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POVERTY, FOOD SECURITY AND SELF-CONSUMPTION IN THE EXTRATIVIST RESERVE (RESEX) CHICO MENDES

POBREZA, SEGURANÇA ALIMENTAR E AUTOCONSUMO NA RESERVA EXTRATIVISTA (RESEX) CHICO MENDES

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Abstract

This paper aims to evaluate the food security and self-consumption condition of families settled in the Chico Mendes Extractive Reserve (RESEX) in the last two decades. Specifically, we seek to identify poverty levels and income distribution and their relationship with food security and self-consumption. We work with the methodology of the Project of Socioeconomic Analysis of Basic Rural Family Production Systems of the State of Acre (ASPF), led by the Federal University of Acre (UFAC), which developed indicators and indexes of economic results that reflect the reality of small farmers. In addition, we estimated the Gini index, which is commonly used to measure the level of income inequality. The results indicate that even after 20 years of implementation of RESEX Chico Mendes, there are still high levels of food insecurity, resulting from the increased dependence on purchased goods in the market and, especially, the reduction in the level of self-consumption. In addition, it was found that the maintenance of income inequality among settled families and the increase of poverty and extreme poverty levels in the recent period, which underscores the urgent need to elaborate an agenda that reformulates policies already implemented and the formulation of new measures to ensure food safety.

Keywords: Food security. Self-consumption. RESEX Chico Mendes. Poverty. Amazon Region.

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Resumo

O presente trabalho tem o objetivo de avaliar a condição de segurança alimentar e de autoconsumo das famílias assentadas na Reserva Extrativista (RESEX) Chico Mendes nas últimas duas décadas. Especificamente, busca-se identificar os níveis de pobreza e de distribuição de renda e suas relações com a segurança alimentar e o autoconsumo. Trabalha-se com a metodologia do Projeto de Análise Socioeconômica dos Sistemas Básicos de Produção Familiar Rural do Estado do Acre (ASPF), capitaneado na Universidade Federal do Acre (UFAC), que desenvolveu indicadores e índices de resultados econômicos que traduzem a realidade dos pequenos produtores rurais. Além disso, estimou-se o índice de Gini, que é comumente utilizado para medir o nível de desigualdade de renda. Os resultados indicam que, mesmo após 20 anos de implementação da RESEX Chico Mendes, ainda se encontram altos níveis de insegurança alimentar, resultado da elevação da dependência de bens adquiridos no mercado e, especialmente, pela redução do nível de autoconsumo. Além disso, constatou-se a manutenção da desigualdade de renda entre as famílias assentadas e o aumento dos níveis de pobreza e de extrema pobreza no período recente, o que denota a necessidade urgente da elaboração de uma agenda que reformule políticas já implementadas e a formulação de novas medidas para garantir a segurança alimentar.

Palavras-chave: Segurança alimentar. Autoconsumo. RESEX Chico Mendes. Pobreza. Amazônia.

Introduction

The Millennium Development Goals (MDGs), elaborated by the United Nations (UN), aims to eradicate extreme poverty and hunger, which, according to the report, has already reached the goal of reducing extreme poverty to half the level registered in 1990, five years before the established one. However, even with the considerable reduction in the share of the population considered extremely poor - from 47% to 22% - more than 1.2 billion people are still in extreme poverty. The statistics also show that every eight individuals, at least one does not have regular access to adequate food to meet their energetic needs (IPEA, 2014).

In Brazil, that situation is marked by the consolidation and institutionalization of successful public policies in the fight against hunger and the implementation of Food and Nutrition Security (SAN), guided by the principle of promoting the Human Right to Adequate Nutrition (DHAA). The reduction of poverty and hunger in the country occurred due to the political commitment of the Federal Government during the previous decade, the result of an inter-sector and participatory strategy, and financed by public investments. Thus, Brazil has fulfilled and surpassed the Millennium Development Goals in reducing poverty and hunger (FAO, 2014).

However, an effective food security depends on factors such as quantity, quality and, especially, access to adequate nutrition, which can be made possible through planning and public policies implemented by the Government. With regard to access to food, this can be guaranteed - totally or partially - by production made for own consumption (self-consumption), a very present production model among family farming (DOMBEK, 2006).

As such, self-consumption continues as a constant and fundamental strategy among family farmers to guarantee the social reproduction of that type of production unit. This mode of production is a way of organizing productive activity and reflects cultural characteristics and the strengths of these farmers, since it is a source of primary non-monetary income to effectively assist in the improvement of living conditions, food security, ultimately hampering the eradication of rural poverty (GRISA, SCHNEIDER, 2008).

The issue of food security and self-consumption, especially of the rural population, goes through other dimensions that can not be dissociated, such as the agrarian reform policy based on the creation of rural settlements. That policy's main objective is to promote the distribution of land in the countryside and integrate family agriculture to different agricultural and extractive production systems, making possible the social reproduction of this population through the generation of income and production for self-consumption. Thus, in the beginning of the 1990s, Extractive Reserves (RESEX) were created in the category of Conservation Units (UC), emerging

as an environmental and land policy, considered a model of agrarian reform in the forest and sustainable development in the Amazon Brazil. RESEX seek the social reproduction of the extractive community, which over time are also finding difficulties to guarantee food security.

Thus, the objective of the present study is to evaluate the relationship between poverty, food security and household consumption of RESEX Chico Mendes' families, located in the State of Acre, considering the period of the previous two decades.

The importance of the study is justified by the need for effective monitoring and evaluation that can assist in the development and consolidation of the RESEX, seeking to subsidize both the public policies focused on the sector and the community itself, especially regarding issues of food security and self-consumption.

Food Security as a strategy to combat rural poverty

The term food security began to be used during the First World War. A large number of people lived in conditions of vulnerability due to food shortages. The rich countries were predominant over the poor countries, so that the underdeveloped countries had a great dependence on food (DEVES and FILIPPI, 2008 apud LOIOLA and MACIEL, 2015, p.33).

A population in situation food security means that all people constantly have access to enough food to ensure an active and healthy life. In mercantile economies, such as the Brazilian one, daily access to food is a result of having the purchasing power, that is, having income to acquire food. Therefore, income is translated into a food security situation, however, a considerable part of the Brazilian population still does not have enough income to escape from food insecurity (HOFFMANN, 1995).

A widely used definition, referring to the World Food Summit in 1996, says that food security occurs when all people have physical and economic access to safe and nutritious food in sufficient quantities to meet their food needs, an active and healthy life. Food security, often used in development discourse, emphasizes food quantity rather than food quality (SMITH *et al.*, 2013).

According to Dombek (2006), food security can be placed as a strategic axis of development, since: i) Good food is a basic condition for existence; ii) Food production, distribution and consumption play a central role in social, economic and cultural issues; and iii) The issue of food is considered a source of concern, social mobilization and public policies.

In Brazil, the "Parallel Government" ⁵ "Elaborated a proposal of National Policy of Food Security, released in 1991. In 1993, it was accepted by the Government of President Itamar Franco, being the base for the installation of the National Council of Food Security (CONSEA), contributing to the introduction of agri-food and hunger issues in the national political agenda. In this way, food security became a "strategic government objective", being the basis for agrarian policies, policies aimed at agricultural production, marketing, distribution and food consumption, with a concept of decentralization and regional differentiation (MALUF *et al.*, 1996).

The objectives of food security are: i) Assistance-compensatory actions against hunger with policies aimed at ensuring access to food in a way that does not compromise a significant part of the family income; (ii) the availability of quality food; and (iii) Dissemination of consumer information on healthy eating practices, as well as information on possible food-mediated health risks (MALUF *et al.*, 1996).

According to the 2014 report of the United Nations Food and Agriculture Organization (FAO), the Food and Nutrition Security Policy (SAN) gained momentum in Brazil through legal frameworks such as the enactment of the Organic Law of Food and Nutrition Security in 2006.

Food and Nutrition Security is the realization of the right of all to regular and permanent access to quality food in sufficient quantity without compromising access to other essential needs based on health-promoting food practices that respect cultural diversity and which socially, economically and environmentally sustainable (FAO, 2014, p.16).

Another important milestone was the incorporation of the human right to adequate food in the Federal Constitution in 2010 and the institutionalization of the National Food and Nutrition Security Plan in 2011, which incorporates more than 40 programs and actions (FAO, 2014)

⁵ Initiative of the Workers Party, in the year 1990, whose objective was to generate alternative proposals for the government

According to Grosset *et al.* (2000) there is a scheme adopted in the international sphere, which points out four dimensions of food and nutritional security: i) availability of food; (ii) access to the food; (iii) use of food and nutrients; and iv) stability.

In Brazil, the Food and Nutrition Security Monitoring System is close to these four dimensions. According to the FAO (2014), the system is based on six dimensions (Decree 7.272 of August 25, 2010, article 21, paragraph 5.) the dimensions are: i) Food Production; ii) Availability of Food; iii) Income; iv) Access to Health Services; and vi) Education.

According to Tschardtke *et al.* (2012) it is necessary that food security policies be applied where the hungry live. Most poor people live in rural areas with little or no access to productive agricultural land. Thus, hunger can be associated with land size: about 90% of farmers worldwide cultivate in areas smaller than 2 hectares. Approximately 80% of the hungry live in underdeveloped countries, with half of them being small landowners (Tschardtke *et al.*, 2012, p.54). Thus, small farmers should be considered the basis of global food security.

Self-Consumption and Social Reproduction of Family Agriculture

Production for self-consumption for a long time was harshly criticized among scholars on the subject of agri-food production. This type of production of family agriculture was pointed out as a backward or even uneconomical and even neglected character, since it was considered as a matter of minor relevance. However, peasantry and family farmer scholars consider that production for own use and consumption of food remains one of the characteristics of this social category (GAZOLLA & SCHNEIDER, 2007, IPEA, 2013).

Self-consumption is defined as the production that had the employment of the family's own labor and destined to the consumption of the family. It is wrong to associate this type of production as residual, as well as to say that they are products with lower quality standards than those offered in the market. What characterizes this production is its use value for family members (GRISA & SCHNEIDER, 2008).

Classical authors such as Chayanov (1974) and Wolf (1976) consider that self-consumption is an essential dimension of the peasantry, as well as being one of the main characteristics of this social category.

Wolf (1976) identified that the evolution of society and the consolidation of modern production techniques of cultivation and breeding, the farmer replaced the production of the minimum caloric by the crops destined for sale, aiming only at profit, which corresponds to maintenance funds and subsistence of the peasantry.

However, some studies show that programs and policies aimed at family farming are the basis for encouraging self-consumption. Gazolla and Schneider (2013) have identified that the National Family Agriculture Strengthening Program (PRONAF) is fundamental for small family production in the State of Rio Grande do Sul. The program assumes a role that goes beyond fostering the diversification of agricultural crop production and creations of family production, since this policy, albeit peripherally, has also assisted in the production of basic family food.

Therefore, self-consumption is the starting point in conducting diversification of strategies to ensure food security and social reproduction of family farming in the field. The production of self-consumption internally strengthened in the production unit is a mechanism of poverty reduction in the field, in addition to sustaining the condition of family food security, however, the weakening of the production destined to self consumption disarms the diversification of the strategies of the familiar farmer, since the income earned through the activities performed outside the unit of production will be spent to acquire goods at market prices, including for the necessary food consumption of the family, ie all the work committed will be reversed depending on the market (GAZOLLA & SCHNEIDER, 2007).

Therefore, "it is the strengthening of the production for self consumption that leads to the diversification of the strategies of living and food security by the reduction of the degree of vulnerability social reproduction of the domestic group" (GAZOLLA & SCHNEIDER, p. 99).

In a recent study, based on data from the Family Budget Survey (POF), Souza (2017) found that in the last decade the production for self-consumption had a significant reduction among the rural families of the North Region, mainly of foods are fundamental in the composition of the income generated. Possibly, households allocate most of these foods for commercialization at the expense of self-consumption, indicating a greater opportunity cost for marketing.

In this sense, Gazolla and Schneider (2007) warns that the weakening of self-consumption by preference and concentration of efforts for the production of commercial and commercial in the domestic unit, is a dangerous situation for social reproduction in the field, since it is subject to trigger problems related to food insecurity and rural poverty. In this case, the strategies of experiences are directed to an involuntary action to attract diversification of assets and other types of capital, which in the limit leads to the abandonment of agricultural activities with the sale of land ownership.

In recent years, with the progress of studies on rurality, several programs and policies of the federal and state governments are following this path and recognizing that production for self-consumption is a fundamental element that contributes to the promotion of food and nutritional security, poverty reduction and social reproduction in the countryside and that can not be neglected (IPEA, 2013).

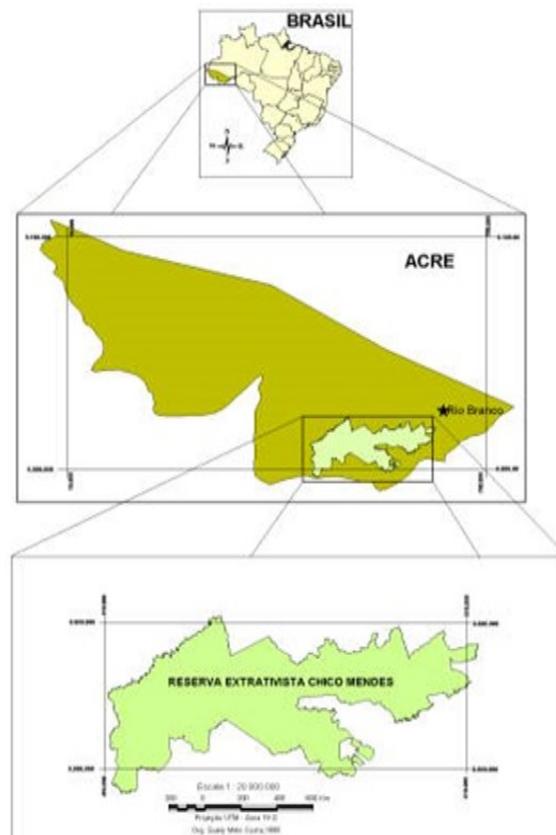
Little is known about the characteristics and meaning of production for self-consumption in family agriculture, besides there are differences in its conceptualization. However, it is known that it is a characteristic closely related to food security and social reproduction in the field, a subject that requires broader and deeper studies to assist in the development of small family production in the field.

Methodology

Characterization of the object of study

The present study was carried out in the Chico Mendes Extractivist Reserve, located in the southeastern region of the State of Acre, created on March 12, 1990, by Decree No. 99,114, the region has about 970,570 ha (hectares), covering the municipalities of Rio Branco, Xapuri, Epitaciolândia, Brasiléia, Assis Brasil, Sena Madureira and Capixaba. By land, access can be made by highway BR 317, which contours RESEX on its east-south side and has traffic throughout the year. And by river, through the Xapuri River and its tributaries, or by the Rio Iaco and Rio Macauã in the municipality of Sena Madureira - except in periods of drought due to the low water level (BRASIL, 2006). Currently, about 2,000 families live within RESEX.

Figure 1: Positioning of RESEX Chico Mendes in Brazil and Acre.



Source: Laboratory of Environmental Analysis and Planning apud Costa (2008: 26).

Material and Methods

The surveys are carried out by sampling. The sample was defined from three stages:

- Stratification of the area according to level of development (high, medium or low), with reference to criteria related to production volumes, ease and quality of access, availability of infrastructure and technical assistance, and the degree of community organization;
- Draw of half of the conglomerates in the study areas - the rubber plantations, in view of the representativeness within each defined stratum;
- Finally, within each conglomerate, a simple random sampling was carried out, with 10% of the production units being the object of this study, and 69 extractivist sites were surveyed.

This work has information on the results obtained from field research in the 1996/1997, 2006/2007 and 2014/2015 periods at the Chico Mendes RESEX for the research project "Socioeconomic Analysis of Rural Family Production Systems in the State of Acre" (ASPF⁶), which has been developed for more than 20 years, currently headed by the Center for Juridical and Applied Social Sciences (CCJSA), Federal University of Acre (UFAC).

In the ASPF project, several indicators were constructed for the economic evaluation of rural family production in Acre, ranging from traditional to indicators that only apply to rural family production. The main economic indicators used in the current research are briefly described below:

a) Self-consumption (AC)

$$AC = \sum Q_{bcpi} * P_i \quad n \quad i = 1$$

Being:

AC= self consumption

Q_{bcpi}= quantity of self-produced good produced

p_i= unit price of the self-produced good

i= items of self-produced goods produced (v = 1, 2, ..., n)

b) Gross Profit (RB)

The gross result is basically the value of the production destined to the market, obtained by the following formula:

$$RB = Q_v \cdot p_p$$

Being:

RB Gross Income (%)

$$Q_m = q_v \cdot q_s$$

Q_m = quantity of the product intended for the market.

q_v = quantity of product sold

q_s = quantity of the product of the exercise in stock

P_p = unit price to producer

c) Total Gross Income (RBT)

Sum of gross income (RB) of production with income derived from income transfers (school scholarship, family etc.) and of the salary outside the Family Productive Unit (UPF). The RBT is calculated for the UPF and the family members.

$$RBT = RB + RT + RA(2)$$

Being:

RB = gross income

RT = income from monetary transfers (municipal, state and federal)

⁶ The ASPF project develops socioeconomic research in the area of rural family production in the Acre region since 1996, resulting in several publications on the subject. For more information see: <http://aspf.wordpress.com/>

RA = wage income outside UPF

d) Gross Family Margin (MBF)

Gross family allowance (MBF) is the specific net income to indicate the monetary value available for the subsistence of the family, including a possible increase in the standard of living, if the amount is sufficient.

$$MBF = RB - (CV - Cftf)$$

Being:

RB = Gross Income;

CV = variable costs

$Cftf$ = actual cost of the family workforce

The value of the $MBF/Q_h/d$ to compare with the opportunity cost, which in this work is the value of a daily wage paid in the region.

$MBF/Q_h/d$ = index of remuneration of family labor;

d = number of working days.

e) Level of Life (NV)

The Standard of Living (NV) is the total of the value appropriated by the family producer, including imputed amounts, less the financial obligations with loans. The standard of living is calculated by:

$$NV = (MBF + AC + Cjicc) - AA$$

Being:

AC Personal consumption.

C_{jicc} = interest charged to working capital.

AA = annual repayments of loans

f) Value of Consumer Goods Purchased in the Market (VBCC)

The Value of Consumer Goods Purchased in the Market (VBCC) is an indicator that measures the quantity in amounts in Reais bought by the farmer family, the formula is given by:

$$V_{bcc} = \sum_{u=1}^n (Q_{bcc})_u \cdot p_u$$

Being:

V_{bcc} = value of purchased consumer goods and services

Q_{bcc} = quantity of consumer goods and services purchased or

p_u = unit price of a good and / or purchased consumer service

u = items of consumer goods and services ($u = 1, 2, \dots, n$).

g) Market Dependency Line

Defined as a line of market dependence are the median values spent on consumer goods and services in the market, plus purchases related to the replacement of fixed capital (machinery, equipment, tools, improvements, etc.) available for the maintenance of the existing means of production.

h) Economic Efficiency Index (IEE)

It is the indicator of benefit / cost. It is defined by the following formula:

$$IEE = RB/CT$$

Being:

RB = Gross Income;

CT = Total Costs.

- IEE > 1, the situation is for profit.
- IEE < 1, the situation is loss.
- IEE = 1, the situation is equilibrium.

i) Food security

The indicator of the National Household Sample Survey (PNAD) is used as a method to evaluate the level of food security and food insecurity in the Chico Mendes RESEX. According to the PNAD 2004 procedure, the families living with income per capita/ month below $\frac{1}{4}$ minimum wage⁷ are food insecure.

Although in some international institutions the indicator for measuring extreme poverty is US \$ 1 a day, a different methodology is used in Brazil, according to the National Report on Follow-up of the Millennium Development Goals, extreme poverty in Brazil is used as a parameter of $\frac{1}{4}$ minimum wage, that is, the value of a quarter of the minimum income wage per capita per month to size extreme poverty and half a minimum income wage per capita per month to scale poverty.

The data analyzed regarding food security were collected through questionnaires on the economic performance of rural families in the State of Acre, in particular the Living Standard (NV), which will serve to calculate the level of food security and food insecurity.

Table 1. Classification of the income range, values according to the minimum wage.

| Class | Income Streams (SM) |
|---------------------|---|
| A | NV > 4 MW / month; |
| B. | 2 SM / month < NV < 4 SM / month; |
| W | $\frac{1}{2}$ SM / month < NV < 2 SM / month; |
| D - Poverty | $\frac{1}{4}$ SM / month < NV < $\frac{1}{2}$ SM / month; |
| E - Extreme Poverty | NV < $\frac{1}{4}$ SM / month; |

Source: ASPF (2018).

j) Poverty Line

Most studies on the problem of indigence and / or poverty define the monetary value of $\frac{1}{2}$ minimum wage and calculate the number of households whose income is less than this line. The indigence line refers to the minimum income required to purchase a food basket with minimum or recommended energy amounts. The poverty line is above the indigence line, as they include, in addition to the value of the food basket, all other non-food expenses, such as clothing, housing, transportation, etc. (CAMPOS & CAMPOS, 2008).

Among the methods that define the line of indigence or poverty defined by income, those that use the proportion of the minimum wage stand out. This method is widely used, because in theory, the minimum wage should meet the basic needs, not only of food, but also of housing, clothing, etc. The values commonly used as poverty line are $\frac{1}{2}$ minimum wage and $\frac{1}{4}$ for poverty line.

According to data collected by the ASPF project carried out between 1996/1997, 2005/2006 and 2014/2015, the income of the producers of RESF Chico Mendes UPF was divided into five social classes according to the minimum wage class A of two to four minimum wages, class C of $\frac{1}{2}$ to two minimum wages, class D who earn up to $\frac{1}{2}$ minimum wage and put class E, families with incomes less than $\frac{1}{4}$ of minimum wage.

k) Restatement

In order to carry out the price update, the National Consumer Price Index (INPC), prepared by the Brazilian Institute of Geography and Statistics (IBGE), was used. Thus, the current values (in Reais) were collected in the periods 1996/1997, 2005/2006 and 2014/2015, with the values updated for July 2018.

Result ans discussion

⁷ For this work, the minimum wage in force in 2018 is considered, with a value of R \$ 954.00.

Table 2 shows the evolution of the median economic result of the families at RESEX Chico Mendes, over the past 20 years. The evolution of some of the analyzed indicators can be noted, such as gross income and gross family margin, with an increase of 24% and 14% respectively. However, there are quite worrying results, such as the high increase in the value of consumer goods purchased on the market, with an increase of 247%, accompanied by a significant drop of 67% in self-consumed goods at RESEX Chico Mendes. It is also noticed that there was a 51% drop in the economic efficiency index and that it is below 1, which shows a situation of loss for RESEX residents. In addition to an increase of 143% in the term of exchange, which in the 2014/2015 agricultural year reached the mark of 0.95, which reveals that 95% of the residents' income is destined for the purchase of goods in the market.

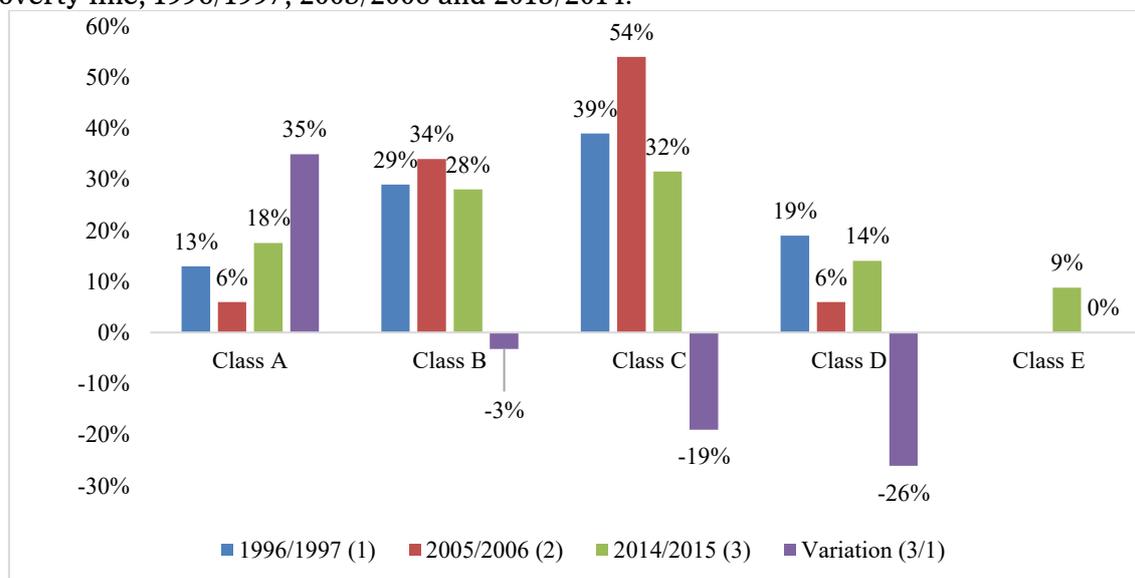
Table 2: Evolution of the economic performance of the productive units of the Chico Mendes RESEX - Acre - 1996/1997, 2005/2006 and 2014/2015.

| Economic Indicators | Unit | 1996/1997 (A) | 2005/2006 (B) | 2014/2015 (C) | Evolution A – B | Evolution A – C | Evolution B – C |
|---------------------|-----------|---------------|---------------|---------------|-----------------|-----------------|-----------------|
| RB | R\$/month | 460,11 | 661,41 | 568,95 | 44% | 24% | -14% |
| GFM | R\$/month | 412,52 | 600,95 | 468,61 | 46% | 14% | -22% |
| VBCC | R\$/month | 211,21 | 713,62 | 732,73 | 238% | 247% | 3% |
| LDM | R\$/month | 417,33 | 1418,35 | 1601,77 | 240% | 284% | 13% |
| AC | R\$/month | 1307,18 | 672,78 | 436,51 | -49% | -67% | -35% |
| NV | R\$/month | 1699,26 | 1394,95 | 733,75 | -18% | -57% | -47% |
| IEE | un. | 1,37 | 0,74 | 0,67 | -46% | -51% | -10% |
| TI | un. | 0,39 | 0,63 | 0,95 | 62% | 143% | 50% |

Note: Median results by Family Production Unit (UPF). Monetary adjustment up to July 2018. GI - Gross Income; GFM - Gross Family Margin; MDL - Market Dependency Line; SC - Self-consumption; SL - Standard of Living; EEI - Economic Efficiency Index
Source: ASPF (2018).

Graph 1 shows the evolution of income and poverty distribution at Resex Chico Mendes. Here, the population was divided into classes according to the families' income. There is an increase of 35% in families belonging to class A, and now, 18% of families are with a per capita income above 4 minimum wages per month. In classes B, C and D there is a decrease of 3%, 19% and 26%, respectively, in the number of families belonging to these classes. However, there is the emergence of families that are in class E, that is, they are in conditions of extreme poverty, that is, they are in a situation of food insecurity.

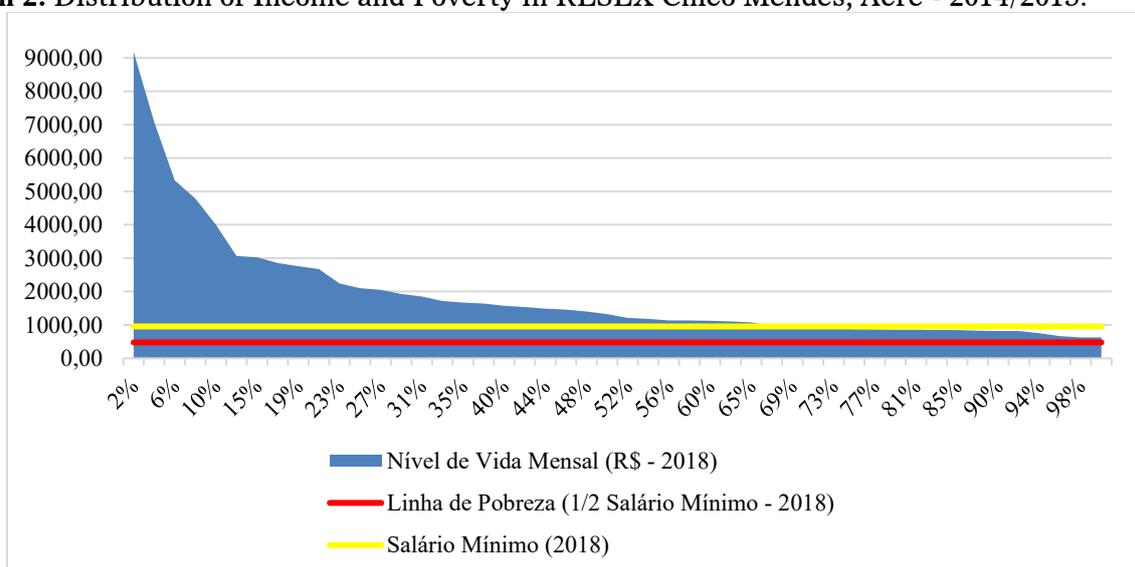
Graph 1: Stratification of RESEX Chico Mendes families by income (Living Standard), according to the poverty line, 1996/1997, 2005/2006 and 2013/2014.



Source: ASPF (2018).

In Graph 2, we have the income distribution in the Chico Mendes RESEX in the agricultural year of 2014/2015. The indicator used is the standard of living (NV) which, in monetary terms, is nothing more than the appropriate value by the family producer. It can be seen that only about 5% of families have a standard of living above R\$ 2,500.00 per month. It is worrying to note that around 55% of households have a living standard below the minimum wage, and that about 16% of RESEX Chico Mendes families live below the poverty line.

Graph 2: Distribution of Income and Poverty in RESEX Chico Mendes, Acre - 2014/2015.



Source: ASPF (2018).

Table 3 presents an estimate of the expenditures made by RESEX Chico Mendes families during the studied agricultural years. There is a marked increase in the amounts spent on goods bought in the market, since in the agricultural year 1996/1997 the total value spent was 1.6 million and in the agricultural year 2014/2015 it reached approximately 7.5 millions. And in addition, about 50% of this value is spent on goods that could be consumed by the families of the Extractive Reserve.

Table 3: Value of foodstuffs bought in the market and their relation to self-consumption in RESEX Chico Mendes, Acre - 1996/1997, 2005/2006 and 2014/2015.

| Item | 1996/1997 | | 2005/2006 | | 2014/2015 | |
|--------------------------------------|--------------|------|--------------|------|--------------|------|
| | Price (R\$) | % | Price (R\$) | % | Price (R\$) | % |
| Vbcc - Food Total | 1.697.423,43 | 100% | 5.908.808,90 | 100% | 7.756.302,48 | 100% |
| Vbcc - Food for personal consumption | 667.039,11 | 39% | 3.120.499,70 | 53% | 3.820.272,97 | 49% |
| Vbcc - Other Food | 1.030.384,32 | 61% | 2.788.309,19 | 47% | 3.936.029,52 | 51% |

Note: Values updated for July 2018 (INPC / IBGE); Vbcc - Value of consumer goods bought in the market. Source: ASPF (2018).

Table 4 shows the main products that are bought by RESEX Chico Mendes families, but could be consumed by them. There is a high increase in the purchase of goods such as oil, cassava flour, rice and butter, with an evolution of 3,909%, 161%, 179% and 234%, respectively. On the other hand, there was a reduction in the purchase of goods such as coffee powder, dried meat, charque and beans, with falls of 54%, 44%, 67% and 63%, respectively.

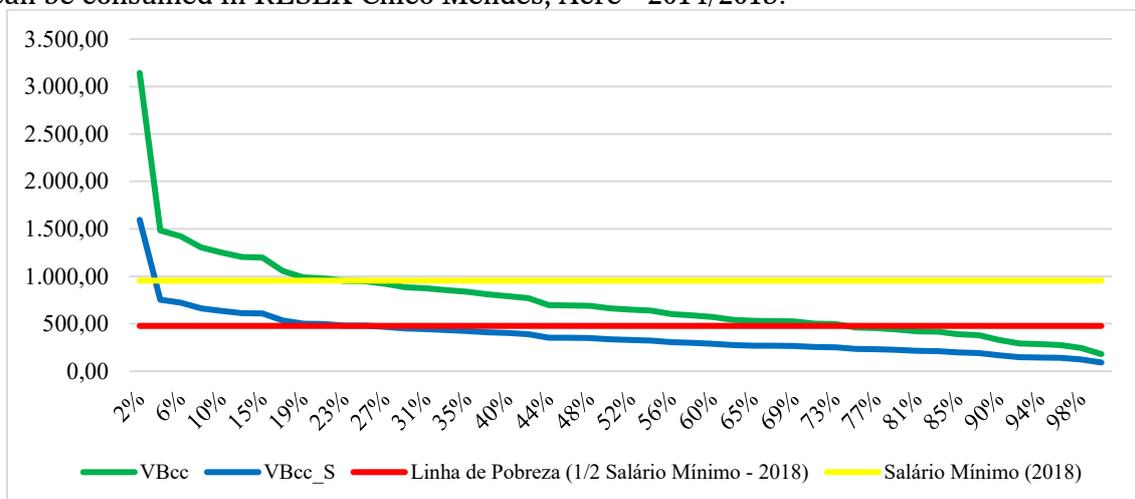
Table 4: Main products purchased in the market that could be consumed by the families of RESEX Chico Mendes, Acre - 1996/1997, 2005/2006 and 2014/2015.

| Product | 1996/1997 (A) | 2005/2006 (B) | 2014/2015 (C) | Evolution (%) C/A |
|------------------------------------|---------------|---------------|---------------|----------------------|
| Oil | 0% | 43% | 19% | 3,909% |
| Powdered milk | 13% | 20% | 16% | 18% |
| Coffee powder | 32% | 0% | 15% | -54% |
| Cassava flour | 4% | 7% | 10% | 161% |
| Rice | 3% | 5% | 8% | 179% |
| beef | - | 2% | 7% | - |
| Aromatic pepper | - | - | 7% | - |
| Butter | 1% | 6% | 4% | 234% |
| Dried beef | 5% | 7% | 3% | -44% |
| Charque (Brazilian Jerked Beef) | 8% | 4% | 2% | -67% |
| Sardines | 0% | 1% | 2% | 1,012% |
| Beans | 6% | 2% | 2% | -63% |

Source: ASPF (2018).

If households stopped buying goods with potential for self-consumption in the Chico Mendes RESEX, there would be a decrease in the value of goods bought in the market (VBCC) and, consequently, there would be a reduction in food expenses.

Graph 3 presents a simulation of the values of the goods bought in the market by deducting the goods that can be consumed. It is noticeable that the values of the goods bought in the market would fall almost in half. And still, about 95% of families would spend less than a minimum wage buying goods on the market.

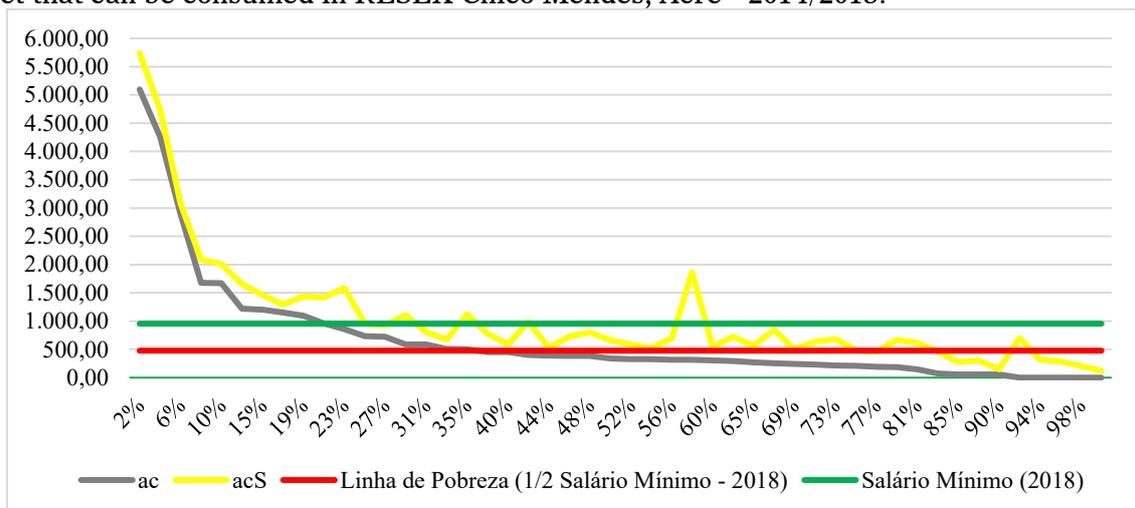
Graph 3: Simulation of the Value of Consumer goods bought in the market, deducted from the goods that can be consumed in RESEX Chico Mendes, Acre - 2014/2015.

Source: ASPF (2018).

Graph 4 shows a simulation of self-consumption with the addition of goods bought in the market that could be produced and self-consumed by families together with the current consumption. It can be seen that around 10% of households do not produce products for self-consumption and approximately 60% of households have a small production and insufficient for self-consumption, since their consumption is below the poverty line.

It is also noted that, the highest self-consumption was approximately R \$ 5,000.00, however, this value was appropriated by 2% of the families. With the simulation of the production of foodstuffs that can be consumed, the level of self-consumption increases, in a way that reduces the VBCC / Food. It is worth to say that the result of this simulation is positive, since the self-consumption of the vast majority of families would be higher than the poverty line. Thus, it is valid to say that the production of food for self-consumption is a viable way to improve the quality of life of the residents of RESEX Chico Mendes.

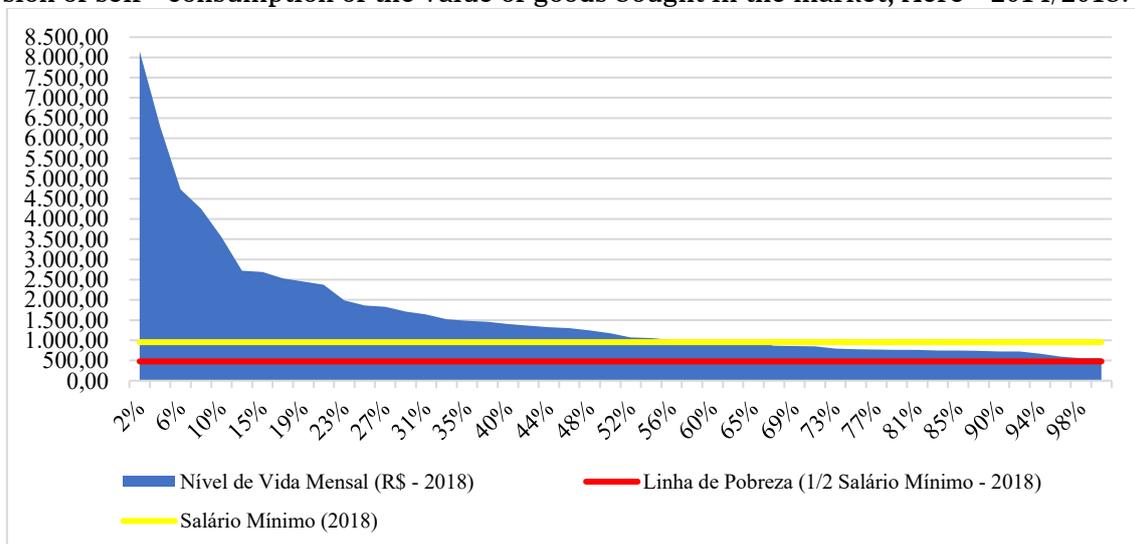
Graph 4: Simulation of the Value of Own Consumption plus the Value of goods purchased in the market that can be consumed in RESEX Chico Mendes, Acre - 2014/2015.



Source: ASPF (2018).

In Graph 5 a simulation of what would occur with the level of the families of the Chico Mendes Extractive Reserve was elaborated if self-consumption were increased with the VBCC / Foods. It is noticeable that there would be a significant improvement in the standard of living of the families. While chart 2 shows that more than 50% of households have an NV below a minimum wage, 15% live below the poverty line. In this simulation, however, about 70% of households would have a standard of living above a monthly minimum wage, and 100% of families would be above the poverty line, that is, they would be in a food security situation.

Graph 5: Distribution of Income and Poverty in the Chico Mendes RESEX simulated with the reversion of self - consumption of the value of goods bought in the market, Acre - 2014/2015.



Source: ASPF (2018).

Conclusion

The literature on family agriculture and the role of self-consumption in the social reproduction of families shows that the weakening of this type of production will inevitably lead to a greater dependence on the market and, in the limit, to the disappearance of this category of rural producers.

The results show that there was an increase of Gross Income (24%) and Gross Margin (14%), which, however, represent just over half of the current monthly minimum wage. They also reveal that, more and more the families of the Chico Mendes Extractive Reserve use their income for the acquisition of goods in the market. There was a 247% increase in the VBCC, accompanied by a

decrease in percentage terms, of self-consumption (-67%) and a reduction of 57% in the standard of living of households.

There was a reduction of the families that are in classes B, C and D. The families are still mostly belonging to classes C and B, respectively. Although there was a significant increase of 35% in families belonging to class A, there also emerged families of class E, that is, families that are in extreme poverty, and in consequence, in food insecurity.

Still according to the results, more than half of the families settled in the RESEX Chico Mendes have a living standard of less than a minimum wage and, even more worrisome, about 15% of these families are below the poverty line.

The production for self-consumption is a propitious alternative to improve the living conditions of families, considering that, in addition to reducing the market dependence of these families, the increase in self-consumption would provide all families of the Chico Mendes Extractive Reserve, a level of life beyond the poverty line.

The results of the research showed that around half of the consumer goods bought in the market could be perfectly produced for self-consumption, such as traditional household subsistence goods: vegetables, cassava flour, meats, rice, beans, etc.

Thus, the scenario found within the Chico Mendes Extractive Reserve promotes the formulation of specific public policies aimed at encouraging and strengthening rural production and income through access to technologies and the sustainable exploitation of natural resources, guarantee the social reproduction of families in the forest.

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