

The Diffusion of Organic Agriculture Based on Agroecological Principles in Two South American Cities*

La difusión de la agricultura orgánica basada en principios agroecológicos: estudio en dos ciudades latinoamericanas

A difusão da agricultura orgânica baseada em princípios agroecológicos em duas cidades sul-americanas

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Artículo de investigación



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Abstract

The objective of this research is not only the evaluation of institutional strategies related to the research and development process of organic agriculture, but also socialization and appropriation of agro ecological knowledge in order to contribute to the discussion regarding the importance of organic agriculture alternative movements as an effective way of working and incoming generation in Río Cuarto (Córdoba, Argentina) and in Seropédica (Rio de Janeiro, Brazil). The chosen methodologies were: qualitative research, in-depth interviews with agriculturists and professionals from local institutions, and observation, which is the basis of all researching in social field.

Keywords: Institutional arrangements, knowledge transfer, urban agriculture.

JEL: R11 Regional Economic Activity: Growth, Development, and Changes.

Resumen

El objetivo de esta investigación es la evaluación de estrategias institucionales relacionadas con el proceso de investigación y desarrollo de la agricultura orgánica, así como la socialización y apropiación del conocimiento agroecológico para contribuir a la discusión sobre la importancia de los movimientos alternativos de la agricultura orgánica como forma efectiva de trabajo y generación de ingresos en Río Cuarto (Córdoba, Argentina) y en Seropédica (Río de Janeiro, Brasil). Las metodologías elegidas fueron investigación cualitativa, entrevistas en profundidad con agricultores en diferentes sistemas productivos y profesionales que trabajan en instituciones locales, y observación, que es la base de toda investigación en el campo social.

Palabras clave: Arreglos institucionales, transferencia de conocimiento, agricultura urbana.

JEL: R11 Actividad económica regional: crecimiento, desarrollo y cambios.

Resumo

O objetivo desta pesquisa é a avaliação de estratégias institucionais relacionadas ao processo de pesquisa e desenvolvimento da agricultura orgânica, bem como a socialização e apropriação do conhecimento agroecológico, a fim de contribuir para a discussão sobre a importância dos movimentos alternativos da agricultura orgânica como forma efetiva de trabalho e geração de renda em Río Cuarto (Córdoba, Argentina) e em Seropédica (Rio de Janeiro, Brasil). As metodologias escolhidas foram pesquisa qualitativa, entrevistas em profundidade com agricultores e profissionais atuantes em instituições locais, e observação, que é a base de todas as pesquisas no campo social.

Palavras-chave: Arranjos institucionais, transferência de conhecimento, agricultura urbana.

JEL: R11 Atividade Econômica Regional: Crescimento, Desenvolvimento e Mudanças.

field work in Argentina, the Coordination of PPGCTIA (UFRRJ and URNC) and all ProHuerta volunteers, professionals, horticulturists and agriculturists who collaborated with this research in Río Cuarto and Seropédica.

Introduction

The absence of pesticides is the most striking feature in organic agriculture, thanks to the fact that the production of healthier food has grown significantly in the agri-food market in recent years. In urban or peri-urban areas, food production under organic farming or based on agro ecological systems¹, particularly vegetable gardens, is an opportunity to improve the living conditions of social risk population and to generate additional revenue through surplus production selling. However, despite of the absence of pesticides in their composition, in order to be considered an organic product some aspects are involved, which in a broader approach, are so important to humankind and the environment, like the chemical composition of food grown in this perspective.

This article discusses the organic farming growth in the city of Río Cuarto, Córdoba, Argentina, where organic farming is not either an incorporated issue by the foodstuffs market or so deeply assimilated by local public opinion: ProHuerta program, which is being implemented throughout Argentina by the National Institute of Agricultural Technology (INTA), has a main objective which is the production of pesticide-free food through low-cost and easy absorption technology adoptions, for self-consumption and additional income generation from surplus production selling. This program also plays the role of a knowledge source about natural food and the organic food cul-

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1. Agroecology is a science that adds a set of organic farming practices and, in a more comprehensive approach, also considers the knowledge of agriculturists resulting from their work experience and cultural background, in which the practice of agriculture is understood in a systemic way, considering its relationship with the environment and scientific experimentation processes that cover the physical and biological aspects inherent to agriculture, as well as socio-economic relationships involved. For more information, it is suggested to consult the authors Miguel A. Altieri and Stephen R. Gliessman.

tivation, in a region that is largely dominated by grain production in conventional monoculture systems.

Moreover, this work analyses the organic agriculture growth based on the principles of agro ecology in the municipality of Seropédica (Rio de Janeiro Metropolitan Region, Brazil), taking as a sample a group of certified agriculturists by the *Sistema Participativo de Garantia* (SPG). The agriculturists experience with organic production reveals the importance of non-industrial crops for small agriculturists, considering their production conditions and limited financial resources, as well as product placement difficulties in the agri-food market for small and little capitalized agriculturists. For these producers, it is usually not profitable to commercialize through large markets, product selling in agro ecological fairs and short marketing channels tend to be more suitable alternatives.

The objective of this research is not only the evaluation of institutional strategies related to the research and development process of organic agriculture, but also socialization and appropriation of agro ecological knowledge, in order to contribute to the discussion regarding the importance of organic agriculture alternative movements as an effective way to improve the labor market and to generate income for economically disadvantaged populations.

Organic agriculture: alternative farming production without pesticides to the conventional model of agriculture

For thousands of years, since the so-called “Neolithic agricultural revolution” about ten to twelve thousand years ago, humankind produced their food without the use of industrial origin pesticides. On the basis of developing the ability to choose place, time, selection of crops and animals that could be raised, there were successive innovations such as the domestication of plants and animals, fallow systems, oxcart and plow, cereals and fodder cultivation systems without fallow, among others (Santilli 2009). It is noteworthy that until then there had been a “no pesticide” agriculture, but not yet covered by a scientific and technological support that could name it as “organic” or other equivalent terms (Queiroz 2014).

The agricultural progress is closely related to the science advancement in other areas; the late nineteenth century, in the wake of progress arising from industrial revolution there were other innovations such as the seeders, harvesters, threshers carousel and fans to clean the grain. There were also chemicals such as fertilizers and pesticides (Santilli 2009). Technological innovations such as large cold storage and increased transport capacity for long distances contributed to the farming development under the paradigm of productivity guided by market demands, enabling the predominance of large monocultures and thus the production cycles had become increasingly longer (with several intermediary players), increasing the distance between the producer and the consumer.

Agriculture has become an economic activity with characteristic elements from the industrial sector, such as large-scale production, reduction of production costs and profit maximization; and the intensive use of capital, goods, technologies: such elements constitute the “Green revolution” technological package, widely spread around the world, wrapped in a discourse of “agriculture modernization”, and in order to control what “on the edge” is uncontrollable, that is, the nature. According to Schmitt (2010), the “Green revolution” is constituted in a production model based on intensive use of modified seeds, industrial inputs (fertilizers and pesticides), mechanization and reduction of management costs that made possible a great increase in agricultural production in the least developed countries in the 1960s and 1970s.

The intensive use of pesticides to control pests and diseases is a widely established practice for just over half a century and whose origins date back to the world wars, when the chemical industry, at that time poison makers with military purpose, turned to agriculture looking forward to the consumption of their products² (Londres 2011). The agriculture based on industrial standards, or “Conventional agriculture”, has made food production on a

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2. As Gliessman (2008, 39): “After World War II, the pesticides were widely praised as the new and scientific weapon in the war of humankind against pests and plant pathogens. These chemicals have the appeal to offer producers a way to rid their crops, once and for all, organizations that continually threaten their crops and literally consumed their profits. But this promise proved false. Pesticides can dramatically lower the population of short-term pest, but as they also kill their natural predators, these populations can often recover and reach even greater numbers than before. The farmer is then forced to use more chemicals. The resulting dependence on its use was called ‘the routine of pesticides’”.

large scale, supported by successive technological innovations that contribute to productivity increase and profit raise, called big investors attention and become hegemonic. It is observed that Conventional Agriculture growth took a few decades to establish and consolidate its domain, requiring from its great defenders investments both in capital contribution, as in the ideological model construction, supported by the promise of being able to generate foreign exchange and eliminate the problem of hunger in the world (a partially achieved goal).

The emergence of the so-called “alternative agriculture”: brief history

In the second half of the twentieth century, agriculture was able to meet, on a global scale, the increasing demand for food with lower prices and increased productivity, which generally exceeded the population growth rate and so there was a decrease in chronic hunger. A satisfactory result was a consequence of scientific and technological advancements that included the use of fertilizers and pesticides, large irrigation structures and the development of new plant varieties (Gliessman 2008). Despite the undeniable productivity gains and the remarkable technological advancements, the agriculture based on the premises of the “Green revolution” also had undesirable effects, and thus came under questions about the high productivity benefits versus such a high environmental cost. In the 1970s the harmful effects of standard technology such as soil degradation, the emergence of pest resistance to agrochemicals and the destruction of natural resources, could already be observed.

The first current of alternative agriculture to conventional farming model emerged in the 1920s, of which already existed in Europe, particularly in Germany, considered a protest movement against urban and industrial development at that time Darolt 2002). The so-called “alternative agriculture” is an alternative way to conventional cultivation placed in the context of counterpoint to the industrial agriculture excess and contemplating various currents as biodynamic agriculture, organic agriculture, natural agriculture and permaculture.

The best-known current, the “organic agriculture”, came up with the studies of the English researcher, Sir Albert Howard, who worked for nearly 40 years in India researching the relationship of human health resistance to disease, with organic soil structure. His book *An Agricultural Testament* and his research, which had repercussions in many countries, propose to improve soil fertility through the use of organic matter, considered essential to plants (Jesus 2009; Darolt 2010). In Brazil and Argentina, the term “organic agriculture” is commonly used to denote the pesticide-free agriculture. Organic farming has grown with the support of alternative agriculture movements, but has already been to some extent, absorbed by production models on an industrial scale and focused on specific markets, including to export to central countries at northern hemisphere. Currently, it is also practiced in large areas, including monoculture systems, and in this case, the production is driven by production technologies that provide control of unwanted variables (pests and diseases) without the use of pesticides, but not including the systemic approach (biological and socioeconomic) advocated by agro ecology.

On the other hand, the study of food production possibilities using techniques of various modalities of alternative agriculture, including agro ecological systems, becomes important by its contribution to the availability of income generation and social inclusion, considering that alternative systems of food production have, on crop diversification, a hallmark: “in sum, you cannot unlink the organic agricultural origin: a social and transforming movement” (Campanhola y Valarini 2001).

Methodological procedures

The field research was conducted in Río Cuarto (Córdoba, Argentina) and the Municipality of Seropédica (Rio de Janeiro, Brazil), where local institutions (public university and agricultural research institutions) perform educational activities and technology transfer; and thus stimulate family agriculturists to practice organic agriculture and the consumption of its products locally.

The chosen methods were qualitative research, that “besides being a researcher’s option, it is justified, above all, to be an appropriate way to understand the nature of a social phenomenon” (Richardson 1999, 79), depth interviews with agriculturists, horticulturists and significant players³ (professionals and volunteers working in local institutions); and observation, which is the basis of all social field research, through participation in agriculturist meetings in Seropédica, certification and verification visits of the Participatory Guarantee System (SPG), “Field Day” (a kind of extension activity) in *Fazendinha Agroecológica Km 47*, training courses and technical visits for follow-up activities of *ProHuerta*.

Organic agriculture in Río Cuarto: The official institutions and ProHuerta program

Cultivation and consumption of pesticide-free food are not common ideas among the urban environment of Río Cuarto. Covering trade near the main square (*Plaza Presidente Roca*), where the main shopping and provision of city services are located. The only place where organic food trade visibility is performed is the fair of organic products *Arte Orgánico*, which was formed with the support of professionals linked to local institutions for teaching and researching, and takes place on a sidewalk in front of the Place on Saturday morning, until approximately one or two o’clock in the afternoon. You can notice, however, that at least from the point of view of consumption, the concept of organic food is poorly spread in the city.

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3. Contact with these “significant players” gave detailed information on the development of activities over the past few years, as these players actively participated in the knowledge transmission process in organic agriculture in the two areas surveyed. In Río Cuarto, 40 interviews were conducted, including 07 professionals from local teaching and research organizations (teachers and technicians), 12 volunteer promoters, 10 horticulturists, 07 fair dealers and 04 additional interviews with farmers, professionals or volunteers who worked or had already developed activities under organic farming or environmental conservation; in Seropédica interviews were conducted with 11 agriculturists already certified, or taking part in the certification process, by SPG, as well as 07 professionals from Pesagro and Embrapa. Data collection in Río Cuarto was held in September 2011 and April 2012, and in Seropédica the second half of 2012 and throughout the year 2013.

In 2017, according to updated information by a professional consultant during field work, organic farming in the region of Río Cuarto is a residual sector in the food market and “*Arte Orgánico*” fair continues to be carried out with few fair dealers. In an attempt to promote family farming in the region, professionals from the National Agricultural Technology Institute (INTA) and citizens related to the subject are promoting editions of Fericambio fair, which, besides marketing family farming products, it is a space for the exchange of seeds, saplings, canning, recipes and experiences related to family production and agro ecological subjects.

The discussion about the possibility of food cultivation without pesticides in Río Cuarto is restricted to educational, research and social assistance institutions set up on that city, which through academic activities, social projects, workshops and outreach activities, promote the practice of organic agriculture in the region. Trading organic food in Río Cuarto is very low in relation to the consumption of conventional products and the term “Organic Agriculture”, considering the conceptual basis that is beyond the absence of pesticides along its production chain, it is mainly widespread in that region as a result of activities carried out by local education, extension and social assistance institutions, and there are no obvious signs that this situation can be changed in the near future.

During the time of conducting the data collection, dissemination of the concept of organic agriculture through the promotion of vegetable gardens by *Fundación Social*⁴ was found, the activities of ProHuerta and *Cambio Rural*,⁵ INTA programs and “*Arte Orgánico*” fair, formed with the support

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4. *Fundación Social* is supported by the municipal government and aims to “assist and promote social, cultural and economically people access to equity and social rights”, developing among its activities, social economy projects that include the promotion of family and community gardens aiming at self-production of “healthy, economic and natural foods”; its projects include the transmission of knowledge to institutions such as schools, community centers and local prison through courses, workshops and technical assistance activities for training and maintaining organic gardens.
 5. *Cambio Rural* program, created in 1993, does not constitute a program for the promotion of organic farming, but that doesn’t exclude it; in Río Cuarto a group supported by the INTA Rural Extension Agency was identified, formed by agriculturists interested in learning about this form of agricultural production and some not certified organic producers, because of market issues or personal goals: some sell their products as organic directly to consumers, who know

of the INTA and *Universidad Nacional de Río Cuarto* (UNRC), the local university.

In the Department of Río Cuarto, the ProHuerta program, identified as the main diffuser of the concept of organic agriculture in the region, was executed in the period of data collection by a team of four professionals with academic backgrounds in veterinary medicine, agronomy, biochemistry and media, and all of them had at that time, or had been in a prior period, a formal working with UNRC. The cooperative relationship between INTA unit in Río Cuarto city, headquarter of the eponymous department, and the University is quite evident, considering that in addition to professionals linked to ProHuerta, also professionals from other lines of action have some kind of cooperation or linking work with teachers from that institution.

The ProHuerta program runs on a network structure that aggregates the various internal players, and the institutions with which the program has cooperative activities, with a network of INTA technicians and volunteer promoters across the country, belonging to various institutions, such as schools, nongovernmental organizations, retired groups, prison systems, health centers, and others.

The nationwide ProHuerta program gets cooperation from various level government institutions, as well as civil society organizations such as the *Caritas*, linked to the Catholic Church. In Río Cuarto it was reported that cooperation comes from the local government and the neighboring cities, the Argentine Agrarian Federation, regular and agricultural schools, neighborhood associations, penitentiary, among others. The methodological framework and the implementation of activities are similar to what is practiced all over the country, but in response to questions about some peculiar feature in Río Cuarto, the large cooperative relationship they have with the local university (UNRC) was informed.

Various institutions emerge volunteer promoters who are linked to the program team, a partnership that not only results in the creation of private and community vegetable gardens, but also in spreading the concept of organic agriculture, considering that in Río Cuarto region, conventional ag-

that the food they buy have no agrochemicals and, therefore, the context in which they operate, the mediation provided by formal certification is not necessary.

riculture in monoculture structures for the production of grains, especially soybeans, is predominantly practiced.

Context and performance of ProHuerta in Río Cuarto

Río Cuarto region is not “naturally” favorable for organic agriculture practice because of its environmental characteristics, undeveloped consumer market and the absence of scientific research as well as applied technologies to local conditions. Some farmers, who produce on a commercial scale, used the expression “almost organic” (pesticide-free production is an objective to be reached, but not always possible, for example, in the case of a livestock producer who does not use pesticides on his site, but needs to use conventional pasture from neighboring property to feed his or her animals).

Among the proposed activities in the program, there is the “development of components”, which is to instruct people for the organic vegetable garden, the use and multiplication of herbs, production of (natural) manures, the development of traps for unwanted insects, ecological pest management, the role played by fruit trees in the constitution of the vegetable garden and pruning of these species, the provision of animal foods such as poultry, different uses of food, among others.

Most of the production from the vegetable gardens refers to vegetable and organic growing with cultivation system association (vegetables, fruit trees, flowers, etc.) It is a ProHuerta routing, which also adds concern for the related social aspects, like the need to obtain self-consumption food, or surplus production for marketing and obtaining additional income. The program has a strong concern for ensuring food security and the option for organic agriculture was given by a quite pragmatic reason: the low-cost of production. The cost of production and technological standards adopted for the formation of vegetable gardens is suitable to the socioeconomic conditions of the target audience of this public policy; for those who have food shortages, sowing a vegetable garden means the possibility of having vegetables to harvest in a period of 45 to 100 days.

Ideological motivation was a very evident trait in the discourse of professionals and promoters involved with ProHuerta activities in Río Cuarto: the goal of learning how to cultivate food enables the exchange of knowledge among participants and, with the development of the program, over time learning activities became more valuable, such as processing of food for sale in the form of jams and preserves, or in the case of vegetables, already cut in trays (*cuarta grama*).

In Río Cuarto, the ProHuerta program is developed by INTA Extension Agency, which is responsible for implementing the activities of the Institute at that Department, covering 39 municipalities in a radius of 300 km, and under the jurisdiction of the Agricultural Experimental Station of Marcos Juárez. There is, therefore, a very broad area of expertise and hard work for a very small team. It is emphasized that the implementation of activities at satisfactory levels is a result of the professionals' commitment involved from the structure provided by the Institute (facilities, automobile, fuel...), and also relying on the strength and reputation of INTA, commonly referred positively by the interviewed people.

The broadcast program in the Department occurs on two axes: the first level is the training for promoters, aiming to distribute seeds and to transmit the relevant concepts in their localities, including training in technical concepts for transmitting knowledge and technology to horticulturists. At a second level, the training is aimed to people who create the vegetable gardens, who work the land and seek the seeds; they are invited to participate in training courses in order to learn how to make their own tools with the use of inorganic waste, such as plastic bottles, brooms and bleach, also used to prepare traps for insects.

It is noteworthy that despite the program's operating focus is food security, some elements conceptually related to the concepts "Sustainability" and "Urban agriculture" were identified in the discourse of professionals, volunteers and interviewed beneficiaries, and issues related to the environment, as for example, recycling of solid waste, the practice of agriculture as a way of maintaining the cleanliness of collective urban and environmental education, especially to the academic training of children and social projects. For instance, in Alcira Gigena, a research carried out in an elementary school was reported (with the guidance of ProHuerta volunteer promoters) for the

formation of a vegetable garden, and the discussion about the improper disposal of pesticide containers in the rural area of the municipality, which is very close to the urban core.

The work done by INTA, more specifically, by ProHuerta, plays the role of a knowledge transferring tool, which in partnership with formal educational institutions, transmits information to new generations about an alternative form of food production, and with limited resources they also carry out activities related to organic farming in a region where there is a field of conventional technological package principles in everyday agricultural practice, and the current discourse in the local society indicates that industrialized agriculture is a natural and certain idea.

Organic Agriculture in Seropédica: improving the institutional arrangement⁶ and the participation of small producers

The Seropédica Municipality is a place where agriculture has traditionally occupied an important position in the economy, as well as the environment and the lifestyle of its inhabitants. In recent years, due to large investments made in the State of Rio de Janeiro, like the construction of *Arco Metropolitano* and the Port of Itaguaí, the city has undergone interventions that have been significantly changing the local landscape and territorial dynamics, and hence agriculture started to face a downturn context.

The intense pressure of the urban environment on agriculture in the region was easily identified during the collection of research data, especially in areas closer to downtown, as well as in the vicinity of *Presidente Dutra* highway and the railroad that crosses the city; in addition some agriculturists have been apprehensive about the possibility of staying in their properties

6. “An institutional arrangement is understood as a set of institutions that a particular company, organization or production unit relates with, developing its activity, forming a field or a network of relationships, partnerships and supports that enable and leverage, partially or completely, its activities and its results in terms of range of proposed objectives and productive, organizational, economic and environmental goals” (LOPES 2001, 16).

living from farming since the proximity to some developments could compromise the quality of production, especially because it is organic farming, it can be even more affected by what happens “beyond the gate” due to its characteristics.

Research in Seropédica was developed considering two axes for the analysis of diffusion of organic agriculture in that environment, namely a group of agriculturists taken as a sample for the study from farm producers’ perspective (Seropédica and small producers from neighboring municipalities) and local teaching and research organizations, that also aim to promote agriculture, which make up the institutional framework of organic agriculture in the region.

In regard to scientific research, Seropédica has a unique feature that differentiates it in the context of the state of Rio de Janeiro, and even in Brazil. The city hosts three important teaching and research institutions related to agriculture: *Universidade Federal Rural do Rio de Janeiro* (UFRRJ), a unit of *Empresa Brasileira de Pesquisa Agropecuária –Embrapa Agrobiologia* and a unit of *Empresa de Pesquisa Agropecuária do Estado do Rio de Janeiro–Pesagro-Rio*. This research environment recently resulted in a further step for the development of agro ecological research, which was the creation of the Professional Master Course in Organic Agriculture.⁷

On the other hand, for the analysis from perspective of production and marketing the group of agriculturists associated with the Participatory Guarantee System was chosen (SPG) –Seropédica core–, through the *Associação de Agricultores Biológicos do Estado Rio Janeiro-ABIO*, because this is a

7. The creation of the Master Degree Course in Organic Agriculture is the result of a partnership between the *Universidade Rural* and *Embrapa Agrobiologia* that divides the faculty and the provision of necessary facilities for the course, such as laboratories and libraries. Thus, the course consolidates *Fazendinha* as a “great laboratory” for scientific experimentation on organic agriculture and agro ecology, with the dissertation projects on specific topics and the objectives for which the space is maintained in a partnership established with *Pesagro-Rio*, preserving the continuity of use of *Fazendinha*’s environment and resources for other Master and Doctorate Degree Courses from UFRRJ. The Professional Master Degree Course in Organic Agriculture is the first course about these topics in Brazil; the course focuses on academic education of students who are already in the labor market in order to contribute to organic farming growth with the integration of theoretical and practical knowledge for the management of organic production systems, teaching, research, rural extension, technical consulting and management (UFRRJ y EMBRAPA, s. f.).

group of agriculturists organized in order to achieve a common goal, to obtain the organic label using the participatory evaluation of the organic production conformity, and who also have participated in knowledge and technology transfer activities promoted by the local institutions, as well as the *Fazendinha Agroecológica Km 47*, a space for research and dissemination of organic agriculture, conducted in partnership by the institutions above mentioned.

In addition, many interviewed agriculturists participated in activities related to learning about organic farming in *Fazendinha Agroecológica Km 47* and the three institutions that comprise it, as well as the formation of the *Circuito Carioca de Feiras Orgânicas*⁸ and, in some cases, they obtained the label as organic agriculturists from ABIO, before it started to act as appraiser of organic compliance by SPG⁹ alternative.

Therefore, the decision of collecting data with these agriculturists, in some cases their labor history suggested the possibility of a satisfactory re-

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8. The *Circuito Carioca de Feiras Orgânicas* (Carioca Trade Organic Circuit) was established in 2010 as a result of a partnership between the *Associação de Agricultores Biológicos do Estado do Rio de Janeiro-ABIO* (Biological Agriculturists Association of the State of Rio de Janeiro) and the *Secretaria Especial de Desenvolvimento Econômico Solidário da Prefeitura do Rio de Janeiro-SEDES* (Special Secretariat for Economic Solidarity of the Municipality of Rio de Janeiro), with the support of local Neighborhood Associations where the fairs are held. (ABIO, s. f.) The fair circuit tries to approximate the consumer to the producer, enabling the supply of food for a lower price and fair to both parties.
 9. In Brazil there are three types of conformity assessment of organic production: Certification by Audit or third party, in which a certifying institution is contracted to carry out the evaluation process; Direct Sale, in which consumers purchase food directly from the producer, without the involvement of intermediaries in the marketing, and does not require the issuance of a formal certificate and the Participatory Guarantee System (SPG), in which a group of producers performs monitoring and verification of conformity of production according to the principles of organic agriculture, through a participatory process of mutual monitoring among peers, whose basic structure is composed of the members of the system who are suppliers and employees (individuals or companies), and by the *Organismo Participativo de Avaliação da Conformidade-OPAC* (a participatory conformity assessment office, which is a legal person who has formal responsibility for the activities developed in the SPG group, corresponding to the figure of a certification audit office by the certification system). The OPAC has the prerogative to authorize the associated producers to market their production using the Brazilian stamp of Organic Conformity Assessment System – SisOrg, which identifies the consumer that the product is certified as “organic” (MAPA 2008). In 2018, these modalities to evaluate the conformity of organic production continue to be maintained by Brazilian legislation.

sponse regarding the objectives and hypothesis defined for this study. In addition to having interviews with agriculturists and researchers from teaching and research institutions, the fieldwork was complemented by attending to regular meetings of the SPG Seropédica group, assessment and verification follow-up visits in the certified production units, and a “field day” in *Fazendinha Agroecológica Km 47*.

Organic farming from the perspective of agriculturists in the Seropédica SPG

The surveyed agriculturists have very different backgrounds and life stories, their interest in organic farming was motivated by various reasons such as health (not using pesticides in farming), the incomings that organic products can generate in comparison to similar conventional products and, in some cases, ideological reasons. The choice of organic agriculture was generally motivated by more than one reason, and even in reported cases by personal health problem experiences, the aggregated value of organic food in the consumer market was another element related to this option, considering that being already aware of the danger of pesticides, and considering its condition of small farmers, organic farming represents an opportunity for more satisfactory yields and better market opportunities.

It is observed that an agricultural practice directly associated with conventional technological package as a more viable cultivation option, or even as the only alternative agricultural practice, was not an perceived idea by surveyed agriculturists when they have opted for organic farming, especially for those who have always practiced a “pesticide-free agriculture”; some of them, especially those from rural areas, or at least reported having family background in agricultural environment, in some cases even could not envision the possibility of producing food with the use of pesticides. It is noteworthy that in that context, the absence of pesticides represented the option for an agriculture with no industrial inputs, which did not, however, identified that agricultural production as “organic”, considering the conceptual charge associated with this term. The option to live mainly or exclusive-

ly from agriculture took place from the 1990s and, in some other examples, from the 2000s.

In the latter case, the agriculturists were influenced by the organic farming concept, which gradually was up spreading in Seropédica and neighboring cities, as well as the growth of the consumer market for organic food in the city of Rio de Janeiro. The referred city, capital of the state of Rio de Janeiro, already has an established niche market for organic products and together with the participation of many loyal consumers, who purchase products that appeal to issues such as health and ecology, represent an essential market for the development of organic agriculture throughout the state.

Among the pioneers in the study group who identified the emergence of organic fairs as a significant marketing channel for small producers, there is the influence of local teaching and research institutions, especially the *Universidade Federal Rural do Rio de Janeiro*, even before the creation of *Fazendinha Agroecológica Km 47*, in 1993. The relationship with these institutions was initially strange and limited to specific projects conducted by professors and researchers, who sought space to perform their scientific experiments, which represented an incentive for learning about organic farming and the option for this crop in that time, in opposition to the conventional technological package, considering the difficulties that these agriculturists would face in order to produce and drain their production.

The participation of agriculturists in research projects provided opportunity to observe undertaken activities, which even when they have not received a formal communication about the achieved results, the practical result observed in their properties helped in learning to identify what would be interesting, or feasible, for adoption in their crops, including to better evaluate the approaches of researchers and technicians interested in making new experiments in their production units. It is observed that over time, besides the relative positioning to the market, agriculturists have gone through an empowerment process in relation to local education and research organizations and its relative position to the possibilities of integrating their products to the market, that resulted, among other factors, from the knowledge acquired over time on cultivation practices, the structuring of marketing channels and participation in research projects.

While the focus of a researcher is the scientific experiment result and its possible consequences, the agriculturist is interested in the possible availability of the offered resource by the financing of the research (science and technology) and in the knowledge that he can absorb interacting with the researcher to improve his productivity. The research is possible only if there is a “meeting of minds”, where both have something to offer and get from working together. In the testimonies of agriculturists there was a clear perception that if one of them was sought, it is because there is something interesting to be discussed, and although they have not always the technical knowledge to understand all the elements that involve the experiment, the agriculturist’s interest in receiving the researcher is directly related to the knowledge they can acquire through any participation in a scientific experiment.

The exchange of information between agriculturists became more intense with the creation of local associations and the SPG group, whose formation was decisive for the insertion of local organic production in the consumer market (with the obligatory organic accreditation from January 2011, as provided by law¹⁰). The collective organization made the qualified entry of these agriculturists in formal economy marketing channels possible, which was strengthened by the increased participation of new agriculturists, helping to improve customer service demand and increase the yield obtained by each producer, and thus enabling the continuity and diversification of production.

The role of Seropédica educational and research institutions, as well as ABIO, influenced directly in the process of learning about organic agriculture practices, which together with economic viability of organic food production (consolidation of a space distribution), especially organic fairs in Rio de Janeiro and the sale of products for the *Rede Ecológica*,¹¹ made these agriculturists choose to continue acting as organic producers.

10. Additional information about the regulatory framework of organic production in Brazil may be obtained from the website of *Ministério da Agricultura, Pecuária e Abastecimento-Mapa*, <<http://www.agricultura.gov.br/assuntos/sustentabilidade/organicos>>.

11. *Rede Ecológica* is a civil society movement in Rio de Janeiro formed by consumer groups that perform direct collective purchases of small organic and agroecological producers and thus shortens the production chain, and which has been representing for many small organic producers from Seropédica, an incentive to continue playing in organic agriculture by achieving a permanent marketing channel, compatible with their productive structure. For more information on the *Rede Ecológica* is suggested to consult the website <<http://redeecologicario>>.

Over the years, the performance of various institutions gave agriculturists knowledge and the improvement of various technologies, such as the construction of a chicken house inserted into mandala structure, composting, the creation of agroforestry, cistern for water collection, the use of EM (*Effective Microorganisms*), the *Bokashi* (organic compound), crop rotation, green manure, low-cost greenhouses, the use of inoculant rhizobia for legume seeds, drip irrigation, humus production and use of organic pesticides (sulfur and Bordeaux mixture) to control pests and diseases.

The adoption of these different technologies varied as the individual trajectories, the prevailing crops, access to technology and identification of potential benefit in each agricultural production unit. Technologies such as composting and crop rotation are used by some, while other practices such as the formation of agroforestry and the use of low-cost greenhouses were adopted in some properties, according to specific knowledge and technology transfer projects or motivation of agriculturists, due to the learning obtained through contact with technicians and researchers.

It has been found, so in Seropédica, that surveyed agriculturists revealed in their speeches the ecological awareness of the importance of organic agriculture and the respect for nature, both for reasons related to the health of producers and consumers of organic foods, and to identify the possibility of working in organic agriculture as the main activity, despite the limited availability of resources and low investment capacity. Given the current conditions established by Brazilian law, in which a product can only be considered “organic” if the producer meets the legal requirements to be qualified as “organic producer”, and too high cost of certification for audit, to ensure the credibility of the Participatory Guarantee System is for most consulted agriculturists, a matter of survival in this niche market food products.

org/). As Darolt (2012, 47), “The successful organization of consumer groups is found mainly in larger cities, where the population presents greater power of purchasing and information, besides motivation for qualified products consumption. The main pillar of success in those groups are trusts established between producers and consumers, as they go beyond the economic aspect. The essence of this partnership goes, also, through social relations and mutual help among the people”.

Final considerations

The institutional arrangements of organic agriculture which were surveyed generate knowledge or interact with the process of knowledge appropriation by the audience, and Río Cuarto and Seropédica experiences reveal organic agriculture practice for promoting healthy eating perspective, respect for the environment and the strengthening of family agriculture, considering that alternative marketing channels (agro ecological fairs, direct sales, government procurement for public schools, etc.) are strengthened, and agriculturists have the opportunity to sell their products fairly taking into consideration their effort.

However, in regard to the practice of organic agriculture oriented to self-consumption and considering the concepts involved in environment, recycling of solid waste and vocational training for the additional income generation, was identified that the institutional arrangement of Río Cuarto was able to enter. Local society is a matter of great importance, and due to the configuration of the agri-food market and the specific interests in economic and business environment, the discussion about organic food without the active participation of educational, research and social assistance institutions is very short. The reputation of these institutions in society and, above all, the effort and dedication of professionals and volunteers involved in the dissemination of organic food production in Río Cuarto region, plays a key role in this process.

In Seropédica, for over twenty years, scientific research and development of several technologies and processes oriented to organic agriculture practice have been conducted by educational and research institutions located in that city by *Fazendinha Agroecológica Km 47*, a space for agro ecology experiments. Although the activity extension is not listed as an objective for these institutions, as well as *Fazendinha*, technology transfer activities and contact with agriculturists in research projects allows scientific and technological knowledge transmission and, thus these institutions are a key reference for organic agriculture in the region, as well as in the state of Rio de Janeiro.

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