

# The commercialisation of tucumã (*Astrocaryum aculeatum*) by extractivists in riverside communities in the Amazon

*A comercialização do tucumã (*Astrocaryum aculeatum*)  
por extrativistas em comunidades  
ribeirinhas do Amazonas*

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## ABSTRACT

The article presents the results of research on the commercialisation channels of tucumã, a product of extractivism which expresses an aspect of the food culture of the Amazonians. The research was carried out in three communities (São Francisco do Mainã, Jatuarana and Novo Progresso) located on the left bank of the Amazon and with farmers from the Puraquequara region, Manaus - AM. The research had a quantitative and qualitative bias. In all, 30 farmers who extract tucumã were interviewed. The research showed the tucumã commercialisation dynamics, quantifying and shedding light on the commercialisation channels and the relationships established in the commercialisation and shows the weaknesses of the actors involved, especially the extractive farmers. The information can help in the elaboration of actions to support the actors involved in the activity.

**Keywords:** Commercialisation. Typologies. Farmers. Extractivists. Market.

## RESUMO

*O artigo traz o resultado da pesquisa sobre os canais de comercialização do tucumã, produto do extrativismo e que expressa um aspecto da cultura alimentar dos amazonenses. A pesquisa foi realizada em três comunidades (São Francisco do Mainã, Jatuarana e Novo Progresso) localizadas à margem esquerda do Amazonas, e com agricultores da região do Puraquequara, Manaus – AM. A pesquisa teve um viés quantitativo e qualitativo. Ao todo, foram entrevistados 30 agricultores que fazem o extrativismo do tucumã. A pesquisa mostrou a dinâmica de comercialização do tucumã, quantificando e lançando luz sobre os canais de comercialização, as relações que se estabelecem na comercialização e mostra as debilidades dos atores envolvidos, de um modo especial os agricultores extrativistas. As informações podem auxiliar na elaboração de ações de apoio aos atores envolvidos na atividade.*

**Palavras-chave:** Comercialização. Tipologias. Agricultores. Extrativistas. Mercado.

## 1 INTRODUCTION

The productive dynamics of "peasant groups treated as traditional populations in the Amazon - sometimes called ribeirinhos or caboclos, sometimes simply rubber tappers, sometimes even family farmers practising agroforestry systems" (Costa, 2020, p.148) - are deeply linked to "the simultaneous management of various natural resources and terrestrial (solid ground) and aquatic (floodplain) ecosystems and productive activities", ranging from plantations, small and large animal husbandry, fishing, hunting and extractivism of forest producers (Pereira *et al.*, 2015, p. 62).

The peculiar management of the diversity of resources available in Amazonian territories and ecosystems imposes the need to understand the productive dynamics of Amazonian communities as not restricted to the natural world but rather in a cultural, social and economic tangle, with the use for self-consumption and commercialisation of species clearly objectified with knowledge, domestication and use, often with origins in myths and rituals of ancestral societies. These are services resulting from biological interaction and sustainable management practices (Athayde *et al.*, 2021).

There is a growing importance of products that come from the interaction between biological diversity and different socio-cultural systems, which can be expressed in the word socio-biodiversity. In 2009, in the National Plan for the Promotion of Sociobiodiversity Product Chains (PNPSB) (Brasil, 2009, p. 7), the products of this interaction were conceptualised as:

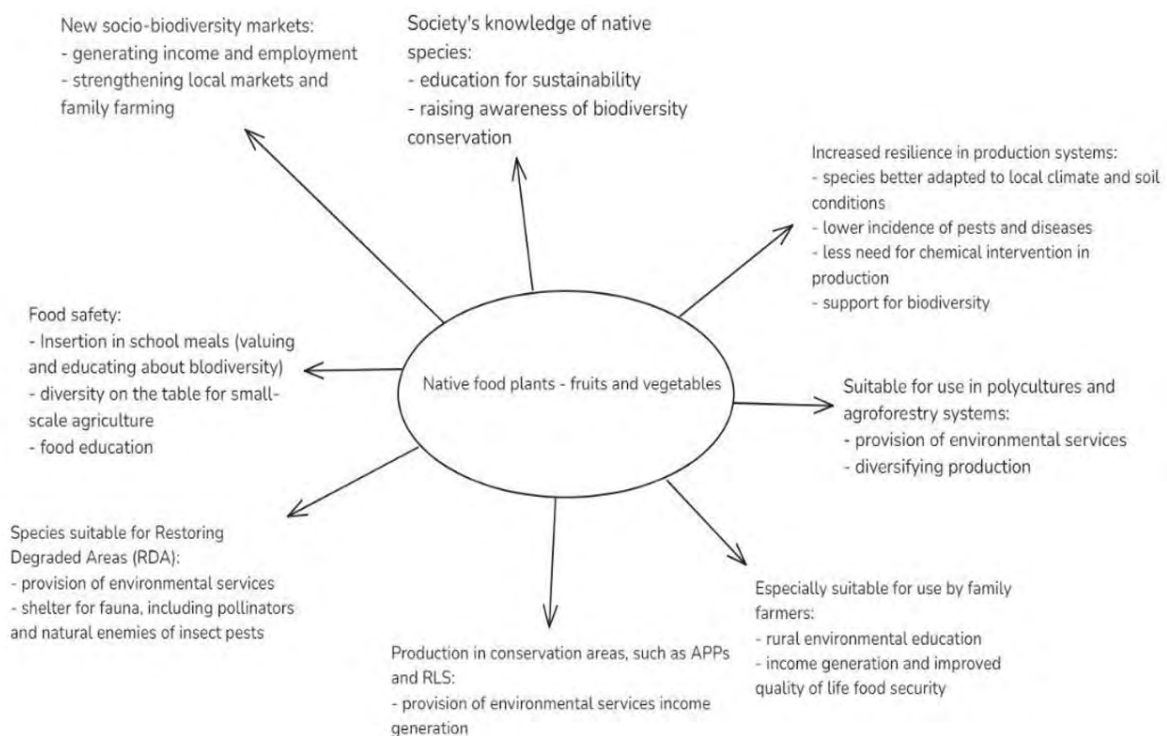
... products generated from biodiversity resources, aimed at the formation of production chains of interest to traditional peoples and communities and family farmers, which promote the maintenance and valorisation of their practices and knowledge, and ensure the resulting rights, generating income and promoting the improvement of their quality of life and the environment in which they live.

The Ministry of the Environment's concept of socio-biodiversity emphasises the "relationship between goods and services generated from natural resources, aimed at forming production chains of interest to traditional peoples and family farmers" (Diniz; Cerdan, 2017, p. 6).

Ramos *et al.* (2023, p. 3) understand that the academic concept of sociobiodiversity is based on the tripod "biological diversity", the diversity of traditional agricultural systems - components of agrobiodiversity, and the use and management of these resources - linked to the knowledge and culture of traditional populations and family farmers". This means recognising the "...diversity of life in all its forms" (Dasgupta, 2021, p. 14).

The Convention on Biological Diversity (Trisos; Merow; Pigot, 2020; Unep, 1992) defined biodiversity as the variability between living organisms in ecosystems, which produces degrees of fragility between ecosystems where there is human, social or productive intervention, i.e. where anthropic actions are projected.

The management of forest resources is an ancestral skill of Amazonian populations. According to Ramos *et al.* (2008), the understanding and inclusion of sociobiodiversity in production dynamics lead to the understanding that farmers and extractivists are the main protagonists in the processes of collecting, producing and processing sociobiodiversity products and also that the production systems stemming from these dynamics oppose predatory production strategies. These processes guide the inclusion of socio-biodiversity resources in the economy, regardless of scale, in production chains for food, pharmaceuticals and cosmetics, and in other economic possibilities for generating work and income, guaranteeing a range of benefits for communities and society (Figure 1).



**Figure 1 – Benefits of socio-biodiversity for society**

Source: Adapted from Oliveira *et al.* (2022).

The worsening effects of climate change increasingly require the adoption of strategies for the sustainable use of socio-biodiversity as an alternative for the conservation of natural resources, which presupposes the "need to overcome the dichotomy established between nature and society as a means of reconciling the preservation of the environment and economic and social development" (Castro; Pinton, 1997, p. 10). It is also an alternative for maintaining and conserving ecosystem services, which increases the importance of socio-biodiversity for human society and understanding "the interaction, in different types of habitat, of biotic and abiotic components and the flows of matter and energy (Costanza *et al.*, 1997, p. 253).

For Costa *et al.* (2021, p. 12), the development of the Amazon region, with socio-biodiversity as its central axis, is one of the main alternatives for "maintaining the forest" and a matrix force capable of "generating income and reducing existing social inequalities". It is in this context that the "bioeconomy" has recently emerged as an option for sustainable development and guaranteeing the maintenance of social and biological diversity, and for achieving multilateral goals and agreements such as the 2030 Agenda and its Sustainable Development Goals, the Paris Agreement, the Aichi Targets, among others.

For OES (2022, p. 1), socio-biodiversity is one of the "ways to mitigate the worsening of the most critical climate change scenarios, such as the loss of biodiversity, water and food insecurity, the increase in communicable and non-communicable diseases and social inequalities". Data systematised by the National Supply Company - Conab (2021, p. 6) show that the primary market for non-timber extractive plant products "generated approximately R\$ 1.6 billion for extractive producers in 2019". With the inclusion of "timber extractives, this amount grew to R\$ 4.3 billion".

The Conab website (2017), which focuses on the Minimum Price Guarantee Policy for Socio-Biodiversity Products (PGPM-Bio), informs that a minimum price policy has been established for 17 extractive products, namely: açaí, andiroba, babassu, baru, extractive rubber, buriti, extractive cocoa, Brazil nuts, juçara, macaúba, mangaba, murumuru, pequi, piassava, pine nuts, managed pirarucu and umbu. Conab emphasises on its website that for "new additions to this agenda, studies are being carried out to include new products, such as licuri (*Syagrus coronata*), fava dantas (*Dimorphandra mollis* Benth) and others".

Tucumã is not yet on the official list of socio-biodiversity products. Its socio-economic and consumption importance is limited to the state of Amazonas. In Pará, until recently, tucumã was seen as a "bush pest" due to its thorns and was only used for animal feed. It is only now that the local species is gaining importance due to the discovery of bioactives present in the extraction of tucumã butter and oil by the biocosmetics industry.

## 1.1 TUCUMÃ: A PALM FROM THE AMAZON

The tucumã tree (*Astrocaryum aculeatum*) is one of the many palm trees in the Amazon that is prized for its fruit, as are the açaí (*Euterpe oleracea* Mart.), the bacaba (*Oenocarpus bacaba* Mart.), the patuá (*Oenocarpus bataua*) and the pupunha (*Bactris gasipaes*). These fruits are part of the Amazonian population's food strategies, as Clement, Lleras and Leeuwen (2005, p. 69) note, due to the "presence of starch, proteins and vitamins, as well as oil", and are consumed as juices (generally called 'wine' in the Amazon), cooked (pupunha) or even fresh (tucumã). Palm trees are also used in the production of household utensils and handicrafts in Amazonian communities (Lorenzi *et al.*, 2004). They grow in dryland forests, secondary vegetation (capoeiras), savannas, pastures and swiddens, as well as in poor and degraded soils (FAO, 1987). Didonet and Ferraz (2014, p. 354) list the main products that can be obtained from the various inputs made available by the tucumã tree since the pre-colonization period as raw materials for:

(i) the stipe is used in construction and for making bows; (ii) in addition to being used to make baskets, hats, shakers and mats, the leaves are also used to extract "tucum", a high-quality fibre used to make hammocks, bags, purses and fishing nets; (iii) to a lesser extent, salt is extracted from the leaves; (iv) the apical meristem (palm heart) is used for food; (v) the mesocarp of the fruit is edible, and the endocarp is used in handicrafts and as a fuel material; (vi) the seed is used as a food supplement for domestic animals, and oil is extracted from it which can be used as biodiesel and as an input in the cosmetics and food industries.

According to Clement, Lleras and Leeuwen (2005, p. 70), there are two species of "tucumã native to the firm lands of the Amazon, which are widely marketed for their edible fruits": the eastern species (*Astrocaryum vulgare*) common in the Belém region, state of Pará, and the western species (*A. tucuma*, syn. *A. aculeata*), widely consumed in Amazonas, mainly in the municipality of Manaus, in family homes, in the well-known regional cafés and at fairs, as sandwiches, tapiocas, breads, creams and ice creams.

The most famous recipe made with tucumã and consumed by the population is the X-Caboquinho sandwich, made with French bread, coalho cheese, fried banana pacovã and tucumã, which is much appreciated by the locals.



**Figure 2** – X-Caboquinho, a typical Amazonian snack

Source: <https://portalamazonia.com/amazonia-az/x-caboquinho>.

Vieira *et al.* (2017) describe the tucumã fruit as having a "global or ovoid shape", the "mesocarp is fibrous and yellow-orange in colour, containing a high content of provitamin A, lipids and energy" and with an "average content of  $\beta$ -carotene". Tucumã is one of the products that generate income for families in rural areas through direct marketing to the consumer, selling to small retailers and small stalls and, more recently, it can even be found in large supermarkets. The market for this fruit is informal, as is the case with other products. For the purposes of this text, informality is understood to mean the absence of any contract or tax document at the time of sale.

Tucumã is a typical extractive product from various municipalities in Amazonas. According to Schroth *et al.* (2004), the fact that the tucumã palm is rustic and also produced in poor and degraded areas favours extractive production. According to the IBGE (1991), plant extractivism is the "process of exploiting native plant resources that includes the collection or gathering of products such as wood, latex, seeds, fibres, fruits and roots, among others, in a rational manner". Tucumã extractivism falls within the perspective of a "way of producing goods in which useful natural resources are taken directly from their area of natural occurrence, in contrast to agriculture" (Drummond, 1996, p. 117).

The extractivism practised by traditional Amazonian farmers is not mere collection but rather a strategy of economic, social and cultural relations and is part of the ability to simultaneously manage "various natural resources and terrestrial ecosystems (solid ground) and aquatic (floodplain) and productive

activities that combine agriculture and livestock with the exploitation of forest resources, notably the exploitation so-called non-timber forest products (NTFP), fishing and hunting" (Pereira *et al.*, 2015, p. 61).

Two main "varieties" or "types" are found in the region: the rajado and the arara. The rajado fruit is smaller, with yellow flesh and an abundance of fibres (on the left in the image below); the arara tucumã is larger, with less fibres, more flesh, and a more orange colour (on the right in the image below, peeled and cut fruit), as can be seen in Figure 3.



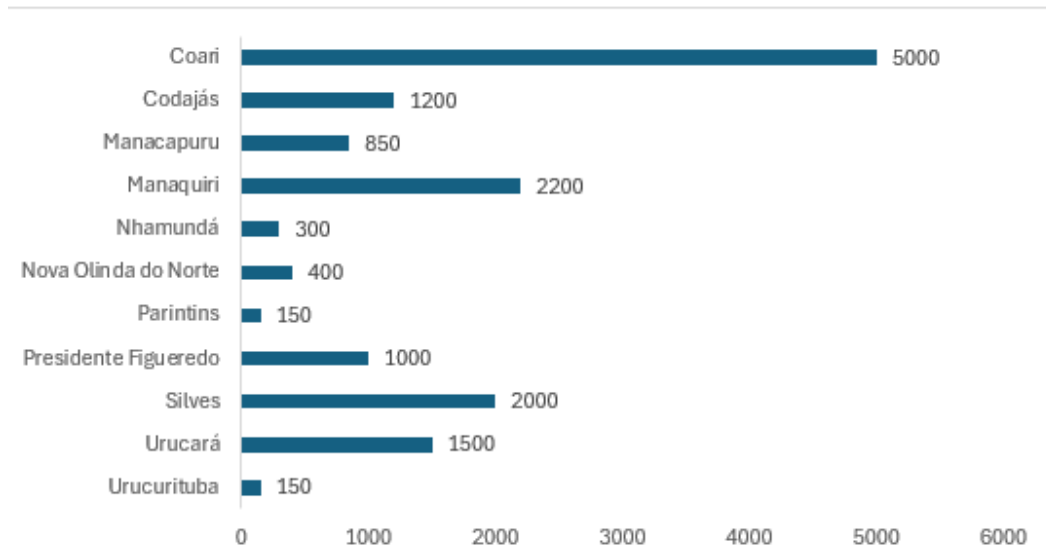
**Figure 3** – Tucumã rajado and tucumã arara

*Source: Daiana Parintins (2023).*

Data on production is still insufficient and often does not reflect the reality of this economic activity. There is still a long way to go in the process of collecting data and information on tucumã production in the state. Didonet and Ferraz (2014, p. 354), when analysing the available data and information, state that it is scarce and that information on the "economic importance and potential, quantitative information regarding its regional market is not available, hindering public and private actions aimed at planning and developing its production chain".

According to an estimate by the Institute for Sustainable Agricultural and Forestry Development of the State of Amazonas (Idam, 2021), of the state's 62 municipalities, 11 (18%) account for 79% of Amazonian production. This production is in addition to that of other municipalities and states that send their production to Manaus, such as Terra Santa - PA and Roraima, which also come from extractivism (Didonet, 2012).

Tucumã is harvested by extractivists, who are traditional family farmers who establish productive strategies for survival or life in different Amazonian ecosystems: forests, rivers, solid ground and floodplain. They don't live exclusively from the collection of a single product or cultivate a single species in their gardens, and many of them have activities other than extractivism and farming. So farmers have their manioc gardens, diversified plantations, fishing and the collection of plant products such as tucumã, açaí, bacaba and patuá, among other forest resources. In his strategy to ensure self-consumption and income, the farmer follows the natural calendar, giving priority to harvesting in the period when the price is most attractive. The quantity of tucumã collected gives an idea of the number of farmers and families involved in this extractive activity (Figure 4).



**Figure 3** – Estimated production of tucumã in Amazonas (50 kg bags)

Source: Idam (2021), organised by the authors..

Due to its rigidity and characteristics, the fruit can be transported over long distances, usually packed in nylon bags, other containers and even in bulk. The fruit is transported by canoes, outboard motor boats, and passenger and freight boats, which circulate on regular days. The whole process of collecting, threshing and packaging is carried out by the farmer, with the support of family members, mainly the wife and children. The farmer defines a quantity to be harvested and marketed, collects it, bags it and takes it to the buyer, as the buyer eventually comes to the community. When the sale takes place the day after the harvest, the nylon bag containing the tucumã, which weighs an average of 45 kg, according to Kieling *et al.* (2019, p. 6), is stored on the balcony, in the living room or in covered spaces in the yard.

The demand for tucumã in Manaus shows the acceptance and consumption habits of the Amazonian population. The production and extraction of the fruit, which, due to its rusticity, grows and is produced in poor and degraded areas, is abundant. It plays an important role in supplementary income generation and is an excellent food supplement for Amazonian farmers.

This article seeks to incorporate into Amazonian rural studies the reflections being carried out by Schneider (2016), who has been classifying and collecting data and information that shows the dynamics and relationships between family farmers and markets. The markets that absorb farmers' production are classified as proximity, territorial, conventional and institutional.

The aim was to understand how tucumã markets and marketing channels function in the communities located on the left bank of the Amazon River, to explore the conditions and circumstances and to identify how tucumã extractivists make connections with the plurality of insertions in markets and marketing channels. The decision to research tucumã extractivism is based on the fact that the farmers in the communities surveyed have an extractivist culture because they carry out extractivist activities, which have played and still play an important role in supplementing their income. These activities involve little use of agricultural technology and innovation, low investment levels, and low access to public policies to encourage production, collection, and marketing. Tucumã is an Amazonian socio-biodiversity product par excellence, which can contribute to the production diversification strategies of production units and is used for family consumption. It is a product accepted by the urban and rural population and has an expanding market with the potential to generate income for the agents in the value chain.

The article is the result of a quantitative and qualitative survey conducted with the participation of 30 farmers on the left bank of the Amazon River and is part of the integration of researchers from the Sustainable Rural Development of Family Farming line of the Brazilian Agricultural Research Corporation (Embrapa Amazonas) into the project "Public Policies and Innovations for Building More and Better Markets for Family Farmers in Brazil - creation of the research network on markets", coordinated by Dr Sergio Schneider, professor at the Federal University of Rio Grande do Sul, and funded by CNPq.

## 1.2 BRIEF CONSIDERATIONS ON THE ECONOMY OF TUCUMÃ AND EXTRACTIVISM

The Amazon emerged in Western history from forest extraction, based on the collection of drugs from the backlands. It was in this way that the region gradually became part of the global mercantile circuit.

The 20th century definitively marked the importance of the Amazon for the destiny of humanity, a condition which meant that "all economic calculations of the future included the Amazon factor" (Pinto, 2002, p. 33). For Costa (2005, p. 132), the concern focuses on the "importance of the largest tropical forest on the planet as a collection of biodiversity and as a basis for providing environmental services to stabilise the global climate".

Among the alternatives aimed at maintaining the Amazon's wealth is extractivism, which has emerged as an activity capable of maintaining the forest, "containing deforestation and fires" (Homma, 2014, p. 18), and a huge challenge for adding value to the region's economy, valuing the knowledge and way of life of Amazonian communities. Castro (1998, p. 7) shows that in regions of the Amazon, extractivism remains an essential element in production systems and income generation. Hunting, fishing, and collecting latex, nuts, and other forest species are associated with agriculture. The work effort is organised according to the accessibility of resources.

Homma (2018, p. 181) understands that extractivism is the first form of "economic exploitation, limited to the collection of products existing in nature, with low productivity or declining productivity, resulting from the opportunity cost of labour close to zero or the high unit price due to the extractive monopoly". From the perspective of the challenges related to extractivism, Costa (2014) states that it is necessary to base the defence of extractive practices on evidence, overcoming ideological perspectives and positions.

A Sudam document (1972, p. 16) states that, for centuries, the main axis of the Amazonian economy took place from the perspective of a "dominant mentality focused almost exclusively on plant extractivism, traditionally depending on the collection of rubber, chestnuts, wood, wild animal skins, the region remained on the margins of Brazilian economic evolution".

The fact is that the participation of river dwellers and traditional communities as subjects in the process of marketing their own production has always come up against economic, logistical, cultural and organisational limitations. In this scenario, the main protagonists of trade relations on the region's banks and communities have been the "marreteiros" (middlemen), who, in most cases, monopolise socio-biodiversity products in trade relations. The relationship between the trader and the customer (river dweller/extractivist) has always had a role to play.

[...] central to life in the interior of the Amazon, as it not only enables the existence of mercantile production but also constitutes a power relationship subject to a morality that provides moral prescriptions for helping customers in cases of danger [...] in exchange for a monopolistic commercial relationship" (Aramburu, 1994, p. 83).

The presence of middlemen occurs mainly in remote regions, places with logistical difficulties and low social organisation. In this sense, the importance of marketing production from biodiversity, due to the



absence of collective conditions, lack of public policies and bureaucracy, is very great for rural areas in the Amazon. The lack of knowledge, information and means makes the commercial transactions that take place in the middle of the forests or on the banks of rivers informal and capable of establishing new bonds of dependency in the commercialisation of certain extractive products. In many cases, the middleman has power over the relationship with the communities and riverside dwellers far beyond the commercial relationship.

In this sense, we can say that extractivism, based on family work and subordinate to natural cycles, is most often practised by the riverside communities, not for profit but for socio-cultural reproduction. Extractivism in Amazonian communities is essential for food, which then incorporates material and immaterial values based on food culture practices, expressed in the relationship with nature of a specific social group.

The study of the marketing process of tucumã extractivism seeks to understand how family farmers are located within the structure of the construct that guides the path "from production to the final consumer, which is represented by the marketing channels" (Brandão *et al.*, 2020, p. 439). In this way, we can better understand the profile of farmers, where they send their produce and the types of markets and channels they access, considering that marketing channels are "a sequence of stages through which the agricultural product passes until it reaches the final consumer, configuring the organisation of intermediaries, each performing one or more marketing functions, and the institutional arrangement that enables market relations in agro-industrial production chains" (Miele; Waquil; Schultz, 2011, p. 57).

Miele, Waquil and Schultz (2011, p. 59) point out that the choice of channels depends on a number of factors, "including the nature and characteristics of the product (for example, the perishability of products), the existence or not of intermediaries and the economic result of the process". In this sense, the process of gathering information in the field makes it possible, as Schneider (2022, p. 6-7) states, to classify channels as: "1 single channel is exclusive; 2 or 3 channels is diversified; 4 or more channels is super-diversified. This resulted in a second typology, which is a finding of the project, which is the typology of production units according to the number of channels accessed". In this way, we can understand which direction the production unit is taking, "namely: deactivation processes, diversification processes and specialisation processes".

Analyses to identify marketing spaces have made it possible to create typologies that help classify the various forms of marketing accessed by family farmers (Ploeg, 2006; Schneider, 2016; Wilkinson, 2008). According to Schneider (2016, p. 110), the typology indicates that the "forms of production differ in terms of the objectives they pursue, which means that insertion into the markets plays a decisive role in their differentiation" that the "social condition and operating strategies of family production units" gain a new "profile and characteristics" as they move beyond production for "self-sufficiency" to "monetary income and, finally, the accumulation of capital".

The typologies formulated by Schneider (2016, p. 115) are well-founded and manage to recognise the diversity of markets that receive the production of family farmers.

The proposed typology is intentional and relational, which means that it is a deductive construction in which the objects to be classified are not empirical data but are generated from pre-selected or chosen indicators based on certain categories and theoretical references. Therefore, the types we are going to refer to do not exist in pure form in reality.

According to Schneider (2016, p. 126), the proposed typologies aim to overcome limitations and generic types of markets, which end up obscuring a closer understanding of the relationship between family farmers and the market. From this perspective, the author defines four types of markets: proximity markets, territorial markets, conventional markets, and public/institutional markets. The markets "are

distinguished by the type of farmer who accesses them, the locus and/or spatial scope, the nature or characteristics of the markets, the existing forms of regulation or control and the marketing channels used". Below is a brief characterisation of the types of family farming market systematised by Schneider (2016, p. 122-125).

- I. **Proximity markets** - these are markets in which interpersonal exchange relationships predominate, which can be mobilised via kinship relationships, inter-knowledge and reciprocity, and which value aspects and the quality of the goods exchanged rather than profit per se. These markets tend to operate on the basis of direct exchanges, valuing self-management and subsidiarity.
- II. **Local and territorial markets** - these are markets in which exchanges are monetised, and a situation of exchange is set up that is increasingly guided by supply and demand, as well as quantitative criteria and indicators. Although values and elements of the previous form persist, these are markets in which agents start to produce in order to sell or exchange in order to earn, configuring a simple mercantile economy.
- III. **Conventional markets** - this third type is characterised by markets for products, goods and merchandise that are driven by supply and demand, commanded by powerful private agents who conduct business and trade at the most diverse levels and in the most diverse ways, with the aim of selling to buy and vice versa.
- IV. **Public and institutional markets** - the fourth type of market in which family farmers have been increasingly inserted in Brazil, but also elsewhere, are the spaces of exchange in which the main agent becomes the state or some public body (an example is the UN World Food Programme) or some non-governmental public organisation, such as those that practice fair trade.

In the approach of Brandão *et al.* (2020), markets are formed from marketing channels, i.e. the sequence of paths through which products circulate until they reach the end consumer. On this path, each stage plays a role in marketing. The formation of channels is the result of different combinations, contexts, and factors that affect family farmers. Schultz, Souza and Jandrey (2017) state that channels and markets are defined according to territory, context and management methods. These aspects can place the family production unit in a better condition or in a situation of restricted access to one or more marketing channels. The integration of channels enables farmers to obtain higher and better monetary returns, flexibility and risk reduction, among other benefits.

Tucumã is a product of socio-biodiversity. It occupies a specific market space (Amazonas) and is, therefore, considered a niche market. It is widely consumed by rural and urban families. It has great potential for promoting territorial development, generating employment, maintaining ecosystem services, guaranteeing production for consumption, marketing for food, and making handicrafts with low environmental impact.

The tucumã is part of the strategy of Amazonian family farmers, who, in their "peculiar way", combine agricultural activities with "the simultaneous management of various natural resources and terrestrial (solid ground) and aquatic (floodplain) ecosystems" in activities that involve agriculture and livestock farming with the exploitation of forest resources, notably the exploitation of so-called non-timber forest products (NTFP), fishing and hunting" (Pereira *et al.*, 2015, p. 62).

According to Costa (2019, p. 32), the Amazonian peasantry has its origins in the 18th century, in pre-existing structures, such as religious settlements, a space for the acculturation of indigenous peoples

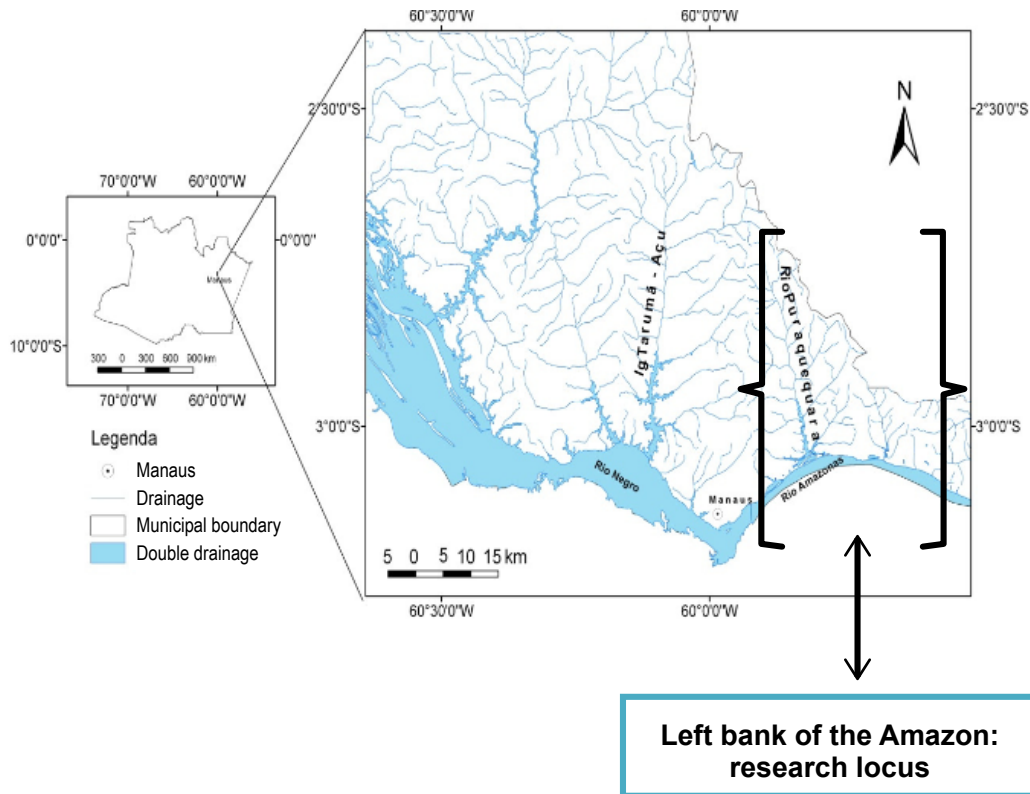
and the formation of nucleated families and the introduction of Western European habits, namely: wearing clothes, hunting with a rifle, using gunpowder and salt in food. In this context, the indigenous peoples began "to use their knowledge of nature to satisfy their new needs and a mercantilist colonial project was created, linked to a peasant structure. From here came cocoa, oils, sarsaparilla, peppers, cloves and other substitutes for the spices of the Orient. In exchange, the peasants, who were actually acculturated Indians, received gunpowder, clothes and salt." With the end of the settlements, the Indians nucleated into Western families and habits "did not go back to living as Indians", becoming peasant families with access to natural resources and "reproductive problems based on rural production - extractive, agricultural and non-agricultural - developed in such a way that the universe of those who decide on the allocation of labour and those who survive on the result of this allocation is not differentiated" (Costa, 2012, p. 117). The Amazonian peasant would therefore be the result of a "society that is still essentially indigenous, although strongly marked by uprooting and intertribal and interethnic acculturation..." (Porro, 1995, p. 73).

Witkosk (2010, p. 467) believes that the uniqueness of the Amazonian peasantry lies in "working simultaneously with the elements of land, forest and water". This productive dynamic gives peasants access to extractive products, which means taking advantage of the richness of the Amazon's ecosystems and biodiversity. This production is destined for the market, be it local, regional, national or even international. However, in the face of natural, socio-economic and logistical limitations and obstacles, the work of the peasants, with a few differences, has remained the same as it was at the time of its advent, i.e. negotiated with the "regatão, a new type of merchant, who sold and exchanged his products practically anywhere on the rivers, channelling local production to the market" locally, regionally and worldwide (Costa, 2019, p. 32).

For Porro (2013, p. 3), there is an urgent need to formulate strategies to overcome the "structural barriers and difficulties faced by traditional communities and family farmers in the Brazilian Legal Amazon" since there are numerous "cases of sustainable management of resources associated with agroforestry and extractive production, which need to be better understood, strengthened and integrated", which can lead to the "viability of livelihoods in which nature, society and development are not in permanent opposition, but rather in balance".

## 2 METHODOLOGY

The research was carried out in three communities: São Francisco do Mainã, Jatuarana and Novo Progresso, in the rural area of the municipality of Manaus, located on the left bank of the Amazon River, and with other family farmers from communities located on the same bank, who were interviewed during their stay in the port of Puraquequara.



**Figure 5** – Location of the research area, on the left bank of the Amazon River, Manaus - AM

Source: Costa, Silva and Silva (2013, p. 94)..

Thirty family farmers living on the left bank of the Amazon River were interviewed. In this non-probabilistic convenience sample, the units were included in advance, specified or known and by availability (Oliveira, 2001). According to Oliveira (2001, p. 5), convenience sampling is used when you want to obtain information quickly and at low cost. We interviewed all the farmers who extract tucumã in the communities named, regardless of the quantity collected. The study starts from the perspective that there are a myriad of markets that absorb tucumã production, especially in the rural areas of the municipality of Manaus. The data was collected between November 2022 and February 2023 using a semi-structured questionnaire, with open and closed questions, which contained information on: 1) Characterization of the family farmer; 2) Products and Branches of Production; 3) Marketing Channels; and 4) Characteristics related to the markets. The data collected was processed in Microsoft Excel spreadsheets. The data was analysed using descriptive statistics.

### 3 RESULTS AND DISCUSSION

The family farmers who collect and sell tucumã in the Puraquequara region sell their produce from January to March, which is the harvest period. Occasionally, farmers find some tucumã fruit in April. The sale of tucumã is part of the strategy for managing terra firma and várzea ecosystems to guarantee family reproduction (Pereira et al., 2015).

A brief look at the profile of the farmers shows that marketing is primarily carried out by men (87%), aged between 41 and over 60 (67%), with incomplete secondary education (53%), with a diversified income and who receive social benefits (70%), salaries and agricultural and extractive activities, including the collection of tucumã.

**Chart 1 – Profile of the people interviewed who extract tucumã**

Variable	Stratification category	Number	(%)
Gender	Man	26	87
	Woman	4	3
Age (age group)	20-30 years old	3	10
	31-40 years old	7	23
	41-50 years old	6	20
	51-60 years old	10	34
	Over 60 years old	4	13
Education	Can read and write	3	10
	Elementary school incomplete	16	53
	Complete primary education	5	17
	Secondary school incomplete	3	10
	Completed high school	2	7
	Higher Education Incomplete	1	3
	Higher education completed	-	-
	Retirement	4	13
Source of income	Income from social benefits (Social assistance to families with children in school - Bolsa Família, aid, Continuous Cash Benefit - BPC, Unemployment Benefits for Artisanal fishermen – Seguro-Defeso)	21	70
	Salaries	13	43
	Daily rates	8	27
	Second job in addition	6	20
	Freight	3	10
	Plant and animal extraction fishing	14	47
	Agriculture	5	16

Source: Field research organised by the authors, 2022.

The survey of family farmers revealed the predominance of three types of markets: proximity, territorial and conventional. The proximity market is organised around three marketing channels: the community, the local market and relatives and friends. The community is a place where tucumã is sold. Not all the families in the community collect tucumã. The reasons given for not collecting tucumã were the difficulties and risks, especially with venomous animals, and the existence of other non-agricultural sources of income, which allow these farmers to buy tucumã, guaranteeing the fruit for consumption in coffee and snacks throughout the day.

The other customers are people who visit the community, relatives, friends or simply tourists, mainly because it is a rural area close to the urban centre, which allows the flow of consumers to the community

and direct sales. This channel accounts for 10% of the products sold by the interviewees. The local market is the second channel of the proximity market, accounting for 3% of the total and is used by some farmers who have acquaintances and relatives who sell at fairs and marketing spaces in nearby urban centres. However, it is still a strategy that has very little been explored by farmers.

The third marketing channel within the proximity market is the network of relatives and friends who live in the city of Manaus and order tucumã from the farmers for daily consumption. This channel accounts for 33% of the marketing of the farmers' produce and is linked to the network established with friends and relatives who, through their ties, buy the farmers' produce, making it the second largest channel in terms of importance, second only to the middlemen.

As Brandão *et al.* (2020) and Schneider (2016) point out, proximity channels are linked to the local context, involving exchanges, social relations of reciprocity and inter-knowledge, regulated by trust and friendship. The small number of marketing channels is related to ease of access and trust. These channels make it possible to obtain income from the sale of tucumã and are spaces for the consolidation of immaterial exchange relationships established by farmers.

Considering the typology of channels formulated by Schneider (2022) and the survey carried out with tucumã-gathering farmers, we can say that: the proximity market accesses 46% of production and is a diversified channel, in which production has three intermediaries before reaching the consumer; the territorial market acquires only 5% of production and is also diversified, since it has two marketing channels; the conventional market has only one channel, which makes it unique and exclusive

**Chart 2** – Types of market, marketing channels and the frequency with which they were mentioned, in percentages, by the interviewees.

Type of market	Marketing channels	(%)
Proximity	Direct sales	10
	Local Market	3
	Relatives and friends	33
Territorial	Regional/traditional coffeehouses	2
	Neighbourhood grocery stores	3
Conventional	Middlemen	96

Source: Data collected and systematised by the authors.

The territorial market for farmers who sell tucumã is made up of two channels: regional/traditional coffeehouses and neighbourhood markets and grocery stores. This market represents only 5% of the destination of the tucumãs collected in the producing localities. The regional coffeehouses, spaces that are open daily, mainly for breakfast, and are most popular on Sunday mornings, for the consumption of Amazonian cuisine, and traditional Brazilian cuisine, such as X-Caboquinho and tapioca cabocona, delicacies prepared with two local ingredients: coalho cheese and tucumã.

It is estimated that some coffeehouses receive up to 500 people on weekends alone (Dantas, 2013). Neighbourhood markets and grocery stores in the city of Manaus, which are not linked to any large retail chain, receive 3% of their production from direct contact with extractive family farmers. These markets sell tucumã in their neighbourhoods, where it is purchased by the unit by consumers.

The large production of tucumã goes to the conventional market, with a predominance of middlemen who buy more than half of the production from the communities on the left bank of the Amazon River. For Carvalho and Gomes (2007, p. 4), the power of the middlemen is related to the fact that family farmers who have this natural resource, tucumã, have to sell it immediately, and thus end

up subordinated to "natural cycles and have as their rationale, in general, not profit, but social and cultural reproduction".

The middleman who buys the tucumã fruit acts as a link between the fairs, markets, coffeehouses, snack bars and other retail markets. Based on Tito's (2007) categorisation, we can say that the middleman is only a "passer", they don't sort or separate the fruit. They only transport the fruit to other markets. When selling to the middleman at the port of Puraquequara, as is the case in many regions of the Amazon, there is no strategy of advance payment, barter or any other form of leasing, such as the collection of Brazil nuts or latex. Their role is clear: they receive the products brought in by the farmers in canoes, boats or dinghies without any form of packaging, remove the product and, take it to the vehicle and distribute it to the marketing areas in an archaic way, without any procedure or care in the storage of the fruit.

The predominance of the middleman is related to a fragmented marketing network and a person who pays for the product at the time of purchase and who is always in large numbers at harvest time. The middlemen who buy the produce of the farmers in the region surveyed don't offer credit or goods to the extractivists, they just buy their merchandise, of course at a much lower price on the market, and establish themselves as "a physical locus, they are placeless markets" but with great influence on the dynamics of tucumã commercialisation in the region (Schneider, 2016, p. 124).

The middleman maintains an archaic structure of commercialisation, still dating from the colonial period and present in the most diverse economic cycles (spices, cocoa, rubber and others) in the Amazon, and reminiscent of the observations of Euclides da Cunha, in "Um Paraíso Perdido" (2000), who describes that the isolated and abandoned workers were in a terrible anomaly of working to enslave themselves (Cunha, 2000, p. 127).

In an analogy with the current period, harvesting tucumã, with the middleman being the predominant channel and having the power to define all its conditions, means working to remain in poverty or, as Darcy Ribeiro reminds us, striving to remain in the "terrible living conditions to which you are subjected" (Ribeiro, 2015, p. 240).

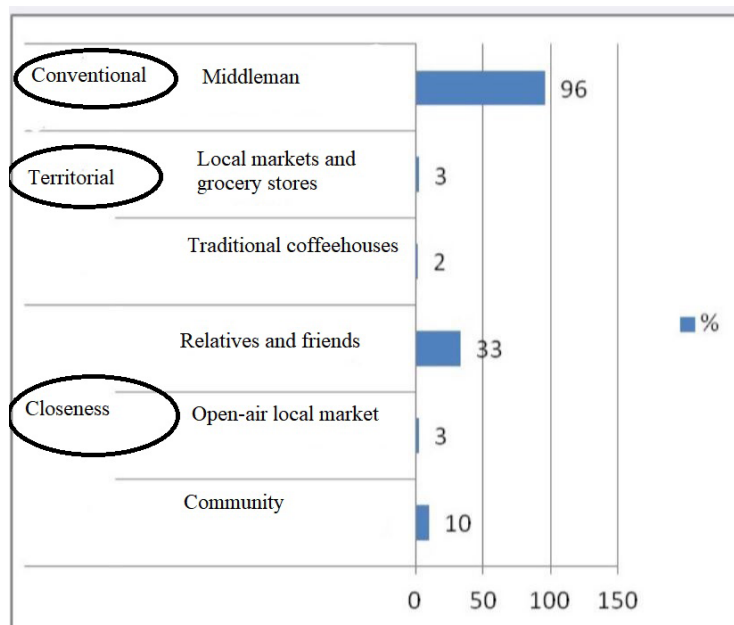


Figure 6 – Percentage (%) of markets attended

Source: The authors, field research.

Among the interviewees, there is a predominance of exclusive sales to just one channel. There are 21 farmers who sell their produce to just one buyer. There are six diversified farmers who have access to two to three marketing channels and only three super diversified farmers who sell to more than four channels (Table 1). This information confirms that tucumã reaches the markets of the city of Manaus within an informal structure, involving the actors of conventional markets, mainly the middleman, which may indicate weaknesses in other forms of markets, as well as the extractivist's own search for new alternatives and better prices for his production.

**Table 1** – Classification of the number of channels.

Type of UP	No. of Channels	Observation No.
Exclusive	Only 01	21
Diversified	From 02 to 03	06
Super-diverse	04 or more	03
TOTAL		30

Source: Organised by the authors, 2022.

In order to find out a little more about the characteristics of the market that absorbs tucumã production from the left bank of the Amazon River, we asked the interviewees how they first accessed the sales channel. The answer to this question was that in 83% of cases, the family farmer sought out the channel. In this case, they go to the port and make their produce available to the middlemen. In this situation, the middleman just waits for the produce to come from the communities. The 7% of interviewees who were approached came to the canal through people they knew. Other cases are related to territorial and proximity markets, but they only account for 17% of the destination of tucumã production collected on the left bank of the Amazon.

**Chart 3** – Forms of access to marketing channels..

How did you first access the sales channel?	%
Have I been approached by the buyer?	7
I looked for the channel/buyer on my own initiative	83
Through acquaintances	7
Others	3

Source: Field data, organised by the authors.

The reasons why farmers "participate in this channel" are related to the fact that it is "the only sales option", with 87% of the responses, followed by 7% for price, 3% for personal relationships/trust and 3% for the advantage in terms of logistics (Chart 3). The predominance of the answer "only channel" sounds strange, given that there are various possibilities and demands from other channels, but this aspect is related to the lack of knowledge and weak collective action to organise production and marketing, including accessing new channels and influencing the inclusion of tucumã among the items in institutional purchases. Organisations can open up spaces for farmers in the market to put pressure on research institutions to provide innovations and technologies that facilitate handling, production, post-harvest and minimal processing.



**Chart 4 – Reason for choosing the marketing channel.**

<i>What is the main reason you join this channel?</i>	<i>%</i>
Price	7
Personal relationship/trust	3
I have a sales contract	0
I have advantages related to logistics	3
Because it's the only selling option	87
Because the volume/quantity of sales is higher	0

*Source: Field data, organised by the authors.*

In the marketing channels that buy tucumã, the price is determined in 80% of cases by the buyer. The seller determines it in 3% of cases, 11% use the price of other farmers, 3% seek information from third parties, and 3% get their price from negotiation (Chart 4). In these tucumã market scenarios, what determines the price is the availability of the product on the market and the lack of an organisation of farmers that could create an environment for negotiation that is more favourable to farmers. Another important factor is the lack of knowledge of techniques for measuring production costs. In most cases, farmers are fragile when it comes to pricing their produce when it comes time to sell it.

The lack of objective or subjective conditions for setting the price of the product frustrates farmers, as can be seen in Chart 5. This is evident in the question related to "opinion/perception of prices", in which 70% answered that they were "Dissatisfied - could be better". Only 7% are "Satisfied", 10% "Satisfied - more or less!!!" and 13% "Don't know/didn't give an opinion". The farmer's dissatisfaction increases when he learns that the tucumã he delivers at a low price to the middleman, in coffeehouses, bakeries and bars and even in the markets of Manaus, is sold at a very high price to consumers. At the port of Puraquequara, the value of the bag, which, depending on the size of the fruit, contains between 600 and 1000 units, reaches a maximum price of R\$ 200.00 and a minimum of R\$ 80.00 during the harvest season. This same product is resold to consumers for up to four times the amount received by the extractivists.

Farmers' dissatisfaction stems from their integration into imperfect markets, in which an economic environment prevails, which leads to dependence on the individual. Under these conditions, farmers are "incompatible with an economic environment where clearly mercantile relations prevail. As soon as price mechanisms acquire the function of arbitrating production decisions, of functioning as an allocative principle of social work, reciprocity and the personalisation of social ties will lose their place entirely" (Abramovay, 1998, p. 117).

In addition to the bargaining power of buyers in determining the price of production, delays in payment still occur in 10% of cases, according to the interviewees. The delay occurs when selling to the local market, where the buyer purchases the produce and wants to pay when it is "cleared", i.e. after it has been sold to consumers.

**Chart 5 – Buyers' delays in paying for tucumã, in percentages.**

<i>Are there any delays in receiving payments in this marketing channel?</i>	<i>%</i>
Yes	10
No	73
No answer	17
Because the volume/quantity of sales is higher	0

*Source: Field research organised by the authors, 2022.*

Among the marketing channels, with the predominance of intermediaries, payment is made in cash, without the use of means such as cards, checks or others. Pix is already being used. How is "trust in matters relating to the marketing of production?" The majority of respondents said that they trust the word of the buyer (73%) and the "consumers I sell to" (17%). There are 5% of respondents who don't trust anyone, 5% didn't answer.

## 4 FINAL CONSIDERATIONS

The tucumã is one of the species of palm and fruit characteristic of the Amazon that is part of food security and income generation, to varying degrees, for a significant number of family production units and riverside communities, especially in the state of Amazonas. Consumption of the fruit is part of the Amazonian food culture. There is evidence to show that consumption tends to expand to other regions with migration. Tucumã is one of the agro-extractive products that contribute to the social reproduction of family farmers. It is a product that mostly comes from extractivism and is linked to the management of the Amazon ecosystem. Very little tucumã comes from plantations. It is used to feed families and is becoming an increasingly important income-generating product. Its market share is growing, and its uses and consumption are diversifying. Despite the high demand, processing is still very artisanal and rudimentary. No structure for processing or storing the fruit of the tucumã tree was found in the family units. In the farmers' reproductive strategy, due to the precarious conditions of logistics, documentation, access to institutional markets and the intense action of middlemen, tucumã plays a marginal role in the composition of the farmers' income. The middleman is the predominant marketing channel, with extraordinary powers to set the price and marketing conditions.

As long as farmers remain isolated, working individually and disorganised, they won't have the strength to influence and seek out new markets and institutional markets, especially the Food Acquisition Program (PAA) and, the National School Feeding Program (Pnae) and others. In the farmers' current situation, you can't demonise the middlemen, because it is they who make a large part of the marketing of farmers' products possible and make it possible to have "quick" money for survival. What's more, the middleman pays cash, which is an advantage in Amazonas. The middlemen, given the current social organisation and occupation of market spaces, are the ones who control the transport and marketing of production. This form of domination creates dependency and subordinates the extractivists and farmers to the middlemen.

Farmers feel the need to sell to generate an income, even if it's under almost any conditions. In this respect, the interviewees expressed their dissatisfaction with the price. This is also the reality for other products in Amazonas. The research's confirmation that middlemen are the main marketing channel for tucumã production in the Puraquequara region shows that farmers lack the skills and knowledge to guarantee autonomy in their production and commercial processes (SEN, 2000), which disables the essential condition for guaranteeing autonomy and building a good life on the left bank of the Amazon River. The research made it possible to better understand the marketing of the product and the channels and paths that tucumã takes from extraction to final consumption in a region of Amazonas. The analysis of the tucumã market in the communities surveyed points to some aspects common to the marketing of other products and problems specific to tucumã.

As well as important aspects in terms of knowledge of tucumã marketing channels, the research also highlighted the need for collective action in marketing. The social organisation of communities is a fundamental factor in the marketing of family farming products, and this also applies to other products. The low level of organisation of farmers and extractivists makes it difficult to open up new market spaces and reduces pressure on public bodies to purchase products. This is yet another consequence that contributes to the permanence of this situation.

## NOTES

1] The IBGE's concept of extractivism (2002, p.49) is the "exploitation of native plant resources through the collection or gathering of products, which allows sustained production over time, or in a primitive and itinerant way, generally allowing only a single production". Homma (1993, p.1) understands that extractivism "has always been understood as the first form of economic exploitation, limited to the collection of products existing in nature, with low productivity or declining productivity, resulting from the opportunity cost of labor close to zero or the high unit price due to the extractive monopoly". The National System of Nature Conservation Units (Snuc), in July 2000, understands extractivism under the terms of this law as "a system of exploitation based on the collection and extraction, in a sustainable manner, of renewable natural resources [...]" (Snuc, 2000, p. 8). Emperaire and Lescure (2000, p. 15) understand the term "extractivism to refer to systems of exploitation of forest products intended for regional, national or international trade." Therefore, when dealing with extractivism we are based on a reflection that understands extractivism as a productive activity highly related to the natural regime, demanded by the market and which has the potential to contribute to the sustainability and maintenance of ecosystems.

2] In 2019, the Amazonian sandwich X-Caboquinho became a cultural and intangible heritage of the city of Manaus, through the approval by the city council of Bill No. 202/2019, authored by councilman Isaac Tayah, which was sanctioned by Mayor Arthur Virgílio Neto.

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