Methods

This study was conducted using a mixed methodology approach over two field seasons in June of 2008 and August of 2009. The first field season consisted of participant observation within a household during the peak of açai harvesting operations, and informal interviews with a number of community members who worked in the harvesting and transport of açai. The following year, structured and semi-structured surveys were held with 16 community members and 5 urban venders using random, purposive, and snowball sampling techniques to select key informants. The outcomes included a social map documenting seed exchanges between community members as well as with neighboring communities, and 16 completed questionnaires on individuals' production, management and preference data

**Figure 2.** Map of Açai Branco Seed Exchanges



## **Results and Discussion**

The data collected and management practices observed support the classification of açaí branco as a dynamic seed system in accordance with the three components established by Almekinders et al. (1994).

### ***Variety Use and Development***

Presence and use of the variety açaí branco was prevalent throughout the community. Out of the 16 households surveyed, 100% of respondents claimed they had planted palms of açaí branco in their açaí stands, or acquired land on which the variety had already been planted. Located on a tributary of the northern Amazon River, the community was subjected to strong currents that carved farther into the river bank each year, often carrying away tracts of the most intensively managed home garden and stands of açaí along with it. Thirteen of the households currently had açaí branco, while the 3 households that did not had lost all of their açaí branco to high floods over the last 10 years, the most recent occurring in 2009. All 3 households without mature açaí branco had already planted seeds or seedlings or had seeds they were planning to plant that year in the rainy season. In total, 11 of the 16 households reported that they were still actively planting açaí branco in either their quintal home gardens, managed açaízais, and even the land holdings upriver in primary forest. Continual refinement and development of the variety was demonstrated by seed selection and exchanges that took place amongst households, even when they already had mature palms. When interviews were conducted in August towards the end of the açaí season, 5 separate exchange events had been documented for just this season. In one case, 5 vegetative cuttings of açaí branco had been gifted from Household A to Household B 8 years ago. This year, Household A bought 15 kg of branco fruit from Household B, and after processing the pulp to sell to the urban market, the seeds were set aside to be germinated and planted while the seeds originating from Household A's own açaí branco was discarded. It was reported by the head of Household A that the fruits purchased from Household B had superior quality pulp. This is just one example demonstrating the continued development and refinement of the variety branco, even after the type has saturated the community.

### ***Seed Production and Storage Under Local Conditions:***

Seed production is said to be more specialized when the seed is produced in separate plots (Almekinders et al. 1994). Informants frequently reported planting the açaí branco in stands spatially removed from açaí preto to prevent what they believed was a risk of cross pollination. Although the factors affecting its expression have not been studied, açaí branco displays the patterns of a recessive trait following Mendelian genetics, with only 20-40% of progeny in turn producing branco according to a controlled study in the EMBRAPA<sup>1</sup> experimental station (pers comm. Mochiutti 2008). To overcome these odds, many farmers reported to be planting only new seeds of açaí branco, with awareness of the low retention for this trait. The intensification of this variety is therefore a gradual and somewhat invisible process, considering that even in plantings made from all açaí branco seedlings, usually only about 30% will mature to express the trait.

The planting and establishment of açaí branco followed very different management pathways than açaí preto as well, beginning with the storage of seeds after processing the pulp (Figure 1). After processing the pulp from açaí preto, the seeds were typically cast away as livestock bedding or to stabilize muddy banks. Açaí branco seeds were retained after processing however, and would typically either be left to germinate in one of the techniques described in Figure 1, or become incorporated into a seed exchange system amongst and between communities. The germination of açaí branco in buckets and plastic bags represents a clear divergence from the management of açaí preto. As there is already abundant regeneration of açaí preto from fallen fruits, seedlings are simply transplanted into growing sites where space is available. Açaí branco is transplanted into cleared areas, such as sunny banks, where the light environment induces earlier production of fruits in the life cycle of the palm. All property owners surveyed with land holdings in the unlogged primary forest upriver reported casting seeds from açaí branco to intensify the varietal production under more humid and closed canopies, conditions linked with superior quality of the fruit pulp.

### ***Seed Exchange Mechanisms of Açaí Branco:***

According to Almekinders et al. (1994), there are essentially 4 sources from which a farmer can obtain seed. These include his/her own harvest, other farmers'



harvests, the local grain market, and the formal seed sector. Surveys revealed that the first three of these are utilized in the case of açaí branco, with the first and second being most frequently reported. The fourth, or formal seed sector for açaí, deals exclusively with açaí preto, as agronomists invest research and develop towards expanding production for export and promotion of year-round fruiting. The seed exchange networks traced in this study illuminate an interesting scenario in which açaí branco appears to have been introduced to the community from either one or two original sources, and in the course of 45 years, saturated the community, leaving a dynamic pattern of selection and intensification in its wake (Figure 2). Furthermore, one of the two individuals confirmed to have originally introduced açaí branco into this community reportedly acquired it through urban connections in Macapá (Pinedo-Vasquez, pers comm. Oct 2009). In the 45 years following the introduction of açaí branco, the two original seed sources have been passed between 36 individuals and diffused into 5 different communities and metropolitan areas via at least 44 unique exchanges, though likely more. Furthermore, seed exchange continues to remain strong even though all households included have the variety, indicating that continued refinement and selection is taking place within the community long after the original introduction.

## Conclusion

The results of this study support the role of informal seed systems in crop domestication and maintenance of agrobiodiversity. This study showed that in less than fifty years, an introduced variety not only saturated a community through social and family networks of exchange, but was continually improved upon, selected for, and experimented with in line with tastes and preferences at the household and local market level. Furthermore, as seeds of açaí branco were reportedly dispersed and planted into tracts of unlogged, primary forest, the case of açaí branco represents a process in which agrobiodiversity has been transferred from urban market to field back to forest, inverting (or perhaps completing) a trajectory typically ascribed to seeds undergoing domestication. There is little likely future in export for açaí branco. It has found its niche in an environment where it is prized for its quality, consistency, flavor, and digestibility — qualities that quickly lose importance in a global market built upon a successfully promoted image rather than taste or quality. Without the high content of antioxidants, green açaí ceases to be 'açaí' outside of the amazon

estuary. However, its very presence and proliferation within communities demonstrates an important fact — local values and preferences strongly affect the selection and management decisions that drive crop domestication. The local importance, individual preference, and higher pricing associated with açaí branco all appear to be factors driving production up, albeit through a slow and invisible process. The seed exchanges by which açaí branco is transmitted and selected between and within communities supports the role that smallholder farmers play in maintaining intraspecific crop diversity, as well as diversifying their economic options, in response to local tastes and preferences.

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## References

- Almekinders, C. J. M., N. P. Louwaars, G. H. de Bruijn. 1994. Local seed systems and their importance for an improved seed supply in developing countries. *Euphytica* 78: 207-216
- Azevedo, J. R. 2005. Tipologia do Sistema de Manejo de Acaizais Nativos Praticando pelos Ribeirinhos em Belem, Estado do Para. Masters Thesis, UFPA.
- Brondizio, E. S. 2008. The Amazonian Caboclo and the Açaí palm: forest farmers in the global market. *Advances in Economic Botany*, Vol ume 16. New York: The New York Botanical Garden Press.
- Calzavara, B. B. G. 1972. As possibilidades do açaizeiro no estuário Amazônico. *Boletim da Fundação de Ciências Agrárias do Pará* 5:1-103.
- Clements, C. R. 1999. 1942 and the loss of Amazonian crop genetic resources. I. The relation between domestication and human population decline. *Economic Botany* 53: 188-202.

Douglas, J. E., 1980. Successful seed programs. A planning and management guide. Boulder: Westview Press.  
Heisey, P., editor. 1990. Accelerating the transfer of wheat breeding gains to farmers: a study of the dynamics of varietal replacement in Pakistan . Research report no . 1, CIMMYT, Mexico.

Jardim, M. A. G. 2000. Morfologia e ecologia do açaizeiro *Euterpe oleracea* Mart. e das etnovarietades espada e branco em ambiente de várzea do estuário amazônico. Tese de doutorado. Universidade Federal do Pará/Museu Paraense Emílio Goeldi. Belém, Pará.

Raffles, H. 2002. In Amazonia: a natural history. Princeton: Princeton University Press.

Rogez, H. 2000. Açaí: preparo, composição e melhoramento da conservação. Belém: EDUFPA.

Smith, N. J. H. 2002. Amazon sweet sea: land, life and water at the river's mouth. Austin: University of Texas Press.

Wierema, H., R. Paulussen and C. Almekinders, 1992. Los sistemas locales de semillas en la pequena producción agricola : los países en via de desarrollo. In Sistemas locales de semillas en Centro-America . Ponencias del seminario en Honduras 10- 16 de noviembre de 1991, edited by H. Wierema and R. Paulussen. IVO, Tilburg.

Weinstein, S. 2000. Causes and consequences of acai palm management in the Amazon estuary, Brazil. Masters Thesis, University of Florida Gainesville

Xavier L. N. B., Oliveira E. A. A. Q., Oliveira A. L. 2005. Extrativismo e Manejo do Açaí: atrativo amazônico favorecendo a economica regional. XIII Encontro Latino Americano de Iniciação Científica e IX Encontro Latino Americano de Pós-Graduação – Universidade do Vale do Paraíba

[1] Brazilian Agricultural Research Corporation