

# AGROECOLOGY AS A MEANS OF SUSTAINABILITY FOR FAMILY-BASED AGRICULTURE

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CHRISTIANE FERNANDES DOS SANTOS<sup>1</sup>,  
ELISABETE STRADIOTTO SIQUEIRA<sup>2</sup>,  
IRIANE TERESA DE ARAÚJO<sup>3</sup>,  
ZILDENICE MATIAS GUEDES<sup>4</sup>

## Introduction

Agriculture and cattle-raising is one of the differentials of Brazilian production. Today, these activities are mechanized and “responsible for some of the changes which have taken place in rural areas and affected the relationship between workers and the land”. However, the development of this sector has seen a number of conflicts and disputes which take place between, on the one hand, agribusiness as the model prescribed by capital, and on the other, family-based agriculture which continues to resist the capitalist model of production (MARQUES et al., 2011, p.1).

Agribusiness is understood as a set of actions associated to the production and transformation of agricultural products. It brings together different activities associated to agriculture such as cultivation and husbandry, the storage of products, and their transportation and sales (BACHA, 2004).

It could be said that this system engenders a considerable number of products “from the most traditional *in natura*” grains and animals to noble cuts of meat, industrialized products such as soya oil, pies, pasteurized milk and various other animal and plant derivatives”. Adding value to primary production further assists in the generation of capital as the prices of products exceed the costs of production (MARQUES et al., 2011, p.3).

The modernization of agriculture brought changes to employment relations, the use of land, agricultural production and demography. This process had an impact on the agents of agricultural production in a variety of ways. If, on the one hand, it benefitted some, such as the agents of agribusiness, for others, such as family farmers, it meant

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1 Mestre em Ambiente, Tecnologia e Sociedade pela Universidade Federal Rural do Semiárido. E-mail: [chrisfernandes@ufersa.edu.br](mailto:chrisfernandes@ufersa.edu.br)

2 Professora Adjunta do Departamento de Agrotecnologia e Ciências Sociais da Universidade Federal Rural do Semiárido. E-mail: [betebop@ufersa.edu.br](mailto:betebop@ufersa.edu.br)

3 Mestre em Ambiente, Tecnologia e Sociedade, do Departamento de Agrotecnologia e Ciências Sociais da Universidade Federal Rural do Semiárido. E-mail: [irianearaujo@ufersa.edu.br](mailto:irianearaujo@ufersa.edu.br)

4 Doutoranda do Programa de Pós-graduação em Ciências Sociais, da Universidade Federal do Rio Grande do Norte. E-mail: [zildenice@hotmail.com](mailto:zildenice@hotmail.com)

difficulties in reproducing and making their production viable in face of the challenges imposed by the market. This situation has been further affected by the evolution of the conventional agricultural model which proved to be unsustainable, in particular from a socio-environmental point of view. The maximization of profit and production are of the utmost importance in this model. It does not take into account either social factors affecting families who find themselves forced to abandon their lands or the natural capacity of agro-ecosystems<sup>i</sup> (GRAZIANO NETO, 1985).

Strategies for implementing agribusiness resulted in the technological modernization of the rural sphere. Miller (2008) argues that the technological package (the use of machines and industrial inputs, as well as other techniques to make extensive production viable) introduced during the Green Revolution<sup>ii</sup> led to an increase in the use of chemical products for pest control and in soil cultivation, and also resulted in the development of monocultures and irrigation techniques, giving rise to health problems and natural imbalances, given that excessive extraction debilitated natural resources.

However, this phenomenon can also be conceived in terms other than the technical factors presented here. According to Sauer (2011, p.23), the Green Revolution is, “in political and symbolic terms, antagonistic to family-based agriculture which is conceived as an archaic and inefficient form of production and land cultivation, particularly because it does not incorporate some of its technological rationale”. Access to technological innovation, and consequently to the optimization of production, is the differential between producers in relation to their participation in market dynamics (MARQUES et al., 2011).

In view of the above, in order to access a distinct market from that of agribusiness, family-farmers need to operate in a sector which is more conducive to their type of production. Agroecology is, therefore, seen as a potential form of sustainability for rural areas because it provides this sector with a technological and scientific foundation, as well as strategies for rural development which are compatible with family-based practices. Altieri (1989) argues that the main purpose of agroecology is to provide a scientific basis for the transition between the current conventional model toward more sustainable agricultural practices. According to Meirelles (2004), it emerges as a socio-environmental answer to the problems caused by the Green Revolution.

Agroecological practices may enable families to remain in rural areas by means of the sustainable management of soils, the conservation of natural resources and the recognition of the value of local knowledge. It may also promote the independence of smallholders who are thus able to market their products without the need for a middleman.

With this in mind, the main objective of this research is to analyze the social, economic and environmental factors which emerge from the practices of family farmers so as to assess whether locally developed agroecological activities enable the advancement of family-based agriculture.

## Methodology

This research involves a case study conducted at the Mossoró Agroecological Fair, in the Brazilian state of Rio Grande do Norte (RN). Dialogue interviews were conducted

with six producers, members of APROFAM (Mossoró Agroecological Producers Association), who market their products weekly in the above mentioned fair. All interviewees worked on agricultural production units situated in a number of rural settlements within the municipality of Mossoró.

For this research, and in accordance with the Brazilian land reform legislation, rural settlements are understood as agricultural production units implemented by means of government policies which “aim to re-organize land use for the benefit of landless rural workers, or smallholders” (BERGAMASCO; NORDER, 1996, p. 7). As Leite (2004) explains, there are different forms of rural settlements which are shaped by the historical context in which agents find themselves. Similarly, the beneficiaries of these production units are also very diverse.

Within the context of rural settlements, it is expected that family-based agriculture will lead to an increase in family farming units so that this mode of production can become socially and economically viable within the current capitalist society. The social organization of production and marketing is therefore essential if this is to occur.

The data analyzed later in this paper were obtained through *in loco* visits, photographic records and the gathering of qualitative and quantitative data which took place between January and March 2012. The issues addressed in this research encompassed aspects such as production with emphasis on the product, quantities produced and marketed, as well as the main difficulties faced during production and marketing. With regard to marketing, the following factors were analyzed: localization, technical assistance provided, price-setting and frequency, that is, whether it occurs every month of the year. The most common types of products traded were also analyzed. In addition, socio-environmental aspects were assessed in order to understand practices, the work on the land, the acquisition of productive inputs, the significance of the fair for the family farmers involved and benefits obtained from agroecological production.

Interviews were conducted by means of a semi-structured questionnaire, recordings of the statements made by family farmers and photographic records. Information and data obtained were subsequently analyzed both qualitatively and quantitatively in order to grasp the complexity of the situation as a whole.

## Theoretical framework

### *Family-based agriculture and Sustainability*

In the countries with the best development indexes, such as the United States and Japan, there is support for family-based agriculture. Policies have common elements, for example, in relation to access to land and incentives to land reform (GUANZIROLI, 2001). In Brazil, this is still a very recent phenomenon, given that the government only increased investment in family-based agriculture in the last few years through policies directed at rural expansion and technical assistance, the acquisition of food and the production of biofuels (WEID, 2010). However, this does not mean that government investment in agribusiness has been neglected.

The fact that there are two models of agriculture (commercial and family-based) is confusing and results in the government spreading resources too thinly, as well as in a lack of strategic planning. In agricultural production some crops require cultivation on a large-scale and are capital intensive, such as platform products (grains and cereals). These products generate income and foreign revenue for the country and, therefore, cannot be ignored. Other crops are labour-intensive and have features which suit family-based management (such as the cultivation of fruits and vegetables). This does not mean, however, that their cultivation is not market-led. It is important that both small-scale and large-scale producers are encouraged to use technology and employ resources efficiently. Without modernization, agriculture will remain at a level of structural heterogeneity, making it impossible to achieve inclusive growth (VIEIRA FILHO, 2011, p.1).

Therefore, it is necessary to implement policies which result in the advancement of a viable model of development. From the Western point of view, this model is associated to a vision, originating in the industrial revolution, in which the natural and the human worlds are constantly moving away from each other (GONZÁLEZ DE MOLINA, 2004). In this conception, man is at the centre of the universe and justifies the manipulation of natural systems by organizing them according to a reductionist rationale.

Economic principles dominate the relationship between society and nature, whose main function is the cycle of capital recovery. However, these principles do not demand responsibility toward nature and, consequently, do not take into account the negative environmental externalities caused by these productive processes (HERNÁNDEZ, 2011). The quest for maximum return and the profit rationale, based on notions of production and wealth, are at the root of the relationship between nature and society and explain the excessive growth in production and the instrumental subordination of nature.

A set of mechanisms - not only of an economic, but also of a political, social and cultural nature - were developed across the world, benefitting the urban-industrial model in detriment to the rural-natural model. This dichotomy resulted in certain social and ecological consequences of the current civilizatory model which could be described in terms of a pyramid in which its top half - the urban industrial sector - parasitically feeds on the lower levels represented by the rural and natural sectors (TOLEDO, 1992).

Within this context, the lack of clear delimitation of the roles of different modes of production - such as conventional and family-based agriculture - means that, to a certain extent, policies geared towards agriculture reinforce the model above.

Thus, it is possible to see that family-based agriculture is indeed an activity associated to natural resources, because it uses fewer modern technologies and less external inputs than conventional agriculture. This is because family-based agriculture “essentially owns its means of production. Furthermore, its relationship with the land is based on the value given to the productive areas and on a certain amount of affection for the land” (MARQUES *et al.*, 2011, p.4). Thus, the objectives of family-based agriculture are commensurate with the definition of sustainability.

Family-based agriculture “[...] is highly integrated to the market and capable of incorporating the main technological breakthroughs, as well as responding to government policies [...]” (ABRAMOVAY, 1992, p.22). It is a new agricultural category created by the transformations experienced by developed capitalist societies. Something which used to be a way of life became a profession, a means of earning a livelihood. He adds that “family-based agriculture and agribusiness belong to the same category: contemporary capitalist agriculture” (ABRAMOVAY, 1992, p.130).

Wanderley (2009, p.156), on the other hand, conceives family-based agriculture as a phenomenon “where the family are both the owners of the means of production and also work in their productive facilities”. He claims that, as a concept, family-based agriculture has important historical roots and he highlights that the transformations which occurred in modern family-based agriculture cannot be seen as a complete break from peasant forms of production, given that it is rooted in the relationship between property, work and the family.

Family-based agriculture emerges in contraposition to agribusiness in order to “develop the potential for this social segment to move away from a view of backwardness and inefficiency” (SAUER, 2008, p.25). Delgado (2009) stresses that its emergence is due to some of the following reasons: a loss in the importance, in political terms, of rural workers; the greater social and political complexity of smallholders; the gradual disillusionment with the modernization of agriculture and its inability to meet the demands of smallholders, as well as the intensification of intellectual conceptions and debates regarding the continuation, the meaning and the economic and social importance of family-based agriculture for a more democratic and inclusive type of rural development.

It is true that family-based agricultural practices are based on the ownership of the means of production and involve the whole family. It also occurs in the same place where smallholders live. In this respect, it can be observed that despite investments in large-scale agriculture, it is also essential to recognize the capacity that this type of agriculture has with regard to social and economic development.

Family-based agriculture involves the diversification of products, low cost, and the use and optimization of inputs. In addition, it may be less damaging to the environment than conventional agriculture. Because they own their means of production, family smallholders seek to produce both for their own subsistence and for the market. For these reasons we will discuss the strategies for production and marketing in order to achieve greater sustainability in family-based agriculture. Fernández and Garcia (2001) argue that moving towards a society that believes in co-existence with nature, as opposed to exploitation, is essential for sustainable agriculture.

Sustainable agriculture encompasses elements such as stable and efficient production, food security and self-sufficiency; the use of agroecological management practices, the preservation of family-based agriculture and local culture, self-management by and the participation of smallholder farmers, as well as the conservation and the recovery of natural resources. This complex vision also involves social, cultural and political aspects. It is much more than a set of techniques and becomes more important during the process of social change, in the context of peasant resistance against globalization

and the predominant model of rural development (ALTIERI and NICHOLLS, 2000 in HERNÁNDEZ, 2011).

It is therefore important to recognize that family-based agriculture is moving away from an image of backwardness and inefficiency, from production purely for subsistence purposes and from an “aversion” to the market, given it seeks to implement strategies for sustainable market integration. In face of the challenge of sustainability in the rural sphere, alternative proposals for trading spaces emerge, such as agroecological fairs.

It is important to note that in order to analyze family-based agriculture, it is essential to engage with conceptions of sustainability, where strategies and policies to promote production and marketing can foster local development based on equity, on recognizing the value of smallholder farmers and their knowledge, and on the diversity of products, as well as on a commitment to the environment and society.

The rural population's struggle for the self-management of their environmental resources points toward the possibility of moving away from preventive and remedial policies in face of socio-environmental degradation and toward the construction of a way of conceiving production founded on equity and sustainability. These are the principles that steer social movements in favour of the re-appropriation of nature, as well as the re-appropriation of these populations' cultures, knowledge, practices and productive methods, guided by the development of new environmental, cultural and collective rights (LEFF, 2006, p.486) .

In this context, agroecology is a way of reconciling family-based agriculture and sustainability in rural areas. However, it is important to recognize the challenges at the economic, technological, social and cultural levels arising out of the transition from one particular model to another.

The approach towards a sustainability perspective of development in rural areas involves recognizing its complexity with regard to its social composition, daily practices, and social and economic relations which sometimes operate beyond this space.

## **Family-based Agriculture and Agroecology**

Agroecology is, on the one hand, “the study of economic processes and agroecosystems and, on the other, an agent for complex social and ecological changes which must happen in the future so that agriculture can be based on a framework that is truly sustainable” (GLIESSMAN, 2006, p. 56).

Caporal and Costabeber (2002) corroborate with the ideas expressed by Gliessman (2001, p. 13) when they argue that “agroecology reminds us of a type of agriculture that is less aggressive to the environment (...) supplying cleaner products, free from chemical residues (...)”. As an academic discipline, agroecology establishes the bases for developing types of sustainable agriculture and rural development. Therefore, when discussing sustainable development based on family-based agriculture, it is possible to do so by appealing to

agroecology, as it is underpinned by a strategy of sustainable rural development which seeks to reduce the effects of (human) action on the environment.

These practices lead to a conception of rural development which takes into account the equilibrium of agroecosystems and the maintenance of families in their rural environment, recognizing the value of their knowledge. Thus, individuals practising agroecology are free to cultivate their products and obtain financial returns, enabling them to support their families.

(...) in order to produce sustainable agroecosystems, agroecology - as theory and praxis - uses the traditional principles of peasant agriculture together with modern ecological methods and know-how. Agroecology, therefore, is a way of strengthening rural development and aims to “transform society” so as to change production relations in rural areas (DUARTE, 2009, p.105).

Agroecology is more than just a set of technical principles which have been adopted by family farmers, it is also a political proposition, given that it transcends operational aspects, affecting and questioning the productive rationale and the dominant powers in rural areas. It should be understood in a broader sense, where smallholder farmers who are environmentally aware have scientific knowledge. In addition, their own experiences, local knowledge about cultures, local natural resources and community origins are able to steer their political actions and productive practices in a more autonomous and sustainable manner (SEVILLA GÚZMAN, 2000).

The first steps toward funding agroecological activities have been taken, through legislation n. 10.831, 23rd December 2003, and more specifically, Decree n. 7.794, enacted on 20th August 2012, which set the National Policy for Agroecology and Organic Production: This policy foresees a number of activities for the sector in the areas of research, technical assistance, environmental management, professional capacity-building and funding, as well as incentives to production. An inter-ministerial council has been established to oversee the policy, also involving the participation of civil society and agroecological bodies. One of the government’s initiatives determines the payment of an additional 30% for the purchase of organic products by the Food Acquisition Programme [PAA], which includes food intended for school meals. Furthermore, Pronaf Agroecology [National Programme for Strengthening Family Farming] funds agroecological and organic projects to the value of R\$ 130,000 at interest rates of 2% per annum. 2012 also saw the launch of a programme entitled “Brasil Orgânico e Sustentável [Organic and Sustainable Brazil]” to promote these products.

Thus, policies have been set up to provide agroecological production with the means to become an established and sustainable alternative for rural areas, by providing both technical and scientific support to sustainable rural development. The aim of these policies is to encourage families to remain in rural areas through the sustainable management of soils, the conservation of natural resources and by recognizing the value

of local knowledge and promoting the independence of smallholders, enabling them to market their products without the need for a middleman.

Similarly important is the fact that agroecological practices enable smallholders to sell their produce in urban areas, particularly by allowing family farmers to establish relationships which work beyond the realm of marketing/consumption relations. These are spaces for mutual exchange and for establishing links, they allow smallholders to talk about their production, their trajectories, communicate their knowledge. In addition, consumers can report directly to smallholders on necessary improvements.

There is evidence that producers lose out when they sell their products via middlemen. The presence of intermediaries in these transactions is common in the Northeastern region of Brazil. Family farmers/producers receive little for their labour, whereas the profits of middlemen are much more significant (KIYOTA and GOMES, 1999).

Spaces where agroecological products can be traded provide an opportunity for the political empowerment of many different agents. These social initiatives and activities can have an impact outside the home and provide family farmers with the opportunity to develop their autonomy in solidarity economy forums where they are able to act outside their vegetable gardens and plots.

Meireles (2004) analyzed the experience of the *Rede Ecovida de Agroecologia*, an agroecological network made up of 180 groups of smallholders in the Brazilian states of Paraná, Santa Catarina and Rio Grande do Sul. It involves the participation of over 2,300 families, 10 cooperatives consisting of consumers of ecological products and 25 NGOs. He argues that market access to agroecological products must avoid elitism. Thus he proposes a marketing strategy which aims to:

- democratize, popularize and pursue the mass consumption of ecological products;
- reduce the distance between producers and consumers, fostering solidarity;
- encourage the recognition of the value socio-environmental services provide;
- ensure that the benefits of sales are shared by all those involved;
- promote co-operation, transparency and complementation between agents involved in the marketing process;
- encourage the gradual inclusion of smallholders and consumers in the market (MEIRELES, 2004, p. 13).

Therefore, although there is no consensus on how marketing influences the socio-economic aspects of this activity, some experiences signal towards important points for discussion.

## Results

### *The Mossoró Agroecological Fair: achievements and challenges*

The Mossoró Agroecological Market was set up in 2007. The idea came about after the Mossoró SEBRAE [Brazilian Micro and Small Business Support Service] provided training to a number of smallholders from various settlements in the region, via a project entitled “mandalas nos quintais” [mandala gardens]. The aim of this project was to make gardens productive and improve the nutrition of families. Initially, seven smallholders from the municipality’s settlements got together to find a space to sell their agroecological production.

Smallholders received support from SEBRAE who opened their premises for meetings and training sessions. In addition, they donated stalls and provided professional-technical assistance. They also supported the family farmers’ application for organic certification. In addition, the Mossoró municipal authorities contributed by providing a physical space for the market; EMATER [Technical Assistance and Rural Expansion Agency] assisted with capacity-building and Neates-RN [State Government Centre for Technical Assistance for Solidarity Economy] helped with the marketing plan.

The market takes place weekly in the municipality of Mossoró, RN, where producers from the Mulunguzinho, Jurema, Favela, Boa Fé, Recanto da Esperança, Lagoa de Xavier, Paulo Freire, Santa Elza settlements and the rural communities of Coqueiro, Serra Mossoró and Cajazeiras, all in Mossoró; sell their produce. This is a space where the smallholders belonging to the Mossoró Association of Agroecological Products (APROFAM), can practice solidarity economy and where they can:

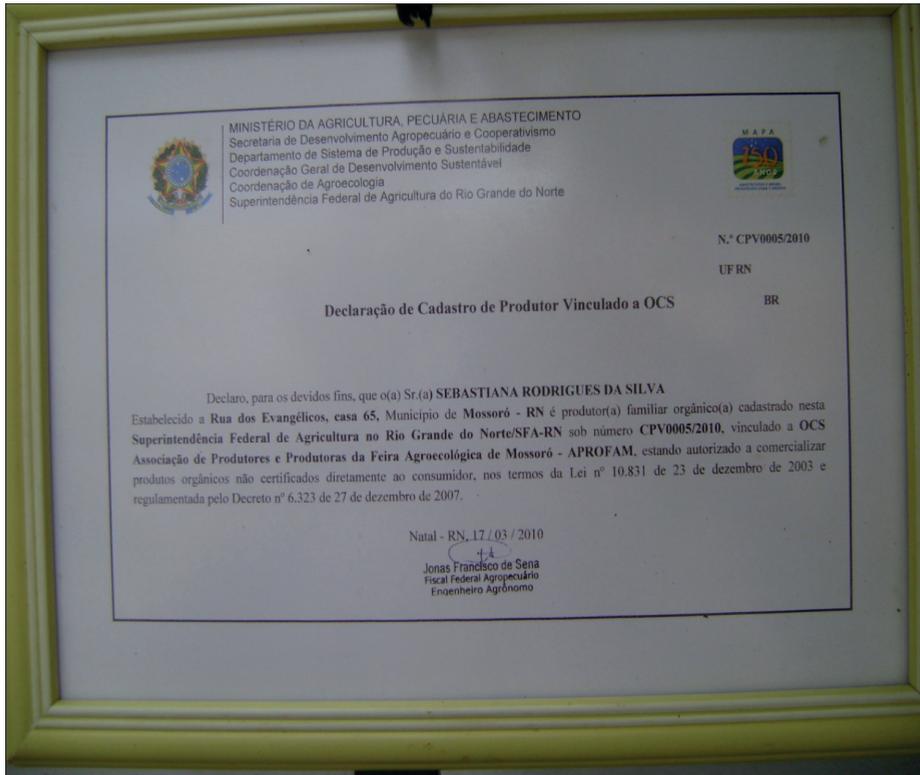
- have access to the market;
- organize themselves in order to acquire a participative certification, OCS;
- increase their sales volume by 70%, generating income and enabling families to remain in the rural areas (on average, between 2 and 6 members are involved in production and they claim to be satisfied and do not think about leaving the rural area);
- respect the environment by employing less degrading methods and improving the quality of human life, given that the products sold are marketed as being healthy.

The Mossoró Fair is pioneering the OCS certification [Products Certification for Organizations of Social Control], as can be seen in Figure 1 (A), which guarantees that producers work in accordance to management methods listed in legislation n. 10.831. Certification is granted by the Brazilian Ministry of Agriculture, Livestock and Food Supply [MAPA], in Rio Grande do Norte. The certification for organic produce also regulates agroecological production. In this procedure, a credited agency, MAPA, guarantees that a particular product, process or service complies with organic production standards and

practices. The certification is provided by a stamp that is either fixed or printed on a product's packaging or label.

The participative stamp is granted on the basis that association members ensure that other members comply with production methods, hence the 'participative' label. As can be observed in figure 1 (B), the OCS certification, shown in figure 1 (A), is hung on the stalls so that it is visible to all buyers, guaranteeing the quality of products.

Figure 1: OCS Certificate (A) shown on trader's stalls (B)



(A)



(B)

Own Source: 2012

In the market, the exchange of produce between traders is common. This strengthens solidarity in the group and fosters collective activities such as price-setting. It is clear that these experiences provide an opportunity for family farmers to improve their situations whilst maintaining their independence vis-à-vis the state, in contrast to the conventional model which requires large amounts of subsidies, as Caporal (2001) argues.

However, it is important to highlight that State policies and actions are, nonetheless, important for family-based agriculture. The involvement of the State can strengthen and enable the development of this activity (VAN DER PLOEG, 2008). However, these experiences show that smallholders are able to develop their own strategies independently.

Figure 2 shows the sales environment, portraying solidarity at work, as mentioned above. Stalls are close together and frequently shared between two smallholders, fostering friendship ties. Solidarity is also portrayed in the productive process. Farmers claim that they donate/exchange productive inputs whenever necessary.

**Figure 2: Mossoró Agroecological Fair**



Own Source: 2012

Figure 3 shows a smallholder meeting that takes place every month, at the fair, once the market is over. This is another activity which reveals the organizational capacity of the group.

Figure 3: After-hours traders' meeting at the fair



Own Source: 2012

According to the producers, technical assistance for this type of production and sales is carried out by just one technician from a Non-Governmental Organization, “Mil Folha”. It is not enough to meet the needs of all traders, especially with regard to their production requirements, as many of the producers are located at different sites.

There have been discussions about the need to improve technical assistance in relation to training and the capacity for the organization, production and trading of family farmers, so as to improve the direct sales of their products to end consumers. To this end, government and non-government organizations which support agroecology must work together to ensure the sustainability of rural families. Though they recognized that there is room for improvement, smallholders expressed their views concerning the importance of agroecological farming.

They understand that agroecology means: “having a different view of production and nature”; “a process which preserves the environment through natural techniques”; “farming without poisoning”; and “a system which brings environmental benefits”.

Smallholders manage and market their own production as they work together with their families in their plots of land. According to Altieri and Nicholls (2000), in Hernández (2011), it is this activity that turns them into family farmers.

With regard to economic aspects, interviewees claimed that they considered the average amount of profit made by selling produce at the fair as satisfactory and equivalent to approximately 30% of their total revenue which varies between R\$600 and R\$1,000 (Brazilian reais) per month.

This variation may be associated to either the type or the quantity of products traded, amongst which we highlight: lettuce (*Lactuca sativa*), rocket (*Eruca sativa*), acerola (*Malpighia emarginata*), spring onions (*Allium schoenoprasum*), coriander (*Coriandrum sativum*), tomato (*Lycopersicon esculentum* Mill), sweet peppers (*Capsicum annum*), ochra (*Abelmoschus esculentus*), West Indian gherkin (*Cucumis anguria*), cashew fruit (*Anacardium occidentale*), lime (*Citrus limonum*), as well as honey, sweets, chicken and eggs, all produced using agroecological principles. It is important to note that this production is not only sufficient to meet both the demands of the families themselves and the agroecological market, but also other governmental programs such as the PNAE [National School Meals Programme], which includes amongst its objectives ensuring best returns from family-based agriculture, as well as providing a sense of worth to local communities.

Smallholders produce 100% of goods in their own work space. However, they claim that it is not possible to calculate the quantity produced because production is seasonal and is dependent on demand. They stated that between 10% and 15% of production is for family consumption.

In relation to marketed produce, 75% of interviewees sell lettuce, rocket, acerola, spring onions, coriander, sweet peppers, as well as chicken and eggs. 100% sold ochra, 50% West Indian gherkin, cashew fruit and nuts and a further 25% trade sweets, bananas, papayas, mint, garlic and meat. When asked about the quantities traded, they said they did not control this information, making it impossible to know the actual average cost per unit traded, and therefore impacting price-setting calculations.

The smallholders state that the main difficulties faced in production related to the lack of water due to the specific climate conditions found in the semiarid region, the lack of food storage know-how and the lack of both technical assistance and inputs. With regard to marketing, the main issues mentioned were the limited publicity that the agroecological fair receives and the lack of value the local community attaches to healthy eating.

All interviewees made it clear that they believed they were providing opportunities for people to be able to eat in a healthier way. When they were questioned about how agroecology contributed to society, producers mentioned that it provided better quality of life and health.

The fair is open from around 6:00 am to 9:00 am. It is common for the most popular produce, such as lettuce, carrots, tomato and herbs to run out before the end of the first hour.

With regard to agricultural inputs, (goat's) manure, animal urine, organic compost and Bordeaux mix are acquired within the communities. When asked about the use of manure as an agricultural input, they stated that 50% is acquired from donations from outside the community, 25% is bought and a further 25% is obtained from within the community. On average, each producer uses two 300 kg loads. The average price per load is R\$200, when it is bought. As mentioned above, there is often a lack of agricultural

inputs and extra amounts are acquired from neighbours without charge, lowering the costs of production.

As already mentioned, producers tend to prioritize and optimize resources available in their own communities. Family farmers believe that using these inputs reduces the cost of products, whilst small-scale cultivation increases costs; 75% of interviewees do not know their actual production costs or how prices are set. The 25% who are able to set prices by calculating costs claim that their costs make up 79.43% of prices, whilst profits account for 21.57%. However, 25% of interviewees do not even measure the amount of water used in production.

According to Silveira (2001), recent economic changes resulted in a new scenario for the rural population. Within the agricultural context, there is a greater concern with not using chemical inputs and an increasing regard for a healthier type of production. She further adds that consumers are demanding more quality and, therefore, more “organic” and/or “agroecological” products. However, the issue of technology and access to land cannot be ignored, given that these have a high cost. This is a factor that also isolates producers from the market, making it difficult for them to sell their products directly.

With regard to environmental factors, the study sought to find out what producers understand about the importance of preserving the environment and local resources, as well as their views on agroecological production. According to these small farmers, agroecology production is good for the environment because “it reduces negative environmental impacts by between 80% and 90%”; it uses resources in a less aggressive manner, preserving water sources and recovering degraded soils”. From these replies it is possible to observe that agroecology is seen as the interaction of agroecosystems, or as a direct relationship between man and nature.

However, Sevilla-Gúzman (2000), Gliessman (2006) and others point out that there is a broader view of agroecology which transcends the technical parameters applied to the term and reveals a political perspective. It can be seen, therefore, that the conceptual limits of the terms agroecology and organic have not been sufficiently addressed, sometimes resulting in a partial comprehension of these concepts.

Silveira (2001, p.136) argues that “family-based agriculture is able to incorporate agroecological principles to a very large degree, not only within the system of production but also in relation to its broader cultural features”. This factor may be associated to day-to-day knowledge acquired by smallholders in their communal practices, exchanges and mutual assistance which take place, so as to facilitate and even optimize the production and marketing of products.

Therefore, it can be seen that the actions of producers transcend productive aspects. The fact that they market their goods in urban areas and are in contact with other smallholders provides them with an opportunity for empowerment, and above all, fosters political action. Some of those taking part in the fair are involved in regional, local and national meetings about agroecology. They are in touch with small farmers from other localities, opening up the possibility for exchanging experiences.

It is clear, therefore, that marketing their wares in the agroecological fair significantly contributes to the sustainability of families, given that many do not have another

source of income (90% of cases). Furthermore, the creation of the fair led to an increase in their income of between 30% and 100%.

## Conclusions

The purpose of this research was to analyze the agroecological fair in terms of its social, economic and environmental aspects so as to understand how this experience has developed. The research takes into account the theoretical work of scholars who discuss these topics and the statements made by smallholders.

The fair has social and economic significance in that it contributes to the welfare of family farmers and society by improving the quality of life and health, as well as increasing farmers' incomes. With regard to its environmental aspects, products are cultivated taking into account the health of soils, water sources, workers and society. Agroecological production along with markets and fairs based on solidarity economy have proved to be an alternative for the sustainability of families in rural areas. This is because of factors which go beyond purely economic issues, strengthening family-based agriculture.

However, it is worth pointing out that there are many challenges that need to be overcome such as the lack of water resources. In addition, there is also a need for improving technical assistance with regard to calculating the costs of production and quantities traded. The group studied here is based in the semiarid region of the Brazilian northeast - an area subject to water shortages during most months of the year - a factor which affects the diversity of production, as well as the income and ability of family farmers to survive. In view of this, it is essential to improve policies related to the capture, storage and management of water, and in particular, the equitable distribution of this resource amongst small-scale and large-scale producers.

This study reveals the importance of regional development models and land policies incorporated to endogenous development. Thus, it can be seen that agroecology provides small farmers with some degree of social, economic and environmental sustainability, making it possible for rural men and women to develop the necessary means to survive.

Small farmers also understand that agroecological production is viable. Furthermore, the fact that they can market their products as a group fosters the recognition of family-based agriculture and also enables these families to remain in rural areas.

Nevertheless, further research is necessary to understand if there are any obstacles which preclude this experience from being both politically and socially recognized. This is all the more important given that the family farmers who participate in the agroecological fair which has been the subject of this research are based in an area which is fragile in terms of its climatic conditions. Thus, the growth or expansion of this experience depends on acknowledging the need for policies developed in partnership with social actors, so as to draw up actions which take into account the population living in this social and spatial context, whilst at the same time recognizing the value of endogenous development.

## References

- ABRAMOVAY, Ricardo. **Paradigmas do capitalismo agrário em questão**. São Paulo: Editora da UNICAMP, 1992.
- ALTIERI, Miguel.; NICHOLLS, Clara I.; **Agroecologia: teoria y práctica para una agricultura sustentable**. Montevideo: Nordan-Comunidad, 2000.
- BACHA, Carlos José Caetano. **Economia e Política Agrícola no Brasil**. Editora Atlas, 2004.
- BERGAMASCO, Sonia Maria Pessoa Pereira; NORDER, Luis Antonio Cabello. **O que são assentamentos rurais?** São Paulo: Brasiliense, 1996.
- BRASIL. Lei nº 10.831, de 23 de Dezembro de 2003. **Diário Oficial [da] República Federativa do Brasil**, Brasília, DF, 24 dez. 2003. Disponível em: <[http://www.planalto.gov.br/ccivil\\_03/leis/2003/110.831.htm](http://www.planalto.gov.br/ccivil_03/leis/2003/110.831.htm)>. Acesso em: 16 de mar. 2012.
- CAPORAL, Francisco Roberto. **Desenvolvimento rural sustentável: uma perspectiva agroecológica**. In: *Agroecologia e Desenvolvimento Rural Sustentável*. Porto Alegre, v.2, n.2,. 2001. \_\_\_\_\_.; COSTABEBER, José Antônio. **Agroecologia: enfoque científico e estratégico para apoiar o desenvolvimento rural sustentável**. Texto provisório para debate. EMATER/RS-ASCAR, 2002.
- DELGADO, Nelson Giordano. **Agronegócio e agricultura familiar no Brasil: desafios para a transformação democrática do meio rural**. NCN-Novos Cadernos NAEA, v. 15, n. 1, 2012.
- DUARTE, Luciana Rodrigues Ramos. **Transição agroecológica : uma estratégia para a convivência com a realidade semi-árida do Ceara**. Dissertação de Mestrado. UFC, 2009.
- EHLERS, Eduardo. **Agricultura Sustentável: origens e perspectivas de um novo paradigma**. 2ª Ed. Guaíba: Agropecuária, 1999.
- FERNÁNDEZ, Xavier Simón; GARCIA, Dolores Dominguez. **Desenvolvimento rural sustentável: uma perspectiva agroecológica**. In: **Agroecologia e Desenvolvimento Rural Sustentável**. Porto Alegre, v.2, n.2, 2001.
- GARCIA, Maria Alice. **Informe Agropecuário**, vol. 22, n. 213, p.30-38, 2001.
- GLIESSMAN, Stephen R. **Agroecologia: processos ecológicos em agricultura sustentável**. Porto Alegre: UFRGS, 2000.
- GONZÁLEZ DE MOLINA, Manuel. **Historia y medio ambiente**. Morelia: Jitanjáfora, 2004.
- GRAZIANO, NETO, Francisco. **Questão Agrária e Ecologia: crítica da moderna agricultura**. 2. ed. Brasiliense: São Paulo, 1985.
- GUANZIROLI, Carlos Enrique. **Agricultura familiar e reforma agrária no século XXI**. Editora Garamond, 2001.
- HERNÁNDEZ, Jaime Morales. **La crisis global y sus impactos em la vida rural**. In:

- HERNÁNDEZ, Jaime Morales (Coord.). **La agroecología em la construcción de alternativas hacia la sustentabilidad rural**. México: Siglo XXI editores, 2011. p. 17-50.
- \_\_\_\_\_. Agricultura sustentable y agroecología. In: HERNÁNDEZ, Jaime Morales (Coord.). **La agroecología em la construcción de alternativas hacia la sustentabilidad rural**. México: Siglo XXI editores, 2011. p.79-108.
- KIYOTA, N.; GOMES, M. A. O. Agricultura familiar e suas estratégias de comercialização: um estudo de caso no município de Capanema – Região Sudoeste do Paraná. **Revista de Organização da UFLA**, Lavras, v. 1, n.2, p. 43-54. 1999.
- LEITE, S.; HEREDIA, B.; MEDEIROS, L.; PALMEIRA, M.; CINTRÃO, R. **Impactos dos assentamentos: um estudo sobre o meio rural brasileiro**. Brasília, DF: Instituto Interamericano de Cooperação para a Agricultura - Núcleo de Estudos Agrários e Desenvolvimento Rural; São Paulo: Editora UNESP, 2004. 392 p. (Estudos NEAD, 6).
- MARQUES, Ana Carolina de Oliveira *et al.* A contribuição da agricultura familiar na produção agropecuária do Brasil a partir do censo agropecuário do ano de 2006. In: JORNADA DO TRABALHO, 21. **“A Dimensão Espacial da Expropriação Capitalista sobre os Mundos do Trabalho: cartografando os conflitos, as resistências e as alternativas à sociedade do capital”**, São Paulo, 2011.
- MEIRELLES, L. Soberania alimentar, agroecologia e mercados locais. **Revista Agriculturas: experiências em agroecologia**, v. 1, p. 11-14, 2004.
- MILLER JR, G. Tyler. Ciência Ambiental. Tradução de: **All Tasks. Revisão técnica de: DELITTI, Welington Braz Carvalho**. 11ª ed. São Paulo: Cengage Learning, 2008.
- VAN DER PLOEG, Jan Douwe. **Camponeses e impérios alimentares: lutas por autonomia e sustentabilidade na era da globalização**. Editora UFRGS, 2008. 372 p.
- SAUER, Sérgio. **Agricultura familiar versus agronegócio: a dinâmica sociopolítica do campo brasileiro**. Embrapa Informação Tecnológica: Embrapa-Secretaria de Gestão e Estratégia, 2008. 73 p.
- SILVEIRA, Miguel Angelo da. O desenvolvimento sustentável em questão. IN: **Agricultura familiar e o desafio da sustentabilidade**. Rio de Janeiro: Oficina Social, Centro de Tecnologia, Trabalho e Cidadania, 2001.
- TOLEDO, Víctor M. Modernidad y ecología. La nueva crisis planetaria. **Ecología Política**, 1992.
- WANDERLEY, Maria de Nazareth Baudel. **O mundo rural como um espaço de vida: reflexões sobre a propriedade da terra, agricultura familiar e ruralidade**. UFRGS Editora, 2009.
- WEID, Jean Marc von der. Agricultura Familiar: sustentando o insustentável? **Revistas Agriculturas: Experiência em Agroecologia**. Leisa Brasil, v. 7, n. 2, p. 4-7, jul. 2010.

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# AGROECOLOGY AS A MEANS OF SUSTAINABILITY FOR FAMILY-BASED AGRICULTURE

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CHRISTIANE FERNANDES DOS SANTOS,  
ELISABETE STRADIOTTO SIQUEIRA,  
IRIANE TERESA DE ARAÚJO,  
ZILDENICE MATIAS GUEDES

**Abstract:** The object of this paper is to conduct a social, economic and environmental evaluation of the features which emerge from the practices adopted by APROFAM (Mossoró Agroecological Producers' Association) family farmers who sell their produce at an agroecological fair. We intend to analyze whether these practices promote the sustainable development of family-based agriculture. Dialogue interviews were conducted with six producers involved in APROFAM who market their production on a weekly basis. In addition, data were also obtained through *in loco* visits, photographs and qualitative-quantitative data collection which took place between January and March 2012. The creation of the fair provided market access and enabled the self-organization of producers in acquiring 'participative certification', as well as diversifying their production and increasing their family income, thereby encouraging families to remain in rural areas. Nevertheless, it was observed that there were challenges that needed to be overcome, for example 75% of interviewees were not able to calculate their production costs or measure quantities marketed. Among other problems, insufficient technical support and water resources hinder the progress of this mode of social organization.

**Keywords:** Agroecology. Sustainability. Rural areas

**Resumo:** O presente trabalho avalia aspectos de ordem social, econômica e ambiental advindos das práticas dos agricultores familiares da APROFAM (Associação dos Produtores e Produtoras Agroecológicas de Mossoró), que comercializam semanalmente sua produção na Feira Agroecológica, de modo a analisar como proporcionam o desenvolvimento sustentável da agricultura de base familiar. Para tanto, foram realizadas entrevistas dialogadas com seis desses produtores. Os dados foram obtidos através de visita *in loco*, registro fotográfico e levantamento de dados qualitativos e quantitativos no período de janeiro a março de 2012. A criação da Feira possibilitou o acesso ao mercado local, organização por parte dos produtores para adquirir a certificação participativa, produção mais diversificada, aumento na renda familiar, colaborando com a permanência das famílias no campo. Observou-se,

ainda, que existem desafios a serem superados, pois 75% dos entrevistados não conseguem contabilizar seus custos de produção, nem mensurar as quantidades comercializadas. Ainda, existe insuficiência de assessoria técnica, disponibilidade hídrica, entre outros, que impossibilitam o fortalecimento dessa forma de organização social

**Palavras-chave:** Agroecologia; Sustentabilidade; Espaço rural.

**Resumen:** Este trabajo propuso evaluar aspectos de orden social, económico y ambiental derivados de las prácticas de los agricultores familiares de la APROFAM (Asociación de los Productores y Productoras Agroecológicas de Mossoró), que comercializan su producción en la Feria Agroecológica, con el fin de analizar si dichas prácticas proporcionan el desarrollo sostenible de la agricultura de base familiar. Con ese objetivo, se realizaron entrevistas dialogadas con seis productores que participan en la APROFAM y que comercializan semanalmente su producción. Los datos fueron obtenidos a través de visita *in loco*, registro fotográfico y recolección de datos cuali-cuantitativos en el periodo de enero a marzo de 2012. A pesar de que la creación de la feria posibilitó el acceso al mercado local, la organización por parte de los productores para adquirir la certificación participativa, una producción más diversificada y un aumento en la renta familiar, factores que ayudaron a la permanencia de las familias en el campo, se observó que existen desafíos aún sin superar, dado que el 75% de los entrevistados no consigue contabilizar sus costes de producción ni medir las cantidades comercializadas. Existen todavía insuficiencias de asesoramiento técnico y de disponibilidad hídrica, entre otras, que imposibilitan el fortalecimiento de esta forma de organización social.

**Palabras clave:** Agroecología; Sostenibilidad; Espacio rural.

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