

# The Pineapple Productive Chain at Novo Remanso: How Is It Development?

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**Abstract:** The state of Amazonas, with the presence of the Manaus Free Zone, was consolidated with an economy focused on the electrical and electronic industry and generating an average of 80,000 direct jobs in a state with four million inhabitants, with more than two million concentrates in Manaus, the state capital, according to IBGE. Due to the industrial model, or even the lack of public policies focused on the primary sector, Manaus suffers from the supply of food products. From this information, this work presents the model of the pineapple productive chain, so that it will be analyzed how this fruit is produced, which is one of the few products produced in the State and that has been supplying the consumption of the capital. The doubts are many: would it be a one-off overproduction or would production be better and more stable? What are the greatest difficulties encountered by the farmer? Thus, we will try to find out how the pineapple productive chain is, the existing structure in the locality of Novo Remanso, which is the object of study, the importance of cooperatives, public policies and whether production is in a profitable and efficient conceptual way for the producer.

**Key words:** productive chain, novo remanso, pineapple, producer

## 1. Introduction

It is known that the State of Amazonas depends economically on the city of Manaus, city that holds the Industrial Pole of Manaus. As a result, a large share of the Gross Domestic Product of the State is made up of the collection of the capital, so that the tertiary sector of goods and services, known as the intangible goods sector, was the one that grew most between 2014 and 2016, followed by the secondary sector, the industry itself. The less expressive development, compared to the others, is the agricultural sector, as shown in the Table 1.

The growth of the demand for goods and services can be easily related to the increase of the purchasing power of the people, or even new services offered to the population ready to consume. On the other hand, the reason why the agricultural sector showed lower

**Table 1 The Gross Domestic Product composition between 2014 and 2016.**

Years	Industry	Goods Service	Agriculture
2014	R\$ 24.786.000	R\$ 41.931.000	R\$ 5.181.000
2015	R\$ 24.299.867	R\$ 42.670.889	R\$ 5.786.355
2016	R\$ 31.373.000	R\$ 43.711.000	R\$ 5.366.000

growth can be related to the preference of the employee to be working either in the production of goods and services and in the industry, both mainly in Manaus, bearing in mind that these are considered more profitable. It may also be associated with the lack of or absence of public policies, the difficulty of the producer to acquire incentives in the area, the logistical and legal bottlenecks, among other obstacles that will be presented during the course of the article.

This situation is not so beneficial to the state because it causes an excessive dependence between the municipalities with the capital. In the years 2014 and 2015, it was observed that 77% and 78%, respectively, of the GDP of the Amazon was composed only by the production of Manaus. So that the other two

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municipalities that contributed the most, Coari and Itacoatiara, participated less than 4% of this amount.

From this, it was noticed the need to diversify the state's income generation matrix, so that capital is not the only promising pole of development, considering that the ZFM model has new competitors that present both the tax benefits and the better logistic conditions.

A potential segment to be worked on is agriculture. In traditional fairs, such as *Panair*, *Manaus Moderna*, and organic fairs, *MAPA*, it is verified that the small producer has volume of production, but it is not supplying the local market due to its various difficulties.

Thus, it was necessary to choose a specific product and its supply chain, from production to the final sale, considering the existing transport and infrastructure to ascertain how the production is. Because of it, this work aims to analyze the pineapple productive chain, especially in the locality of Novo Remanso, Itacoatiara village, and verify its development. The reason for this choice is the fact that the city of Manaus in recent years has been receiving an expressive amount of pineapples and the origin of this product, when asked to sellers, as well as indicated by IDAM<sup>1</sup>, is the locality of Novo Remanso.

## 2. Methodology

The research is characterized as qualitative-quantitative. It is qualitative because, according to Oliveira (1999), such method is adopted in studies focused on the compression of human life in a group, the focus is on the interpretation of reality. It will also be quantitative, because according to Denzin and Lincoln (2000) there is concern about the quantification of data, using statistical resources and techniques. The method of case study is going to be adopted since, according to César (2005), it is a qualitative and frequently used study for data collection in the area of organizational studies. Three

aspects should be taken into account when adopting this study: the nature of the experience, the knowledge to be reached and the possibility of generalization from the method.

The data will be obtained through a bibliographic research, which, according to Lakatos and Marconi (2003), has as its characteristic the use of secondary sources, in order to cover all bibliography already made public in relation to the studied subject. Most will use published articles, books containing specificities from the area of logistics and supply chain, as well as maps and digital content, such as published material on websites. Some of the information is going to be transformed into tables and graphs in order to facilitate the understanding of what is wanted to be treated.

As mentioned before, the universe chosen for study is the pineapple production of the State of Amazonas, however, due to the vast territory and several producers distributed in the territory, only the sample of the Vila do Novo Remanso was used, in order to limit the product. It is also known that in choosing only one locality, depending on the conjuncture, will not contemplate other realities.

## 3. The Pineapple Productive Chain at Novo Remanso: How Is It Development?

Novo Remanso is a village, founded in the middle of 1988, located in Itacoatiara, a municipality that is part of the metropolitan region of Manaus 270 km away from the capital.

According to data released by IDAM in 2012, based on population-based surveys, there were about 37 communities in the village, with an urban population of 6,950 inhabitants and a rural population of 8,930, totaling 15,880 inhabitants.

At the time, agricultural production was already the strongest source of income in the locality, with the main products being cupuaçu, vegetables and beef cattle, generating R\$7,472,500, only the three products.

<sup>1</sup> Institute of Agricultural Development and Sustainable Forestry of the State of Amazonas.

Over the years, the village has received increased support for rural production, so that potential and the real production have grown and become known in the state. In the city of Manaus, part of what is sold at fairs and informally at the traffic lights comes from Novo Remanso.

The Table 2, shows the pineapple production among the years 2014 and 2016, the evolution of the village relation to the numbers of producers, hectares planted, hectares harvested and production according to the estimate of the municipality.

Despite the downturn of 8.9% in 2015, in 2016 there was an increase of 17.83%, totaling by 7.27% the expansion in the period from 2014 to 2016. The growth in 2016 of 17.83% confirmed the production potential of the locality.

As for the aspects of local production infrastructure and the subsidies that the farmers had, it was analyzed that from studies carried out by IDAM in 2012 for the segment of fruit growing, the infrastructure could be summarized in two agroindustries of fruit processing, considered by the Institute of Development to be optimal. In the other sectors, including fruit growing, there were four refrigeration chambers in excellent condition, seven carts to be transported, six motorized and one animal traction, both in good condition and for agricultural mechanization there were three four-wheeled tractors without specification of its conservation.

Regarding the contribution made by the government, expressively through IDAM's actions in the village, it had the support of professionals from the agricultural area, but there was a need for new hires. Between the years 2014 and 2016, the change in infrastructure

subsidized by the government was minimal. In 2017 and 2018, the on-site visits were resumed by SEPROR, identifying the main difficulties of the producers and the obtaining of a cold storage room for the fruit

Cooperativism, another item of research analysis, according to Duarte & Wehrmann (2006), since the 1930s, has become an important instrument of agricultural policy. It was understood that agricultural cooperatives did not only become a link between family farming and modern production systems, but a way of articulating producers, public development institutions and the consumer market.

In Novo Remanso, the acquisition in relation to both the infrastructure and the financing coming from the public initiative took place in the name of the cooperatives and not of individuals. In the locality, two cooperatives stand out: *Cooperativa Agropecuária do Novo Remanso (Coopanore)* and *Cooperativa Novo Engenho*. The two are working together with *Unifrut*, an agro-industry responsible for buying fruits and processing primary products into pulp.

With regard to public policy in Novo Remanso, it was reported that the most important current program is ATER, Technical Assistance and Rural Extension. This program was established in 2010, through the Law number 12.188, defined as a non-formal an non-continue education service in rural areas. Its objectives are to promote sustainable rural development, contribute to food security and sovereignty, equity in gender relations, race and ethnicity, and adoption of ecologically based agriculture principles. In addition to the ATER program, it was also verified that several meetings were held between the producers and the IDAM seeking rural credit, as well as actions carried out by the public authorities to boost the production of pineapple.

Another fundamental aspect to assimilate the agricultural activity of Novo Remanso is to understand the scale of production, also known as economy of scale. Economies of scale can be defined as a way of

**Table 2 Pineapple production among the years 2014 and 2016.**

Estimative of Itacoatiara				
Years	Number of Producers	Hectares Planted	Hectares Harvested	Production
2014	1300	2700	2700	59.400
2015	1300	2250	2250	54.075
2016	1520	2640	2640	63.720

reducing costs in developed economic activity. For this to be possible, the average cost through dilution of fixed costs should be minimized. Practically, selling more units reduces fixed costs. Although seemingly simple to accomplish, for success to occur, demand for a particular product is required, so that it is absorbed and the above goal is achieved.

This production has a different situation from the above concept. Fruit is grown, since it has conditions for planting and harvesting throughout the year, but there is not enough demand, so that this dissolution of fixed costs does not occur. It is common for pineapple producers to sell fruits below market value so that they do not rot, as it is better to have a lower profitability rate than to have total waste.

In order to know if the production of pineapple of the Novo Remanso can be framed like being a productive chain with all the steps, it is necessary the definition of the term agricultural productive chain. Although there is no exclusive model of the agricultural productive chain, the concepts of industrial production chain and EMBRAPA studies in the area of agricultural

agribusiness will be used to reach a more defined concept.

According to Chopra and Meindl (2011), a supply chain consists of all parties involved, directly or indirectly in the execution of a customer's request. They also state that it includes not only the manufacturer and the suppliers, but the carriers, warehouses, retailers and even the customers themselves, a chain is dynamic and involves the constant flow of information, products and funds between different stages.

For Hines (2004) the supply chain encompasses all activities associated with the flow and transformation of goods (products and services) from the initial design stage to the raw materials until reaching the final consumer.

In his book, Ballou (2006) states that the supply chain is a set of functional activities that are repeated over and over again along the channel whereby raw materials are converted into finished products, which add value to the consumer.

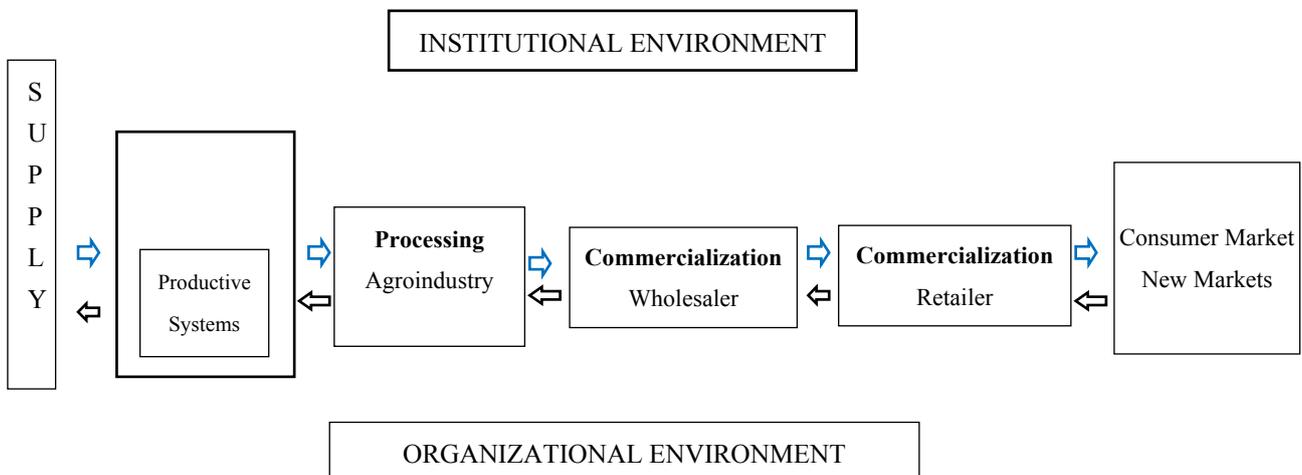


Fig. 1 The agricultural productive chain according to Embrapa researchers.

The Methodological Manual of Embrapa, developed in 1995, was used to mention the specific area of agribusiness. In this, it is said that agriculture can be defined as interconnected components and processes able to offer products to the final consumers, so that this happens from the transformation of inputs by its

components. Agribusiness is considered a broader system composed of productive chains and these have smaller productive systems that operate in diverse ecosystems.

Above is the scheme developed by Embrapa researchers as a possible model of agricultural

production chain. From the flow of materials, the inputs that are taken to the agricultural properties are classified as agricultural productive chains, that is, they are submitted to productive systems, which are the set of interactive components that objectify the production of food. Then, they are routed to processing, where the product will receive value added, then it will be marketed in large wholesale markets, to be resold in retail markets until it reaches the end consumer. The black arrow is the capital flow, which makes the reverse path so that the money itself reaches its respective destinations within the chain.

It must be observed that every supply chain is dynamic, passive of changes depending on the climatic conditions, the type of producer, whether it is a traditional family system, organic or agroindustry, besides the inclusion or exclusion of processes that depend exclusively on demand and, for end, where the final consumer is.

#### 4. Conclusion

The conclusion is that although agriculture is one of the components of GDP in Amazonas, which showed a lower evolution, showing a decrease of 7.27% in one of the analyzed periods, the production of pineapple, from 2014 to 2016, presented a growth of 7.26%, even though between the year 2014 and 2015, there was an 8.9% decrease, according to IDAM data.

Regarding the production infrastructure, from the most recent data collection, it was noticed that it did not meet the needs of both the pineapple producers and the other producers of the village, due to the need to share the few equipment, besides of not having an expressive number of industries to add value to the fruits harvested.

Related to Cooperativism, it became fundamental for the production system to thrive in the place studied. Today there are two cooperatives in focus, Coopanore and Novo Engenho. Through the union of producers, the possibilities became greater as the State action, so that the financing and the qualification of the producers

became more accessible.

The most effective public policy actions in the area were the ATER program and IDAM action. The first, rural technical assistance, is a non-formal non-formal education service in rural areas. In turn, IDAM's actions served as an intermediary between the producer and public decision-makers. There was in fact no improvement in the producer's infrastructure, but the institute offered technical and theoretical subsidies to farmers.

Regarding the scale of production, it was noted that the farmer is not able to consolidate economies of scale in his business, given that there is a need to increase sales of fruit so that the profit margin also grows. As much as the pineapple is planted and harvested throughout the year, there is a massive waste because the storage of the fruit does not happen under the right conditions. This is decisive for assimilating one of the reasons why the pineapple production chain of Novo Remanso cannot be considered an effective chain.

According to experts, the production chain is composed of a series of processes capable of transforming an input into customer demand, being this dynamic in order to maximize profits and reduce costs.

In addition, in order for an efficient chain to exist, it must have distinct agents in the necessary steps, which may vary according to the business, so as not to overload either party. However, it is not uncommon for the farmer to be responsible for all stages of the chain and still make use of the figure of the transporter for transport. The bureaucracy also becomes an obstacle, as for example in the sale of the fruits in supermarkets.

Currently, Novo Remanso is the third largest producer of pineapple in Brazil, so that the difficulties can be adjusted provisionally. However, it is identified that if there were in fact an infrastructure implementation mainly in machinery, to plant and to transport, and in the highways, or in other modal for flow, the producers of the New Remanso could be more efficient in its activities.

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