COLLABORATIVE NETWORKS IN ORGANIC AGRIFOOD SYSTEMS: A SYSTEMATIC LITERATURE REVIEW

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ABSTRACT

Objetivo: The accelerated growth of collaborative networks in organic agrofood systems places Brazil in the spotlight in the global production and consumption of organic foods. This article aims to identify and analyze the studies carried out in Brazil in the period from 2010 to 2020 on organic agrofood systems based on the theoretical framework of collaborative actions in networks, considering the publications in national journals.


Resultados e Discussão: The systematic review identified the growing interest of researchers in investigating and understanding how actors interact with each other or configure in the economy and society, as well as the influences for the formation, development, consolidation, and even the dissolution of collaborative networks in organic agrofood systems.

Implicações da Pesquisa: It is expected that the results presented can subsidize future studies on collaborative actions in organic agrofood systems, contributing to the expansion and positive changes in collective actions in organic agrofood systems.

Originalidade e Valor: The study innovates in presenting research agenda of collective actions in organic agrofood systems observed in national literature over the decade highlighted.


RESUMO

Objetivo: O acelerado crescimento das redes colaborativas em sistemas agroalimentares orgânicos coloca o Brasil em destaque no cenário mundial em produção e consumo de alimentos orgânicos. Este artigo objetiva identificar e analisar os estudos realizados no Brasil no período de 2010 a 2020 sobre os sistemas agroalimentares orgânicos a partir do arcabouço teórico das ações colaborativas em redes, considerando as publicações em periódicos nacionais.


Resultados e Discussão: A revisão sistemática identificou o crescente interesse dos pesquisadores em investigar e compreender como os atores interagem entre si ou se configuram na economia e na sociedade, bem como ocorrem as influências para a formação, o desenvolvimento, a consolidação e até mesmo a dissolução de redes colaborativas nos sistemas agroalimentares orgânicos.

Implicações da Pesquisa: Espera-se que os resultados apresentados possam subsidiar estudos e pesquisas futuras pertinentes às ações em redes colaborativas em sistemas agroalimentares orgânicos, com os estudos apresentados contribuindo para a expansão e mudanças positivas frente às ações coletivas nos sistemas orgânicos de produção.

Originalidade e Valor: A pesquisa inova na apresentação de agenda de pesquisa de ações coletivas ao abordar redes em sistemas agroalimentares orgânicos, observada na literatura nacional ao longo da década destacada.

Palavras-chave: Agricultura Orgânica, Agricultores Familiares, Ações Coletivas.

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REDES DE COLABORACIÓN EN SISTEMAS AGROALIMENTARIOS ORGÁNICOS: UNA REVISIÓN SISTEMÁTICA DE LA LITERATURA

RESUMEN

Propósito: El crecimiento acelerado de redes de colaboración en sistemas agroalimentarios orgánicos destaca a Brasil en el escenario mundial en producción y consumo de alimentos orgánicos. Este artículo tiene como objetivo identificar y analizar estudios realizados en la década de 2010 a 2020, en Brasil, sobre sistemas agroalimentarios orgánicos a partir del marco teórico de acciones colaborativas en redes, considerando publicaciones en revistas nacionales.

Método: La investigación exploratoria se realizó con el apoyo de la Revisión Sistemática de Literatura a través del análisis de documentos y artículos científicos publicados entre 2010 y 2020. Se utilizó la plataforma Cielo y revistas de la base de datos CAPES. Se seleccionaron artículos relacionados con el tema de estudio y se clasificaron en Qualis A1-B2.

Resultados y Discusión: La revisión sistemática permitió identificar el creciente interés de los investigadores por indagar y comprender cómo los actores interactúan entre sí o se configuran en la economía y la sociedad, así como las influencias en la formación, desarrollo, consolidación e incluso disolución de redes colaborativas en sistemas agroalimentarios orgánicos.

Implicaciones de la Investigación: Se espera que los resultados presentados puedan apoyar futuros estudios e investigaciones relevantes a acciones en redes colaborativas en sistemas agroalimentarios orgánicos, contribuyendo los estudios presentados a la expansión y cambios positivos en las acciones colectivas en sistemas de producción orgánica.

Originalidad y Valor: La investigación innova al presentar una agenda de investigación para acciones colectivas abordando redes en sistemas agroalimentarios orgánicos, observada en la literatura nacional a lo largo de la década destacada.

Palabras clave: Agricultura Orgánica, Producción Familiar; Acciones Colectivas.

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1 INTRODUCTION

Some agro-industrial systems have undergone profound changes in recent years and in many of them distinct market dynamics have become evident, both in circuits between rural producers (local or traditional) and in circuits of reinsertion of groups of small producers from
alternative markets, the which begin to coexist with conventional commodity markets (Cassol, 2013; Schneider, 2013).

New arrangements in agri-food systems (Ploeg, 2008; Cassol, 2013) are visualized, based on distinct added values, linked to development in rural production (Wilkinson, 2006). Mainly originating from family farming, value chains for product differentiation imply appropriate coordination and governance mechanisms, because if coordination failures occur, such value can be lost along the chain, and the benefits associated with differentiation can disappear. (Trienekens & Zurbier, 2008).

Therefore, given the relevance of organic production systems, this article sought to identify and analyze the studies carried out on organic agri-food systems based on the theoretical framework of collaborative actions in networks, considering periodical publications, at the level national, covering the period from 2010 to 2020. Scientific production in the area was analyzed, based on the following research question: How has research into organic agri-food systems that use models of collaborative actions in networks been triggered?

The growing and expanding organic products market, highlighted by Oliveira & Hoffmann (2015), has attracted the attention of producers, consumers and investors. Due to its sustainable characteristics, as a constant concern of contemporary society, it transforms the purchasing pattern of families, companies and institutions towards choices that are less harmful to the environment and health (Sahota, 2019). This trend is confirmed with the growth of organic production in Brazil and the world. Legislation and the institutionalization of public policies have projected Brazil internationally as one of the countries that has made the most progress in favor of organic production and commercialization (Sambuichi et al., 2017; Schmitt et al., 2017).

2 THEORETICAL REFERENCE

2.1 DISCUSSION OF COLLABORATIVE NETWORKS IN ORGANIC AGRO-FOOD SYSTEMS

The production and consumption of organic products have grown significantly around the world, driven by an expansion in demand for organic food and beverages mainly in European and North American countries (IPEA, 2020). It is observed that since the year 2000, the average annual growth in retail sales of organic products in the world has been greater than 11%, IPEA (2020). In Brazil, the segment generated R$5.8 billion in 2020, a value 30% higher
than in 2019, according to the Council for the Promotion of Organic and Sustainable Production (ORGANIS) (SA+, 2020).

The agricultural area occupied by organic production in Brazil, data from the Research Institute of Organic Agriculture (FiBL) / International Federation of Organic Agriculture Movements (IFOAM), estimates around 1.3 million hectares, or around 0.5% of the area Brazilian agricultural sector (Willer, Schaack, & Lernoud, 2018). It is estimated that there are still 1.7 million lands considered organic destined for beekeeping and extractivism, such as areas dedicated to the production of nuts, açai, palm hearts, medicinal and aromatic plants (IPEA, 2020).

Organic production systems are regulated by law. In Brazil, this regulation came through Law No. 10,831, of December 23, 2003, which regulates organic production systems. Subsequently, with the joint participation of civil society, decree 6,323, of December 27, 2007, was formulated, which brought the regulation to Law No. 10,831, of December 23, 2003, and subsequently the Normative Instructions (IN), with highlighting IN nº 46, which regulates animal and vegetable production. Ordinance No. 52 was recently published, which establishes the technical regulations, substances and practices for use in Organic Production Systems (Brazil, 2021).

Commonly presented as an important differentiation for the producer, organic production is part of an agro-industrial system that demands differentiated governance mechanisms, in order to ensure that the value generated in the products is not lost throughout the chains and, mainly, is not appropriated only by some intermediaries (Trienekens & Zurbier, 2008).

In these types of transactions, discussions about networks as complex or hybrid forms of governance emerge. According to Wenningkamp (2019), new forms of governance emerged as a response to a set of distinct transactions that happen collectively and simultaneously, which other governance structures, such as hierarchy and the market, cannot explain (Ménard, 2004).

According to Ménard (2004) and Zylbersztajn (2005), market governance and hierarchy structures were used to explain the transactions and institutional arrangements present in the market as a whole and in the Agricultural Economy until the mid-1980s, for the existence of other forms of organization, characterized by complementarity and simultaneity of transactions (Wenningkamp, 2019).

The previously existing theory could no longer meet the organizational forms that emerged “such as non-profit organizations, political firms and associations and representation
entities” nor the strategic organizations that were formed by complex institutional arrangements (Zylbersztajn, 2005, p.387).

Complex governance structures in agri-food systems can encompass the most varied types of collective actions, based on the collaborative and joint action of people or organizations with common interests. Among the different formats that these structures can take are franchises, collective brands, partnerships, cooperatives, alliances, clusters, arrangements, and supply chain systems (Zylbersztajn, 2005).

It is important to observe the notion of network used in multiple ways and discussed from different theoretical perspectives. In social sciences and studies on rural development, the perspective presented by Schmitt (2011) observes three interpretative lines, in the use of networks, linked to rural development: the Actor-oriented perspective, Actor Network Theory and Network Analysis Social, in economic sociology studies.

The actor-oriented perspective refers to the classic authors of anthropology who strongly influenced the debate on this topic in the social sciences. Although many structural changes are the result of “external forces” (such as the State, the market or pro-development international policies), forms of intervention only affect social opportunities and the conduct of individuals to the extent that they are introduced into their own ways of life, taking shape, directly or indirectly, in everyday experiences (Long, 2007). It thus understands the way in which different agents influence the formulation and implementation of development policies and projects, affecting their results.

The Actor-Network Theory was developed from the end of the 70s by authors such as Law, Latour, Callon, among others, mainly through analyzes focused on science and technology (Schmitt, 2011). For authors identified with this approach, the starting point of network analysis is the plural and incomplete processes through which order is constructed. Each and every form of ordering is a product of the performance of networks.

In this configuration, Latour (2007) argues that for ANT, the actor is not a source of action, be it an individual, a group or an organization. It only exists through a set of associations, established between “human” and “non-human” agents, connected to each other through different translation processes. In this aspect, it is important to consider that for ANT, elements of the material world are not only mobilized by human beings, but actually participate in the action. It is in the overlap between the social and the material that human societies stabilize, in time and space, certain connections crystallized in increasingly complex social and material configurations (Murdoch, 1997).
Finally, the third aspect that studies on rural development deal with refers to the literature originating in economic sociology about the relationships between economic processes and social structures. The social insertion of economic actions is placed here at the center of the analysis, translated through the concept of embeddedness (rootedness), developed by Polanyi and, later, by Granovetter (1992; 2005). The idea of rootedness arises in Granovetter's sociology, in three basic assumptions: (i) economic action is a form of social action; (ii) economic action is socially situated; and (iii) economic institutions are social constructions, as pointed out by Schmitt (2011).

From Granovetter, economic action is considered socially situated, which points to the immersion, or rooted in networks of contacts and connections, between individuals and groups, who establish personal relationships from which bonds are established, or even, in Raud-Mattedi’s (2005) words mean that individuals do not act autonomously, but that their actions are rooted in concrete, continuous systems of social relations, that is, in social networks.

Granovetter (1992) maintains that social relations, more than institutional devices or generalized morality, are mainly responsible for the production of trust, that is, individuals are linked to multiple networks, governed by economic and non-economic principles that influence, in different ways, their actions.

From this perspective, networks make it possible to uncover the relational contexts in which actors are inserted: individuals, families, groups and organizations. They are, therefore, fundamentally social. The influence of social networks on economic results occurs in different ways: altering the flow and quality of information, favoring the mobilization of resources, institutionalizing mechanisms of retribution or punishment, enabling the structuring (or even the destructuring) of social bonds. Such bonds are built both through interpersonal relationships (strong ties) and through weak ties that connect socially distant agents (Schmitt, 2011).

These different theoretical aspects are important when discussing agro-industrial networks and systems. The analytical proposal of the Actor-Network Theory provides elements that align with the geographic network perspective, because, according to Latour (2007), anything that modifies a situation making a difference is an actor. The plural and incomplete processes through which order is constructed are important, Schmitt (2011).

Likewise, the foundations of networks are used as a social construction, with a growing interest in organic products, with a perception that reaches new potential in the construction of differentiated markets, through networks with long-term operating capacity, distance (such as fair trade) or short marketing circuits.
Therefore, in this study, the different actors who build relationships based on the principles of organic food production stand out. Serving the market is one of the main objectives of the actors involved with organic production. Products are sold through the main sales channels: supermarkets and specialized stores as demonstrated by Finatto (2016).

Organic Production Networks share intentions and relationships that reveal the immediate interest in serving the consumer market and thus result in an arrangement of flows that have their scope shaped by commercial relationships. Many actors that make up these networks are also part of the conventional product market, from product flows to financial ones (Finatto, 2016).

The position occupied by farmers in organic production networks stands out, as suppliers of raw materials, reproducing a typical relationship of the conventional production system, with a process similar to the integration model taking place. Collaborative networks in organic agrifood systems, as the result of a dynamic and continuous social process, are constantly readjusting themselves, building new links and abandoning others that could result in increasingly hybrid projects.

3 METHODOLOGY

This exploratory research used the Systematic Literature Review (RSL), which according to Cronin, Ryan & Coughlan (2008), prevails with a rigorous and outlined approach to the specific topic, answering questions directed by the study. Hek & Langton (2000), focus on the criteria of quality and precision in the evaluation and selection of literature. In Parahoo (2006), the systematic review stands out from the methods used to evaluate and synthesize the results of particular studies.

Guarnieri (2015), based on Cronin et al. (2008), adds that the systematic literature review has well-defined procedures, following a source selection and analysis protocol. According to the author, systematic literature reviews can be anchored in qualitative or quantitative approaches, depending on the research objectives.

Guarnieri (2015) describes the RSL protocol proposed by Cronin et al. (2008), which involves the steps: formulation of the research question; set of inclusion and exclusion criteria; literature selection and access; assessment of the quality of the literature included in the review and analysis, synthesis and dissemination of results. Based on the protocol, Figure 1 presents a summary of the studies analyzed.
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**Figure 1**

*Systematic literature review protocol.*

In this sense, data collection was carried out in two stages, the first through theses and dissertations and the second using publications in national periodicals classified by the Qualis evaluation system of the Coordination for the Improvement of Higher Education Personnel (CAPES), in classification strata A1 to B2, considering national works in Agribusiness,
Administration or interdisciplinary. In order to meet the research objective, the period of publications was limited to 10 years, covering the period from 2010 to 2020.

The SCIELO and CAPES platforms were the databases used and four inclusion criteria were defined: studies that deal with agricultural systems integrated in agribusiness, collaborative networks in agribusiness, agribusiness of organic products, collaborative networks of organic products, in the period from 2010 to 2020. Duplicate studies and those prior to 2010 were used as exclusion criteria.

Articles were selected by titles that discussed the topic. Articles with selected titles had their abstracts read. After reading the abstracts, those relevant to this study were selected and the others were disregarded. For agricultural systems integrated in agribusiness, 188 articles were found, where the following were identified: (i) 5 articles for collaborative networks in agribusiness; (ii) 126 articles for agribusiness of organic products; (iii) 98 for organic systems; and (iv) 1 article identified for the descriptor collaborative networks of organic products.

It is important to highlight that considering the quality criterion of the literature found, of the 79 articles selected by title, 49 were eliminated by the summary because they did not fit the research theme. Of the remaining 30 articles, 20 articles were part of the RSL, as they met criteria established based on CAPES Qualis.

Finally, the study was characterized by the analysis of the selected articles, with a description of the results found, as well as the considerations about each article.

4 RESULTS AND DISCUSSION

Table 1 presents the 20 selected articles, in order of selection, considering the sequence of keywords presented in Figure 1, highlighting: Author(s), Year, Title, Periodical and CAPES Qualis.

Table 1

<table>
<thead>
<tr>
<th>Author/Year</th>
<th>Title</th>
<th>Periodical</th>
<th>Qualis</th>
</tr>
</thead>
<tbody>
<tr>
<td>Castellani et al. (2017)</td>
<td>Purchase of family farm and organic foods by the Brazilian School Food Program in Santa Catarina state, Brazil.</td>
<td>Nutrition Magazine</td>
<td>B2</td>
</tr>
<tr>
<td>Vieira, Corso &amp; González-Chica</td>
<td>Organic food-related educational actions developed by dieticians in Brazilian municipal schools.</td>
<td>Nutrition Magazine</td>
<td>B2</td>
</tr>
</tbody>
</table>
Next, Table 2 presents the state of the art of research on collaborative networks in organic agri-food systems, at a national level, in the period between 2010 and 2020.

**Table 2**

*Síntese da produção científica nacional sobre redes colaborativas em sistemas agroalimentares orgânicos, no período de 2010 a 2020.*

<table>
<thead>
<tr>
<th>Author/Year</th>
<th>Subthemes</th>
<th>Methods</th>
<th>Sample</th>
</tr>
</thead>
<tbody>
<tr>
<td>Year</td>
<td>Methodology</td>
<td>Findings</td>
<td></td>
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<tr>
<td>---------</td>
<td>------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------</td>
<td>--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------</td>
<td></td>
</tr>
<tr>
<td>2013</td>
<td>School meals; organic foods, food education and nutritional, organic food.</td>
<td>Cross-sectional census-type study.</td>
<td></td>
</tr>
<tr>
<td>Vieira et al. (2014)</td>
<td>Analyzes consumers' decision-making, their attitudes and values in relation to organic food through the use of the Theory of Planned Behavior.</td>
<td>Studies social innovations, through democratic and participatory actions that promote social inclusion.</td>
<td></td>
</tr>
<tr>
<td>Miranda et al. (2020)</td>
<td>Participant observation and analysis of primary data and other documents.</td>
<td>Analyzes the experience of the Family Farming Commercialization Laboratory.</td>
<td></td>
</tr>
<tr>
<td>Darolt et al. (2016)</td>
<td>Local Markets; Organic Foods; Agroecology; Fair Trade.</td>
<td>Descriptive and qualitative, multi-case research.</td>
<td></td>
</tr>
<tr>
<td>David &amp; Guivant, (2020)</td>
<td>New channels. FVL sales services online.</td>
<td>Rural development and new connections.</td>
<td></td>
</tr>
<tr>
<td>Caldas &amp; Anjos (2017)</td>
<td>Background study Understanding a phenomenon. Multimethod, Descriptive qualitative analysis.</td>
<td>FVL sales service online.</td>
<td></td>
</tr>
</tbody>
</table>
When seeking to understand the main discussions made in the texts, some ideas stand out. By highlighting the construction of “a civic critique”, based on societal demands for equity, justice, social participation and sustainability, food security and sustainable food production stand out, in Nierdele (2014). The agri-food focus as a focal theme for rural development scholars becomes relevant, emphasizing family farmers, in Schneider & Trieches (2020).

The transformations of the market and its expansion, in order to expand the possibilities of access to these products, particularly in Brazil, appear in the studies by David & Guivant (2020). The authors highlight that although supermarkets, specialized stores and fairs continue to be the main places for purchasing organic products, the emergence of new channels, such as purchasing products via internet platforms, consumer clubs and subscription to food baskets, points to niches that coexist, sometimes intertwining, sometimes operating in parallel, with the conventional retail infrastructure (Silverio & Souza, 2014).

For studies that addressed cases, such as Caldas & Anjos (2017), the panorama of the experience of an alternative agri-food network existing in Italy, Gruppi di Acquisto Solidale (GAS) and Porto Alegre, examining the factors that led to its emergence, and the challenges that The commercialization and development of these markets are presented in their operating logic.

For the collaborative networks approach, the references given to the formation and institutionalization of the sector in the regions analyzed are highlighted, and its importance in promoting the sector in Oliveira, Correia & Gomez (2018), as well as in Miranda et al. (2020).

The interest of approaches in the structures of production chains, as in the case of Azevedo et al. (2014), for the production of organic mushrooms in the Federal District, encouraged by the strong technical assistance presented, the content covers certification, costs, legislation and other specific aspects of the production chain. It is important to highlight that the study considered that few links demonstrated interest in strengthening relationships with each other and, as a result, the formulation of strategies aimed at leveraging the production chain as a whole is hampered.

In recent years, the agri-food chain of organic products has been highlighted as a global phenomenon, with new models of supply and distribution of organic foods, expansion of the consumer market, linked to a greater global appreciation for foods whose origins are environmentally, economically and socially sustainable, in Castellani et al. (2017); Miranda et
The results found by Pereira et al. (2016), in a multiple case study, pointed to horizontal coordination, reinforcing the ties between the social actors that make up the territory.

5 CONCLUSION

This study aimed to evaluate the main academic contributions on the topic of networks and organic agri-food systems, with a special focus on recent national production. By seeking to portray the institutionalization of research in Brazil and the reflections that supported the research agenda on the topic, its quantitative nature and qualitative approaches demonstrate, in addition to theoretical proof and validation, a reflection on its relationships, structures and conditions.

Brazil is an important actor in the organic food production scenario and the results of this study point to the strategic relevance that networks have for this agro-industrial system, which can be observed in the creation of new marketing channels, and the valorization of consumer for different foods. The formation of collaborative networks and other variables of collective actions for the sector are highlighted.

On the other hand, some limitations can be pointed out. This study did not aim to exhaust the national literature on the topic during the period investigated. The theme provides opportunities for referenced research, which can be multiplied, in order to demonstrate and/or reconstruct consolidated theories, or even propose new theories, new models and new relationships between variables that support organic agri-food systems and their relationships in networks.

Knowing the state of the art in the development of new marketing channels using technologies for other regions of the country, as well as the impact of large corporations that start to sell organic products compared to local commerce and direct sales, are some suggestions that will be able to contribute to the construction of a consistent theoretical framework, promoting the progressive advancement of knowledge about this segment in Brazilian agribusiness.

REFERENCES


