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THE OPPOSITION OF AGROECOLOGY TO THE INDUSTRIALIZATION OF ORGANICS

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Hudson Antunes da Silva Nunes[1]

ABSTRACT

The article deals with the relationship between organic production and agroecology. When analyzing data from the federal government, it is noted that food production in Brazil is large and concentrated in the power of a small group of people, while most producers, who come from family farming or small properties, find it very difficult to produce and sell their production. An alternative to the conventional production of large rural properties would be the planting of organic products, because in this way, there would be no control of large agricultural groups over production, giving the small producer productive and financial autonomy. But, realizing that organic agriculture could be produced on a large scale, the capitalist market took over the organic agricultural technique, transforming the natural product into something industrial, and consequently, excluding two social groups from the food market, namely small producers and low-income people. In this sense, agroecology emerges as an alternative for small producers, as it involves not only the technique, but also a wide set of factors that make this concept something different in rural areas.

Keywords: Agroecology. Organic. Capitalism. Family Farming.

[1]Bachelor of Laws from the José do Rosário Velanno University – Unifenas (2017) Master's student in Public Management and Society at the Federal University of Alfenas – Unifal

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INTRODUCTION

Brazil has recently been going through a process of change in agricultural production, given the food requirements in the internal and external spheres.

As a major exporter of fresh food, the country has projected a large production area through extensive agriculture, thus generating a significant number of harvested and marketed production. But to have this great result in food production, some precautions are necessary, such as the use of chemical fertilizers, pesticides and genetically modified seeds. Such acts, which have the intention of increasing the quantity of production, generate a food - sometimes - not ideal for consumption, given the excess of modifications made in the agro-production process.

As an alternative to modified foods, the return to organic food production emerged, without the use of artificial genetic modification, pesticides or chemical fertilizers. But, when observing that organic agriculture could generate products with a higher price to the consumer and thus increase the profit margin, the market soon absorbed the production of organic products, leading them to controlled cultivation and on a large scale, not being susceptible to temporal changes and not obedient to natural seasonality.

As a result, the price of food tends to rise, with the exclusion of two social groups: 1) small producers and family farmers; and 2) low-income people.

Agroecology then emerges as a process of independence of these groups in relation to the capitalist market, as an alternative form of production at affordable prices, without abandoning the quality of the product.

The theoretical framework was divided into three sections. In the first section, the rural issue in Brazil will be addressed, in which it is possible to see the exclusion of small producers and family producers from the market, as well as the challenges they face to maintain their production. In the second section, the production process of organic products and their capitulation to capital will be analyzed, and in the third section, the concept of agroecology will be addressed. As a result, it was identified that organic products are no longer a productive alternative to capitalism and that such an alternative of independence will take place through agroecology.

The methodology used was qualitative bibliographic research through scientific articles and government sources, extracted from scientific journals and electronic addresses. Quantitative analysis was also used through graphs and tables extracted from

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the selected articles. The Google Scholar and Capes Journal Platform search instruments were used.

LITERATURE REVIEW

THE AGRARIAN QUESTION IN BRAZIL

When talking about agriculture in Brazil, the memory of large crops such as soybeans or corn, as well as large pastures with Nelore cattle, and bucolic landscapes of green pastures, golden plantations and people with wide-brimmed hats characterizing a wealth produced in the rural environment, comes to mind.

But, when we look at the reality of the rural issue, it can be noted that there is a totally different situation from the one narrated above. When analyzing the distribution of rural properties in Brazil, 76.8% of the properties belong to the family economy category. However, this same group occupies only 23% of the country's productive area, according to data extracted from the IBGE in 2019 (Faverato, 2022), as shown in Chart 1:

Table 1: Number and area occupied by family and employer establishments by major regions of the country for the year 2017.

	Number of Establishments			Occupied Area		
	Total	% family members	% employers	Total (ha)	% family members	% employers
N	580.613	82,8%	17,2%	65.213.349	30,3%	69,7%
NE	2.322.719	79,2%	20,8%	79.893.865	36,6%	63,4%
CO	347.263	64,3%	35,7%	112.004.322	8,9%	91,1%
IF	969.415	71,1%	28,9%	60.302.969	22,8%	77,2%
S	853.314	78,0%	22%	42.875.319	26,8%	73,2%
Total	5.073.324	76,8%	23,2%	351.289.816	23,0%	77,0%

Source: Faverato (2022).

Although the number of family economy establishments concentrates 3/4 of the number of rural properties in Brazil, this same group constitutes less than 1/4 of the country's productive area. Meanwhile, a small group of people, corresponding to less than

1/4 of rural producers concentrate more than 3/4 of the productive area, thus the discrepancy in the concentration of productive area is clear and, at the same time, several factors of inequality can be extracted, not only in area, but also in employment and income, human development and ecological development. In this sense, Faverato (2022) says:

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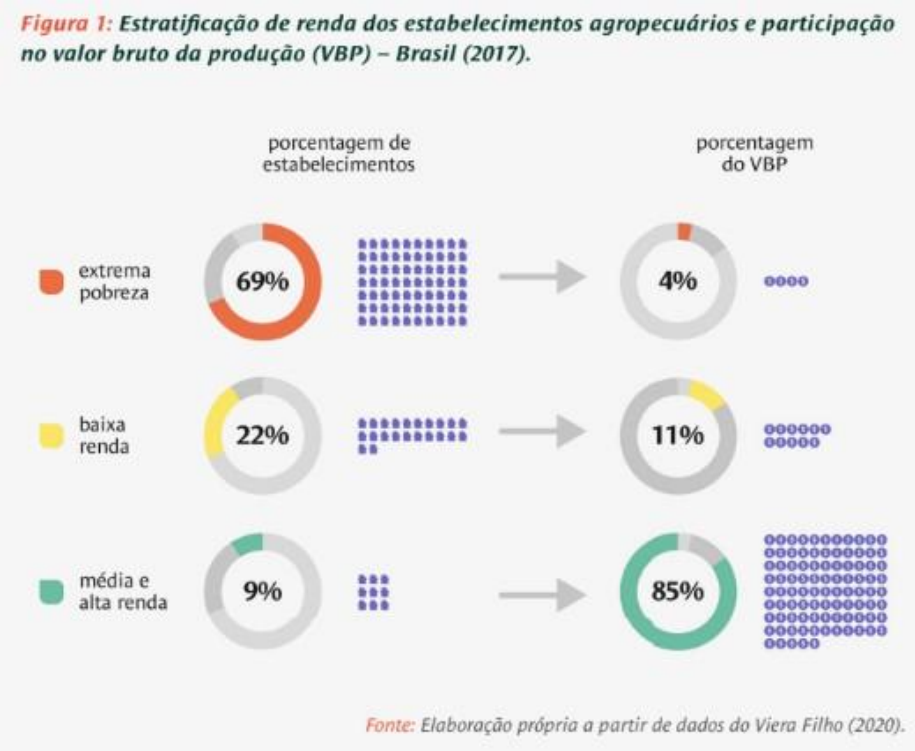
> Regarding production concentration, there has also been a deepening in recent years. According to Vieira Filho (2020), in 2006, only 11% of the richest establishments accounted for about 86% of the gross value of production (GVP), while the poorest 68% represented only 3.4%. In 2017, the richest 9% of establishments were responsible for 85% of the GVP, while the poorest 69% contributed 4%. In this discussion, it is important to clarify that the finding of the high concentration of income and production does not mean that low-income establishments or those in extreme poverty are productively unviable or that they can only benefit from social policies. (FAVERATO, 2022, p. 40)

That is, as the large number of properties belong to the family economy group and these have little productive area, these production areas have little capacity to generate satisfactory income for the subsistence of the family unit. Such a discrepancy can be seen in Image 1:

Image 1: Income Stratification



Source: Faverato (2022).

Another factor that demonstrates such inequality and depreciation towards the family farming group is the lack of technical guidance. Of all rural properties, only 20% receive the assistance of a technician, whether private or from a government agency, but of this 20%, the number of family or low-income farmers who receive technical assistance corresponds to only 35%, that is, a very limited number of properties (Faverato, 2022). Without technical assistance, the producer may have his production impaired, either in terms of quality or in

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terms of product quantities and, with the drop in production in quantitative terms or with a lower quality, the aggregate price also suffers depreciation, leading to a loss of profit in marketing, as well as in the income of this small property.

Access to credit for investment in production is another point of importance for the farmer. As previously noted, family farming and small farmers are harmed in the productive quantity, being the weakest link in the agricultural production chain, because with a very limited productive area, their production also becomes limited, being basically for their subsistence and selling the surplus. As the source of income is minimal, there is little left for investment, requiring government support, but even subsidies suffer discrepancy in their distribution. In 2023, when announcing the 2023/2024 Crop Plan, the Federal Government (Brasil, 2023) allocated a contribution of 364.22 billion reais to be distributed among large and medium-sized producers, with a positive variation in the amount of resources compared to the previous plan, as shown in Table 2:

Table 2: Volume of Resources – Purpose (in R$ billion)

Purpose	2022/2023	2023/2024	Variation
Costing and Commercialization	214,27	272,12	26%
Investment	71,98	92,10	28%
Total Crop Plan	287,16	364,22	26,8%

Source: Federal Government (2023) Elaborated by: SPA/MAPA

And for the same period, family farmers and small farmers have allocated a smaller contribution of subsidies to their financing, with a value of 50 billion reais for the 2023/2024 period. When analyzing the data provided by the Federal Government, through the Ministry of Agrarian Development (Brasil, 2024), there was a decrease in the amounts allocated to the financing of small producers and components of family farming, as shown in Graph 1:

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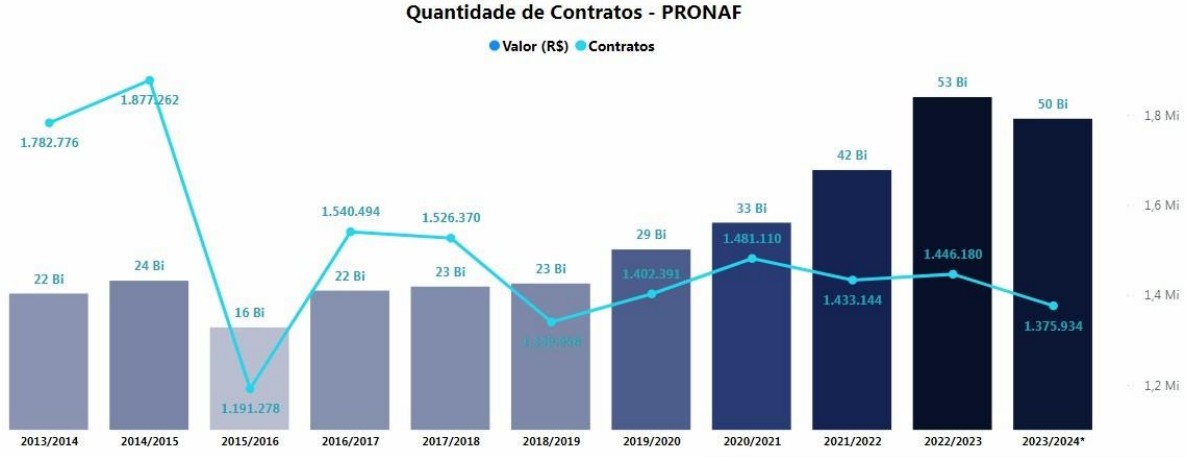
Graph 1: Variation in Pronaf financing contracts and amounts allocated to financing (in R$ billions)



Source: Federal Government (2024).

Observing the challenges faced by producers, it can be noted that the traditional method of extensive production cannot be successful in small properties, as they have a confusion between the producer's income and the property's profit, and rural family properties use the resources obtained from production to improve their living conditions and to subsist, allocating part of its production to self-consumption, removing the chance to strengthen assets for investment and consequently growth (Faverato, 2022). Therefore, small producers and family farmers should look for other ways to obtain this asset, such as organic agriculture and agroecology.

ORGANIC AGRICULTURAL PRODUCTION

An alternative form of agricultural production found by small producers and family producers was organic agriculture. But, what is organic farming? Organic agricultural production is based on the non-use of chemical products in crops, such as pesticides and chemical fertilizers, and the use of organic inputs is chosen, which are not harmful to the soil and the environment (Viglio, 1996).

According to Viglio (1996), there are basic criteria for production to be considered organic, namely:

1. Protect the natural fertility of soils in the long term, by maintaining organic matter levels, stimulating biological activity in the soil.
2. Cautious mechanized interventions.
3. Supply of nutrients to relatively insoluble crops (not obtained by chemical processes), which are made available to plants by the action of microorganisms.
4. Seeks self-sufficiency in nitrogen through the use of legumes and inoculations with nitrogen-fixing bacteria, as well as the effective recycling of organic materials from the incorporation of crop residues and animal manure.

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> 5. Control of pests, diseases and weeds primarily by crop rotation, natural enemies, genetic diversity, organic fertilization, use of resistant varieties and limited use (preferably minimal) of thermal, biological and chemical interventions.
> 6. To seek extensive ways of animal husbandry, aiming as far as possible at the well-being of the exploited species.
> 7. Special attention to the impact of the production system on the environment as a whole protecting existing wildlife. (Viglio, 1996, p.8)

Observing the established criteria, it is noted that there is a difficulty in agriculture in using the organic mode. However, when analyzing the data from Brazil, a large increase in the number of farmers who opted for the organic production system stands out.

According to the 2017 Agricultural Census, carried out by the IBGE, there were 68,716 rural properties certified as organic producers in Brazil. The Ministry of Agriculture, through the National Registry of Organic Producers, points to a smaller number of certified producers, with 17 thousand producers in 22 thousand production units, so there is a difference of 46 thousand certified producers and production units. (Lima; Galicia; V; Alves, 2020).

Even though there is a glaring difference between the IBGE and the Ministry of Agriculture's figures, it is not to be denied that organic agriculture in Brazil is going through a growth process, year by year, as shown in Graph 2:

Graph 2: Number of production and organic units registered with the Ministry of Agriculture

Source: Brazil (2019) in Lima; Galicia; V; Alves (2020)

Of this large number of establishments certified as organic producers, it can be seen that family farming has a participation of great importance, comprising the vast majority of producing establishments, to the detriment of non-family farming, as illustrated in Graph 3:

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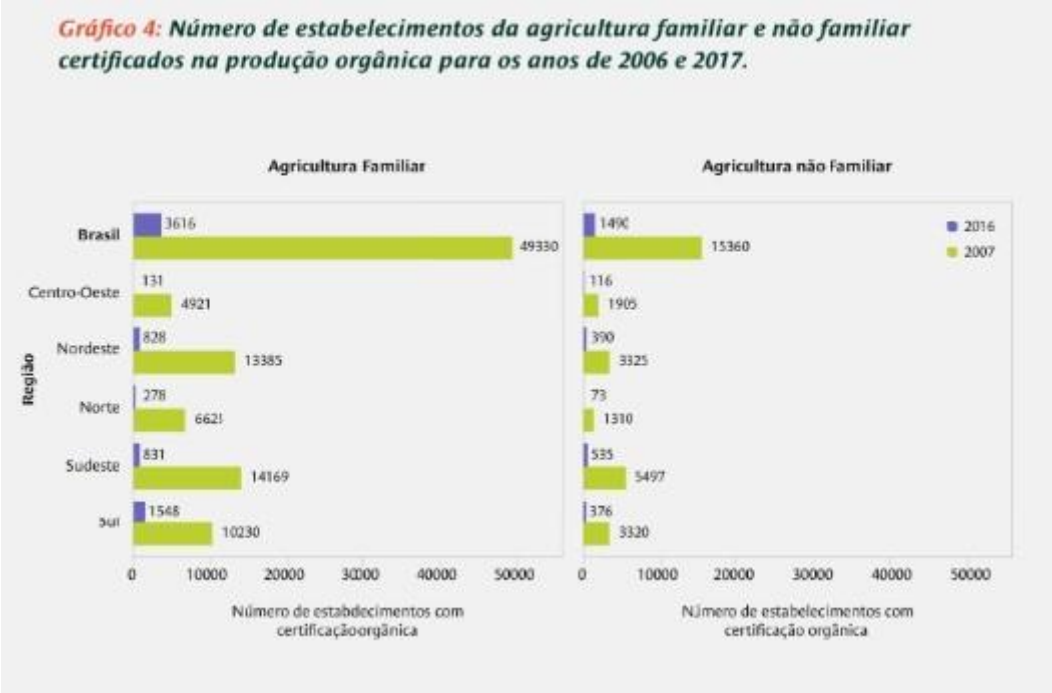
Graph 3: Number of family and non-family farming establishments certified in organic production for the years 2006 and 2017.



Source: Faverato (2022)

Analyzing the exponential jump in the number of organic producers, it can be noted that the vast majority comes from the family economy, being approximately 3/4 of the number of producers. But the same graph draws attention to another fact - the growth of organic cultivation by non-family establishments, that is, large and medium-sized producers, who are migrating from traditional agriculture towards organic agriculture. Such a question raises a question: do these producers truly care about well-being and the environment, or are they migrating because they have found a new niche in the market to be occupied in search of profit?

Friedmann (2005) answers the question by saying that:

> Food becomes a commodity, and as such it is treated, seeking its durability, its deterritorialization, appropriating its "natural" character and replacing it. From this stems an antagonistic movement, but which would also belong to and compose a complex third agri-food regime, which is that of the "greening" of capitalism. (Friedmann, 2005 in Da Costa Nascimento, 2018, p.619).

Thus, it can be seen that the increase in organic production is not merely an increase in awareness of healthy eating practices, but rather a market segment with immense exploratory potential and almost no competition.

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Like traditional agricultural products, organic products are being produced systematically so that there is no shortage of sampling in the market, not obeying the seasonality of the product. Regarding the industrialization of organic products, Da Costa Nascimento (2018) explains that:

The market is structured, has registered suppliers and the availability of products varies, basically, by seasonality. The organic market, having become an industry, is organized to offer all products, so as not to be missing on the shelves. (Da Costa Nascimento, 2018, p.620)

And even if it is a product without the use of chemicals in its production, which would characterize a product without the influence of capitalism, the items sold need a certification and this certification removes the human character of organic production, as explained by Da Costa Nascimento (2018) saying that:

> The organic products seal serves as an inspection and guarantee for consumers that that product is organic. However, the product with the seal means buying from an industry, from a machine, and not from those who produce it, and this is a consumer choice. As the organizer of the fair said, organic is a mass label. (Da Costa Nascimento, 2018, p.621)

And he continues:

> There is a growing appreciation of the organic market, and this favors the development of initiatives to promote the activity. (...) The eyes seem to be focused on the large production of the organic chain, which is established in production networks in the molds of factories, machines and labels. It is when the product of the land becomes a label, when respect for the small and truly sustainable producer can be lost before the exploitative industry of consumption, camouflaged by the label of "organic". The organic label becomes a distorted way of the market to further exploit the product of the land and its producer, using the seals "organic", "natural", "direct from the producer", to make the article more expensive (...) when, in fact, the producer does not have the financial return in the same proportion. The product gains a premium value in the market, it can be sold more expensive, however, the true value that the consumer transfers to it is not effective for its producer. The distribution chain ends up taking the largest share and the exploitation system repeats itself, now with a green label. (Da Costa Nascimento, 2018, p.224-225)

In other words, the organic market was subverted by capital in another item of the portfolio of products offered by the market to consumers at the first hour, without concern for the well-being of the consumer or producers, much less for the social and ecological conditions in which that product was grown.

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AGROECOLOGY AS AN ALTERNATIVE

Before understanding agroecology as an alternative, it is first important to know what this concept is. The term agroecology is something new when compared to traditional agriculture and organic agriculture. For Caporal and Costabeber (2002), agroecology:

> It reminds us of an agriculture that is less aggressive to the environment, which promotes social inclusion and provides better economic conditions for farmers in our state. Not only that, but we have also linked Agroecology to the offer of "clean", ecological products, free of chemical residues, as opposed to those characteristic of the Green Revolution. Therefore, Agroecology brings us the idea and expectation of a new agriculture, capable of doing good to men and the environment as a whole, moving us away from the dominant orientation of an agriculture that is intensive in capital, energy and non-renewable natural resources, aggressive to the environment, excluding from a social point of view and causing economic dependence. (Caporal; Costabeber, 2002, p.16)

More than a simple technique of agricultural production with an ecological character, agroecology is a mixture of several other areas such as agriculture, ecology, social and economic relations, etc., in order to develop the rural environment in a sustainable way. (Caporal; Costabeber, 2002).

As already mentioned, the organic product has been undergoing a process of industrialization and the loss of its identity as an alternative item to capitalist power. The agroecological article, on the other hand, unlike the organic one, comes from a small production, with producers coming from family farming or small producers and who are concerned with the land, the ecosystem in which they live and with the social nucleus they live with, such as their family and neighbors (Da Costa Nascimento, 2018).

Caporal and Costabeber (2002) corroborate by saying that in agroecology:

> The first objectives are not to maximize the production of a particular activity, but rather to optimize the balance of the agroecosystem as a whole, which means the need for greater emphasis on knowledge, analysis and interpretation of the complex relationships between people, crops, soil, water and animals. For this reason, research in the laboratory or in experimental stations, although necessary, is not enough because, without a greater approximation to the different agroecosystems, they do not correspond to the objective reality where their findings will be applied, nor do they safeguard the desired ecosystem focus. (Caporal; Costabeber, 2002, p.17)

In Brazil, with the inauguration of President Lula in 2003, agroecology began to gain a certain prominence, being regulated by Law No. 10,831 of December 23, 2003 and by Decree No. 7,794 of August 20, 2012, as well as by government actions, such as Pronaf Agroecology with the allocation of up to 130 thousand reais per farmer, and the registration

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of ecological farmers in the Food Acquisition Program, mainly for school meals, receiving an additional 30% of the value of the products sold to the program (Santos, 2014).

Meireles (2004) says that agroecology avoids the elitization of consumption of production and proposes a commercialization process that aims to:

> - democratize, popularize and massify the consumption of ecological products;
> - shorten the distance between producers and consumers, stimulating solidarity relations between them;
> - valuing the socio-environmental services generated;
> - make sure that the benefits of commercialization are shared among all those involved;
> - promote cooperation, transparency and complementarity between the agents of the commercialization process;
> - enable a growing inclusion of farmers and consumers in the market (MEIRELES, 2004, p. 13 in Santos, 2014).

This productive social practice called agroecology generates a sustainable form of income for the producer, preventing him from having to leave the rural area in search of work in the city, as well as conserving the existing biome in the countryside, where he lives. In this sense, Santos (2014) says that:

> Some policies begin the process of offering agroecological production ways to establish itself, and to constitute itself as an alternative of sustainability for the rural environment, as it has a techno-scientific basis of strategies for sustainable rural development. Through these practices, the objective is the permanence of families in the countryside based on the sustainable management of soils, the conservation of natural resources, the valorization of local knowledge, the independence of small farmers who sell their products without the presence of the middleman. (Santos, 2014)

At the same time, the small farmer who can sell his surplus production and transform it, not only into income, but also into working capital for investments in the property, thus leaving the reality exposed in image 1. Commercialization for agroecology is not only a commercial relationship, but also a social relationship, in which bonds are formed between the farmer and the customer, offering quality of life to both sides. Santos (2014) says that:

> Equally important is the possibility that agroecological practices offer farmers to market their products in the urban space, especially because a relationship is established that goes beyond the commercialization/consumption relationship. These environments consist of spaces for mutual exchange, establishment of bonds, in addition to allowing farmers to talk about their production, their trajectories, socialize their teachings, and hear from consumers what needs to be improved. (Santos, 2014)

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Which completes with sayings by Caporal (2001)

> In the commercialization space, it is common to exchange products among the stallholders, providing the strengthening of solidarity ties between the group and facilitating collective actions, such as the definition of prices. Through these experiences, it is possible to perceive that for family farmers there is a possibility of developing themselves while maintaining independence from state action, different from the conventional model that requires a large amount of subsidies, as stated by Caporal (2001). (Caporal, 2001 in Santos, 2014).

In this way, agroecology is a system that values the sustainable socioeconomic valorization of the rural population, especially small producers and family producers, as well as providing the consumer of the product with a better quality of life.

METHODOLOGY

The qualitative research method was used, through a bibliographic survey of articles and newsletters of the federal government that dealt with the theme agroecology, organics and agriculture. Through the articles, graphs were collected that enriched the demonstration of data, better elucidating the theme. The search in the search tools used the words: agroecology, organic, family farming, organic agriculture and extensive organic production. After showing the articles that are related to the keywords, the texts that supported this article were selected, due to their greater connection with the theme.

As a search tool, the Google Scholar systems, developed by the American company Google, and the Capes Journal Platform, belonging to the Federal Government of Brazil, were used.

Through this research it was sought to demonstrate the capitulation of organic production to capitalism and the resistance of small family farmers to the industrialization of agriculture, using agroecology as an instrument of this resistance.

RESULTS AND ANALYSIS

As already analyzed, it can be noted that the situation of small producers and family farming in Brazil faces great challenges, which sometimes may become unfeasible for them to exist as an individual in the countryside, as a food producer.

The advance of extensive agriculture has been a major factor in the exclusion of small producers and their families from the countryside, not only when it comes to rural possession, but also when it comes to income.

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The lack of income for the subsistence of small farmers and their families is the main generator of what is known as rural exodus, in which families exchange their property and life in the countryside for a life in the urban environment, in degrading conditions, but with the dream of having a better quality of life than the previous one on their rural property.

Even though it is a large portion of the countryside, in terms of population, in territorial terms the small farmer and the family farmer are the minority in cultivation area, in percentage, while 25% of rural landowners own 75% of the arable land, concentrated in large properties, the other 75% of rural landowners own the rest of the arable area, that is, only 25%. In this 25% the farmer needs to produce a considerable number for his subsistence, but also for sale, for income generation. But because they are very small properties or even micro properties, this production process is deficient, since any variable, whether natural or human, can bring serious damage to production and consequently to the survival of that small rural nucleus.

Such problems could be alleviated or have a beginning to the end if there were technical and financial assistance from the government and its entities, because such services, when regulated by the market, become excessively expensive for small producers. However, when analyzing the graphs in section 2.1, it can be seen that the attention to these small producers and family farming is relatively low compared to the aid to medium and large producers.

Analyzing graph 1 and table 2, it is noted that there is a discrepancy in power between large producers and small producers, even though the latter are the majority in numerical terms. As a justification for this difference in allocated resources, it can be listed that the production of the large ones is greater and therefore needs more investments, but when one reflects on it, which of the producers has more difficulty in obtaining financial currency with their production? Which of them have assets that can guarantee financing? Which of them do not suffer losses in production due to climatic and human inclement weather that will significantly affect their income?

When answering these questions, what we have is the small producer in need of aid and prone to exclusion, while the large producer does not need aid because he has considerable capital for investment. Therefore, the federal government's aid policies should be aimed largely at micro and small producers, as large producers have financial and technical autonomy to conduct production.

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Organic agriculture is a way, then, for small farmers to counteract this unfair balance that tilts towards capital, but, as it is a product generated without the use of chemicals and only using natural resources, the eyes of the market have started to turn to this nascent "niche", with a considerable demand, but little supply, given the production technique.

In this way, the organic product is no longer something that comes from the concern for well-being, because, with a high demand and low supply, the prices practiced also rise, which leads to several consequences, of which four are noted: 1) the improper use of maximized natural resources to produce more and meet the growing demand of the market, not taking the necessary care for environmental preservation; 2) the increase in individualization in favor of the well-being of the individual who consumes without worrying about others around him; 3) the food exclusion of the poorest, because the so-called healthy foods will have high prices and will be inaccessible to the lower economic classes;

4) exclusion of small producers from the market, because their product that is seasonal will face competition with organic products grown in controlled environments, not being affected by seasonality.

The most viable alternative to break this reality is agroecology, as it has several factors in addition to technique, which can take the small farmer and his family to another level. Agroecology is a branch of agriculture, which produces food naturally, without the use of chemicals, using natural resources consciously and obeying its rhythm of regeneration. With a small production, it also benefits from seasonality to produce better quality items that are accessible to consumers. More than production, it also takes into account the ecological and social context in which that nucleus is involved, maintaining a balance with the environment that surrounds the property and strengthens the social nuclei, through the family that produces the land, the neighbor who helps the production in some way, and the producer with the final consumer of his product, who acquires a relationship of trust and this social relationship evolves into a possible friendship that goes beyond the commercial relationship.

CONCLUSION

In view of all the above, it is possible to define agroecology as a social production process, differing from the capitalist production of conventional agriculture.

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Organic products have a good capillarity and can be produced by small farmers, but then they enter into an essential factor, between capital and social, public and private, inclusion and exclusion.

The traditional mode of production is totally private, as it has capital control, whether on the farm, industrialization or even in the commercialization of seeds. In other words, everything revolves around profit and with the dominance of large corporations, such as Monsanto and Bayer, which owns the production of genetically modified seeds (transgenic), chemical fertilizers and pesticides, and machinery industries such as Case, New Holland, John Deere, Valtra and Massey Ferguson, which owns the production of agricultural machinery and large rural properties. In other words, few people control the global production process.

Unfortunately, organic production has also suffered from the onslaught of capital, already being produced on a large scale to meet a growing demand from the consumer market, and no longer being a viable alternative.

The only form of liberation that rural production can have from the capitalist regime is agroecology, because it values ecological and social relations, and is not tied to the control of large corporations and small groups of financial dominance.

Agroecology is a form of free production by growing products in a sustainable and environmentally friendly way. It is a form of independence for small producers, as the demands and inconstancies of the market are not volatile. It is a way of strengthening social relations, as it creates bonds and bonds between producers and consumers that go beyond the market relationship. It is a form of ecosystem preservation, as it values the correct use of the soil and the preservation of natural resources and fauna. It is a form of food inclusion, as it can meet the food demand of low-income people at low cost. It is a form of health inclusion, because with a healthy product, the propensity to diseases is minimal. With these and other factors, we can produce a question and an answer: What is agroecology? It is liberation from the shackles of capital.

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