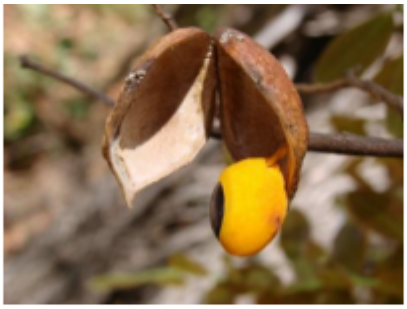
COPAÍBA REPORT (*Copaifera* spp .)

The copaiba tree is known as "pau-de-óleo," "miracle tree," and "diesel oil tree" because it produces oil that can be extracted from the trunk. Copaiba oil is known as the antibiotic of the forest. It is one of the most important medicinal plants in the Amazon, used mainly to treat inflammation and numerous other ailments. It has long been used by Indigenous groups throughout the Amazon, who discovered the healing power of copaiba oil long ago. Because of copaiba oil production's highly variable and somewhat unpredictable nature and limited research effort, virtually all Copaiba oil is extracted from trees in natural forests.



Copaiba tree



Copaiba fruit



Copaiba oil

PRODUCT

Oil-resin - used to extract essential oils for cosmetic and herbal purposes

Biofuel: If production challenges are resolved, Copaiba oil could become a promising biofuel

Other Products

Wood – The wood is highly resistant to decay and is used locally in civil construction and furniture production.

CURRENT MARKET SIZE

In 2009, Brazil produced 538 tons of copaiba oil, which generated a value of BRL 4.1 million (R$ 7.71/kg) ≅ USD 1.9 million (3.65 USD/kg); in 2021, total production was 170 t, generating BRL 4.9 million (R$ 29.13/kg) ≅ USD 839,491.52 (4.93 US$/kg), in 12 years there was a decrease in production by 68% and an increase in price by 277%. In 2022, Brazil had a production of 265 tons of copaiba oil, generating BRL 10.1 million (R$ 38.44/kg) ≅ and USD 1.9 million (7.25 US$/kg) (IBGE, 2024).

PROJECTED FUTURE MARKET SIZE

Global Copaiba Essential Oil Market was valued at USD 2.42 billion in 2022, and the total revenue is expected to grow 5.4% from 2023 to 2029, reaching nearly USD 3.51 billion (MMR, 2023). The copaiba tree is an important species with significant economic potential.

VOLUMES SOLD/CONSUMED

Production of copaiba oil varies considerably from year to year. For example, production in Brazil reached 580 tons in 2010 and fell to 214 mt in 2011. However, the production in Brazil in 2022 was 265 tons with a total market value of BRL 10.1 million ≅ USD 1.9 million. The state of Amazonas was the largest producer with 191 t (72% of the total, with a total value of BRL 6.4 million ≅ USD 1.2 million). Estimates of production for the other major producing states: Rondônia with 49 t (BRL 2.6 million ≅ USD 500,754.71), and Pará with 18 t (BRL 744,000.00 ≅ USD 140,377.35 (IBGE, 2024).

PRICE TREND

Wholesale prices for Copaiba essential oil found on the internet: 5 lbs for $411.99 (≅ USD 82 per pound) and 400 lbs priced at $18,293.99 (≅ USD 45 per pound) (WHOLESALE BOTANICS, 2024).

HISTORY

The Copaiba tree is a plant native to South America, occurring mainly in Brazil, Venezuela, the Guianas and Colombia. Indigenous people discovered the medicinal properties of the plant long ago. Amazonian Indians apparently used the oil to grease their bodies after combat to heal their wounds, a behavior probably arising from observing animals that, when injured, rubbed against the trunks of the copaiba trees. Knowledge of the medicinal properties was passed on to European colonists and was soon a fundamental element of traditional medicinal knowledge throughout the Amazon and much of Brazil (MUNDO EDUCAÇÂO, 2023). The first European record of extracting oil from the Copaiba tree was in a work published in 1625, which stated that ". . . a single tree is said to yield about 40 liters" (Grieve 1931 in (OIL SEED CROPS, 2023). A 1979 report cited in the same article states that it was possible to "collect 15-20 liters of oil every six months" (OIL SEED CROPS, 2023). However, a study says that the average oil withdrawal for each tree varies from 0.3 to 3 liters, depending on the species and the conditions to which it is subjected, and some trees can provide up to 30 liters in a single withdrawal (PIERI, MUSSE & MOREIRA, 2009). Another study states that each tree can provide 0 to 18 liters (RIGAMONTE-AZEVEDO, WADT & WADT, 2006).

PRODUCTION SYSTEMS AND ENVIRONMENT: AGROFOREST, WILD HARVESTING, PLANTING

Thus far, virtually all Copaiba oil is obtained from trees in natural forests, and there is no established system for managing groves of trees for their oil production. Copaiba tree densities are pretty low, and average densities for trees above 40 cm dbh range from 0.1 to 2 trees per hectare. Some copaiba trees produce oil when they reach about 35 cm dbh. Tappers drill into the tree with an auger to extract the oil and then plug the hole with clay to prevent infection. Tappers will return to the tree periodically to extract more oil from the same hole. However, Copaiba trees are notoriously unreliable as sources of oil. Studies document that the first extraction invariably yields the largest amount, and the following yields are considerably lower. A three-year tapping cycle is optimal.

Another possible strategy is to integrate copaiba trees into agroforestry systems with other faster-growing species that generate returns while Copaiba trees are growing, much as RECCA has done with agroforestry systems integrating Brazil nut trees. It may be that the best option is to use Copaiba trees in consortia to restore degraded lands (EMBRAPA, 2021).

MATURITY TIME

Copaiba trees are relatively slow-growing, reach a maximum height of 40 meters, and can live up to 400 years. Trees seem to produce oil when they reach about 35 cm dbh. During the productive phase, the yield of copaiba oil per tree can vary from 0.3 to 30 liters per year; however, not all trees produce oil.

PRODUCER PROFILE AND SOCIAL IMPACTS

Copaiba oil is collected by small-scale farmers in forested areas and families that depend on forest extraction. These families are integrated into Copaiba's fairly specialized supply chains compared to those for traditional agricultural and forest products. In this context, middlemen often play an important role, which can reduce producers' profit margins.

PRODUCTION PROBLEMS

As noted throughout this text, copaiba oil production is notoriously fickle. Thus far, there is little indication in the literature that the challenges of developing production systems that can provide a consistent and economically viable quantity of oil have been developed.

SUPPLY CHAIN PROBLEMS

Among the problems of supply chains are poor infrastructure, little social organization, lack of training for sustainably extracting oil, and little support for ensuring that the quality is maintained along the supply chain.

RECOMMENDATIONS FOR PROCESSING AND SIZING

Copaiba oil is a valuable substance, and the Copaiba trees could be a significant source of value-added for managed forests, reforestation projects, and perhaps agroforestry systems. However, to develop the economic potential of Copaiba trees, an important, long-term investment in research will be needed.

CREDIT POTENTIAL/CARBON SEQUESTRATION

There is no particular role in carbon offset schemes.

CERTIFICATIONS PROGRAMS

To fractionate, refill, and/or repackage inputs such as vegetable oils, essential oils, and butter to resell to stores and end consumers, companies need an Operating Permit from the Ministry of Health, inspected by ANVISA.

CERTIFICATION	BY-PRODUCTS	TYPE
IBD organic seal	copaiba oil _	Certified natural and/or organic raw materials

RELEVANT SECTORS

retailer	Site
Projeto RECA	https://www.projetoreca.com.br/produtos/oleo-de-copaiba/
Associação Agroextrativista das Comunidades da RDS do Rio Uatumã (AACRDSU)	contabil_ney@yahoo.com.br
Amazônia Hub	https://amazoniahub.com/inatu/

IMPORT/EXPORT AND COMPLIANCE RATES

Data for copaiba are aggregated with other vegetable oils and resins.

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

Brazilian adherence to the Nagoya Protocol, Legislative Decree No. 136 of 08/11/2020, ratified by the national executive in March 2021, can leverage the Copaiba oil production chain due to other countries' use and exploitation of genetic heritage.

REGULATORY INFORMATION

Harmonize System Number: For import and export of copaiba – nº 3301 – essential oils; and nº 3004 – medicines for therapeutic/homeopathic use

PS.: For all conversions from Brazilian real (BRL) to US dollar (USD), an average of the values for each year was made (example: sum of the monthly averages for the year 2021, divided by 12. The result was taken with the value dollar average in 2021).

Table with monthly averages:

Year 2009: USD 1 ≅ BRL 2,11 (annual average).
Year 2019: USD 1 ≅ BRL 4,16 (annual average).
Year 2020: USD 1 ≅ BRL 5,44 (annual average).
Year 2021: USD 1 ≅ BRL 5,90 (annual average).
Year 2022: USD 1 ≅ BRL 5,30 (annual average).
Year 2023: USD 1 ≅ BRL 5,18 (annual average).