THE CONSERVATION OF AGRICULTURAL BIODIVERSITY AS A STRATEGY TO GUARANTEE FOOD SECURITY AND SOVEREIGNTY IN BRAZIL

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ABSTRACT

Hunger is a problem that covers several sectors, being mainly the product of a historical trajectory of disorganization of public policies. In this context, concerns arise with strategies that enable increased production, availability, and access to food, with emerging proposals that value the environment during this process, as well as food security and sovereignty. To guarantee these motions, traditional communities stand out, which adopt agroecological production systems, aiming for a sustainable approach that conserves the agrobiodiversity of the people and enhances sociocultural diversity through their «creole» varieties. Creole are commonly selected and cultivated in certain locations by different people, often for their own subsistence. Considering the conception that the epistemological crisis of conventional science is giving space to a new political and participatory epistemology to rise, the objective of this study is to discuss the contribution of agrobiodiversity preserved by traditional communities, represented especially by Creole seeds, under the agroecological perspective, as a strategy to guarantee food security and sovereignty. To this end, qualitative research was adopted as a methodology, to compare agricultural evolution and the food crisis. From this perspective, it is possible to discuss the premises, providing the characteristics of an agriculture on an agroecological basis and its relationship with conserved agrobiodiversity, mainly with native seeds. In the end, it was found that the maintenance of native seeds contributes to food security and sovereignty in line with the agroecological approach, highlighting the urgency of opting for one of the paths: maintaining the model driven by predatory agricultural production capitalism of own sources of resources on which it depends; or the consideration of «recalcitrant

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territories» sheltered by traditional peoples who position themselves intending to modify the paradoxical and autophagic character of the current scenario, providing strategies to solve problems such as the food crisis which, in itself, exposes other difficulties faced by different peoples.
Key words: genetic erosion, food crisis, plant germplasm, creole seeds, genetic variability, Brazil

RESUMEN

El hambre es un problema que abarca varios sectores, siendo principalmente el producto de una trayectoria histórica de desorganización de las políticas públicas. En este contexto surge la preocupación en cuanto a estrategias que hagan posible aumentar la producción, la disponibilidad y mejorar el acceso a los alimentos, surgiendo propuestas que valoricen el medio ambiente durante este proceso, así como la seguridad y soberanía alimentaria. Para garantizar estas mociones se destacan las comunidades tradicionales, las cuales adoptan sistemas de producción agroecológicos, apuntando a un enfoque sustentable que conserve la agrobiodiversidad de los pueblos y que potencie la diversidad sociocultural a través de sus variedades «criollas». Estas son comúnmente seleccionadas y cultivadas en determinados lugares por diferentes comunidades, a menudo para su propia subsistencia. Considerando la concepción de que la crisis epistemológica de la ciencia convencional está dando espacio al surgimiento de una nueva epistemología política y participativa, el objetivo de este estudio fue discutir la contribución de la agrobiodiversidad preservada por las comunidades tradicionales, representada especialmente por las semillas criollas y desde una perspectiva agroecológica, en tanto estrategia para garantizar la seguridad y soberanía alimentaria. Con este fin se adoptó como metodología la investigación cualitativa, presentando una comparación entre la evolución agrícola y la crisis alimentaria. Desde esta perspectiva, es posible discutir las premisas, proporcionando las características de una agricultura de base agroecológica y su relación con la agrobiodiversidad conservada, principalmente en lo referido a las semillas nativas. Finalmente se constató que el mantenimiento de las semillas nativas contribuye a la seguridad y soberanía alimentaria en consonancia con el enfoque agroecológico, destacando la urgencia de optar por alguno de estos caminos: mantener el modelo impulsado por el capitalismo de producción agrícola, depredador de las propias fuentes de recursos de las que depende; o considerar a los «territorios recalcitrantes», cobijados por pueblos tradicionales que se posicionan con el objetivo de modificar el carácter paradójico y autofágico del escenario actual, aportando estrategias para resolver problemas como la crisis alimentaria que –en sí misma– expone otros problemas que enfrentan los diferentes pueblos.
Palabras clave: erosión genética, crisis alimentaria, germoplasma vegetal, semillas criollas, variabilidad genética,

RÉSUMÉ

La faim est un problème qui concerne plusieurs secteurs, étant surtout le produit d'une trajectoire historique de désorganisation des politiques publiques. Dans ce contexte, des préoccupations surgissent concernant des stratégies qui permettent d'augmenter la production, la disponibilité et l'accès aux aliments et qui présentent des propositions émergentes qui, dans ce processus, mettent en valeur l'environnement ainsi que la sécurité et la souveraineté alimentaire. Pour garantir ces mouvements, les communautés traditionnelles se distinguent en adoptant des systèmes de production agroécologiques, visant une approche durable qui préserve l'agrobiodiversité des peuples et qui valorise la diversité socioculturelle à travers leurs variétés « crioulas » (variétés paysannes ou autochtones). Les variétés «crioulas» sont généralement sélectionnées et cultivées dans des endroits spécifiques par différentes personnes, généralement pour leur propre subsistance. En considérant la conception que la crise épistémologique de la science conventionnelle laisse place à l'émergence d'une nouvelle épistémologie politique et participative, l'objectif de cette étude est de discuter de la contribution de l'agrobiodiversité préservée par les communautés traditionnelles, représentée notamment par les semences «crioulas», dans une perspective agroécologique, comme stratégie pour garantir la sécurité et la souveraineté alimentaire. Pour ce faire, une méthodologie de recherche qualitative a été adoptée, présentant une comparaison entre l'évolution agricole et la crise alimentaire. À partir de cette perspective, il est possible de discuter des prémisses, en fournissant les caractéristiques d'une agriculture sur des bases agroécologiques et sa relation avec l'agrobiodiversité conservée, principalement avec les semences natives. En conclusion, il a été constaté que le maintien des semences natives contribue à la sécurité et à la souveraineté alimentaire en accord avec l'approche agroécologique, soulignant l'urgence de choisir l'un des chemins suivants : le maintien du modèle impulsé par le capitalisme de production agricole prédateur des propres ressources dont il dépend ; ou la considération des « territoires récalcitrants » abrités par des peuples traditionnels qui se positionnent dans le but de modifier le

caractère paradoxal et autoflagellant de la situation actuelle, fournissant des stratégies pour résoudre des problèmes tels que la crise alimentaire, qui expose d'autres problèmes rencontrés par de différents peuples.
Mots-clés : érosion génétique, crise alimentaire, germoplasme végétal, semences paysannes, variabilité génétique, Brésil

RESUMO

A fome é um problema que abrange vários setores, sendo principalmente produto de uma trajetória histórica de desorganização das políticas públicas. Nesse contexto, surgem preocupações com estratégias que possibilitem o aumento da produção, da disponibilidade e do acesso aos alimentos, com propostas emergentes que valorizam o meio ambiente nesse processo, bem como a segurança e a soberania alimentar. Para garantir esses movimentos, destacam-se as comunidades tradicionais, que adotam sistemas de produção agroecológicos, visando a uma abordagem sustentável que conserve a agrobiodiversidade dos povos e que valorize a diversidade sociocultural por meio de suas variedades "crioulas". As variedades crioulas são comumente selecionadas e cultivadas em determinados locais por diferentes pessoas, geralmente para sua própria subsistência. Considerando a concepção de que a crise epistemológica da ciência convencional está dando espaço para o surgimento de uma nova epistemologia política e participativa, o objetivo deste estudo é discutir a contribuição da agrobiodiversidade preservada pelas comunidades tradicionais, representada especialmente pelas sementes crioulas, sob a perspectiva agroecológica, como estratégia para garantir a segurança e a soberania alimentar. Para tanto, foi adotada como metodologia a pesquisa qualitativa, apresentando uma comparação entre a evolução agrícola e a crise alimentar. A partir dessa perspectiva, é possível discutir as premissas, fornecendo as características de uma agricultura em bases agroecológicas e sua relação com a agrobiodiversidade conservada, principalmente com as sementes nativas. Ao final, constatou-se que a manutenção das sementes nativas contribui para a segurança e a soberania alimentar em consonância com o enfoque agroecológico, destacando a urgência de se optar por um dos caminhos: a manutenção do modelo impulsionado pelo capitalismo de produção agrícola predatório das próprias fontes de recursos das quais depende; ou a consideração de "territórios recalcitrantes" abrigados por povos tradicionais que se posicionam com o objetivo de modificar o caráter paradoxal e autofágico do cenário atual, fornecendo estratégias para solucionar problemas como a crise alimentar que, por si só, expõe outros problemas enfrentados por diferentes povos.
Palavras-chave: erosão genética, crise alimentar, germoplasma vegetal, sementes crioulas, variabilidade genética, Brasil

1. INTRODUCTION

Hunger is a structural social problem that mainly affects the working class (Hoyos & D'Agostini, 2017). It is a problem that interconnects several sectors, being the product of a historical trajectory and, mainly, of an inadequate organization of those who should implement public policies in this sense. Assuming that hunger is a solvable problem, proposals for food security and food sovereignty emerge, which, according to Hoyos & D'Agostini (2017), share the understanding that hunger can be eradicated by actions such as environmental preservation, protection of women's rights and promotion of the productive capacity of small communities, being, even so, proposals that were born in different political contexts, and that differ in particular issues.

Aiming guaranteeing food security and sovereignty, it stands out traditional communities (indigenous, *quilombolas*, etc.) which adopt agroecological production systems, in a sustainable production system that preserves the agricultural biodiversity of the peoples and enhances the sociocultural diversity through their creole varieties, taking place here, according to Pereira, Kaufmann & Kubo (2020), a direct relationship between the food sovereignty and agroecology in the field of local production, with creole seeds being an alternative to promoting food security.

In this perspective, creole seeds can be seen as «varieties selected, managed and conserved by family farmers, *quilombolas*, indigenous tribes and other traditional peoples, and are permanently adapted to the ways in which these populations are managed and to their places of cultivation» (Campos & Dal Soglio, 2020, p. 2).

Considering the conception presented by Sevilla-Guzmán (2009) that the epistemological crisis of conventional science is originating a new political and participatory epistemology, which is externalized in the agroecological approach of sustainable management of natural resources through collective social action, the objective of this study is to discuss the contribution of the conserved agricultural biodiversity of traditional communities – represented, especially, by the creole seeds preserved by these peoples – from an agroecological perspective, as a strategy to guarantee food security and sovereignty.

The present study is justified by the emerging quest for strategies that are alternatives to the eradication of hunger and problems linked to it, as well as the need to promote and preserve the conserved agricultural biodiversity of traditional communities, in order to achieve food security and sovereignty for the peoples.

2. MATERIALS AND METHODS

The methodological procedures adopted for the study consist of qualitative research, survey, analysis and theoretical systematization. The first step was the bibliographic survey, which began with a mapping of all references on the topic, whether in physical or digital format.

The research was carried out in the scientific bases SciELO, Scopus and CAPES Gateway of Journals, with search criteria for «food security and sovereignty», «food policy», «Creole seeds and food security» and «conserved agricultural biodiversity, agroecology and food sovereignty».

The research included articles written in English, Portuguese and Spanish, without restriction of publication date, which allowed the selection of 37 works, which, together with five normative texts inherent to the theme, contribute to the present study. It is noted that during the search, only one source in physical format was used, which was already part of the authors' research collection.

In this context, a comparison between agricultural evolution and the food crisis is initially presented, which allows leveraging the discussion of the premises of food security and sovereignty. Subsequently, through the agroecological approach, it is presented the characteristics of agriculture in that base and its relations with preserved agricultural biodiversity within a selection process that includes several aspects, emphasizing here the creole seeds as they are the externalization of the evolution of small communities, as well as the traditional ones, as they help to contribute to food security and sovereignty.

3. AGRICULTURAL EVOLUTION AND THE FOOD CRISIS

Since the beginning of civilization, agriculture has been the main form of relationship between man and nature, with different intensities of impact on the environment, considering the time and place of its development (Trovatto, Bianchini, Souza, Medaets & Ruano, 2017).

The First Agricultural Revolution of modern times took place in Europe from the 16th century onwards, integrating farming and livestock and introducing a rich system of rotations, leading to the growth of agricultural production and productivity. The Second Revolution, also known as the Green Revolution, began at the end of the 19th century in the United States and Europe, allowing the transition from traditional agriculture to intensive inputs, generating increasing dependence on agriculture in terms of industry and strong aggressions to the environment (Trovatto *et al.* 2017).

Says Trovatto *et al.* (2017) that, with the end of World War II, there was an internationalization of environmental and social issues, leading society to reflect on the rampant degradation of nature, especially due to agricultural and industrial advances.

Whatever the time and the management adopted, one of the main obstacles in agriculture is the guarantee of a production that meets the world demand. In Brazil, since

colonial times, there was a concern on the part of the governors with the feeding of the population, which, from the 20th century onwards, triggered the implementation of public policies covering items such as agricultural policy, supply systems, price control and food distribution (Belik, 2003).

The Green Revolution (1960-1970) was presented in Brazil as a model that would modernize the countryside, based on increasing agricultural production and productivity without modifying the concentrated agrarian structure existing at the time (Canavesi, Moura & Souza, 2016). According to Fernandes (2017), an important element in the agricultural modernization project was the development of high yielding varieties selected to increase productivity, with a better response to the application of synthetic fertilizers and pesticides.

In Brazil, aiming at agricultural development, policies were developed adopting the development of these varieties as a guideline. However, they were policies elaborated without meeting the interests of the farmers themselves, and as far as they promoted the dissemination of these seeds and their inputs, it discredited and delegitimized Creole seeds, inducing farmers to replace the latter with the former (Fernandes, 2017). This author also asserts that, despite the advances of these policies –which, in fact, ended up contributing to the loss of agricultural and food genetic diversity, native seeds were still cultivated in family farming and in small traditional communities.

In this way, the Green Revolution model was responsible for the relative economic success of Brazilian agribusiness. However, it brought environmental, cultural and social impacts that lead, until the present day, to food insecurity, thus ceasing to be a way of overcoming hunger by the increase in food, as initially intended (Canavesi et al., 2016). It is worth noting that the Green Revolution proposal aligns to the reproduction pattern typical of agribusiness, thus causing problems to natural conditions. In this sense, Jeziorny (2022) presents the concept of «ecosystem metabolism», which, according to the author, refers to the correct functioning of a given ecosystem, in which the interaction of the elements that make up its structure, results in a series of ecosystem functions.

According to this concept, a minimally «healthy» social metabolism would be one that does not cause a dysfunctional change in the ecosystem that serves as its basis (Jeziorny, 2022), which does not occur with the adoption of practices arising from the Green Revolution, as reported. Therefore, there is an urgent need to promote a healthier social metabolism, in order to maintain ecosystem metabolism, with native seeds and other agroecological strategies playing an important role in this challenge.

For Leach et al. (2020), the Green Revolution was not just scientific and technological, but was mainly geopolitical (in the context of the Cold War) and about class politics (regarding to the reproduction of unequal patterns of accumulation - be it food, or wealth in general). Still for the same authors, the ecological critique of the Green Revolution showed that the increase of yields and productive efficiency were not the only important consequences of the advancement of agri-food technology, allowing another focus on local and alternative trajectories.

In regard to food insecurity, it is urged to note that the right to food should not be considered in isolation, but rather «as a link that makes up the chain of a right to development» (Oliveira, Castiglioni & Santos, 2016). In fact, due to its importance, it is currently provided for in article 6 of the Federal Constitution of 1988 (Brasil, 1988), as a social right expressly guaranteed.

In 1996, the Brazilian government –along with other countries at the World Food Summit held in Rome, began to focus on this set of policies within a general effort aimed at reducing the situation of hunger in their territories. Thus, the country a commitment to halve the number of hungry people by 2015 (Belik, 2003).

However, in the early 2000s, countries began to face the increase in the price of various food items. Such a situation culminated in the food crisis in 2007, which resulted in several factors (Silva, 2010), which can be explored from different points of view, represented on the

one hand by state agencies and, on the other, by social movements.

For the United Nations special rapporteur on the right to food, this food crisis was triggered mainly by excessive consumption, food waste, and the impasse between supply and demand, resulting from the deficit of food reserves. These caused an increase in prices of staple foods in the international market (Hoyos & D'Agostini, 2017).

It is observed that this understanding is based mainly on marketing reasons, evaluating the food crisis as a specific problem, without considering its historical background and the peculiarities of each country or community. On the other hand, for the social movements and peasant organizations that made up the Vía Campesina –composed of organizations and social movements from different parts of the world, constituting an international peasant movement that emerged in 1993 (Valério, 2018), this crisis was part of the of a general crisis in the capitalist system, which includes the climate, energy and financial crises (Hoyos & D'Agostini, 2017).

Besides that, by the Maputo Charter – product of the 5th Via Campesina International Conference held in 2008, this aspect interpreted the 2007 food crisis as a process with a previous historical context (Via Campesina, 2008). Therefore, it was not just as a conjunctural matter –thus contradicting the understanding of the United Nations Special Rapporteur, also stating that

> (…) the origin of the crisis lays in the strategies associated with the international monopoly of food production and distribution, such as the privatization of seeds, land, water, biodiversity and natural resources in general, as well as the international concentration of producers and distributors of food, the monopoly of inputs for agricultural production, the imposition of international food regimes, the promotion of the production and consumption of biofuels, according to the document, for the development of a new matrix in the transport sector but whose cultivation generates hunger, poverty in the countryside and environmental problems (Hoyos & D'Agostini, 2017, p. 176).

The factors that conditioned hunger in the world vary among territories. For example, on the Asian and African continents, in general, hunger is the result of the lack of food, although there are countries in the region where hunger results from social inequality (Almeida, Paulillo, Maiorano & Louza, 2015).

Regarding the concern with the lack of food, which demands the need to increase agricultural production, the valorization of seeds has been marked out as a possible solution to the emergency in the intensification of the scale of food production:

> With the prediction that the planet will reach, in 2050, the mark of 9.6 billion inhabitants (UN, 2013, p. 15), there is a growing concern about strategies to intensify the scale of food production, reduce losses and minimize the environmental impacts linked to agricultural activity, also leading to a growing appreciation of the origin, control and cost of raw materials, including seeds. (Aviani & Machado, 2015, p. 2)

In this context, based on the assumption that world hunger can be eliminated, the concepts of food security and food sovereignty emerge. Both, according to Hoyos & D'Agostini (2017), share political principles that guide their actions, adopting the following guiding criteria: recognition of the importance of the female role in the production, distribution and consumption of food; recognition of the production capacity of peasants, popular organizations and Landless workers; need to implement strategies to protect the environment, making it peaceful and stable, preventing food from being used as a weapon of political pressure.

Referring to environmental protection, Hoyos & D'Agostini (2017) also claim that this term is a political principle that, called environmental sustainability, has been present since the origins of food security and sovereignty proposals. However, it is also a principle that requires the adoption of varied, natural and balanced systems that replace production modes focused on monocultures and dependents and chemical products to be maintained.

As for food sovereignty, environmental sustainability is directly related to the promoted

agricultural production system. Regarding food security, environmental sustainability is related to several factors, such as infrastructure and rural institutions, as well as inputs, products, production technologies adopted, in addition to the use of natural resources (Vía Campesina, 1996).

Thus, despite sharing political principles that guide their actions to be political proposals that aim to guarantee the right to food (Hoyos & D'Agostini, 2017), food security and food sovereignty represent interests of different classes in order to achieve this objective, having, therefore, differences that make them, at the same time, autonomous proposals.

4. FOOD SAFETY AND SOVEREIGNTY

The concept of food security came to existence in the European context at the beginning of the 20th century, defined as «the ability of each country to produce its own food, thus avoiding vulnerabilities» (Custódio, Furquim, Santos & Cyrillo, 2011, p. 2). Likewise, Menezes (1998) indicates that the term «food security» emerged after the end of the First World War, from the perception that a country could dominate another if it had control over its food supply, attributing to the term a geopolitical character, from the perspective of military strategies.

In this vein, Belik (2003) states that the concept of food security emerged from the Second World War, with the scenario of more than half of Europe devastated and unable to produce its own food, and in Brazil, according to Valério (2018), the debates around food security began around 1938, when Josué de Castro prepared the first Food Surveys, by which he defined hunger as a political problem, constituting the most important historical landmark in the study of hunger in the country.

From the Food Surveys there were frustrated government initiatives related to the issue of hunger. However, for Maluf, Menezes & Valente (1996), it was only in 1986 that the issue of food security appeared in Brazil as a defining element of a political proposal for food supply.

Since the 1996 World Food Summit, food security policies must account for the production, distribution, access and consumption of food, through a network interconnected to the fundamental values of the population and expressed through the axes of health, hygiene, environment, authenticity and solidarity (Paulillo & Pessanha, 2002).

In summary, the values linked to the health axis refer to the nutritional composition of foods. Those related to the hygiene axis foresee the absence of toxic elements, in addition to the control of production, packaging and distribution conditions. Those referring to the environment are the ones that encompass ecology, claiming respect for the environment, determining that food demand should give relevance both to the quality of the food and to its form of production. Those related to the axis of authenticity, shelter the appreciation of the knowledge of traditional and agri-food production. And, finally, the values linked to the solidarity axis encompass the moral values that drive the participation of the well-nourished population in humanitarian actions in the process of consuming an ecologically correct product, produced on small properties, thus linking cooperatives and small producers in the construction of the food and nutrition security (Almeida *et al*., 2015).

It can be seen that the values linked to the axes discussed are interconnected, and, according to Almeida *et al*. (2015, p. 85) «socially constructed and shared in broad articulations in society and in public policy networks, for the functionality and adaptation of a food standard with equity for the malnourished population».

Belik (2003) asserts that the concept of food security encompasses three main aspects, namely, quantity, quality and regularity in access to food. He also emphasizes that access and availability of food are different terms, since food can be available, but the poorest part of the population may not have access to them, whether due to income issues, internal conflicts, deviations or monopolies.

Thus, «it is considered that there is food security for a population if all people permanently have access to enough food for an active and healthy life» (Strassburg et al., 2015, p. 56). Also important is the idea that food insecurity does not only translate into the existence of hunger, but also into the

production of food that disrespects the environment during this process (Machado, 2017).

In this scenario, the Brazilian Institute of Geography and Statistics (IBGE) defined food security as

> (…) a right for all people to have regular and permanent access to food in sufficient quantity and quality, without compromising attention to other essential needs, based on health-promoting food practices that respect cultural diversity and that are socially, economically and environmentally sustainable (IBGE, 2006, p. 22).

Based on this concept, it becomes evident that it is impossible to approach food security in a way that is dissociated from the functioning of society as a whole, considering, mainly, the social inequality that makes access to food difficult in the face of the concentration of means of production (Hirai & Sacco dos Anjos, 2007).

In addition, mainly in regard to the agricultural production system, we have food security linked to food sovereignty. This, according to Machado (2017), refers to the right of peoples to define policies, with autonomy over which product, which recipient and under what conditions to produce, being food sovereignty essential to guarantee food security, as it guarantees the power of small farmers over their culture. The notion of food sovereignty emerged with greater emphasis in the debate on the theme of food security at the World Food Summit in 1996, attributing great importance to the preservation of the culture and eating habits of peoples, as it emphasizes the food autonomy of countries (Belik, 2003).

Its origin is also in the non-conformism of peasant organizations, mainly regarding their dependence on the low prices paid by intermediaries, thus originating –through Vía Campesina, the concept of food sovereignty, based on the assumption that food is an inalienable human right, and not a commodity (Valério, 2018).

Vía Campesina (1996) defended a change in terms of «who defines and determines the purpose and terms of knowledge, research, technology, science, production and commerce related to food» (Desmarais, 2013). It was a modification that, according to the same author, does not indicate an aversion to modernity, technology or commerce, but rather the integration of these spheres with traditional practices.

Therefore, popular actions –promoted in particular by Vía Campesina, seek to develop local food production through food sovereignty. For Hoyos & D'Agostini (2017), one of the purposes of food sovereignty – based on the Vía Campesina, was to constitute an alternative for the production and marketing of food in which indigenous peoples and peasants regained control over land and seeds. This aimed to abolish the real causes of hunger, demand sovereignty to define policies regarding the right to food, thus removing actions that promoted food security through trade.

In Brazil, Law nº 11.346/2006 establishes the concept of food sovereignty in the country in an unprecedented way. This law classifies food sovereignty as a principle that guides food security, together with the principle of the human right to food, when it determines in its article 5 that «the achievement of the human right to adequate food, and food and nutrition security requires respect for the sovereignty, which gives countries the primacy of their decisions on food production and consumption» (Brasil, 2006).

For Valério (2018), this rule does not represent an advance, as it indicates that food sovereignty is subordinated to food security, limiting sovereignty only as production capacity within the country, which represents only one of the scales of food sovereignty originally conceived along Vía Campesina.

That is why, for Vía Campesina (1996), the concept of food sovereignty encompasses several dimensions, such as access to land and water, control of seeds, food flows and income generated by work in the field, the use of agroecological, as well as the question of the quality, diversity and adaptability of food to the most varied climatic, geographic and cultural conditions of the peoples.

It appears, therefore, that Law nº. 11.346/2006 wrongly inserted the concept of food

sovereignty by subordinating it to food security. The reason would be that, according to Hoyos & D'Agostini (2017), despite both sharing the understanding that hunger can be eradicated through actions such as environmental preservation, recognition and protection of women's rights and recognition and promotion of the productive capacity of small communities, are proposals that were born in different political contexts, differentiating themselves by representing

> (…) class interests historically in dispute; that from opposing interpretations of the right to be protected against hunger, they built divergent and constantly conflicting purposes and action strategies; that radically differ in the conception of the State, the ownership of the means of food production, the agricultural production system and the characteristics of food marketing [...] (Hoyos and D'Agostini, 2017, p. 195)

According to the same authors, one can also differentiate the proposals for Food Security and Sovereignty in the following contexts:

For Carneiro, Pereira & Gonçalves (2016) food sovereignty goes beyond food security, since through it the sectors of society must

Table 1
Differentiation of food security and sovereignty proposals

Food Security	Food Sovereignty
It disseminates access to land, water, seeds, credit and technology, through commercial relationships and especially bank loans	It claims collective ownership of land, seeds, water sources and knowledge associated with food production; it promotes access to credit and technology through social policies, defending national autonomy in the management of land and natural resources, proposing community control of these resources
It defends the privatization of natural resources to improve their productivity	It defends agrarian reform as a way of returning territories to indigenous people, granting control of the lands where Landless and small farmers work
It also states that the genetic manipulation of seeds and animals is the possibility of feeding the world and improving the quality of food and that research in the agro-industrial sector should be promoted, guaranteeing intellectual property rights	It also demands the conservation of native seeds as a collective heritage, being against the use of genetically modified seeds (GMO - however favorable to conventional breeding), and intellectual property processes, providing for research on traditional production practices
It focus on food producers	It emphasizes both food producers and consumers, advocating that the latter have the right to decide on the origin and characteristics of the food they choose to consume, thus being able to control their own food and nutrition
Prioritizes quantity, quality and regularity of access to food	It prioritizes the nutritional characteristics of foods and the conservation of the diversity of food crops, encouraging the dissemination and appreciation of the agricultural history of each country, as well as warning about the imposition of international food regimes and the standardization of diets
The achievement of guarantee of the right to food depends on the purchasing capacity of food-importing countries and final consumers, with the liberalization of international agricultural trade, obtaining credits and humanitarian aid programs being fundamental. Therefore, the market and international cooperation are responsible for protecting the right to food	The achievement of the right to food depends on the production capacity of each country and the strengthening of peasant and indigenous family agriculture, it is essential to activate the role of the State as regulator of the economy, prioritize and protect local and national markets, as well as promote small production. Therefore, the State is responsible for the protection against hunger

Source: own elaboration, with data from Hoyos & D'Agostini (2017, p. 189)

share, in different scopes, decision-making when defining what, how and where to produce, being still necessary to recognize the rights of peoples in the definition of their public policies.

According to Valério (2018), food sovereignty is an alternative to neoliberal policies, enabling people to determine their own food and agricultural policies, substantiating the right to have access to water, land and seeds. To this end, they demand policies based on solidarity among producers and consumers, given the impossibility of maintaining sovereign policies based on the free market.

For this reason, the same author (2018, p.9) understands that «production based on agroecological processes is one of the dimensions that make up food sovereignty, being inseparable from it, since its use implies the independence (even if relative) of the producer in relation to the industry».

It appears that production based on agroecological processes is one of the dimensions of food sovereignty, and family agroecological agriculture and in traditional communities has a fundamental role in achieving sustainable forms of production, especially for the conservation of its agricultural biodiversity, externalized by its traditional means of production and their seeds.

5. THE AGROECOLOGICAL APPROACH AND CONSERVED AGRICULTURAL BIODIVERSITY

The agrarian space was reorganized in order to adapt to the temporality of the current configuration of capitalism, in which accumulation responds massively to the imperatives of interest-bearing capital. In this reorganization scenario, the transformation of property into a financial asset is envisaged, in order to appropriate income from land, which refers to the term «land grabbing» (Jeziorny, Dillenburg, Kuhn & Maia, 2023).

On this regard, Frederico & Almeida (2019) states that the expression that best translates the notion of «land grabbing» is «land appropriation», since its meaning indicates the taking control of land and resources, through expropriations and with the aim of capital accumulation. Also, according to them (2023, p. 66):

> In this sense, it is worth highlighting that it is possible that land grabbing is associated with the process of land acquisition by foreign capital, but that this does not exhaust it. Strictly speaking, there may be land grabbing operations with national capital and acquisitions with foreign capital that do not necessarily characterize it.

For those who acquire land with the intention of generating income, the consequences of massive production do not affect them. For Jeziorny et al. (2023), what matters to land holders is the income they can extract from the property, with problems such as degradation and poisoning of soils and ecosystems, being inevitable effects of concrete ways to increase the productivity of their lands.

Agribusiness encompasses several dimensions such as economic, social, political and environmental, all of which are mainly linked to the concentration of land, expropriation of farmers and violation of the environment. Thus, as agribusiness expands, movements against it grow, forcing the State to create mechanisms to combat its harm (Canavesi et al., 2016), with agroecology being one of these movements contrary to the agrarian model currently seen as conventional.

For Schneider (2003) the rural space gained attributions becoming a place of multiple productive and occupational activities, such as the consumption of goods (material and symbolic) and services, indicating the need to understand the rural environment beyond the agri-food perspective, from the analysis of their relations of production and consumption in a local and global dimension.

This new socioeconomic and spatial configuration of the rural environment is explained by Mardsen (1995) through the concept of commoditization. This term represents a broad social and political process in which mercantile values are constructed and attributed to rural and agricultural objects, as well as to people, transforming not only work in agriculture, since it is a diversely constructed phenomenon around which development processes unite and become generalized.

In this way, the same author (1995) considers that the pluriactivity of the rural space tends to be generalized in areas of agricultural production and in rural areas as a whole. Thus, it leads to the revaluation of the rural space, mainly due to the growth of the environmental movement and the processes of industrial decentralization that lead to the expansion of the local labor market and the adoption of pluriactivity in rural families.

In this context of pluriactivity in rural areas, agroecology stands out, which, for Sevilla-Guzmán (2009), can be defined as the ecological management of natural resources through collective social action, in order to expand access and improve of food quality, thus ensuring food safety.

Also, for Sevilla-Guzmán (2009), the agroecology strategy considers the area of farmers, community organization and the relationship of rural societies articulated in the place. In this way, local and/or traditional knowledge systems meet, allowing potentializing the ecological and sociocultural diversity.

Agroecology can also be understood as a science that permits the redesign of production systems, always striving for the farmers' autonomy in the face of agro-food complexes (Canavesi et al., 2016). On the other hand, the agroecological approach –in the conception of Sevilla-Guzmán (2009), appears as a response to neoliberalism, economic globalization and conventional science, whose epistemological crisis of the latter is giving rise to a new political and participatory epistemology.

In this scenario, the crisis in conventional science paradigms welcomes the agroecological approach as a new method of exploring the means of agricultural production, integrating family and traditional communities with their sustainable, environmentally responsible forms of production that promote their culture.

According to Trovatto et al. (2017), agriculture based on agroecology has characteristics such as the rich biodiversity of production systems, pluriactivity, forms of organization and access to their own markets that, related to social, economic, environmental and cultural factors, allow the guarantee of food security to the peoples. In addition, agroecology brings together contributions from various sciences, providing the search for alternatives to expand the sustainability of agriculture in its different functions in rural areas (Trovatto et al., 2017), highlighting that in recent years there has been a growth in the debate on sustainable development, which starts to reflect in several ways, mainly:

> (…) in relations among countries, in the rules of world trade in goods and services, in theoretical-scientific production, in the attitude of local governments, in the institutionalization and advancement of specific legislation for the planning and implementation of environmental policies, in the advancement of the productive sector, including agriculture.
> In agriculture, movements such as alternative agriculture, organic agriculture, sustainable agriculture and the multifunctionality of agriculture are beginning to be developed based on the principles of agroecology as a science. (Trovatto *et al.* 2017, pp. 92-93)

Therefore, the principles of agroecology outlined the elaboration of movements essential to traditional production, such as sustainable agriculture. According to Beraldo, Mendonça & Rodrigues (2018), the Brazilian public policy agenda gradually adopted an agroecological approach, which occurred mainly due to the presence of some managers more committed to the theme, as well as the emphatic action of the agroecological movement. These factors made it possible, mainly from the 2000s onwards, the active participation of organizations in the elaboration and implementation of public policies at the federal level.

With regard to public policies at the federal level, it is possible to list programs and actions that have contributed to the promotion of agroecology, such as the National agricultural biodiversity Program, the National Action Program to Combat Desertification and Mitigation of the Effects of Drought-PAN Brazil, the Rural Women's Productive Organization Program, the Organic Agriculture Development Program (Brasil, 2013), formal education with an agroecological focus promoted by the Ministry of Education, the National Environmental Education Policy,

Law No. 9,795/1999, the Environmental Education and Agriculture Program Familiar (PEAAF), and the Cisterns Program (Canavesi et al., 2016).

It is not the intention of this study to deepen into the details of the programs and actions listed, it is only necessary to contextualize that in Brazil, policies in favor of agroecology have advanced mainly in the space outlined by policies to strengthen family agriculture, and, «when entering the universe of these public policies, agroecological ideas began to interact with pre-existing devices, facing resistance and undergoing adaptations» (Niederle et al., 2019, p. 277).

Starting from the premise that agroecology is limited to the functions and interactions of agroecosystems, natural resources and local knowledge, it is possible to affirm that agroecological instruments and systems promote and relate to agricultural biodiversity, within a process of interactions among sociocultural aspects, ecological management of natural resources and integrated management of agroecosystems, which gives rise to social, economic and ecological sustainability (Machado, Santilli & Magalhães, 2008).

According to Gliessman (2009), for the development of a sustainable agroecosystem, it is necessary that its social and ecological components combine in a system that reflects the interaction of human knowledge and preferences with the ecological components of the agroecosystem, building, from this interaction, traditional knowledge that allows the conservation of the communities' agricultural biodiversity.

This knowledge is the product of the evolutionary process of communities with their natural resources, which are essential to ensure the maintenance of traditional agricultural practices. Moreover, agroecology, as a field of knowledge, seeks to understand elements of the functioning of traditional agrosystems, in order to propose the use of ecological principles to sustainable management systems, recognizing and conserving local potential and traditional knowledge (Pereira, Kaufmann and Kubo, 2020).

For Molina, Petersen, Peña & Caporal (2021), in addition to the importance of these communities for food on a global scale, the knowledge they have is highlighted, which is based on ancient practices and that lead to the management of agroecosystems that makes them suitable for the agroecological transition. Along with it, as for the local potential, according to Santilli (2009), the conserved agricultural biodiversity stands out, which, as a rule, presents a greater diversity of physiognomies and uses when compared to industrial agriculture, with native seeds being a strong externalization of this institute.

Creole seeds, or local or traditional varieties (Brasil, 2003, p. s/n), are «varieties selected, managed and conserved by family farmers, *quilombolas*, indigenous peoples and other traditional peoples». These seeds «are permanently being adapted to the forms of management of these populations and their places of cultivation» (Campos & Dal Soglio, 2020, p. 2).

For Pereira et al. (2020, p. 196), «in the context of native seeds, Food and Nutrition Security can be achieved and maintained based on food sovereignty». This is because, according to the same authors, there is a direct relationship between food sovereignty and agroecology in the field of local production, with native seeds being an alternative to promoting food security.

6. CREOLE SEEDS, SECURITY AND FOOD SOVEREIGNTY

Since the beginning, seeds and seedlings have been used to promote agriculture, with traditional communities and family farmers having the habit of planting and saving the best seeds for the next plantings, a practice that has been transmitted through generations and promoted the selection of the most resistant and productive seeds, and the maintenance of their genetic variability (Silva, Barreto, Ambrozio & Letti, 2018).

For Pereira et al. (2020), native seeds are an alternative to promoting food security because they are under the control of small farmers, as well as because they have the potential to reduce or eliminate the need for chemical inputs, which benefits the environment. This

potential mainly comes from the genetic variability of the varieties which, according to Silva et al. (2018), can manifest itself through rusticity, resistance to drought, water stress, pests and diseases.

Thus, regarding food security, native seeds can contribute to the availability, diversity and access to healthy foods, managed in sustainable agro systems, to the maintenance of the local culture and, also, to the increase of family income (Pereira et al., 2020).

Studies in Brazil indicate that native seeds are economically more efficient and have greater profitability when compared to conventional systems that adopt other types of seeds (Fernandes, 2017). They also generally show good adaptation to local conditions, soil, water regime and climatic stresses (Pereira et al., 2020).

Also noteworthy is the fact that local agricultural biodiversity can favor the production of culturally appropriate food (Pereira et al., 2020). According to Fernandes (2017), seed fairs and parties, in addition to being major events, are also spaces for the exchange of genetic resources and associated knowledge; exchanges that are a way of conserving these materials. It hence allows the production of food that meets the local culture and responds to the sustainability legitimized by that community.

Therefore, creole species bring farmers closer to agroecology, stimulating agroecological transition processes. Furthermore, these species are part of the subjectivity of peoples, which means that their conservation goes beyond genetic maintenance, translating into the very maintenance of the social reproduction of their guardians (Pereira et al., 2020).

Communities that conserve native seeds, which can be called «guardians of biodiversity and knowledge», are a front of resistance to the modern agricultural model that has been in place since the Green Revolution, a model that will likely trigger the reduction of biodiversity as a whole (Silva *et al.*, 2018).

According to Jeziorny & Miebach (2023), the modernization of agriculture –for example, through the Green Revolution, is based on genetically modified seeds, machinery and chemical inputs, in order to accelerate processes and increase production. It can be considered as «predatory growth» that persists unscathed and disregards living territories, such as those that shelter preserved agrobiodiversity:

> Thus, different from a technological advance, so to speak, holistic, guided by society/nature harmony in its double internality, it is the concrete result of scientific knowledge highly departmentalized and constructed from a certain ontology, in which nature is interpreted not as a web of life on which humanity depends, but as something whose functioning is understood through the use of its (dead) parts, later used as «natural resources» in productive processes that are, above all, of value appreciation. In this line, in which predatory growth persists unharmed and – even revered as a «saint on the altar» –, the indispensable ecosystem services provided by different ecosystems as living territories are simply disregarded, since the ecosystem itself loses its systemic nature when having its amputated parts to be used as inert, passive, «natural resources». (Jeziorny & Miebach, 2023, pp. 153-154)

Still for these cited authors, sustainable development along the lines of capitalism is paradoxical and autophagic, which urgently needs to be theorized by questioning normal sciences – which provide support for the dominant rationality, which is the vector of the environmental crisis. The authors thus start with the idea of «recalcitrant territories», as places of alternatives that allow a «becoming» of possibilities for social transformation:

> Thus, although some theories defend the idea of a homogeneous global order, in the real world there are still – and resist – particularities. These are the territories or, as Milton Santos (2008) states, the built, lived, shared spaces, that appear as substrates that resist changes, by preserving the vigor of their material and cultural heritage; resistant force of what was created from another temporality, that is, from another logic than that of accumulation. (Jeziorny & Miebach, 2023, p. 159)

It is possible here to consider the places sheltered by family farmers, *quilombolas*, indigenous peoples and other traditional peoples, as «recalcitrant territories», who

question the vector of the environmental crisis by resisting with their particularities, guarding their material and cultural heritage, emerging as indicators of the necessary path in order to modify the paradoxical and autophagic character of the current scenario.

Therefore, the process of preserving and using creole seeds is seen as an act of resistance, which is justified by the qualities of these seeds and the cultural preferences of traditional communities:

> Behind this process of preservation and use of creole seeds are farmers from all regions of the country who resisted the movement to replace varieties and continued planting, selecting and conserving their materials. Faced with the stigma that these were old and outdated seeds, many kept these materials almost hidden. In these invisible acts of resistance, different elements of peasant rationality are present and materialized, given that farmers have always seen, in these seeds, variability, rusticity, adaptability, multiplicity of uses and economy compatible with their culture, their agricultural systems and their productive and of economic reproduction. These qualities, as well as cultural preferences, justified the care and maintenance of these varieties over time. In fact, they are seeds of autonomy, a constitutive trait of peasant identity and that, therefore, cannot be reduced to the category of mere productive inputs. (Fernandes, 2017, p. 328)

This preservation movement still faces discredit from some agrarian segments and public policies. However, it has gained strength and recognition from some sectors of the academy. In recent years, this movement has been a strategy in the face of risks and unfulfilled promises by genetically modified organisms (Fernandes, 2017).

In 2012, the National Agroecology Articulation (ANA, 2021) brought together organizations from all regions of the country at the Creole Seeds and Public Policies Workshop, in order to expose experiences of rescue, conservation, multiplication, use, exchange and commercialization of these seeds. These organizations also debated the challenges of this work, as well as identifying and discussing the guiding principles of the actions of family farmers and organizations in the field of seeds and how they are affected by public policies in this regard (ANA, 2012).

This theme has motivated work in several regions of the country, being considered as a possibility of liberation from a production model dependent on industry and capital. On the other hand, despite the importance of these works, they have remained «invisible» to the State, which still has difficulties in valuing agricultural biodiversity conservation initiatives by family farming, and, although these works are not standardized, they share common principles that guide them (ANA, 2012), as listed below (Table Nº 2).

Based on these common principles, communities have been successful in managing their resources (improving, multiplying and exchanging seeds), in carrying out seed exchanges (increasing the rescue and access to these materials), and in articulating connections with institutions (inspiring new movements and promoting the training of farmers in the characterization of varieties) (ANA, 2012).

Notwithstanding the successes achieved by the communities, there are growing events that put all the preserved agricultural biodiversity and traditional knowledge at risk, especially the genetic erosion of crops. According to Silva et al. (2018), genetic erosion is a current concern, which consists of the loss of genetic diversity of crops, as a result of the replacement of local or creole varieties used by family farmers by the introduction of improved varieties, which can lead to the disappearance of the first ones.

The loss of native seeds has led populations to food insecurity and to the loss of their sovereignty, since they are subject to commercial resellers, who excel in recommending the same commercial cultivars or hybrid and transgenic seeds that are not recommended for family farming because they require intensive use of machinery and chemical fertilizers that, in addition to not being financially viable for farmers, can be harmful to the environment. This scenario has been repeated reiteratedly and has contributed to the increase in genetic erosion and the probable loss of several species (Silva *et al.,* 2018).

Santos & Vasconcelos (2020, p. 261), suggest an analysis of agrarian policies during

Table 2
Common principles that guide seed work in Brazil

Principles	Remarks
Identity	The regions have their own seeds, which are simultaneously a means of production and cultural identification. As the work with seeds is carried out, the identity of the family farmer, indigenous or *quilombola* is rescued, and this rescue of identities is essential to agroecology
Autonomy	The experiences seek to guarantee autonomy with regard to access to the seeds themselves, but also to other inputs, financial systems, among others. The issue of autonomy is also related to the recognition of the family farmer as guardian and producer of seeds
Diversity	The works seek to maintain, feed and enrich diversity, which conflicts with the idea of "the good seed" promoted by seed distribution programs based on the dissemination of one or a few improved varieties. Here, the "good seed" is the set of diversity
Resistance	This principle translates in two ways: political resistance - in defense of peasant agriculture, of the seed as an expression of the exercise of the right to remain peasants, indigenous and *quilombolas* against an overwhelming force of expropriation of genetic heritage and diversity - and biological resistance - that, depending on the adaptation developed over generations, local seeds present to climatic adversities, poor soils, among others
Culture	Seeds carry with them an associated culture, and this idea refers to the denial that they are regulated by an intellectual property regime. Although the State recognizes the existence of Creole seeds, they are regulated by the Seeds Law – and the fact that this Law is governed by other principles creates a series of tensions

Source: own elaboration, with data from ANA (2012, p. 18)

progressive governments in Latin America, arguing that neoliberal policies «aggravated land concentration, the expansion of monoculture, the plundering of peasant and indigenous lands and, above all, the consolidation of transnational businesses that have massively poisoned Latin American soil, water, air and agri-food systems.» To this context, they attributed the concept of «glyphosate consensus», which has as its main characteristic the extractive modality of «agriculture without farmers» –which can, consequently, contribute to genetic erosion.

The «glyphosate consensus» led to a deepening of the commodification of life and a weakening of community ties. This occurred simultaneously with innovative political articulations between sectors of the peasant movement –including some linked to Vía Campesina, which promoted an agenda of public policies aimed at food sovereignty and agrarian reform (Santos & Vasconcelos, 2020), thus reinforcing the importance of native seeds in the face of ecosystem degradation. Therefore, the redesign of cropping systems within the scope of Agroecology and the social and productive organization of family farmers are important aspects that contribute to the maintenance of native seeds and the promotion of Food Security (Pereira et al., 2020).

Studies point out (Leach et al., 2020) that the complex relationships between nature and people in agri-food systems continue to be neglected, with agrarian social actors and

movements, carriers of different knowledge and ways of knowing, still on the margins of systems of science and technology. In order to safeguard and take advantage of agri-food systems where human communities and ecology coexist in harmony, initiatives are presented, such as the Globally Important Agricultural Heritage Systems (GIAHS), implemented by the Food and Agriculture Organization of the United Nations (FAO):

> The initiative for Globally Important Agricultural Heritage Systems (FAO 2019), which frames agri-food systems beyond a functionalist perspective to account for human, cultural, territorial and aesthetic values in food, may be a step in the right direction, provided it fulfills its promise to safeguard and harness agri-food systems where human communities and biophysical landscapes coexist in harmony. This requires an opening of institutional arrangements so that a more plural set of interests and perspectives can influence agri-food S&T.» (Leach et al., 2020, p. 8)

The practice of conservation of native seeds, considering global aspects, can contribute to at least six of the objectives of the 2030 Agenda of the United Nations (UN), which are:

> Goal 1. End poverty in all its forms, everywhere; Goal 2. End hunger, achieve food security and improved nutrition, and promote sustainable agriculture; Goal 3. Ensure healthy lives and promote well-being for all at all ages; Goal 5. Achieve gender equality and empower all women and girls; Goal 12. Ensure sustainable production and consumption patterns; Goal 15. Protect, restore and promote the sustainable use of terrestrial ecosystems, sustainably manage forests, combat desertification, halt and reverse land degradation and halt the loss of biodiversity.» (Pereira et al., 2020, p. 203).

Analyzing the objectives listed, in conclusion, seed conservation can reduce poverty, since the seeds belong to the farmers themselves –providing free access to them, and these can increase the income of farmers through processing, handicrafts, among others possibilities, also triggering the empowerment of communities in the social aspect, contributing to the growth of rural regions in a sustainable way.

In this vein, for ANA (2012), the seed can be understood as an expression of the contradiction between rural development based on peasant and agrobiological family agriculture –which considers it as a free common good, and development supported by agribusiness –which considers it as a commodified input.

When considering the creole seed as a free common good, it is possible to place it as an alternative to a series of problems that drag on in a historical conjuncture –such as the food crisis, poverty and the promotion of environmental preservation, agricultural biodiversity and culture, whereas, when considering it as a commodified input, the concentration of its benefits remains in favor of a privileged minority. Thus, the situation demands reasonableness, so that the contradictory character attributed to the Creole seed is removed, transforming it into a representative instrument of a path that manages to reconcile the development of agribusiness and the preservation of conserved agricultural biodiversity.

7. CONCLUDING REMARKS

The evolution of agriculture reports a trajectory of lack of environmental prioritization, food insecurity and loss of agricultural genetic diversity. In this conjuncture, hunger demands urgency for strategies that increase production, availability and access to food, and, despite the divergences as to its real reasons, the fact is that hunger is a historical, structural and conjunctural problem, which requires taking action at the heart of these three perspectives.

The absence of food, the main source of hunger, brings the need to increase agricultural production, and the valorization of traditional seeds represents a great potential for alleviating this impasse. Considering that there is a possibility that the world hunger will be abolished, there are the concepts of food security and sovereignty: the first being limited to quantity, quality and regularity in access to

food; and the second, to autonomy of peoples in defining what, how and for whom to produce, sharing, however, the understanding that hunger can be eradicated through actions such as environmental preservation, recognition and protection of women's rights and recognition and promotion of the productive capacity of small communities.

In Brazil, there is a legal setback when subordinating sovereignty to food security, since this subordination ends up excluding all other aspects of food sovereignty disseminated by Vía Campesina. As for these aspects, one can be cited, being the production in agroecological processes in traditional communities that enforces the right of people to have access to natural resources –such as seeds, and ensures the autonomy of farmers in the face of agri-food complexes.

In this sense, the agroecological approach –which arises from the epistemological crisis of conventional science, articulates farmers and local communities, enabling the meeting of traditional and local knowledge in a participatory way, recognizing and conserving local potential, aiming to promote ecological and sociocultural diversity.

Moreover, as for the local potentials, the conserved agricultural biodiversity stands out, which is expressed mainly by the creole seeds, which can guarantee food security through food sovereignty, given the direct relationship between the latter and agroecology in local production.

Creole seeds are kept by farming families as an essential asset for the reproduction of their tradition. They constitute an alternative to promoting food security as they are under the control of small farmers –thus guaranteeing their sovereignty, and because they are economically more efficient, having greater profitability, showing good adaptation to local conditions, soil, water regime and climatic stresses, favoring the production of culturally appropriate food, and, also having the potential to improve nutrition and promote sustainable production systems.

The process of preservation and use of creole seeds is seen as an act of resistance, being considered part of the subjectivity of the people, which implies that their conservation translates into the genetic maintenance and social reproduction of their guardians. Therefore, the concept of «recalcitrant territories» presented by Jeziorny & Miebach (2023) is pertinent, in relation to places sheltered by family farmers, *quilombolas*, indigenous people and other traditional peoples who take a stand.

This study reported that communities have been successful in managing their resources, carrying out seed exchanges and articulating connections with institutions. However, there are still growing events that put all conserved agricultural biodiversity and traditional knowledge at risk, such as the genetic erosion of crops, which has led populations to food insecurity and the loss of their sovereignty, since they are subject to commercial resales, which excel in recommending the same commercial cultivars or hybrid and transgenic seeds not recommended for family farming.

Therefore, the maintenance of conserved agricultural biodiversity –and, especially, of native seeds, is essential for the search for productive autonomy of family farmers, through more sustainable forms of agricultural production and the organization of farmers, elements that contribute to food security and sovereignty along with the agroecological approach. Nevertheless, the predominant scenario currently is antagonistic and autophagic, and it is urgent to choose one of the following paths: maintaining the model driven by capitalist agricultural production, that is predatory of the very sources of resources on which it depends; or the consideration of «recalcitrant territories», providing strategies to solve problems such as the food crisis which –in itself, exposes other problems faced by different peoples.

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