ANDIROBA REPORT (*Carapa guianensis*)

Andiroba, also known as andirova, andiroba-saruba, or carapá, is an Amazonian fruit Indigenous people commonly use. Its name comes from the Tupi term ãdi'roba, meaning 'bitter taste,' which, along with its pungent smell, are striking characteristics of andiroba oil.



Fruit of Andiroba



Andiroba Oil



Tree

PRODUCTS

Timber: The extraction of andiroba trees for wood can compete with almond collection and oil processing.

BY-PRODUCTS

Andiroba oil: Virgin and refined andiroba oil is widely used in the phytocosmetics and phytotherapeutics industries. The oil is used in traditional medicine for its anti-inflammatory, antiseptic, and healing properties. It treats worms, skin diseases, fever, and inflammation. Adiroba oil is also used as a massage oil to relieve muscle pain and inflammation. Additionally, it is used as a moisturizer and an ingredient in hair products, competing with other Amazonian vegetable oils such as copaíba, Brazil nut oil, patauá, murumuru, and açaí (COSTA *et al.*, 2015).

CURRENT MARKET SIZE

Andiroba oil is an input for the cosmetic and pharmaceutical industries in personal hygiene, beauty, and health-related products. It is sold in the Brazilian market and exported to the United States and European countries, such as Germany, Spain, and France (CONAB, 2022).

SIZE OF THE PROJECTED FUTURE MARKET

The size of the global Andiroba Oil market was estimated at US$95.1 million in 2021, US$104.2 million in 2022, and US$ 104.43 million in 2023. It is projected to reach US$145.02 million in 2028 (53% in 7 years) and US$179.07 million in 2031, assuming a CAGR of 6.21% during the forecast period. However, recent production trends suggest that this forecast may be optimistic.

VOLUMES SOLD/CONSUMED

In 2020, production was 115.5 tons, 5.5% lower than in 2019, with distribution primarily in Amazonas, Maranhão, and Pará. Amazonas and Pará accounted for 87% of national production, while Maranhão produced the remaining 13%. The drop was mainly due to restrictions caused by the global COVID-19 pandemic, affecting local businesses and paralyzing logistics and processing (CONAB, 2022).

There was significant growth in 2022, with the production in Amazonas alone being estimated at 1,383.94 tons. (IDAM, 2022).

PRICE TRENDS

The price paid to producers for andiroba oil varies over time and location, ranging between R$ 0.77/kg and R$1.62 kg in recent years (CONAB, 2022). Wholesale prices on the international market for andiroba oil vary from $170.78 to $213 per gallon , and from $711.58 and $889.48 per 44-lb container in 2023 (EBAY, 2023). In 2024, the price varies between $480.00, $595.00, and $901.52.

HISTORY

The Andirobeira, *Carapa guianensis* Aubl, naturally occurs throughout the Amazon basin, primarily in lowland environments. It also grows on Caribbean islands, southern Central America, and northern South America (Ferraz et al., 2003). The Andirobeira has been an important source of timber that competes with its value as a source of high-quality oil. Fortunately, the Andiroba tree has a rapid growth rate and is less vulnerable to logging pressure. It is increasingly used in agroforestry systems for its oil (LAMEIRA *et al., 2022*).

PRODUCTION SYSTEMS AND ENVIRONMENT: AGROFORESTRY, WILD HARVEST, PLANTATION

Where sustainable management practices are adopted, andirobeira contributes to the forest's sustainable use and ecological resilience (CONAB, 2022). The andirobeira is an essential species in agroforestry systems due to its timber and oil that can be harvested annually as the trees grow. However, the high value of andiroba wood can threaten wild stands in areas with weak forest governance.

MATURITY TIME

It is a medium to large tree, which can reach 30 meters in height, with a cylindrical and straight trunk and thick bark. The fruit is a globular, dehiscent capsule (fruits, when ripe, open to expose the seed) of four valves that separate when they fall to the ground, releasing four to twelve seeds, which weigh an average of 21g. An adult tree can produce up to 120 kg of seeds (average 50 kg). Harvest occurs between January and June and can vary from year to year, depending on rainfall patterns.

As with many Amazon forest trees, andiroba nuts are adapted to germinate soon after dispersal. As a result, storage for extended periods is only feasible with compromising oil extraction, and harvest areas tend to be concentrated in areas close to local processing plants (CONAB, 2022).

Almonds contain 43% fat, but yield depends on the extraction methods. For example, extracting 1 liter of oil requires 12 kg of almonds with manual extraction, 4kg of seeds with mechanical extraction, and 3kg of seeds with the use of solvents. The average oil yield from an andiroba tree ranges from 10 liters with manual extraction to 30 liters with more intensive extraction methods.

PRODUCER PROFILE AND SOCIAL IMPACTS

Andiroba almond collection and oil extraction are practiced mainly by traditional and indigenous people in areas with access to local processing plants. In these areas, the collection and processing of andiroba oil can be a significant income source for rural families (MENDONÇA; FERRAZ, 2006).

PRODUCTION PROBLEMS

As with other socio-biodiversity products, logistics is the main bottleneck for producing and marketing andiroba oil. The relatively high prices for andiroba almonds in Amazonas and Pará are a result of increasing demand for oil, fragility in the supply chain, a reflection of the informality in the activity, from almond collection to oil production, the perishability of the fats in almonds, which can

compromise the quality and quantity of the oil, and the low value-added of the final product (CONAB, 2022).

SUPPLY CHAIN PROBLEMS

Natural medicinal products require certification by the National Health Surveillance Agency (ANVISA) to ensure products comply with quality standards. The absence of a quality seal restricts the amount of andiroba and copaiba oils that individual establishments can sell (COELHO *et al.*, 2014).

Brazil is a major supplier of essential oil to the US market but needs help with chronic problems such as the variable quality of the oil, low national representation, and low government investment in the sector (BIZZO *et al.*, 2009; SOUZA *et al.*, 2010).

CREDIT POTENTIAL/CARBON SEQUESTRATION

Andiroba trees can be an important income source from forests managed for non timber forest products and also play an important role in agroforestry systems. Forest carbon credits could be an added incentive for the sustainable management of andiroba in local forests.

CERTIFICATION PROGRAMS

CERTIFICATION	BY-PRODUCTS	COMPANY
ORGANIC BRAZIL	Andiroba virgin oil organic refined oil	Amazon Oil Ind. and with. of Eireli Vegetable Oils
USDA-ORGANIC – Organic Agriculture in the USA -USDA NOP		Beraca Natural Ingredients Ltd
ECOCERT cosmos organic		100 (Percent) Amazônia Exportação e Representação Ltda
ORGANIC IBD		Association of Small Agroforestry Producers of the Reca Project and the Agricultural and Forestry Cooperative of the RECA Project
ECOCERT cosmos organic		Symbiosis Amazon

RELEVANT SECTORS

Almond -> Oil (pharmaceutical and aesthetic industries)

Only a few plants process andiroba in the Manaus region, resulting in low demand for the product. This can result in a low supply of extractive products since extractive producers are not prepared to collect in the forests. The production of the Juruá/AM region is purchased by almost every pela Natura company, along with USAID/Brazil, the Plataforma Parceiros pela Amazônia (PPA), and the Bioversity/CIAT Alliance (CONAB, 2022).

Aggregators/suppliers

Retailers

ORGANIZATION	CONTACTS
The wall Association of Rural Working Women United for Freedom, Humanity, and Love	(68) 99965-1946 Nataíres (68) 99968-9961 Aldeli womenamuralha@gmail.com https://amuralha.ac.amazoniativa.com/
ASPROJU Jutaí Producers Association	(97) 3425-1056
Association of Agroextractivists Ribeirinhos do Rio Araguari	(96) 3118-4477

COOPFITS Cooperative of Producers and Beneficiaries of Medicinal Plants, Phytotherapeutics and Phytocosmetics of Manaquiri	(92) 9627-7327
copronate Amazon Natural Products Cooperative	(92) 2528-2088 rubemgoes@bol.com.br
Socio-environmental Institute of Amapá – Cumaú	(96) 99190-6008
RECA Association of Small Agroforestry Producers of the RECA Project and the Agricultural and Forestry Cooperative of the Project	(69) 3253-1007 (69) 3253-1046 WhatsApp: (69) 98471-0234 projectorreca@yahoo.com.br https://www.projetoreca.com.br/ Youtube: Reca Project

IMPORT/EXPORT AND COMPLIANCE RATES

Não estão disponíveis dados desagregados de exportação e importação do óleo essencial de andiroba, os óleos vegetais são contabilizados juntos,

BIOCULTURAL PROTECTIONS OF COMMUNITIES OF ORIGIN (NAGOYA/CGEN/ETC. PROTOCOL.)

Brazil adheres to the Nagoya Protocol, Legislative Decree No. 136 of 08/11/2020, signed into law in March 2021. This legislation can add value to the andiroba production based on other countries' use and exploitation of Brazil's genetic heritage (Amazonoil, 2022).

REGULATORY INFORMATION

IUPAC Name: *Carapa Guaianensis* Seed Oil is the fixed oil expressed from the seeds of *Carapa guaianensis*, Meliaceae

Harmonized System Code: 4407.29.02.40 - Andiroba (*Carapa guianensis and C. procera*)

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