CHAPTER 52

Agroecological certifications and commercialization channels: a look under the eco-innovation shield

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ABSTRACT
With the objective of discussing the insertion of agroecological products in commercialization channels, this article links principles of eco - innovation to the production and certification of products and processes arising from family farming. It presents a new territoriality, where networks of farmers are formed and, through social organization, there is certification by peers and consequent use of seals, attesting to the quality of what is sold. In the meantime, agroecology, participatory certification systems, eco -innovation, social innovation, networks, markets and commercialization channels are discussed. Methodologically, it is a qualitative research of a theoretical nature that seeks critical reflection on the subject. The results point to the growing problematization of the forms of appropriation, by various social actors, of agroecological knowledge through instrumental (techno- scientific) and economic rationality, conditioning the autonomy and creativity of the local socio-productive system to those logics. On the other hand, the establishment of alternative networks for joint sales, whether with the appropriation of new technologies - such as applications and/or websites, implies, above all, in changing paradigms not only in agroecology, but also on the part of consumers who adhere to a new social behavior.

Keywords: Agroecology, Family farming, Eco-innovation, Sustainable development.

1 INTRODUCTION

In order to leverage the achievement of the Sustainable Development Goals (SDGs), the Food and Agriculture Organization of the United Nations (FAO) launched the “Decade of Family Farming”, between 2019 and 2028. (UN, 2018) . The relevance of world family farming is supported by FAO estimates, which indicate the predominance of this type of agricultural establishment , both in developed and developing countries, covering approximately 500 million farmers in the world. (LOWDER et al, 2016; 2014). Small and medium-sized farmers are part of this context, as well as peasants, indigenous peoples, traditional communities, fishermen and other groups representing all regions and biomes of the world. (GRISA & SABOURIN, 2019; LOWDER et al, 2016; 2014; GLIESSMAN, 2014; WYMANN VON DACH et al, 2013, MCMICHAEL, 2012).

Family farming is characterized by diversified agricultural systems, by safeguarding global agrobiodiversity , by food production and consequent maintenance of food and nutritional sovereignty. (LOWDER et al, 2014; 2016; GRISA & SABOURIN, 2019; ALTIERI & TOLEDO, 2011).

Dealing with the Brazilian reality and according to data from the 2017-2108 Agricultural Census carried out by the Brazilian Institute of Geography and Statistics (IBGE), Brazil has a total of 5,073,324 agricultural establishments, which occupy a total area of 351.289 million ha, that is, about 41% of the country's total area. Of these, approximately 77% were classified as family farming (according to the classification of Decree 9,064, of May 31, 2017), responsible for 23% of the production value and occupying an area of 80.89 million hectares. (IBGE, 2019). Given its relevance, family farming is regulated in Brazil through Law 11,326, of July 24, 2006, which establishes guidelines for the formulation of the National Policy on Family Agriculture and Rural Family Enterprises.

Schneider (2016) warns of the conceptual controversies surrounding the definition of the term "family farming", often used as a synonym for "small production" and "peasantry". Family farming is a productive activity, while small production refers to the scale of production.

Family farming is a productive activity that takes into account a traditional (or substantive) rationality that goes beyond economic logic, in this sense, local institutions based on a peasant logic tend to affect it, in different expressions.[1]

A large part of these farmers characterized as family members practice agroecology not only as a productive system, but as a philosophy of life, which considers the land as a sacred patrimony , they use practices of water preservation, reduction of the use of chemical products, rescue of knowledge and ways of traditional cultivation, sustainable development of the territory, solidarity economy and safeguarding agrobiodiversity . (ALTIERI, 1989A, 1989B, 2002, 2012; WANDERLEY, 2014; 2009, 1999; WOORTMANN, 1990) Agroecology has also been treated with a multidimensional approach covering social, political, economic and environmental aspects (ALTIERI et al, 2021; WEZEL et al. al, 2009; CAPORAL & COSTABEBER, 2002). It is identified as an alternative to overcome world food insecurity, safeguard biocultural heritage , improve production, add value to products and promote local development (ALTIERI & NICHOLLS , 2020; NICHOLLS & ALTIERI, 2018; TOMICH et al., 2011; FLORIANI ; FLORIANI, 2010)

However, the products coming from these small properties, usually agroecological, face difficulties with the flow of production, given the high competitiveness and competition, and access to commercialization channels is unfeasible due to high costs and requirements for standardization and standardization of products. One of the alternatives to improve the income of producers, add value to

[1] Far from presenting the state of the art on the scientific paradigms about the peasant question, whether they are more materialist or cultural, we highlight some authors who have contributed to the reflections of what peasants are in modernity and the process of re- peasantization in the face of the process of globalization of the capitalist mode of production, especially in rural Latin America. Each author, although focusing more on the economic, or organizational or symbolic dimensions, seeks to address the issue by establishing connections between the categories identity, territory, work and way of life, and their forms of resistance and constant search for autonomy (CHAYANOV, 1981; CANDIDO). , 1964; SAHLINS, 1979; IANNI, 1986; WOORTMANN, 1995, DIEGUES, 1996; WANDERLEY, 1999, ESCOBAR, 1999; TOLEDO; BARRERABASSOLS, 2000; BRANDENBURG, 1999; CARMO, 1998; SABOURIN, 2009; PLOEG, BRANDÃO ; LEAL, 2012; RAFFLES, 2002; BARRERA-BASSOLS and FLORIANI, 2016, among others).

products, guarantee access to buyer markets , whether institutional or for direct sale and promotion of sustainable development, is social organization, through networks and associations.

Brazil is a pioneer in institutionalizing the production of organic and agroecological products. In this sense, Law no. 10,831 of 2003 and Decree no. 6,323 of 2007 that regulate the production, storage, labeling, transport, certification, marketing and inspection of products. In addition, there is also a wide range of normative instructions, ordinances and resolutions that establish technical norms and procedures that govern the matter.

The objective of so much regulation is to provide instruments of control, transparency and traceability for consumers who opt for organic and agroecological products. It is, therefore, a guarantee of quality. We believe that legislation on the procedures that govern the production of agroecological products is necessary, from the point of view of establishing certain control standards. However, in practice, adapting to what is recommended in the legal-bureaucratic framework has been limiting, imposing and excluding, limiting the creative and innovative potential of family farming. (FLORIANI et al, 2022; GIRALDO & ROSSET, 2018)

Agroecological certification initiatives maintained by public institutions or implemented by associations and cooperatives persist equally imposing and excluding protocols, demanding that farmers adapt to standards that promote the deterritorialization of practices and traditions that translate into territorial and cultural goods. Furthermore, it can be seen that the extensive and complex legislation has represented obstacles not only to certification, but also to the insertion of agroecological products in distribution channels.

Still from the perspective of agroecological certification, the proposal is the development of protocols that cover the legislation, but at the same time allow flexibility in favor of the traditional practices adopted that translate into cultural and local goods. The development of such humanized protocols involves social organization and certifications would be the result of control exercised by peers, formally organized through associations and/or cooperatives.

Once organized collectively, it is possible to define certification strategies, as the extensive legislation recommends, with seals that identify a certain territory, reflecting its characteristics and cultural heritage. Within this context, eco -innovation is inserted as a tool for adding value (BERTHET et al., 2016; EL BILALI, 2019; IYABANO et al., 2021; PEÑA-TORRES; REINA-ROZO, 2022; SILVA; ISSBERNER; BRAGA, 2021).

Based on the study developed by Shumpetter , innovation is understood as a process that results from complex interactions at local, national and global levels between individuals, firms and other organizations focused on the search for technological capability. (PORDEUS & STROPARO, 2021; PRZYBYCZEWSKI; STROPARO . 2021).

We cite the work of Dosi (1988), who uses Thomas Kuhn's notion of a scientific paradigm to understand the development of technology, relies on an analogy between science and technology, and cites

innovation as a problem-solving and developmental activity. specific procedures for solving these problems, characterizing it as the search, discovery, experimentation, development, imitation and adoption of new products, processes and new organizational techniques. (PORDEUS & STROPARO, 2021; PRZYBYCZEWSKI; STROPARO, 2021).

Innovation can incorporate other dimensions and move towards environmental and social dimensions, for example. In the environmental issue, there is eco -innovation that goes beyond the themes of diagnosis, pollution prevention, reduction of environmental liabilities and environmental impact, with most concepts incorporating the reduction of environmental effects (KOELLER ET AL., 2020; PINSKY ET AL., 2015; SCHIEDERIG ET AL., 2012).

According to Maçaneiro & Cunha (2015) eco -innovation , therefore, is an innovation that results in a reduction in environmental impact, whether these impacts are intentional or not, thus being a way of sustainable innovation. The interfaces between eco -innovation and agroecology are perceptible as the latter is characterized by the adoption of sustainable, albeit traditional, practices.

Innovation focused on sustainability, or eco -innovation , can be considered as the introduction of new or significantly improved products, production processes, management or business methods for the organization and that bring economic, social and environmental benefits, compared to relevant alternatives. It is not just about reducing negative impacts, but adding net benefits (MAÇANEIRO & CUNHA, 2015).

In the midst of discussions about innovations, eco -innovations and the relationship with agroecology and participatory certification systems, the link with social innovation emerges, in the sense of proposing a new productive and process rationality. A rationality that escapes the imposing and inflexible processes, legally constituted or by protocols agreed by established organizations. (BERTHET et al., 2016; EL BILALI, 2019; IYABANO et al., 2021; PEÑA-TORRES; REINA-ROZO, 2022; SILVA; ISSBERNER; BRAGA, 2021).

We share the idea that agroecological certifications can be a form of eco -innovation because, in theory, they are vectors for adding value to products and processes, as they enable the creation of networks and the safeguarding of knowledge and practices.

Family farmers, agroecological, whose products are certified with quality assurance, adept at eco -innovative and social practices, have greater possibility of access to commercialization channels, whether through fairs, supply of baskets, organization of communities that support agriculture (CSA - *Community Supported Agriculture*) as well as institutional programs such as the Food Acquisition Program (PAA - replaced by the Alimente Brasil Program) and the National School Feeding Program (PNAE)

In this way, the objective is presented, which consists of discussing the insertion of agroecological products in commercialization channels, linking principles of eco -innovation to the production and certification of items arising from family farming. The justification for the possession of eco -innovative tools by agroecology, notably in terms of adding value and access to more competitive markets, is based on the principles of agroecology itself, which encourages the autonomy of farmers in the market and the

consequent appreciation of agrobiodiversity . . (ALTIERI, 2012; ALTIERI & TOLEDO 2011 FLORIANI and FLORIANI, 2020), and the diversification strategy is recognized as one of the means that provides the sustainability of a property in rural areas. (PLOEG et al., 2019; ALTIERI, 1989b).

The methodology is characterized as qualitative research, with a bibliographic approach and documental procedure. In this way, searches were carried out in international journals such as *Esmerald Insight* , *Science Direct, Scopus* and *Web of Science,* using the terms " Agroecology ", " Innovation " and " Distribution ". channels ". Duplicate items were excluded from the research portfolio; articles published in scientific events; texts exclusively focused on the business area and/or with a general focus; without specifying agroecological products in the research object and studies that do not deal with eco -innovation directed to distribution channels or agroecology.

2 DEVELOPMENT

2.1 SUSTAINABILITY, AGROECOLOGY, NETWORKS AND INNOVATION: MEANINGS AND REPERCUSSIONS

Sustainable development was defined by the Brundtland Commission (WCED, 1987) as development that meets the needs of the present without compromising the ability of future generations to meet their own needs. Other definitions have emerged over time and although the concept is widespread and accepted in academic circles, it is vague and subjective in terms of practical ways to achieve the proposed objectives. (CAPORAL E COSTABEBER, 2002; LICHTFOUSE et al., 2009) . In common, among the numerous definitions of sustainable development, the central point is the duty to satisfy the needs of the present generation without compromising the needs of future generations. In other words, the long-term vision and actions to safeguard material and immaterial (biocultural) heritage must prevail. (DALE et al., 2020; LICHTFOUSE et al., 2009; ALTIERI 1989A;1993; CAPORAL E COSTABEBER, 2002)

Dealing specifically with family farming, we adopt the approach of Caporal and Costabeber (2002) who assert: "(...) strategies aimed at promoting sustainable agriculture and rural development must take into account six related dimensions, namely: ecological, economic, social, cultural, political and ethical". Thus, the concept of sustainability is one of the pillars on which agroecology is based, and can even be used as an indicator of activity in transition processes (CAPORAL AND COSTABEBER, 2002).

Thus, discussing sustainability in the light of family farming, specifically agroecology, implies considering multidimensionality as an implicit factor not only in terms of regional and local characteristics, but above all with respect to ancestral practices, defining the cultural identity of the different social groups that constitute territorialities .

We believe that it is not possible to deal with sustainable development without considering the ecological, economic, social, cultural, political and ethical dimensions, although it is not the objective of this work to discuss each of them in detail. At the same time, Sachs (2004) considers the following

dimensions: social, political, economic, environmental and territorial, the latter being related to the spatial distribution of resources, populations and activities.

In the scope of this work, the terms and dimensions are related and integrated in a symbiotic way, as the defense of territorialities and the fight against hegemonic processes of monocultural production are defended . It is understood that the social organization and the certification of agroecological products are sustainable alternatives for small properties that will be able to access marketing and distribution channels, using an eco -innovative tool for the promotion and dissemination of what is produced.

Innovation focused on sustainability, or eco -innovation , can be considered as the introduction of new or significantly improved products, production processes, management or business methods for the organization and that bring economic, social and environmental benefits, compared to relevant alternatives. It is not just about reducing negative impacts, but adding net benefits (MAÇANEIRO & CUNHA, 2015).

Furthermore, leaving the field of abstraction and thinking about the concrete reality and the difficulties related to the theme, the central point is the reflection of the meanings and repercussions arising from the adoption of eco- engagement tools in such a way that they guarantee to the farmers processes within the principles agroecology itself, that is, are economically viable, environmentally safe and socially just. In this way, the aim is to restore local self-sufficiency, the conservation and regeneration of agrobiodiversity of natural resources, the production of healthy foods with low inputs and the empowerment of peasant organizations (ALTIERI; TOLEDO, 2011)

Ploeg and Marsden (2008), when discussing rural development, discuss it from two perspectives: one that understands development as something that is being built from local experiences and another that encompasses social processes of inclusion, participation and income generation. In this study, there was the proposal of the so-called Rural Web, which aims to understand the interconnections between people from different locations around agriculture. Networks are fabrics that make it possible to study the relational structure in which individuals or organizations are inserted and that emerge as a new instrument in the face of determinisms to existing social groups, new arrangements and demands. (PLOEG, MARSDEN, 2008; MARTELETO, 2001).

In line with the above, networks are groups formed from common interests, with relations of respect and reciprocity, despite individual differences, collective interests overlap. It is noticed, in the debates involving the term development, different concepts and approaches to deal with the intrinsic relationships existing between sustainability, networks, autonomy and local organizations. In these terms, freedoms are not just the primary end of development. The promotion of political freedoms (governance and bottom- up decision-making processes), social opportunities (in the form of socio-environmental education and health), and public-private economic devices, are synergistic processes aimed at social (equity), ecological (sustainability) and economic (growth) of development (SEN, 2010).

Latour (2007), deepens the discussion by proposing the Actor-Network *Theory (ANT*) deals with the perception of space as an analytical dimension, enabling new re-readings of the relationships that are

established, even enabling the construction of collectives including human and non-human and establishing new paradigms. (FLORIANI et al, 2022)

Networks are, therefore, constitutive of political spaces and, for the scope of this work, when discussing whether alternative agri-food networks such as CSA, for example, there is, in addition to the aspects of connections for common interests, the struggle for healthy foods, for safeguarding agrobiodiversity , by ancestral cultural traditions and knowledge and represents an act of subversion to the dominant model of markets and profits. In this way, it is verified that the social actors constitute a web of interdependencies that constitute space and territorialities.

Finally, it appears that the issues dialogue and, as a political action, it is up to agroecological farmers to appropriate the available technological tools, as a way of reaching new markets and consumers and as a guarantee of adding value to what is produced.

2.2 PARTICIPATORY GUARANTEE SYSTEMS (SPG), SOCIAL CONTROL, AGROECOLOGICAL CERTIFICATIONS AND DISTRIBUTION CHANNELS

The conformity assessment of organic products was instituted in Brazil with the enactment of Law n. 10,831 of 2003 and Decree no. 6,323 of 2007 that regulate the production, storage, labeling, transport, certification, marketing and inspection of organic products in Brazil. In addition to the legal instruments mentioned above, there is a range of normative instructions, ordinances and resolutions that establish technical standards and procedures. (BRAZIL, 2003; 2007).

The enactment of Law 10,831/2003 formalized the Brazilian Organic Conformity Assessment System (SisOrg) which has three modalities for certification: i) certification by auditing; ii) participatory conformity assessment bodies (OPAC) and iii) Social Control Body (OCS). There are, therefore, the Conformity Assessment Bodies (OAC) constituted by audit certification or Participatory Assurance Systems (SPG) covering OPAC and OCS. The latter establishes Social Control for direct sales (without certification).

Certification by auditing consists of hiring public or private auditing companies, regularly registered with the Ministry of Agriculture, Livestock and Supply (MAPA). The criteria for certification are defined by international regulations and standards suited to Brazilian legislation and consist of inspections of properties aimed at verifying production processes. This modality is unfeasible for small family producers because it incurs high costs of contracting and adaptation.

Participatory Guarantee System (SPG): This is a collective organization that is responsible for certification. They are usually groups of producers, consumers, technicians and other interested parties, and there is a need to establish and formalize a Participatory Conformity Assessment Body (OPAC) that will be responsible for issuing a seal via the Brazilian Organic Conformity Assessment System (SisOrg), as well as controlling of production processes. It is a legal entity with attributions and responsibilities regulated by MAPA and, due to the administrative structure and inherent bureaucratic obligations not only for

constitution and formalization, but for operationalization, it also presents high costs and broad and rigid protocols.

On the other hand, the third way to obtain accreditation and conformity assessment, which allows direct sales, is through the constitution of a Social Control Organization (OCS) **.** It is a group, association, cooperative or consortium of family farmers, with or without legal personality, which establishes the processes and inspects the documentation produced internally, in each of the properties and issues the Registration Declaration, which proves its production of agroecological and/or organic basis. Quality assurance, in this case, is the responsibility of the group responsible for social control.

Among the possible ways of obtaining the conformity assessment, the one obtained through OCS stands out for the simplification of the assessment processes and reduction of implementation costs, since social control is carried out by the peers that make up the nucleus. The conformity of processes and products is attested after visiting and verifying the items object of analysis and identification of inconsistencies and non-conforming items, as well as adaptability to specificities, and there may be seals that identify territorialities and territories .

Constituting an OCS is, therefore, one of the ways provided by law to strengthen existing family farming, with the implementation of agroecological practices that add value to the products and consequent creation of a certifying seal that enables product traceability and quality assurance. Furthermore, it should be noted that the creation of a certifying seal supersedes legal issues and technical procedures, but must consider variables such as respect for traditions, beliefs, methods and acceptance by the farmers involved, completely discarding any imposing methodology and/or that significantly alters the way production and processes already consolidated.

Even opting for the modality of social control for direct sales, in a simpler theory, it appears that the three modalities provided for by law are wrapped in a wide range of complex and excluding protocols, making it extremely difficult for small family farmers to participate.

Research pointing out such difficulties and dichotomy between the ideal and the real find that although there is an increase in the number of certified farmers, it is noticed that there is a tendency to keep only in the reach of the minimum objectives, without the interest in the implementation of complex agrifood systems and the justification has been the impositions arising from the introduction of extensive and costly manuals and forms. It questions whether, even, the excessive concentration on evaluation routines as a demotivating factor for the transition from conventional to agroecological agriculture. (NIEDERLE et al., 2022).

In addition to problems with certifications and sales, agroecological farmers face problems with the competitiveness of their products and, as they are perishable, with timely disposal. Solutions have been presented to overcome the problems arising from supply and demand, trying to establish sales schedules, either through street markets, weekly or fortnightly baskets for pre-determined consumers, as well as the so-called Communities that Sustain Agriculture (*Communnity). supported Agriculture*), or simply CSA.

CSA is a movement that aims to encourage the consumption of local products and the sustainability of local food systems (Henderson; Van En , 2007; Lamb, 1994;) where consumers are considered co-producers and purchase an expected harvest, every six months or year, of agroecological farmers, paying monthly or fortnightly a predetermined amount of money. On the other hand, they receive baskets with various products, which can be vegetables, fruits, vegetables and other items produced on the property.

The central objectives of the CSA are: i) stimulating the consumption of locally produced food; ii) establishment of direct links between producers and consumers; iii) revitalization of production, transformation and distribution structures; iv) building networks of relationships between producers and local governments, entrepreneurs and other leaders; and v) promotion of the local economy and rural development. (KOLODINSKY, PELCH 1997; LANG, 2010; LAGANE, 2015).

At the same time, producers are encouraged to participate in other sales modalities, such as using sales platforms hosted on websites or applications developed for this purpose.

3 CONCLUSIONS

This article seeks to discuss theoretically the insertion of agroecological products in marketing channels, linking the principles of eco -innovation to production and certification. The need to provide sustainable development where natural resources are used within an ethical and preservation rationality, linking income generation policies and improving the quality of life of small farmers is urgent under penalty of deterritorialization of an entire cultural and cultural heritage. agrobiodiversity present.

Among the alternatives for adding value and access to markets, there is the certification of products and processes, through social control exercised by peers, which makes it possible to provide tools that translate into transparency and traceability for consumers, restoring relationships of trust and proximity.

However, certifying products and processes, even in a less bureaucratic way - via the constitution of OCS - implies overcoming highly complex obstacles and constraints related to extensive legislation that imposes time-consuming, exhaustive and often limiting standards and procedures.

The solution that presents itself to face the obstacles is to build networks and work on collective solutions where farmer associations (OCS) play the role of agglutinating, inspecting and certifying products and processes in accordance with and in line with the territorialities and traditional practices of a population whose foundation is the safeguarding of the present biocultural heritage .

Certifications and seals are, therefore, instruments of validation and accreditation that the product offered was produced within certain ecological, ethical, social and economic precepts that encompass the multidimensional dimensions of agroecology itself, giving them protagonism and socio-environmental awareness. .

Within this context are the eco -innovation tools that cover all stages of production, certification, marketing and logistics channels. Dealing specifically with commercialization channels, there is the

possibility of sales at street markets, supply of baskets, participation in programs such as CSA and institutional notices such as supplying food for school lunches.

We understand that access to these markets necessarily involves the disclosure of available items, publicizing not only the items themselves, but setting up a pool of information that allows the necessary transparency of the production process, the sanitary techniques used and other pertinent information in such a way that consumers and farmers and serve as an incentive to consume local, agroecological, in natura or agroindustrialized products . To this end, the use of apps or websites for sale means a paradigm shift not only in agroecology that appropriates new technologies, but also on the part of consumers who adhere to a new social behavior of valuing local and healthy products.

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