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## Distribution and Exploitation of Mangaba (*Hancornia speciosa* Gomes) in Sergipe, Northeast, Brazil<sup>1</sup>

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### ABSTRACT

Given that mangaba tree is currently one of the most important raw materials for the juice and ice cream industry in the Northeast and Midwest regions of Brazil. The State of Sergipe is the largest producer in Brazil, and the value added to mangaba has increased in the last few years (pulp, ice creams, among others). Among other factors, there is an intensification of conflicts as well as the extractivism in several areas of the State of Sergipe, therefore, the need to generate knowledge on the cropping and permanence of *Hancornia speciosa* in Sergipe is of utmost importance. Accordingly, this study was intended to accomplish an analysis of the distribution and exploitation of Mangaba (*Hancornia speciosa* Gomes) in Sergipe. The methodological procedures applied in this study followed the approach method, in this case, the GTL model – Geosystem/Territory/Landscape. Among the main results obtained with this research, the fact that the largest mangaba production in the state of Sergipe can be found on the South coast stands out. Thus, this paper discusses the establishment of the Association of Mangaba Pickers in the town of Barra dos Coqueiros, besides the main threats and demands per village in each town of this region. The main threat to be highlighted is the frailty and/or lack of social organization among the pickers, and the main demand is the access to land. The conclusion is that the phytogeographic distribution of mangaba corroborates the confrontation of data among the edaphoclimatic conditions required by this species and the conditions found in the study area, which focused on the south coast of Sergipe.

Keywords: Threats, Cultivation, Phytogeography, GTL.

## Distribuição e Aproveitamento da Mangaba (*Hancornia Speciosa* Gomes) em Sergipe, Nordeste, Brasil<sup>1</sup>

### RESUMO

Por ser a mangabeira hoje, uma das mais importantes produtoras de matéria-prima para a indústria de sucos e sorvetes do Nordeste e Centro-Oeste, por ser o Estado de Sergipe o maior produtor no Brasil, pelo aumento do valor agregado à mangaba nos últimos anos (polpas, sorvetes, entre outros), e pela intensificação dos conflitos e da prática do seu extrativismo em diversas áreas do Estado de Sergipe, entre outros, faz-se necessária a geração de conhecimentos que fundamentem o cultivo e a permanência da *Hancornia speciosa* em Sergipe. Para tanto, o objetivo desse estudo foi realizar uma análise da distribuição e aproveitamento da Mangaba (*Hancornia speciosa* Gomes) em Sergipe. Os procedimentos metodológicos aplicados nesse estudo acompanharam o método de abordagem, nesse caso, o modelo GTP – Geossistema/Território/Paisagem. Dentre os principais resultados obtidos com essa pesquisa, destaca-se que a maior produção da mangaba, no estado de Sergipe, encontra-se no litoral Sul. Discute-se a criação da Associação das Catadoras de Mangaba no município de Barra dos Coqueiros, assim como, as principais ameaças e demandas por povoado em cada município. Destaca-se como principal ameaça a fragilidade e/ou ausência de organização social entre as catadoras e como principal demanda, o acesso a terra. Conclui-se que a distribuição fitogeográfica da mangaba

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corroborar o confronto de dados entre as condições edafoclimáticas exigidas por esta espécie e as condições encontradas na área de estudo, sendo o foco no litoral sul de Sergipe. Palavras chave: Ameaças, Cultivo, Fitogeografia, GTP.

## Introduction

The vegetation on the Holocene sands of the coastal plains of Brazil is commonly called "restinga" or sandbanks. The restingas do not constitute a homogeneous phytophysiological unit since the variations of substrate and salinity shape the vegetal communities in the coast; therefore, there is a great floristic and structural variation.

The physiognomy of the restinga environment is directly related to the constitution of the soil where it is found. Therefore, several authors affirm that it depends more on the soil than on the climate, and they are considered edaphic communities occurring in areas of great ecological diversity.

In the State of Sergipe, there is a great lack of studies on the restingas and, to date, few specific biogeographic studies have been developed and published on this coastal vegetation of the state. As examples of recent publications on phytogeographic analyses in resting areas in Sergipe, we can cite those of Santos and Melo and Souza (2010); Santos, *et al.* (2011); Melo, Souza and Costa (2011), Mota *et al.* (2011), and Nascimento-Jr, Amaral and Bittrich (2012).

Phytogeography, according to Humboldt's studies, is the study of the spatial distribution of a particular plant species or of a phytophysiology, that is, of a particular biotic community, associated with socio-spatial processes. Phytogeography covers knowledge related to Taxonomy, Climatology, Ecology, Morphology, and Physiology. This study focuses on the mangaba Phytogeography (*Hancornia speciosa* Gomes) in Sergipe.

The mangaba is recognized as the symbol of the State of Sergipe, according to Decree-Law no. 12,723 of January 20, 1992.

We have chosen the mangaba for this study because the State of Sergipe has the largest production in Brazil and there is a lack of geographic studies on this fruit for the state. Moreover, there is no other product that competes or approaches its production, besides there are a large number of extractive families depending on this fruit, exclusively or partially, being estimated in 2150 families, among several other aspects.

This study is also justified by the values listed by Henrique *et al.*, (2011), among which: ornamental and landscape value, industrial value, food value, and medicinal value. Based on data

from mangaba production by IBGE (2015), by the studies of Lima (2010), which reports that the State of Sergipe concentrates most of the Brazilian mangaba production, with 90% of the fruits marketed in this state coming from native areas, where traditional populations have practiced extractivism for centuries.

Therefore, the objective of the study was to analyze the distribution and exploitation of mangaba in Sergipe.

This study sought to employ methodological guidelines that insert the anthropic as a modifying agent of biophysical processes. We sought to provide data for the scientific discussions about the relation of environmental factors and anthropic variables, thus contributing to the theoretical and practical development of Physical Geography.

## Material and Methods

In order to reach the objective proposed and conclude the study, the methodological procedures applied followed the approach method, in this case, the GTL - Geosystem/Territory/Landscape model. Four stages were adopted: documentary, fieldwork, laboratory, and synthesis.

The documentary stage was constructed from the collection of analogical and digital preliminary data (bibliographical, cartographic, and imagnetic) in diverse sources made available in organs of the direct and indirect public administration. The objective of this stage was to construct the theoretical-methodological review of the present study, in addition to characterizing its scope, although summarily.

The fieldwork phase comprised 28 visits to the study area, conducted between 2010 and 2013 for information gathering and area mapping, and another 8 visits in 2016 to update the study, mainly the mangaba spatial distribution. The mapping of EMBRAPA, by Pereira *et al.*, was used; (2010) with orthophores with a spatial resolution of 60cm and the aero-photogrammetric survey developed by the Planning Secretariat of Sergipe (2007). At this stage, the following techniques were used: empirical observation; photographic register; landscape sketches; a collection of plant species; climate data collection, references of guidelines and localization, and registration in field notebooks.

The laboratory stage was characterized by the generation of maps, such as the map of the mangaba distribution in Sergipe. Some procedures of digital cartography were used, such as the use of the digital cartographic base of the state; digital processing with image reading and recording, operation and contrast and color generation, and color composition to improve the visual presentation, among others.

Results were analyzed and tabulated in the synthesis stage, in addition to the writing of the study.

### Results and discussion

The word mangaba is of indigenous origin and means "good to eat". It is one of the richest fruits in iron, and is also a good source of vitamin C. The fruit is pear-shaped and very viscous when unripe. It contains milky juice, which almost intoxicates and can kill. When ripe, the fruit has yellowish bark with red spots, it is aromatic, delicate, and has great flavor, even though it is still a little viscous. The pulp is white, fibrous, and covers the circular seeds, having a high yield, in the order of 93.7% (CONAB, 2012).

According to data from EMBRAPA (2008), in the 1980s and 1990s, several states appeared as producers of mangaba on the IBGE list, such as Pernambuco, Piauí, Pará, Mato Grosso, Ceará, Goiás, Mato Grosso do Sul, Maranhão, and Rio de Janeiro, but there were no records of them in the following years. This phenomenon is attributed to the little use of the fruit in most of these states, and to the disappearance of natural areas of occurrence where extractivism was practiced, as happened in Pernambuco and Ceará. The latter fact can also be attributed to the drop in fruit production from extractivism in the first years of the following decade.

Figure 1 - Register of *Hancornia speciosa* Gomes. Source: Jailton de Jesus Costa, 2016.

The mangaba tree, (*Hancornia speciosa* Gomes), a fruit tree of the Apocynaceae family, is a medium-sized tree, which reaches from 5 to 10 meters in height, has 4 to 5m diameter canopy, lanceolate green leaves, and soft-smelling white flowers (Figure 1).

It is native to Brazil and found vegetating spontaneously in several regions of the country, from the *Tabuleiros Costeiros* and *Baixadas Litorâneas* of the Northeastern Brazil, where it is more abundant, until the Cerrado areas of the Center-West Region. It can also be found in the North and Southeast regions (Vieira Neto *et al.*, 2002).

According to the authors, the mangabeira is a plant of the tropical climate, vegetating well in areas that have high insolation, average temperature around 25°C, and rainfall of 750mm to more than 1,500mm annually. It is tolerant to water deficit periods and, in times of higher temperatures and lowers relative humidity, has a better vegetative development.

The information collected above corroborates to justify the production of mangaba on the Southern Coast of Sergipe, since this portion of the coast has, during the period analyzed (1991-2011), an average temperature of 25.8°C and an average rainfall of 1092.1 mm per year. On the other hand, the North Coast has a hotter average temperature (26.6°C) and a lower rainfall below 1000 mm per year, averaging 982.1mm.



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The climatic and edaphic requirements of the mangaba culture were obtained from bibliographical surveys (LEDERMAN *et al.*, 2000; VIEIRA NETO, 2001) and are presented in Tables 1 and 2.

Considering that there was already an analysis that all production stages take place in the water deficit, no more concrete inferences can be made between precipitation and mangaba

Table 1 – Climatic requirements for mangaba crops.

Mangaba	Preferential Temperature (°c)	Temp. Marginal (°c)	Preferential rainfall (mm/ano)	Marginal temperature (mm/ano)	Altitude (m)	Preferential relative humidity %
	24 - 26	43 and 15	750 – 1600	Without Information	0 – 150	Without Information

Source: FONSECA; BOLFE; JÚNIOR, 2004.  
Organization: Jailton de Jesus Costa, 2013.

Table 2 – Soil requirements for mangaba crops.

Mangaba	Texture	Drainage	pH	Depth
	Sandy to sandy-clayey	Well-drained	5.5	Deep

Source: Fonseca; Bolfe; Júnior, 2004.  
Organization: Jailton de Jesus Costa, 2013.

To establish a relationship between the climatic variables analyzed and the production of *Hancornia speciosa* Gomes in the coastal plain of Sergipe, Figure 2 was used to represent the precipitation variability and the production data of

this fruit in the period 1990 – 2011 was plotted over its production, since it oscillates even with relation to periods of water surplus. A more detailed study with this theme is suggested.

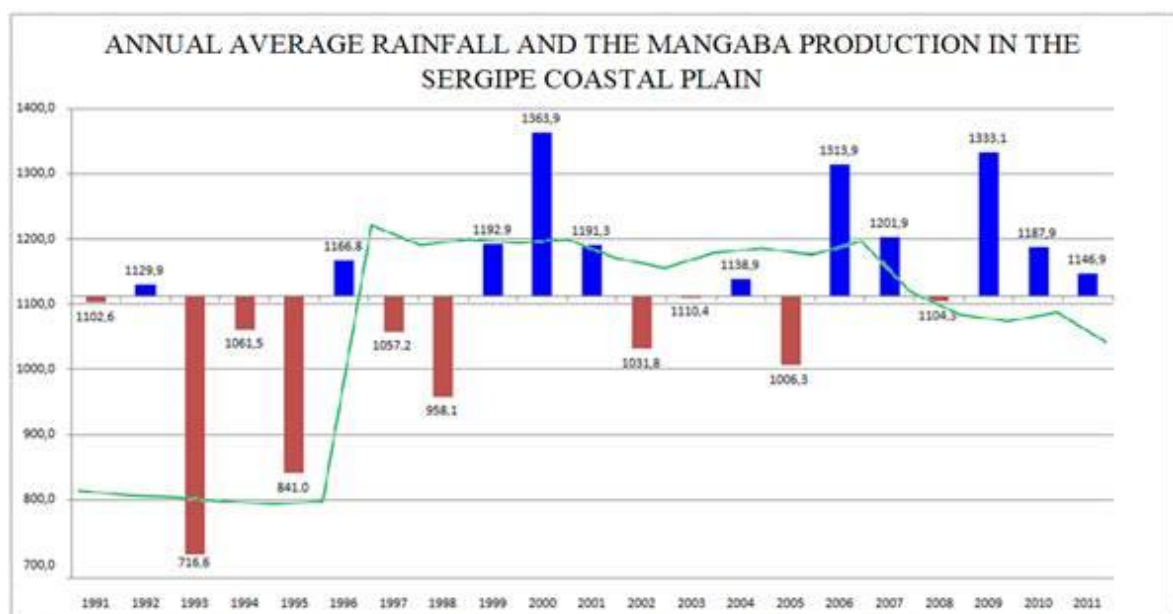


Figure 2 - Annual average rainfall and the mangaba production in the Sergipe Coastal Plain.  
Organization: Jailton de Jesus Costa, 2013.

Source: IBGE, Production of vegetal Extraction and Forestry, from 1990 – 2012 and INMET, 2012.

From the information on the soil and climatic requirements and the soil and climate conditions of the municipalities located in the central-south of the state of Sergipe, Fonseca, Bolfe, and Júnior (2004) built thematic maps with the agricultural zoning of four cultivated species, among them mangaba. Of the municipalities analyzed in this study, Indiaroba, Santa Luzia do Itanhy, Estância, Itaporanga d'Ajuda, and Aracaju are included in the study of the authors mentioned.

As crops have different water requirements for their different phenological stages, the zoning maps should be redone as research in the area of plant physiology makes the edaphoclimatic requirements of crops available for periods of less than one year. This water fractionation of the crops will allow the generation of subsidies for regional decision-making and agricultural planning.

For a better visualization of the area zoning, a soil survey was used as a basis to obtain the soil characteristics, avoid grouping different soil classes into the same mapping unit, detailing the physical characteristics of the soils in the region fully.

The detail of the soils physicochemical characteristics is fundamental for studies of this nature since these are the characteristics used for the verification of the suitability to the cultivation of the different species.

An update of this study is urgently needed since; in addition, it did not include areas of permanent environmental protection, in which mangaba production would not be feasible, among other aspects.

The flowering and fruiting of the mangabeira are irregular, varying according to the time of the year, from one year to the next, among mangabeiras of different places, and even among trees of the same site. Even with this variation, the collection of fruits usually has an appropriate time.

In the north of Minas Gerais, for example, fruits are collected from October to January. As for Sergipe, there is the summer harvest, which goes from December to April, and the winter harvest, which runs from May to July. In Bahia, the collection is done from November to April (LIMA, 2010).

In addition, according to Lima (2010), the flowers of the mangabeira, in general, appear mainly from August to November, but there are many early flowers, that is, they bloom ahead of time. For this reason, there are fruits in the trees

practically all the year, depending on the region. However, most fruit production occurs between October and April. The variation in fruit production per plant is enormous, and there are mangabeiras that can produce more than 1000 fruits in a year.

Regarding the soil characteristics suitable for its cultivation, the essential requirements for its good development are related to physical attributes, such as high depth, the absence of hindrance (cohesive horizons), good drainage - sufficient to prevent any possibility of waterlogging, and high aeration rates. Thus, soils without cohesive horizons should be chosen in the case of using *Tabuleiro* areas for planting this species. In this way, economic exploitation of the mangaba will be possible in the offshore plains, and other favorable factors of the ecosystem will contribute, such as topography, climatic characteristics, and proximity to large consumer markets (Vieira Neto et al., 2002).

The coastal plain of Sergipe is marked by nutrient-rich soils, with no presence of cohesive horizons, and can, therefore, be considered adequate for mangaba cultivation. In the Northeast, the mangaba is part of the Cerrado or *Tabuleiro* vegetation; it is found from the coastal area to the Agreste, vegetating in deep, poor, and sandy soils. The mangabeira can be propagated by seed or grafting. The most usual method is through seeds, which are disk-shaped and can be found inside the fruit in varying numbers.

The macronutrients found in greater proportion in the mangabeira are nitrogen and potassium, and they are the most exported by the fruits at the time of the harvest; iron is the most abundant among the micronutrients (Vieira Neto et al., 2002).

From these and other studies, it was possible to draw a map with the spatial distribution of the mangaba in the coastal plain of Sergipe (Figure 3).

Interest in the mangaba culture in Brazil is remarkable, especially in Sergipe, which is the largest producer state, where it finds a habitat favorable to its reproduction in the sandbanks.

Unfortunately, the constructions of tourist developments, second homes, other crops, among others, have been the main causes of the indiscriminate eradication of these native plants in Sergipe. In other words, the intense human occupation on the coast of

Sergipe in the last 20 years has reflected directly on the decline of the mangaba areas, and during the four years of fieldwork, this became evident.

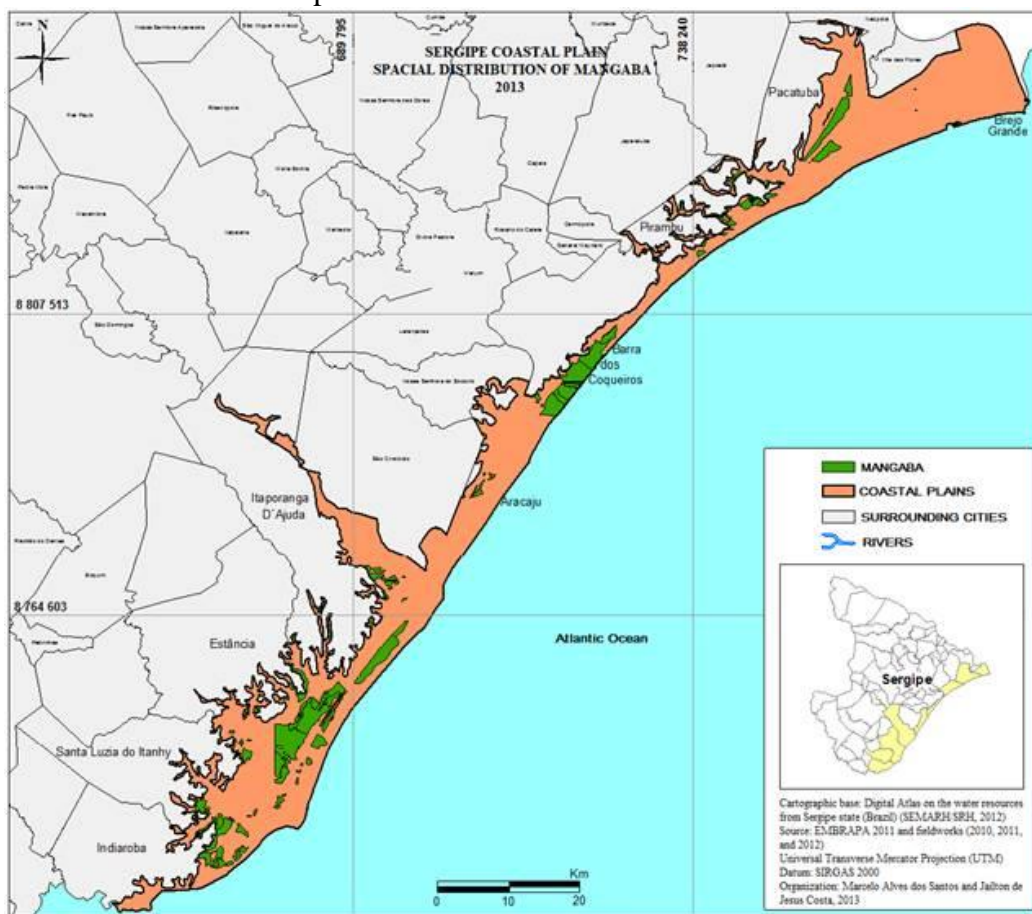


Figure 3 – Sergipe Coastal Plain: Mangaba Space Distribution, 2013

Although mangabeira is a latex-producing plant, its fruit is the main product exploited, especially by the pulp, juice, and ice cream industries. Some parts of the plant are used in folk medicine, such as the bark, with astringent properties, and the latex, which is used against injuries, inflammations, diarrhea, tuberculosis, ulcers, and herpes. The leaf tea is used for menstrual cramps, in addition to inhibiting the substances responsible for hypertension, thus being also a vasodilator.

Table 3, updated in 2016, shows that the number of resident families and extractive families is absent in some villages, because during the field work there was an attempt to update the information contained in the Atlas of Mangaba Extractivism in Sergipe and in the initial study (2010 - 2013), some

information was corroborated, others diverged, and there was new information. The villages of Paruí (Itaporanga D'Ajuda), and the villages Fazenda Nova, Junça, Piranhas, and Tejuparis were not found during field research.

The data in table 3 shows an estimate of 739 families in the coastal plain of Sergipe that is directly responsible for mangaba extraction, out of 2150 families living in traditional communities. These data show the social importance of this fruit to the State.

Despite the substantial number of inhabitants involved, it is also worth noting the territorial coverage of the *Hancornia speciosa* Gomes culture in Sergipe (27,540 hectares for extractivism).

The heterogeneity in the fruit harvesting must be emphasized, since there is

a collection in one's own land, in sharecropper system, and situations in which the pickers pay for the fruit harvested. There were locations where mangaba was being planted using seedlings or transplanted plantlets, as is the case of Caueira, in Itaporanga D'Ajuda.

Up to approximately two decades ago, mangaba was collected in free areas, and this was the prevailing system. From then on, the sharecropper system became common, through which the pickers collected, marketed, and then divided the amount collected with the property owner or the owner of the land. This practice has also become insignificant nowadays. The predominance of the purchasing system was observed in the fieldwork carried out in 2016, in which one pays to collect the fruit, mainly in the Capoa Village, in Barra dos Coqueiros, where there are the largest native mangaba areas. The pickers pay the owner of the land an average of four to five reais for a 15-liter bucket.

Some pickers characterize payment as a conflict since some have no financial resource to pay in advance. Others see it as the only way out of perpetuating the extractive practice, even though clearly more than half of the trees were cut by real estate speculation, after the construction of the bridge.

It is worth mentioning that about 90% of the fruits marketed in the state come from the native areas in which traditional populations have practiced extractivism for centuries.

With the valorization of the fruit, conflicts are more and more frequent, mainly when the pickers do not own the land. In Itaporanga D'Ajuda, the advance of eucalyptus and shrimp farming, in addition to the presence of pickers from other villages, are the main threats to the culture maintenance. In Aracaju, the urban expansion was responsible for the disappearance of the fruit. In Pirambu, the lack of social organization has threatened production. In Barra dos Coqueiros, the main threat comes from the explosion of allotments and construction of resorts and hotels. In Estância,

the growing shrimp farming activity has increasingly threatened mangaba production.

The absence of social organization of the pickers is notorious in Santa Luzia do Itanhy and Pacatuba. In Brejo Grande, the absence of production is justified by the geomorphological and pedological conditions of this sector of the coastal plain that do not favor the culture of *Hancornia speciosa* Gomes. Therefore, no mangaba production foci were identified and, in Indiaroba, the allotments and shrimp farming activities are more evident.

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The importance of the association of mangaba pickers in the municipality of Barra dos Coqueiros in the Capoa settlement should be emphasized. It was created in 2010, that is, after the emergence of the mangaba pickers' movement dating from 2007. The movement contributed to the creation of the association by the necessity of preservation of the native mangaba areas.

It currently has about 25 associated families. The association carries out activities related to the processing of mangaba and other fruits of the sandbank, such as murici (*Byrsonima crassifolia*), cambuí (*Myrciaria tenella*), cashew (*Anacardium occidentale*), banana (*Musa* spp.), guava (*Psidium guajava*), jambul (*Syzygium cumini*), and strawberry guava (*Psidium cattleianum*).

The organization aims to preserve the native areas and fight for the conquest of a common area, in which the pickers can remain with the extractive activity and perpetuate the practice of extractivism.

It is composed mostly of women - the board is exclusively composed of women, many of the leaders of the mangaba picking movement in the State of Sergipe.

The Association uses it to produce liqueurs, jellies, cakes, cookies, jams, candies, pies, gingerbread, tartlet, truffles, candies, sweets, besides the commercialization of mangaba milk.

These products are sold at trade shows, events at various tourist attractions in Aracaju, at the Federal University of Sergipe, and along the roadsides.

The data in Table 3 must be used for implementing public policies that protect extractive communities that rely exclusively on this fruit to survive.

Table 3 - Synthesis of the spatial distribution of mangaba by producing municipality in the Sergipe coastal plain.

MUNICIPALITY	Community (village/Settlement)	N. of Families	N. of Extractivist Families	THREATS	DEMANDS
<b>Itaporanga D'Ajuda</b>	Settlement Darcy Ribeiro	32	25	Eucalyptus and presence of pickers from other villages	Extension of crop area / agricultural inputs.
	Settlement Dorcelina Folador	51	51	Eucalyptus and Shrimp farming	Technical assistance; Extension of crop area / agricultural inputs.
	Village Caueira	26	10	Presence of pickers from other villages	Technical assistance; Extension of the cultivation area / agricultural inputs; Fruit processing / refining units.
	Settlement Luzia Mahin	11	1	Eucalyptus. Owners surround and prohibit the entrance of pickers, Allotment.	Technical assistance; Extension of the area of cultivation / agricultural inputs; Fruit processing / refining units; capacity to aggregate value to the product.
	São João Farm	14	14	Presence of pickers from other villages	Improvement of marketing channels.
	Village Paruí	-	-	Shrimp farming	Extension of crop area / agricultural inputs.
<b>Aracaju</b>	Santa Maria District	-	10	Urban Sprawl	Extension of crop area / agricultural inputs.
<b>Pirambu</b>	Village Aningas and Village Lagoa Redonda	240	20	Lack of Social Organization. Owners surround and prohibit the entrance of pickers, Allotment.	Extension of the cultivation area / agricultural inputs; Fruit processing / refining units; Training in product value aggregation; "Defeso of Mangaba".
	Village Alagamar, Settlement São Sebastião, Village Pau Seco and Village Santa Izabel	45	-	Lack of Social Organization. Owners surround and prohibit the entrance of pickers, Allotment.	Technical assistance; Improvement of marketing channels; Training in social organization.
	Village Baixa Grande, Village Moita Redonda, and Village Porteiras	75	55	Sugarcane; Eucalyptus; Lack of social organization; Lack of income alternatives.	Training in product value aggregation
	Village Aguilhadas	177	-		Improvement of marketing channels and training in adding value to the product
<b>Barra dos Coqueiros</b>	Village Capoã	62	50	Owners surround and prohibit the entrance of pickers, Allotment.	Access to plants/land; Training in product value aggregation.
	Village Jatobá	15	14	Owners surround and prohibit the entrance of pickers, Allotment.	Access to plants/land; Training in product value aggregation.
	Village Olhos D'Agua	34	25	Allotment.	Access to plants/land; Training in product value aggregation.

Source: Fieldwork between 2010 - 2013 and 2016

<b>Estância</b>	Village Gravatá and Village Farnaval	100	30	Shrimp Farming	Technical assistance; Extension of the cultivation area / agricultural inputs; Fruit processing units; Improvement of marketing channels; Training in product value aggregation; Training in social organization.
	Village Manoel Dias	300	100	Allotment, Shrimp Farming.	Technical assistance; Extension of the cultivation area / agricultural inputs; Fruit processing units; Improvement of marketing channels; Training in product value aggregation; Training in social organization. “Defeso da Mangaba”.
	Village Massadiço	60	45	Shrimp Farming.	Technical assistance; Extension of the cultivation area / agricultural inputs; Fruit processing units; Improvement of marketing channels; Training in product value aggregation; Training in social organization.
	Village Reboleirinha	200	100	Shrimp Farming.	Technical assistance; Extension of the cultivation area / agricultural inputs; Fruit processing units; Improvement of marketing channels; Training in product value aggregation; Training in social organization.
<b>Santa Luzia do Itanh</b>	Village Rua da Palha and Village Pedra Furada	349	26	Lack of Social Organization	Technical assistance; Extension of the cultivation area / agricultural inputs; Fruit processing units; Improvement of marketing channels; Training in product value aggregation
<b>Pacatuba</b>	Village Timbó	90	90	Lack of Social Organization	Training in product value aggregation
	Village Tabuleiro do Garcia	46	3	Lack of Social Organization	Technical assistance; Extension of the cultivation area / agricultural inputs; Fruit processing units; Improvement of marketing channels; Training in product value aggregation; Training in social organization.
	Village Maracujá, Village Alagoinhas, Village Fazenda Nova, Village Junça, Village Piranhas, and Village Tejuparis.	123	0	Lack of Social Organization	Technical assistance; Extension of the cultivation area / agricultural inputs; Fruit processing units; Improvement of marketing channels; Training in product value aggregation; Training in social organization.
<b>Brejo Grande</b>	-	-	-	-	-
<b>Indiaroba</b>	Village Pontal	100	70	Owners surround and prohibit the entrance of pickers; Allotment and Shrimp Farming	Fruit processing units; Improvement of marketing channels; capacity to aggregate value to the product.

This study corroborates the idea of mangaba trees preservation since all this reality is increasingly weakening the mangaba pickers and the communities where they live, causing the destruction of their culture and the rural exodus, leading young people and entire families to try life in Aracaju, Capital of the State of Sergipe. Therefore, pickers are important to affirm a new development model, seek the benefit of the collective with a concern for the care of the environment and future generations.

### Conclusions

From the comparison between the soil and climatic conditions required by this species (EMBRAPA studies already mentioned and commented) and the conditions found in the study area, such requirements are concluded to be satisfactorily found in the Sergipe sandbanks. This area is the locus for the cultivation of this species, mainly on the Southern Coast of Sergipe, which justifies the production in this state.

The regularity of precipitation is not a preponderant factor for mangaba production since it is perceived to increase in the driest years, that is, when precipitation is lower. Allied to precipitation, management techniques must be inserted in the producing areas. It is necessary to create a protection zone, or an extractive reserve for this species, with a view to maintaining this activity in Sergipe, as well as increasing production.

The method used to analyze the distribution and utilization of *Hancornia speciosa* Gomes proved to be efficient and important. Thus, we can visualize the various situations of mangaba extractivism and serve as strategies for the public authorities to intervene in favor of the maintenance of this species and of the thousands of pickers' families, to whom this species represents the only or main income source.

Finally, a more detailed study is necessary, since some communities may not have been identified in the mapping, as well as

updating the study that was completed in 2016, in addition to a more specific study of the climatic elements and the production percentage.

From the update carried out between April and August 2016, a strengthening of the pickers from the social organization via the Association was noticed in the northern coast of Sergipe, mainly in the municipality of Barra dos Coqueiros, as a potential for maintenance of extractive practice. Social organization in other municipalities is indispensable as a resistance to Western capitalist development.

The initial study (2010-2013) concluded that the greatest threat to the continuity of the extractive practice is related to the access to land by the pickers and the deforestation of more than half of the mangaba trees in a decade, when the bridge João Alves Filho was built, in 2006.

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