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AGROECOLOGICAL SYSTEMS OF PRODUCTION AND FOOD CONSUMPTION IN SÃO DOMINGOS, SOBRAL, CEARÁ

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ABSTRACT
The consumption of healthy foods is essential for nutrition and quality of human life. Thus, family farming is responsible for the production of organic food, since the people who inhabit urban centers depend on this sustainable production. In addition, the spatial clipping of the research is situated on the backcountry surface, in the semi-arid northeast. The community of São Domingos, is located 25 km from the municipality of Sobral- Ceará. The aim of the study is to characterize the agroecological systems of consumption and production (PAIS and Mandala) and to present their multiple uses, and commercial flows in the sale of cultivated products. It is concluded that agroecological systems are a source of income that fosters the local economy and helps in the healthy diet of people who consume the cultivated fruits.
Keywords: agroecological systems; food consumption; social technologies

SISTEMAS AGROECOLÓGICOS DE PRODUÇÃO E CONSUMO ALIMENTAR EM SÃO DOMINGOS, SOBRAL, CEARÁ

RESUMO
O consumo de alimentos saudáveis é essencial para a nutrição e qualidade de vida humana. Assim, a agricultura familiar é responsável pela produção de alimentos orgânicos, uma vez que as pessoas que habitam os centros urbanos dependem dessa produção sustentável. Soma-se a isso, o recorte espacial da pesquisa é situado na superfície sertaneja, no semiárido nordestino. A comunidade de São Domingos, localiza-se a 25 km do município sede Sobral- Ceará. O objetivo do estudo é caracterizar os sistemas agroecológicos de consumo e produção (*PAIS* e *Mandala*) e

apresentar seus usos múltiplos, e fluxos comerciais na venda dos produtos cultivados. Concluir-se que os sistemas agroecológicos são uma fonte de renda que fomenta a economia local e ajuda na alimentação saudável das pessoas que consomem os frutos cultivados.
Palavras chave: sistemas agroecológicos; consumo alimentar; tecnologias sociais

INTRODUCTION

Agroecological production includes many agricultural practices, among which organic family farming stands out. Such systems are spatially represented in the semi-arid environment or in local ecological agrosystems. Thus, food production is diversified, whether in the commercialization in the very place that is cultivated or in the region and the processing of food products, in some cases fruit pulp is made. According to Kneafsey et al. (2013), a local agri-food system consists of a structure where food is produced, processed and marketed within a defined geographical area.

Societies seek healthy and sustainable life alternatives. In this sense, the production, processing, distribution and consumption of food have become important issues on the agenda of the governments of different countries (ORGANIZACIÓN DE LÁS NACIONES UNIDAS PARA LA AGRICULTURA Y LA ALIMENTACIÓN [FAO], 2011).

The United Nations-UN Organization in Brazil establishes 17th Sustainable Development Goals (SDGs), which must be achieved in the 2030 Agenda, among which the 2nd goal is allusive to *Zero Hunger and Sustainable Agriculture*. It should be emphasized that food produced in ecological agrosystems are fundamental elements in the models of sustainable socioeconomic development regulated by both the State and the market (Triches, 2015).

The mode of production and consumption of today's society brings serious threats to the planet (Zulauf, 2000), so the world needs solutions that seek to increase food production, without further compromising the environment (Nascimento; Mendonça; Cunha, 2012).

The population increase and the need to produce food to meet the growing demand have been a major global obstacle, requiring the search for sustainable food production systems (Hundley et al., 2013). Due to its importance and complexity, this theme is part of one of the SDGs- Sustainable Development Goals, objective 2: "Ending hunger, achieving food security and improving nutrition and promoting sustainable agriculture" (UNESCO, 2015).

In the words of Martinez et al. (2010), agri-food systems involve local farmers' markets, heterogeneous products and short agri-food chains, in which farmers in addition to producing can also perform marketing functions, including storage, packaging, transport and distribution.

This is configured with the adherence of farmers with the different means of commercialization, such as the sale of products in communication groups (WhatsApp), in agroecological fairs that are spaces for buying and selling fruits and vegetables that consists of marketing strategies that boost the production of the field, providing healthy food in the countryside and in the city, in addition to ensuring the increase of family income.

Thus, the science entitled Agroecological is based on the formation of new trends in agriculture, giving a functioning, organization and possibilities of agroecosystems, interconnect with the new socio-environmental technologies, currently produced by the most diverse human groups (Gliessmam, 2000).

As locus of this study we elect the community of São Domingos, located in the city of Sobral, CE, where the focus of the research is on the analysis of two agroecological systems: the *PAIS- Integrated and Sustainable Agroecological Production and the Mandala Production System.* The aforementioned agrosystems are also social technologies of coexistence with the semi-arid, which aim to promote the quality of life of the beneficiaries, economic productivity, sustainable development and environmental balance in the rural area of the Northeast.

As already focused, Froehlich (2010) also points out that the characteristics involved in the process of purchasing products directly from local family farmers potentiate advantages for all those involved in this process, besides combining Food and Nutritional Security (SAN) and local development.

Thus, agroecological practices, in addition to contributing to the environmental balance of ecosystems, help in the recovery and revitalization of the environment.

In this sense, the objective of this study is to characterize the agroecological systems of consumption and production (*PAIS and Mandala*) and to present its multiple uses, as well as socio-environmental impacts.

SOCIAL TECHNOLOGIES

Generally speaking, social technologies, in summary, are important pieces that are developed through popular knowledge and problems of local origin, a social construction, based on creativity and availability of resources existing in the locality. Social technologies are costly and easy to replicate. In addition, they can be suitable for new realities and according to the needs or resources available (Sebrae, 2017a). Generally speaking, social technologies, in summary, are important pieces that are developed through popular knowledge and problems of local origin, a social construction, based on creativity and availability of resources existing in the locality. Social technologies are costly and easy to replicate. In addition, they can be suitable for new realities and according to the needs or resources available (Sebrae, 2017a).

The concept of "social technology" is thought broadly for the different layers of society. The adjective "social" does not claim to affirm only the need for technology for the poor or underdeveloped countries (Jesus & Costa, 2013). The model that prevails in technological development has as its idea a proposal of sustainable basis and with solidary guidelines of technology for all social categories. Social technology implies participation, empowerment of active users (Jesus & Costa, 2013).

This social technology, in addition to avoiding the migration of man from the countryside to the peripheries of urban centers and promoting the self-sufficiency of families contributes to the good performance and strengthening of family farming (Küster, Martí, & Melchers, 2006; Mesiano & Days, 2008). With regard to the water resources of social technologies, several studies have already evidenced its applicability in a favorable way (Magalhães et al (2012), Falcão Sobrinho et al (2015; 2017; 2019;

2021). Almeida and Falcão Sobrinho (2020), Carvalho and Falcão Sobrinho (2021); FALCÃO SOBRINHO (2020th and 2020b)

It is clear that agroecology, in which organic production is inserted, integrates agronomic, ecological, cultural and socioeconomic principles (Altieri, 2004), encourages environmentally friendly cultivation practices and the need for dialogue between producers and consumers, with the purpose of offering food to humans and benefiting the environment (Brito; Mello, 2016).

The sertaneja surface, despite its great variability of natural elements, there is something in common in this type of environment, these are areas susceptible to the consequences generated by rainfall irregularity, typical of semi-arid climate, erosion and degradation of the soil, by traditional methods of uses, especially agricultural. (Sobrinho Falcão; Costa Falcão, 2006).

Soil degradation causes undeniable environmental impacts, soil is a natural element for food cultivation, it is necessary to keep it for future generations. The environment suffers constantly, with forest fires that cause damage to the natural habitat.

The use of fire is considered a harmful and outdated technique, as it destroys local biodiversity, eliminating various forms of life. The temperature in a burn can exceed 800º centigrade, causing the death of animals, when not injured or intoxicated. Although the fires are framed as an environmental crime (Law 9.605/98) and also research shows that there are more advanced techniques than fire to improve productivity, yet more than 90% of forest fires are caused by human action, of purposeful origin, accidental or negligence (Inpe, 2017).

It must be true that nature is a complex system, in which all natural and social elements are integrated, erosive processes, fires and the use of fire in agricultural cultivation, ship a direct risk to agricultural and agroecological production. Thus, the implementation of actions and practices that promote sustainable development are valuable for the terrestrial and aquatic ecosystem. Similarly, a theoretical framework on agroecological systems: *PAIS and Mandala* is presented.

In this view, PAIS social technology- Integrated and Sustainable Agroecological Production is an alternative of work and income for family farming, which can be replicated by all rural producers in improving the quality of food production, because it enables the cultivation of healthier foods, both for their subsistence and for local marketing, it also brings the modification of the family agro ecosystem representing traits compatible with the principles of sustainable development.

Enhancing rural development, having in family agriculture the referent and central axis of support, oriented fundamentally towards the generation of employment and income in rural areas" (Sacco dos Anjos, 2003, p. 272). The identification and systematization of these characteristics allow the redesign of agroecosystems, adapting them to the principles of a new development proposal, which prioritizes the pillars of sustainability.

Among the concepts or definitions that are established by the institutions, regarding PAIS, the Banco do Brasil Foundation defines it as:

> A social technology that allows family farmers to produce without the use of pesticides, with the concern of preserving the environment and providing

> food security and income generation through socioproductive inclusion. Social technology because it is a replicable technique, developed in interaction with the community y and that represents effective social transformation (FBB, 2013, p. 6).

Regarding its creation, influenced by the work of family farmers who chose to do a diversified agriculture, concerned with social and environmental issues and without the use of toxic products, the aforementioned Social Technology, popularly known as the PAIS project or system, took its first steps in the locality of Brejal, municipality of Petrópolis/RJ (Roman, 2013).

Integrating simple and easy-to-adapt techniques, the PAIS system guarantees the production of food in small spaces, based on organic agriculture, gathering in the same place vegetable garden, orchard and animal husband (N'Diaye, 2009). Theoretically, PAIS is mounted in a module with approximately 5,000 m², divided into a central chicken coop of 17 m², a grain production area of 500 m², a vegetable garden of 200 m2 and an area for the production of fruits, tubers and pumpkins of 4,200 m2 (Pais, 2012).

Because the PAIS system uses technologies based on the concepts of integration and sustainability, according to which different crops are produced from a ring system (Romão, 2010), there is the possibility of breaking with resource instability through the domain of technology by farmers.

Thus, prioritizing the agroecological management of the system, the proposal is that over time the beneficiaries of the PAIS program add more beds to the original format and diversify the production with other crops, with the chance of commercialization of the surplus and the aggregation of value with the processing of fruits and vegetables.

Making a brief history, occurred in December 2005, through the Banco do Brasil Foundation in partnership with the Ministry of Integration and the Brazilian Service of Support to Micro and Small Enterprises (SEBRAE), the formation of the so-called National Steering Committee, initiating the dissemination of PAIS throughout Brazil (Getúlio Vargas Foundation, 2008). Between 2005 and 2007, with this partnership, 1,300 units of the PAIS system were built in 33 municipalities in 11 states (Alagoas, Bahia, Ceará, Espírito Santo, Goiás, Minas Gerais, Mato Grosso do Sul, Paraíba, Piauí, Sergipe and Rio Grande do Norte), totaling R$ 3.8 million in social investments from the Banco do Brasil Foundation (Pais, 2012). In this case, we can see the locational spatiality of these social technologies in The Brazilian territory.

With regard to the Mandala model, the dissemination of this system began in 2002, through the initiative of Professor Willy Pessoa and a group of young university students in João Pessoa (PB), founding the Mandalla DHSA Agency (Holistic and Systemic Environmental Development), an OSCIP (Civil Society Organization of Public Interest).

The system was also replicated in the community of São Domingos in the municipality of Sobral, CE. The locality has a community area, cultivated along the lines of PAIS, where it has an area with an orchard of several fruit trees; area for the continuous production of vegetables and alternating grains and tubers; in addition to the production

of forage species and breeding of goats and birds, aiming at consumption and commercialization in the region.

About the Mandala, it is known that this word Mandala has Indian origin, being a drawing composed of concentric geometric figures. From a religious point of view, it is a representation of the human being and the universe. The Mandala system reproduces the structure of the Solar System (Barros; Moraes, 2009).

The Mandala System consists of the consortium of agricultural production that is widespread in small rural communities. Its main objective is the diversification of agricultural activities, and its purpose is to improve the food pattern of families and increase income through the introduction of appropriate low-cost production technology (Abreu et al; 2010).

To achieve the proposed sustainability levels, the Mandalla DHSA Agency is based on the principles of Permaculture. At the center of the perambulator's activity is conscious planning that makes it possible, among other things, the use of land and water without waste or pollution, the restoration of degraded landscapes and the minimum energy consumption (Magalhães et al., 2012).

Thus, the format of this system is basically a new form of irrigation. The construction of a reservoir in the middle of planting in circles in order to make better use of the space, since the project is applied in small rural properties. Food production is diversified (Mesiano and Dias, 2008).

This process is a system focused on agricultural and agro-industrial production that uses irrigation and the rearing of small animals, starting from its central point where all forms of energy originate, ensuring the sustainability of the environment (Paulinoet al., 2007).

The main idea of this agroecological system is to maintain the permanence and durability of benefits, creating conditions for communities to sustain themselves over time, preserving the productive capacity of natural resources, ensuring economic viability and substantial improvement in quality of life, as well as promoting equity as a principle of social coexistence (Sebrae, 2004).

This system is a social innovation, which covers economic productivity, quality of life and environmental balance of natural elements, such as: soil, fauna, and vegetation, among others, which establishes the guarantee of food sustainability and is also present in the study area.

MATERIAL AND METHOD

The study area is located on the sertaneja surface, in São Domingos, which is located in the municipality of Sobral- Ceará. The locality had its first inhabitants in 1942, due to the lack of water and drought; some residents had to move from their places of origin, to an area that was privileged by a weir, water resource existing in this environment. The individuals who migrated near the reservoir wanted a better quality of life and the possibility of growing corn or beans. As a result, several people formed a village, which would later be called São Domingos.

The Catholic Church, was an institution responsible for the local development of this community, we can highlight the participation of the Diocese of Sobral, through the Parish of Patrocínio, which sought to alleviate social problems in various segments of society. The parish through Father João Batista Frota, created the Project Our Goat every Day, this project sought as main objective the creation of goats, to obtain goat milk, this food was essential for the nutrition of many children who died from child malnutrition.

In 1993, some social assistance services were deployed in the community, had the construction of a municipal college, on September 22, 1997 was planned the creation of a community association, which had as other objectives the organization of the community in general. Electricity was one of these basic services, which in 2000 came to the first homes with electricity, which helped many people, because some did not have the lighting in their homes.

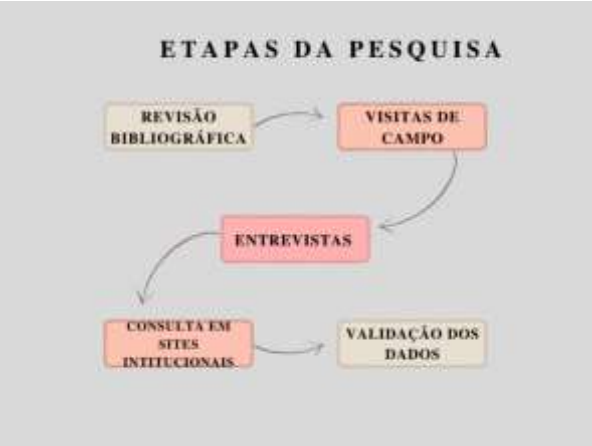
Fish farming was another project carried out in the community, which consists of the creation of fish in cages in dams or lakes. In 2001, the first fish cage was implanted, which benefited 20 families and helped in the financial condition of these families. With the partnership of the Northeast bank, in 2006 it was possible for some associates to invest in financial loans for farmers to buy some herds to help with family income. The community site was another project, which had the support of government agencies, it was suggested the implementation of a Mandala, which is currently included in the community site.

The village is on the banks of the public dam Ayres de Sousa, currently the community is organized legally through the community association of São Domingos. Today residents have essential basic services, such as: a basic health unit, a school that cares for children in the process of literacy, a water supply network, municipal square, a collective road, a place that houses animals such as goats and sheep. In relation to the main sources of income in the locality, it focuses on family farming, fishing, livestock and retirements.

Figure 1– Panoramic view of the community of São Domingos

Source: https://www.instagram.com/super.clickls/

Figure 2- Flowchart- Research Steps



Source: ASSIS, 2022.

The first stage of the research included a bibliographic review of the theme studied. The literature was extracted from databases, where scientific articles, dissertations and theses are found. The 2nd moment consisted of field visits in the study area. In which the agroecological systems were identified, at the time photographs of the space were recorded. The agricultural potential of the site was observed, the type of soil predominant in the region.

The interview was another stage of the research, the act of interviewing someone it is possible to obtain information and know the peculiarities of the object of study. The interview was conducted on May 22, 2022, with targeted questions, such as: types of irrigation, cultivated fruits. A targeted search was conducted on websites that present materials about agroecological systems in São Domingos, and some actions that were and are performed in the locality were observed. Ultimately, the data validation process was carried out, in the item of results and discussions.

RESULTS AND DISCUSSION

In São Domingos, the actions that gave rise to PAIS were initiated in 2014. Initially there was the implementation of a project to create goats the project: Cabra Nossa de Cada Dia, which comes from the Catholic prayer: The Bread of Our Sum sums. It is known that the production of manure, from goats, enables fertilization and improvement of soil fertility for plant production, which includes diversified fruit trees. On the other hand, the tramplering of animals potentiates the process of soil erosion.

It should be emphasized that in the area where the two agroecological systems are located, the site has a steep slope; this facilitates soil loss due to erosion and impoverishes the nutrients present in the soil. Associativism is one of the characteristics of the residents of São Domingos, so several fruit plant species were planted, such as: mangos, cowberries and banana trees in the community site, which is a green area next to the dam, in which the Mandala is inside the site.

In general, PAIS is an agro food ecosystem that consists of the cultivation of fruits and vegetables. It is observed that in figure3, the physical composition of the PAIS, which

consists of wooden rods, coconut straws that form the roof. There is also a small fence around, for birds to circulate, bird feces can and are used for fertilization.

Currently, this system has a cultivation area of one hectare, with olericulture plantation, focusing on hardwood, being the main activity generating income. The commercialization is mainly done through the government program PAA (Food Acquisition Program). In 2020, more than 1,000 kilos of green smell (coriander and chives) were sold, 30 kilos of pepper, cauliflower, not including sales, made in the community itself, with the support of social networks, the dissemination of products and direct sales, through the community's WhatsApp group.

It is important to mention some programs and public policies that establish a direct link with agroecological production, such as the Food Acquisition Program (PAA), the National School Feeding Program (PNAE), incentives for milk production and consumption (PAA Leite) and the National Program for Strengthening Family Agriculture (PRONAF), the Federal Government's main program for guarantee, maintenance and development of family farming.

In this sense, people who work daily with nature, over time, perceive the natural dynamics of the environment, such as: the correct period of planting and harvesting of fruits, if the soil is fertile for cultivation. They have the perception that pesticides cause harmful damage to agricultural production and human health, making their use unfeasible.

Such knowledge is popularized in the semi-arid by the influence of welfare agencies, such as the Technical Assistance and Rural Extension Company of Ceará (Ematerce) that share technical knowledge, with the traditional information that the man of the backwoods knows, as an example: the prophets of rains and their predictions. Thus developing a link of mutual communication between the producer and the specialized technician.

In PAIS is grown: cabbage, coriander, chives and pepper. The physical shape and agricultural production are planted in the form of a concentric circle, with several turns to each other, as can be seen in the figure below. In addition to the crops mentioned, there are hand and cowberry that are planted around the PAIS, that is, the production is integrated.

Commonly, soils in northeastern Brazil suffer the process of erosion, either natural or by social action. It turns out that cultivation in circles helps reduce erosion and loss of water underground and increases agricultural productivity. As can be seen by both the PAIS and the Mandala, the production is around a circle.

It is evident that in the study area the predominance of soil type is the Eutrophic Litholic Neosol, so the texture of this soil is: medium or clayey, the horizon: Weak and relief: flat or wavy, this information was extracted from the platform of the National Soil Program of Brazil- PronaSolos, which has data on Brazilian soils.

In relation to water resources, water is a good in the public domain, among which there are multiple uses, which is human consumption and desquenation of animals, among the priorities. Irrigation uses excessive amounts of water. Thus, the main water source that supplies water to PAIS and Mandala comes from the ayres de Sousa public dam, located

in the jaibaras-sobral district (CE), which is in the acaraú river basin. The irrigation system is by means of pipe, PVC pipes that are interconnected to a water box. Already in the weir bed an engine pump the water to reach the water box and therefore irrigate the fruits,the sprinkler system is currently used to irrigate the food, as shown in Figure 3.

Figure 3 - Integrated and Sustainable Agroecological Production - PAIS

Source: ASSIS, 2022

The fruits produced are harvested weekly, such as coriander and chives, for sale in the community or at family farming fairs. The maintenance of the PAIS is done constantly, be it the exchange of straw, putting another new, or cleaning the area, removing weeds. Composting is made with organic compounds, leaves, branches, or animal feces. In the figure above show fertilizer ready to use in production, this fertilizer was given by the Municipality of Sobral, through the composting plant.

Part of the production harvested during the week is marketed in the locality itself, the food grown are organic, essential for the quality of human life. Producers also market their products to the Paa Food Acquisition Program. In this view, another aspect observed during field visits, are the traditional customs that are permeated from generation to generation. People who work in the PAIS is a family group, so each person plays a role.

It is worth mentioning that to have agricultural productivity, several constraints are required, such as financial investments and technical assistance. Among the government agencies that assist producers is Ematerce. The news published on the official website of the agency says: Ematerce assists agroecological projects in communities of Sobral-CE.The objective of said technology that is to enable the production of healthier foods (fruits and vegetables), without the use of pesticides, serving both for the consumption of the families of farmers in the community and for marketing.

Figure 4- Mandala Food Production System

Source: ASSIS, 2022

In view of these considerations, Figure 4 exposes the Mandala; the said system was built in 2010. In the year of Mandala implantation, the breeding of birds began, such as ducks, chickens and fish. These animals collaborate in the natural cycle of this system, both in the natural balance between plant and animal species. In this case, in the image see the banana trees, so the bees perform the pollination process that acts directly in the fruiting and reproduction of the plant species of the site.

It is appropriate to emphasize that currently there are only fish in the Mandala, which are created only for human subsistence, for food. Around the system there are edible fruits such as cowberry, guava, mango and banana. It is worth mentioning that the forestation of the community site, where the Mandala is located is essential for the climatic stability of the area and air quality, it is worth mentioning the proximity of the dam. In the site, there is a floristic diversity of fruits and trees native to the semi-arid, the local forestation, depends on the valorization of local biodiversity, which induces the conservation and preservation of natural resources.

It is necessary to emphasize that the rains on the site are scarce, so other alternatives are needed to assist in agricultural cultivation. Irrigation is commonly a viable option for the environment. The irrigation system is by means of enchantment, which is pumped by a water pump motor that lies on the banks of the dam.

Thus, in Figure 4, there are branches of cut hoses, pruned hoses and leaves on the floor. Both, the branches, leaves and spoiled fruits are reused for the composting process, which aims to produce organic compounds for fertilizing the plants in the site and pruning the plants help in the vegetative growth of the trees. Knowledge about composting, pruning and reuse of organic components is taught through thematic workshops, visits by agricultural technicians and scientific research that is developed in the research area. These environmental practices are added to contemporary themes such as Environmental Education, which is a theme that requires ephemeral discussions and practices in social spaces.

In the course of the research, it was observed that in São Domingos, it is not only agriculture, as a source of exclusive income, there are other branches, such as: sheep and goat farming, which is goat farming, the fragment below present's information about the history of rural extension in the locality. The article says: Sobral: Place São Domingos is attended by *Ematerce.*

Executive Board and several technicians from the offices of the administrative regions of Sobral and Ibiapaba and also of the management center of Ematerce made a group visit, in Sobral, to the São Domingos community, which is 30 kilometers from the city's headquarters and receives technical guidance from the Ematerce de Sobral office. The history of the official rural extension in the São Domingos community began in 1993, with support for the "Cabra Nossa" project, conceived by the priest and community leader, João Batista. At the time, 32 families benefited from the receipt of 200 goats and 10 more fish farming cages, implanted in the Jaibaras reservoir. In the same year, Ematerce developed a Pronaf aimed at increasing cages for fish farming, providing a significant increase in production. Today, there are 120 cages in production, producing 15,000 kilos/month of fish. Ematerce has also made several projects to finance costs for the acquisition of feed, to meet the needs of fish farming.

CONCLUSIONS

For the purposes of this study, the agroecological systems studied are essential both for ecological balance, as well as the quality of life of people, who consume the food produced in the respective systems: Mandala and PAIS. It is necessary to underline the relationship of the SDGs with the article in question, which they share with the SDGs 1-Eradication of poverty, 2-Zero hunger and sustainable agriculture and the 11-Sustainable cities and communities.

Thus, the community of São Domingos is an example of a sustainable community, such agrosystems are responsible for local sustainable development, where there are environmental practices, such as: composting, the commercialization of organic food and preservation of water resources, such as the protection of riplet forests of the reservoir.

Food is a topic that requires discussions among international organizations, such as the Food and Agriculture Organization of the United Nations - FAO. It is known that many people suffer from food insecurity due to the lack of daily meals. Thus, the implementation of other agrosystems in other rural communities is essential to prevent this fact. As it was put, many people consume industrialized foods, harmful to human health.

Similarly, in addition to food security, with the implementation of other Mandala, in communities, places similar to São Domingos help in the promotion of a specific financial income. It should be noted that government food purchase programs are necessary in the flow of income from producers.

As is known, it is necessary to promote family farming, in which the feeding of large urban centers comes from rural production, so it is necessary to invest in courses on family agriculture, soil erosion, evidenced by the negative causes of the erosion process that causes the loss of agricultural productivity and among other factors that should be discussed.

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