

Agroecology and solidarity economics: a sustainable symbiosis.

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ABSTRACT

For the past three decades, groups of social activists in Brazil, as has happened in many other countries, have been trying to develop a pathway for agriculture, which aims to be ecologically sound, economically viable and socially fair. The results of the spread of modern technologies all over the country were perceived as generally negative by its critics, with problems such as environmental contamination, health hazard from pesticides and the displacement of farmers, especially those with a less economic advantage. To answer these questions, 'agroecology', a theoretical and methodological, hence scientific, approach that enhances the sustainability of agricultural systems has been promoted. It aims to develop an agriculture based on principles of an ecological system, which addresses the socio-economic issues from the perspective of the small-scale, poorer family farmers, or peasant farm sector. Agriculture based on agroecology is characterized as a socially rooted option as opposed to the more biologically centred sustainable agriculture movements, which are mainly concerned with the production of 'clean' agricultural products, without using chemical synthetic inputs. The adoption of agriculture based on agro ecology was aimed to sustain not only the environment, but to foster a rural development option that would be based on peasant or family farmers in order to promote social justice. It would be an opposite route to that taken by modernization, and should be based on the elements of technological and cultural resistance that were endogenous and specific to each community. This idea has its roots in a Chayanovian perspective of peasants being co-operatively organised making them a socially and economically viable option for rural development. In order to promote that, the traditional solidarity of the poorer, a cultural element, was combined with the social capital accumulated by social movements, generating associative entrepreneurship that rises from adverse economic situations and relies on a technological arrangement anchored in social practices marked by the solidarity and non-capitalist values. These new initiatives of collective entrepreneurship were called "Solidarity Economy". This paper analyzes the role performed by organizations of solidarity economy of familiar or peasant agro ecological farmers, in the promotion of the sustainability of this segment in south Brazil. The associated agroecological farmers establish an important level reliability on these organizations, since, these organisations enable the activity of ecologically based production, allowing farmers to avoid

living in a situation of social vulnerability as well as benefiting both economically and socially from them. Such organizations of solidarity economy, present themselves as a means for the agroecological farmers of the south Brazil, to have access to the market and to the social policies promoted by the State, and through self management work, practice the right to citizenship. The organizations of solidarity economy were able to organize networks that provide support and promote the ability to survive in a market environment. Therefore, through these organizations of solidarity economy agroecological farmers 'actively construct the market space'. It implies a different rationale, which considers questions of power, since people come to market from different positions, some weak, some powerful and others with the status of 'market makers' as in the real merchandised world of farmers, where agricultural production is dominated by large-scale farming and consumption by large retail corporations. In this particular scenario, the solidarity economy organisations are a key element of the promotion of social and economic dynamics, integrating farmers and consumers in different ways to overcome these power struggles. The analysis provided evidence of an ecologically sound, socially fair, strategy for agro ecological farmers, although it also indicates less sustainable trends in the economic dimension. The study draws conclusions about the importance of the organizations of solidarity economy in the sustainability of peasant livelihoods and indeed of agroecological farming in southern Brazil

KEYWORDS: Peasants, Agroecological farming, Solidarity Economy Organizations

Introduction

For the past three decades, a group of social activists in Brazil, with different perspectives, has been trying to develop a path for agriculture which aimed to be ecologically sound, economically viable and socially fair. These attempts have been a voyage in unknown and somewhat rough seas. There was a clear perception that what was being learnt in the agricultural colleges and prescribed by the agricultural technicians was only partially applied by farms, especially those with less economic advantage, and was therefore not quite right. The results of the spread of modern technologies all over the country were perceived as generally negative by its critics, and even enthusiasts admitted there were side effects, such as environmental contamination and health hazard from pesticides. This criticism prompted a search for an alternative agricultural path, this has since evolved into what has come to be known as a 'sustainable agriculture'.

Although the need for a sustainable agriculture is generally accepted, perceptions of what this is can be very different. They range from visions of a new 'green revolution' to the complete rejection of modern technologies. These differences are not limited to technological options, but extend also to debates about whether, in a context that favours large-scale agriculture (Gonçalves Neto, 1997, Gonçalves, 1999), policies towards smallholding farms should seek to make them economically viable or merely regard them as a social problem.

To answer this question, 'agroecology' has been proposed, developing an agriculture based on ecological systems principles but addressing the socio-economic issues from the perspective of the small-scale, poorer, peasant or family farm sector.

The initiatives of promoting agroecology among these farmers are coupled with the development of organizations that can support them as well as promote the well-being of such populations.

This paper is an effort to describe and assess the achievements and challenges, in the context of southern Brazil, of current efforts in pursuit of a sustainable agricultural system supported by peasant or family farmers solidarity economics' organisations. It reports the findings of some studies conducted in the state of Rio Grande do Sul (RS), which is the most southerly of the states of Brazil. Within this state the region of the empirical research was the micro-region south, which is an administrative division of the state of Rio Grande do Sul that encompasses 26 municipalities, approximately 950 000 inhabitants and an area of 48 221.9 square Km

Sustainable Agriculture

Environmental crisis is not a new theme in the history of human civilisation. However, what is novel and disturbing at the present time is the dimension and intensity of such problems. In recognising this problem there is a consensus among many different schools of thought. The discussion has focused on how to achieve what has been called 'Sustainable Development' (WCED, 1987), where there are many different views, varying from not being possible to complete feasibility.

Agriculture's contribution to solving the environmental crisis could be addressed by the development of sustainable agricultural systems, where sustainable management of natural resources is a key aspect. These systems take a number of forms such as biological, organic, ecological, and biodynamic agriculture. These forms of agriculture are currently being increasingly adopted in different regions of the world.

The idea of sustainable agriculture revolves around using available biophysical and human resources to achieve good yields, increasing the use of internal resources and/or minimizing the use of external resources (Pretty, 1996). However, there are many other definitions and conflicting approaches to sustainability in agriculture (Burton et al., 1998; Pretty, 2008). The concept of sustainable agriculture can be regarded as a combination of views which are opposed to what is considered to be the unsustainable path of the so-called 'conventional' or 'modern' agriculture. This unsustainable path is closely related to the concepts and practices of the 'Green Revolution', whose approach stands by the use of high-yielding varieties (HYV). To achieve this high yield there is a heavy dependency on a set of off-farm inputs including synthetic fertilizers, pesticides, hybrid seeds, and mechanization (Reijntjes et al., 1992, Souza Filho, 2008). Even those who accept that green revolution has brought considerable advances in food production agree on the negative impacts (World Bank, 2008). According to Gliessman (1997) the main problems of this type of agriculture can be grouped as follows: Soil degradation; Water waste and overuse; Pollution of the Environment; Dependence on External inputs; Loss of Genetic Diversity; Loss of Local Control over Agricultural production; contribution to global inequality.

Alternative Attempts to Sustain Agriculture

These problems have given rise to concerns among farmers, consumers, scientists, general public and governments about the suitability of the conventional methods of modern agriculture. Consequently these problems have led to a series of attempts towards changing the path of agriculture.

According to Shepherd (1998) attempts to promote sustainable agriculture have in common the following characteristics or principles:

- The rejection of industrial farming and search for low external inputs methods that can be productive and economically viable as well as environmental sound.
- The focus is on soil, and recycling energy and nutrients through the farming system.
- Consideration of local/indigenous knowledge means that development of technology gives priority to farmers' vision.
- A broader approach to soil and water conservation, that includes resources such as bio-diversity and wildlife integrated into the production framework.

It is generally accepted that a sustainable agriculture system would seek to:

“Have minimal negative effects on the environment and release no toxic or damaging substances into the atmosphere, surface water, or ground water; preserve and rebuilt soil fertility, prevent soil erosion, and maintain the soil’s ecological health; use water in a way that allows aquifers to be recharged and the water needs of the environment and people be met; rely mainly on resources within the agroecosystem, including nearby communities, by replacing external inputs with nutrient cycling, better conservation, and an expanded base of ecological knowledge; work to value and conserve biological diversity, both in the wild and in domesticated landscapes; and guarantee equality of access to appropriate agricultural practices, knowledge, and technologies and enable local control of agricultural resources” (Gliessman, 1997, p. 13).

Seeking to find ways to achieve the general goals expressed above a group of approaches have been developed. They share many similarities but have some differences that might allow diversity. The main divisions of alternative approaches to develop a sustainable agriculture were: Biodynamic farming; Ecological Agriculture; Natural farming; Organic farming, Permaculture and the Low External Input Sustainable Agriculture (LEISA) concept (Reijntjes, et al., 1992; Souza Filho, 2008).

These attempts to sustainable agriculture aim to preserve ecosystems encouraging production that attends the needs of a human population using as much as possible local, renewable resources.

Among them, Organic Farming is an early concept, preceding other environmentally aware approaches to agriculture. In this approach consideration is given to the way in which nature environmental systems behave and attempts to integrate these processes into the agricultural system (Rigby and Caceres, 2001). Although organic agriculture claims to be more than only ‘environmentally-friendly’ and aims to achieve ‘justice’ and ‘responsibility’ (Rigby and Bown, 2003), there are broader approaches that look more intensively at the interrelation with society.

This may be typified by the case of Agroecology, in Brazil and Latin America, which aims to study agricultural systems not only from an ecological perspective, but also including a strong socio-economic perspective, also looking at how indigenous agricultural systems adapt to local ecological conditions (Altieri et al., 1996).

In the present research, agroecology, is the most important concept since it is the option adopted by NGOs and farmers' ecological groups. Besides, agroecology is the paradigm officially adopted by the Rio Grande do Sul state government and by EMATER, the state extension agency, between 1999 and 2002, and recently again, since the new state government took place in 2011 (Paulus, 2011). It is necessary to clarify that agroecology is the scientific basis for the development of agriculture systems based on ecological process, the practice of this agriculture is named ecological agriculture, or agriculture ecologically based (Caporal and Costabeber, 2002).

Agroecology, in a more restrictive, or field orientated way can also be defined as:

“The application of ecological concepts and principles to the design and management of sustainable agroecosystems. [sustainable agroecosystems are]... in most general sense a version of sustained yield - the condition to harvest biomass from a system in perpetuity because the ability of the system to renew itself or be renewed is not compromised ” (Gliessman, 1997, p.13).

Physically an agroecosystem can be limited to any unit of interest such as a region, group of farms, a farm, or a part of it. Their spatial limits are arbitrary and represent a definition of agroecosystems in hierarchy that goes from the single plant/animal and its surrounding environment up to an overall socio-economic system (Conway and Barbier, 1990), it highlights the interaction between ecological, and farm systems, with the overall system.

As the physical boundaries of agroecosystems are arbitrary, it is possibly better to clarify the relationships between systems in the hierarchy and to apply the agroecosystem concept to a more restricted, and somehow manageable, unit of analysis, such a farm, a farm field or a group of farms, making clear the relationships within the systems and between the different levels (Hess et al., 2000).

The agroecosystem is a unit of analysis and conceptually it may be defined in terms of an ecosystem that is relates to matters outside of its boundaries with other natural and socio-economic systems.

The Political Ecology of Sustainable Agriculture in Brazil and Rio Grande do Sul (RS) state.

In Brazil, attempting to confront the process of 'conservative modernisation', and its social and environmental problems, several civil society organizations started to promote the 'alternative agriculture'. According to Almeida (1998), the meaning of alternative agriculture in Brazil has its roots in the economic and political alternative discourse that took place especially after the students' movement in 1968 in Europe. It was a movement against a capitalist model viewed as economically unfair, politically centralized and anti-nature. It encompassed anti-capitalist, ecological and civil society contestation of the dominant political powers. These ideas came to Brazil in the earlier 1970s and were part of the ecological movement that grew in the eighties (Almeida, 1998).

The intention of those organizations was mainly to help smallholding farmers and protect the environment. Several NGOs were set up to deal with this process since government research and extension programme did not give priority to environmentally friendly technologies (Romeiro, 2011). This characteristic of a NGO-led process is not unique in Brazil, several other Latin American countries have experienced similar situations where attempts to support small-scale farming and approaches in pursuit of a sustainable agriculture is being done mainly by NGOs (Bebbington, 1999, Clades, 2011). The alternative techniques that have been developed and supported by NGOs and governments institutions include for instance non-tillage cultivation, use of green manure, organic fertilizers, biofertilizers, biological fixation of Nitrogen, biological pest control, integrated pest management, pollution control, and preservation of biodiversity and genetic resources (MMA, 1999). This body of techniques developed into a more basic set of principles capable of wider adaptation to local contexts, as did the social perception about it. The 'alternative agriculture' became known and generally accepted as the 'sustainable agriculture' paradigm (MMA, 1999).

With the evolution of alternative agriculture into sustainable agriculture, its pioneers were able to identify a more widely acceptable scientific base, without however losing social commitment. The defined scientific base of this new agricultural paradigm has been mainly, in the Brazilian and especially in RS case, that of agroecology (Almeida, 2003).

The option for agroecology as a sustainable agricultural path carries within it an explicit option to reinforce agricultural systems that are peasant based. This is due to a social commitment to the poor in the rural areas. Besides, it includes a belief that traditional agricultural systems have been adapted closely to ecologically natural systems, a characteristic that has kept them as a basis of most agricultural practices worldwide, providing a strong component of sustainability (Gliessman, 2001). In terms of social sustainability peasants are viewed as a more equitable form of production within capitalism. These were the

relative self-sufficiency, a logic reproduction of family work force in opposition a logic of profit, production based upon family work force and biological energy (human and animals), the use of smallholding areas, and the diversification of peasants agriculture (Fernández, 1995; Van der Ploeg, 2008).

The agroecological proposal, to some extent uncritically, tends to distinguish and to privilege indigenous and peasant forms of agriculture (Almeida, 2003). This reinforces the 'peasant' identity of small-scale farming or family farms. The peasant 'nature' provides the basis for a neo-populist reaction against modernisation and a possible alternative to rural development. This is clear, for instance, in the RS state policies for rural development during the Workers Party (PT) administrations, between 1999 and 2002, and the current, from 2011 to 2014 (Paulus, 2011).

The adoption of sustainable agriculture was aimed to sustain not only the environment, but to foster a rural development option that would be based on peasant or family farmers in order to promote social justice. It would be an opposite route to that taken by modernisation and the neo-liberal path, and should be based on the elements of technological and cultural resistance that were endogenous and specific to each community (Sevilla-Guzmán, 2001). This idea has its roots again in Chayanovian vision of a technical superiority of peasants co-operatively organised as independent class (Bernstein and Byres, 2001) that make them a socially and economically viable option for rural development. This is certainly an oversimplification of the technological alternatives and social process behind the sustainable agriculture movement in Brazil. However, the aim here is to characterize agroecological agriculture as a socially rooted option as opposed to the more biologically centred sustainable agriculture movements, which are mainly concerned with the production of 'clean' products, without using chemical synthetic products (Fernández, 1995). In short, the evolution from alternative agriculture to agroecology may well represent a neo-populist reaction against the perceived negative effects of modernisation of agriculture in the family farm sector. The incorporation of these environmentally sound technologies had the overall objective of reinforcing the rural population against exodus and impoverishment. It could also count on the support of urban sectors that are more sensitive of social problems, looking for a better quality food, protecting the environment and aware of the problems caused by conventional agriculture technologies. Although one could think that such environmental concerns would be an issue for wealthy people or affluent nations it is also present in the struggle for life by the poor, and very often mixed with social movements (Martinez-Alier, 2002).

More recently governmental institutions such as EMBRAPA, the national agriculture research

corporation, a federal agency and EMATER, state agencies for agriculture technical assistance, in different Brazilian states, have joint this proposal and developed programmes to support agroecologically based farming (Romeiro, 2011; Paulus, 2011), which became a productive model for a sustainable rural development and a governmental policy in recent years.

“ In the federal domain,..., this discourse also began permeating actions for the agrarian reform and family farm ... increasingly more profoundly since 2003, with the election of Lula, particularly regarding the technical assistance and rural extension fields, whose orientation by agroecology became a political strategy”
(Schneider, 2007 p. 15)

In practical terms the government set up policies to achieve these aims, such as credit for agroecological production projects through the family farm credit programme (PRONAF), which included a special credit for agroecological production, and the institutional food acquisitions programme (PAA) and the programme of acquisitions of food for public schools (PNAE). The two latter include the commercialisation of raw and agro-industrialized ecological products (Gotuzzo, 2009).

Despite the importance of the above mentioned efforts, they probably could not be accomplished entirely, if there was not there a channel of communication between, NGOs, governmental agencies, and farmers. These networks started to be constructed very early in the processes, their basis were farmer groups, associations and new cooperatives. They also started with the perspective of support peasant farming and, initially, some of them may not have being entirely committed to agroecology, others began originally as an association of agroecological farmers, however what they have in common is that these new organizations, tried to act differently from traditional giants cooperatives, an model that enter in crises in Brazil leaving many farmers in disbelief of cooperation itself. These new initiatives tried to organize based on what has being called the principles of solidarity economy.

Solidarity Economics

What is regarded in this paper as “solidarity economy” is occurring on the social practices of some tens (maybe hundreds) of millions of people from peripheral countries. Associative entrepreneurship that rises from adverse economic situations and that relies on a technological arrangement anchored in social practices marked by the solidarity, in a combination of non-

capitalist values and alternative economic models. It embraces associative enterprises where the ownership, the labour, the management and the economic results are shared by the members of the enterprise prioritising to pay back the effort of the group leaving the individual capital remuneration in a second level of importance. In the cities and in the countryside the traditional solidarity of the poorer, a cultural element, was combined with the social capital accumulated by social movements generating collective enterprises based on values of reciprocity, participation, democracy, autonomy and self-management (Singer, 2002A) . This rationality, according to their members and theoretical formulators, engenders differentiated economic and environmental practices, since it understands the sustainability as a way of preservation of the economic resources for its own and for the future, taking the solidarity intra and intergenerational as a principle and as a strategy. They are cooperatives, associations, groups or networks of agroecological producers, collectors and recyclers of waste, traditional populations, free software communities, communitarian radios, ecological consumers, fair trade initiatives, housing construction by mutual help and many other examples. Initiatives managed in the periphery of capitalism, opposing its effects, and generating intangible values, based on the ecological quality of the production, distributive justice, cultural identification, sense of citizenship, in an anti-hegemonic rationality guided by the combined practices of solidarity/sustainable production and of conscious consumption that clash with the regulatory regimes and the current accumulation pattern, and pointing to a bottom up re-signification of the economy (Singer, 2005).

Conceptually solidarity economy embraces the group of associative economic enterprises in which (i) the work (ii) the economic or financial results (iii) the ownership of means of production, consumption, credit, and others assets (iv) the decision power (v) the knowledge about its functioning are shared by everybody that participates of the enterprise (Cruz, 2006). They differentiate largely from the traditional cooperatives and cooperative movement that are perceived to not being faithful to the original principles of the cooperative movement that started in Rochdale (Cruz, 2006).

Due to these characteristics, the solidarity economy is perceived as one economy where the human being is central to the organization of society, and also in the organizations of their enterprises, where this notion defines the social, economic, and productive relationships (ANTEAG, 2005). This perspective is central to solidarity economy as it intends to re-locate the person to the centre of economic life and to commit production and circulation of wealth with human emancipation (Nakano, 2004). Changes in production mode alone are not able to produce transformation of the human being from subjugated to emancipated (Barreto, 2003).

The practices of the solidarity economy are the experiences of freedom of former subjugated employees capable of the conduct required as condition of associated workers that are emancipated. These practices are given origin to organizations that are very different from normal capitalist enterprises (Gaiger, 2004) or from traditional cooperatives (Cruz, 2006)

These organizations have in common the commitment to a set of principles: workers self-management, democracy, solidarity, participation, and cooperation. They are, according to those who create theoretic formulae, associative/cooperative/solidarity forms of production and consumption that are based on forms of propriety and social relations that are non-capitalist and, therefore, are experiences linked to a non-capitalist mode of production subordinated to the capitalist mode of production (Singer, 2002; Cruz, 2011).

The symbiosis of these two movements are creating some novelty in the social movement. They are organizations of family farmers that are promoting an agriculture based on ecological process, scientifically supported by agroecology, and organized in accordance with the principles of solidarity economy. There are many of them all over the country and in the state. In the research we took three as an example of these organizations, they are UNAIC, ARPASUL and Cooperativa Sul Ecológica which are based at the southern region of the Rio Grande do Sul state.

The UNAIC is formally an association of family farmers associations, a regional network of associations and groups of family farmers. Started in 1988 in the municipality of Canguçu as a local association, nowadays it congregates groups from various municipalities of the region and acts promoting family farmers organization through cooperatives and association and agroecology (UNAIC, 2012).

The ARPASUL is the older organization in the region entirely dedicated to congregate the family farmers that worked with the production of agroecological agricultural products. Starting in 1995 as an association of agroecological farmers, it began to run a street market in January of 1996 in the town of Pelotas. Currently there four weekly street markets in Pelotas and one in Canguçu. They have about thirty families associated (Gotuzo, 2009).

The Sul Ecológica is a cooperative that congregates 150 families of organic (agroecological) producers. They are organized in groups of, at least, five families. The cooperative act upon social organization, organization of production through planning with the family farmers to attend market demands in order to promote market access and the welfare of the cooperated families. It started as a cooperative in December of 2001 (Sul Ecológica, 2012).

These three organizations also started as alternatives to the traditional cooperative movement and large cooperatives that were perceived by the family farmers as not being very different

from capitalist entrepreneurs. However, differently from other associations and small cooperatives that were created on the wake of the crises of the traditional cooperative movement, these three organizations have been promoting agroecology coupled with solidarity economics, although not necessarily naming it. Their aim is to support family (or peasant) farmers in the southern region of the RS state. In order to do so they try to grant farmers access to market and policies through their organizations.

Agroecological Networks

Analysing the process of alternative 'networks' in the family farm access to markets, policies and institutions is necessary to acknowledge the importance of 'global networks' in this structural change (Schmidt, 2003), such as the worldwide movement of environmental sustainability and the sustainable agriculture movement. However, in order to grassroots these movements, a local network has to be developed. In the Brazilian case the main stakeholders of this process of promoting alternative networks for sustainable agriculture which includes alternative channels of commercialization and a participatory certification process are the agroecological farmers associations and cooperatives. Organizations like UNAIC, ARPASUL e Sul Ecológica.

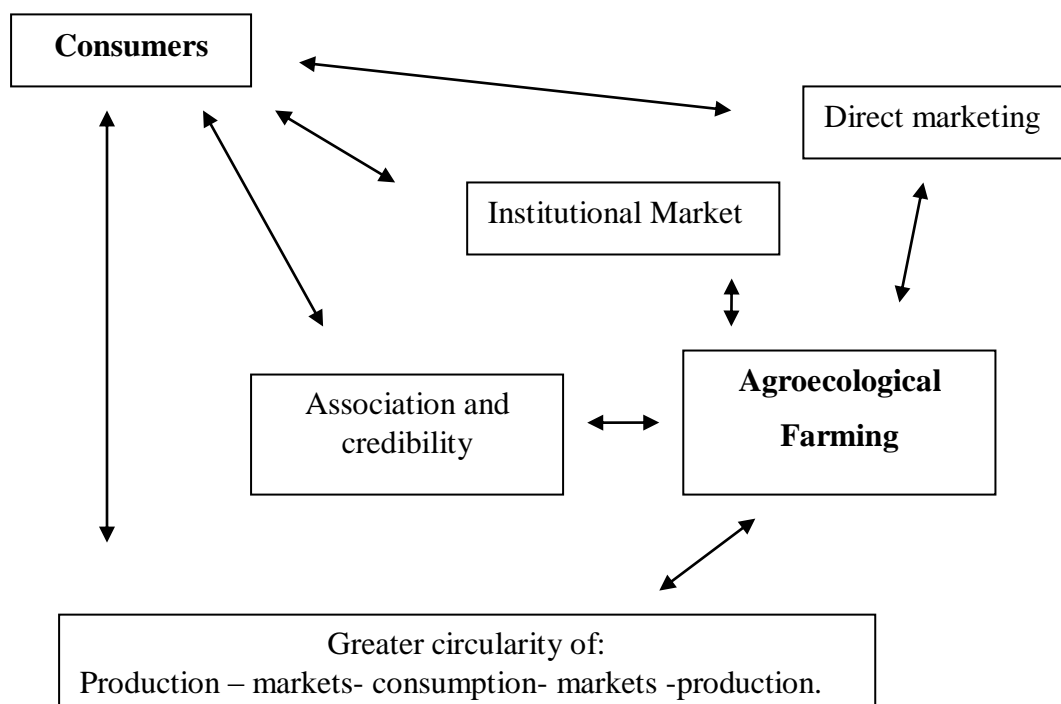
It is possible to find the organic or agroecological food in sections of the main supermarkets, however the main achievement of the agroecological farmers association are the street markets where they commercialised their products weekly in many cities and towns in several states in Brazil. The idea behind this initiative is to build local commercial networks in partnership with other organizations and with the participation of consumers aiming to develop consciousness and citizenship. The certification process is also based in a network, the ECOVIDA network, which was structured and elaborated with the objective of permitting a democratic and participatory generation of credibility of the organic production.

In Brazil the ECOVIDA network integrates farmers, consumers and technicians, organized in 24 groups in three states of southern Brazil. Among its main achievements is the recognition by Brazilian Ministry of Agriculture that ECOVIDA is able to certify the ecological quality of the food produced by its members (ECOVIDA, 2012).

Regarding the organizational form of the agroecological networks (Figure 1) it is mainly related to the street market experiences of ecological farmers and solidarity economics organizations, however the same principles can be seen in the organization of institutional markets such as the PAA (Programme of Agricultural Products Acquisitions) programme by the federal government to supply public institutions such as schools and hospitals. These two

examples are also part of the experience of the farmers that were participating of ARPASUL, UNAIC and Sul Ecológica, which are farmers organizations that have been able to organise these farmers and either have access to markets through street markets (ARPASUL), governmental programmes (UNAIC) or both (Sul Ecológica) (Schmitt and Guimarães, 2008; Gotuzzo, 2009).

Figure 1 - Agroecological Network



Source: Adapted from Schmitt, 2001¹.

This model of alternative networks is advantageous when it keeps a policy vision that is not an idealised one of ‘agriculture by peasantry organized cooperatively and independently being technically superior’, but a model that can reinforce the strengths that agroecological farming, and its solidarity economics organizations, has given to peasant farmers. Thus, as a framework for sustainable agriculture being a pointer towards sustainable rural livelihoods based on farming. The construction of local organizations and market networks, as expressed above are, these cases, providing the support for the sustainability of peasant farming

¹ Presentation at *Taller Intensivo sobre Investigación in agroecología*. 3rd-7th of December, 2001. EMBRAPA-Clima Temperado, Pelotas.

(Bebbington, 1996; Mendez, 2001). This kind of organisation can be explained by the economic sociology that sees markets as social constructions and emphasise this model as a way to reconnect family farming with the new market dynamics in a more autonomous way (Wilkinson, 2008). Such construction is based on beliefs expressed by agroecological farmers, and they are pervasive in all the process. Thus technological adoption cannot be seen as exclusively a function of market or organisational changes. It is this, but also in this case the result of an alternative farmer's organizational logic (supported by many other activist). The agroecological farmer is not only an adopter but a 'translator' and a creator of a technological process. This results in different levels of agroecology adoption and also of cooperation among the farmers and their institutions (Gotuzo, 2009).

It is also clear that the institutional market is getting bigger, much more important in the figure above. It is also necessary to keep in mind that the majority of farmers, even many of the agroecological farmers are not members of any of these organizations.

We would argue that in order to achieve sustainability local markets should receive incentives, short networkers are in place and if developed can contribute more with the overall goal of sustainability. However, it should not be understood as preventing the development of broader markets for agroecology. Therefore, it is not the case to argue against the expansion of the agroecological market, but to monitor its development in order to suggest policies to ensure compatibility with the sustainable objectives. Nevertheless, marketing interventions are necessary as the marketing for ecological products seem to be one of 'bottle necks' of adoption (Fernandes, 2004). These interventions possibly will be more successful if they can follow and expand the current form of organization adopted by agroecological solidarity economics organizations in order to foster the market alternatives for family farmers.

A rationale for the analysis of such alternatives, has been proposed earlier by van der Ploeg (2000) based on empirical observations of new forms of agriculture that are not organized according the mode of organization of modern agriculture, which he calls 'Economic Agriculture' (Box .1).

Although, one could argue that peasants are only partially integrated to the market (Ellis, 1993; Bryceson, 2000), it is possible to interpret that the category includes different types of integration. In an analysis proposed later by van der Ploeg (2008) they can be viewed in different levels of integration to the market and also with the agribusiness chains.

The author's suggestions tried to integrate characteristics of organizational options and logics that are different to those of 'modern' agriculture. Many of these characteristics can be compared with the farming systems adopted by the agroecological farmers. Agroecological

farming systems experiences seems to have valid features towards a desirable path of sustainability. It can be said that it is closer to the notion of 'Economic Agriculture' of van der Ploeg (2000). Thus, it is more consistent with the objectives of an agriculture that is not based on modernisation in rural areas and contributes to the sustainability of the agricultural sector.

Box 1 'Economic Agriculture' (as opposed as 'modern agriculture')

1. Sustain or increase incomes by developing a combination of resources under farmers' control.
2. Flexible use of multiple resources.
3. Developed step-by-step based on available resources.
4. High value per unit of product.
5. Tends to invest in multi-functionality
6. Local Innovation capability
7. Learning by doing
8. Labour and Networks are central
9. Price variability; actively construct the market space
10. Low use of external inputs, low costs.
11. Sustainability based on 6, 8 and 10.
12. Re-engaging farming with local ecosystems
13. Small resources base to produce an acceptable income.

However, it implies a different rationale. This rationale seems to give agroecological/solidarity economics organization like UNAIC, ARPASUL e Sul Ecológica, a central role in relationship with the environmental and social conditions of their regions. As Schmitt (2003) states in relation to Rio Grande do Sul state, even the agroecological technologies or techniques are not 'diffused' or 'adopted' by agroecological farmers, they are 'translated' by them in the context of their farming. Similarly the economics of agroecology are not proposed as being based on individual behaviour and competitive market, as in a pure neo-classical model, nor are they based on a theoretical model of a pure 'moral economy' among peasants. It may have some features of both, and others, not described here in a formal model, but negotiated on a daily basis in each agroecological farm and in their organizations, like UNAIC, ARPASUL, and Sul Ecológica.

Despite being closer to the 'economic agriculture' model in practice an 'ecological' agriculture and solidarity economics has to have this rationality integrated with that of a market economy where agricultural production is dominated by large-scale farming, since there is no peasant mode of production nor an 'agroecological mode of production' neither a solidarity economy. To keep an 'alternative' rational while integrating to broader markets seems to be one of the greatest challenges to be faced by agroecological farmers and the solidarity economics organizations. Despite the many difficulties they face they are still trying, and to a certain extent, succeeding, by the last twenty years at least. These difficulties range from the financial problems of the farmers and, consequently, of the organizations, to a recently developed large income dependency, for both, of the institutional market, government acquisition programmes (PAA and PNAE), that if cancelled could lead farmers and organizations to bankruptcy (Gotuzzo, 2009).

Despite that, they are still there, struggling maybe, but alive and guaranteeing the livelihoods of hundreds of families if one considers only these three organizations, and thousands or maybe millions if one looks at the Brazilian context. As they insist on surviving in an adverse environment, they also force new public actions. For instance a large policy is being created at this moment to answer their claims. The Brazilian government intends to present the National Policy of Agroecology in the verge of the summit of the earth or RIO 2012. More than an economic proposal they are a political challenger to the overall political structure.

Final Remarks: Agroecology and Solidarity as an Alternative Rural Development

Having been initiated by NGOs in order to make agricultural production ecologically sound, economically viable and socially fair, agroecology became transformed to some extent into public policy by the Brazilian government, which trying to reformulate the concepts of rural development, opting for base it on peasants and agroecology. It was an intriguing amalgam of an anti-modernisation, anti-neo-liberalism, and neo-populist with radical environmentalism politics. Despite support for agroecology among NGOs, government agencies and policies, its generalisation and acceptance, even among possible beneficiaries, has not been achieved and it remains largely marginal (Romeiro, 2011). There may be a series of reasons for that, for instance: conceptually agroecology is still a broad notion (e.g. confusion of agroecology as technical or scientific instrument with agroecology as development policy) (Almeida, 2003); the problems of qualifying the technical staff in the research and extension agencies in a new paradigm; and there is still little technical/technological knowledge accumulation about the

diverse productive/ecological process' interventions despite the clear set of scientific principles of agroecology (Romeiro, 2011).

However, one main reason could be explained by the 'Genesis' of the agroecological movement. The initial step of the alternative movement in the 1970s was to contest the 'industrial society', its conventional agricultural model and the State as its promoter. Largely, in the following 20 years, as the alternative agriculture movement in Brazil has evolved to the agroecological movement, this characteristic was kept with some notable exceptions, among NGOs, social movements, sectors of the Christian Churches, and political parties (Almeida, 2003). What it certainly does is to typify the alliance between environmentalism and neo-populism to promote an alternative development model. The Chayanovian, neo-populist view of the development of agriculture on the basis of peasantry organized cooperatively (Bernstein and Byres, 2001), was coupled with radical environmentalism (Sachs, 1993), in the form of ecological approaches to agriculture, to construct a sustainable rural development based on the 'smallholding farms'. Agroecology as the basis of this model of sustainable rural development became then a policy of the Brazilian government. This conflicting and strong ideological identification of the agroecological proposal may not help agroecology to gain allies in other sectors, such as the academic and scientific communities. It may also explain the resistance to it by politically opposed sectors of society, when agroecology is transformed in a public policy.

One aspect that is clear is the importance of social capital (Putnam, 2001), the organization of farmers in groups, associations or cooperatives, the building of networks, to provide support for agroecological farming development. In the other hand the requirement for such social capital can be a limitation to a wider adoption of agroecological farming. Moreover, if effort were to be made to provide more social capital, it may require disengagement from the current linkage to an ideological perspective. This may seem naïve and argue for a 'neutral' technology or rural development. It is not, since what is been argued is that agroecology as a public policy has to aim to reach everyone, within the prioritised group (family farmers or peasants). The previous decision to prioritise family farmers or peasants has already an ideological connotation. However, once these decisions have been made it is fair to expect that no one by ideological conviction must be excluded from the public policy. The fact that agroecology, and the forms of social capital that have given support to it, can be seen as political, it is a powerful force against the diffusion of agroecology and also of the increase in the social capital. Thus, to deliver agroecology as a public policy some form of distension is necessary. As agroecology, not necessarily but in practice, excludes some groups or is at least,

more appealing for some groups. To overcome this and in order to promote a greater adoption would imply building more social capital in a context of greater ideological diversity. Despite the fact that diversity is not generally favourable to increasing social capital (Putnam, 2001).

An alternative to cut this 'Gordian' knot would be to promote or reinforce solidarity economy organizations. It could be expected that in building up civil society organizations, governments could hand over some decision power and appeal for more diversity. There are examples of the success of public policies promoted through reinforcing civil society (Bebbington, 1999). Far from being neutral, solidarity economy organisations, such as UNAIC, ARPASUL, Sul Ecológica, play a political role. They can negotiate access to all forms of assets, for their members or to citizens in general, with different institutions in the State and in the market. This must be viewed as a desirable feature, but in order to promote it, there is a need to accept diversity and ideological differences, a challenge on its own.

This may possibly also be an 'alternative' political rational of Agroecology. It is a collective initiative organised by smallholder family farmers or peasants who were affected by the consequences of agricultural modernisation. They opted for agroecological farming technologies, supported by organisations of civil society. Their strategy included an option for alternative channels of commercialisation in order to make the agroecological production process viable economically and socially fair as well as environmentally sound in a sustainable symbiosis between agroecology and solidarity economy. In this way the ecological production may have financial benefits families, however it is clear that there are other important factors that have lead these family farmers to adopt agroecological production, and work organized in economy solidarity organizations. These reasons are health concerns, a rescue of a central role for them in the management of the production process, a sense of citizenship, and a desire to not to only be viable as farmers but meaningful in life. Focusing in these elements, they may well be accumulating the basis for a new agriculture that would also contribute for a new basis of society organization, consequently, they became much more than a technological or economic proposal, they are a political alternative for a sustainable rural development.

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