

## Peasants and the production of food: new values and ways of thinking about the relationship between food, agriculture and the environment<sup>1</sup>

### Abstract

*In the twenty-first century, the countryside has been characterized by advances in the production of commodities on a large scale based on a large estate model, production highly adapted to the technical and technological packages of the Green Revolution, and the use of a small, at all times wage earning, workforce. Another characteristic that has expanded in recent times has been that of the presence of large corporations – of seeds and inputs – in controlling the direct production of farm products, and often, subsequently, going on to market them.*

*This production model, which is highly encouraged by Latin American States, has resulted in the imposition of an increasingly less diverse model of food production, characterized by the imposition of the capitalist logic of the pursuit of profit at any cost, and the privatization of seeds, land and water (Vivas, 2009), which ultimately ends up resulting in an increasingly defined process of genetic erosion (Porto Gonçalves, 2006).*

*The imposition of this model eventually resulted in a crisis for many peasants, from which another production model emerged based on the production and dissemination of native seeds, the diversification of varieties made from agro-ecological farming practices, and direct commercialization by means of agro-ecological fairs or solidarity purchase groups. Two opposing models are to be considered here, which have highly differing results on the countryside and the perspectives they hold on the future are quite different from each other; these are the models to be analyzed in the present article.*

**Keywords:** Peasants, Production of food, Agriculture, Environment.

### Introduction

As is widely known, the countryside in the twenty-first century – especially that of Latin America – has been characterized by advances in the production of commodities on a large scale, carried out on large estates, and highly adapted to the technical and technological package of the Green Revolution which was introduced to Latin America in the 1970s; it is further characterized by the spread of a pattern of agricultural production highly dependent on chemical inputs, little diversification, with a high concentration of land and the use of a small, at all times wage earning, workforce. Another characteristic to have expanded in recent years – while not hegemonic – is that of the increased presence of large corporations – of seeds and inputs – in controlling the direct production of farm products, and often, subsequently, going on to market them. This insertion has come about through the purchase or lease of large tracts of land in several Latin American countries, and especially in Brazil, whose case we consider in this article.

This production model, which is highly encour-

aged by Latin American States, has resulted in the imposition of increasingly less diverse types of food produce, characterized by the high concentration of capital and land in the countryside, the increasing presence of large agribusiness corporations monopolizing the production process in part or entirely, the imposition of the logic of the capitalist pursuit of profit at any cost, and the privatization of seeds, land and water (Vivas, 2009). Large petrochemical companies such as Monsanto, Bayer, Dupont, among others, gradually started to diversify their lines of action, and, apart from selling fertilizers and pesticides, began to devote themselves – starting with mergers or the acquisition of other companies – to the production of genetically modified seeds and the sale of sealed packets of seeds, fertilizers and pesticide seeds. This practice eventually triggered a process that Porto Gonçalves (2006) classified as *genetic erosion* and gradually went on to establish peasants' growing dependency in relation to these companies.

The imposition of this model eventually resulted in a crisis for many peasants. The combination of the high prices of inputs and a lack of clarifica-



tion regarding the need to purchase the complete package – seeds, pesticides and fertilizers – to obtain the guaranteed results caused many peasants to only buy part of the package – the seeds – damaging the performance of the crops.

Alongside the expansion of the production of commodities, the expansion of the production of crops for agro-energetic purposes also had an impact in reducing the area used to cultivate food destined for the domestic market and consequent supply of such food products for that market area. This combination of factors eventually resulted in the so-called “food crisis” of 2008, due to an increase in the prices of products on the market. At the time, the trigger of the crisis was the choice made by the United States to produce ethanol from corn, using part of that year’s harvest to begin production, without the necessary increase of its production having taken place. The reduced supply of the product for human and animal food-stuffs raised its price on the world market and, consequently, increased the demand for substitutes, which in turn generated a ‘domino effect’, raising the price of various other products on the world market.

However, this fact, while true, only explains part of the crisis of that year. Another part of the explanation must be sought in another event that took place in 2007 which was not directly linked to agricultural production, namely the mortgage crisis (subprimes) experienced by the United States. This crisis ended up displacing investments hitherto made in this sector for the agricultural and oil markets, which contributed to the rising price of food and supplies in 2008. It is worth highlighting that the rise in prices was largely caused by speculation; in effect, those who had the products available held onto them in anticipation of the “best” price. This was only possible because many of the countries adhering to neoliberal policies had reduced their regulatory inventories, thereby leaving the market to self-regulate. Speculation on food ended up increasing food prices to unsustainable levels and without the buffer stocks of the States, speculators could recoup some of their losses at the expense of the people who needed to acquire food. The result accounted for the approximately 925 million hungry people in the world that year, a figure that has continued to grow over the years, despite the stabilization of the production of goods<sup>2</sup>.

With the crisis playing itself out, and the increasing subordination of small farmers in relation to large companies, another production model emerged, based on the production and dissemi-

nation of native seeds, the diversification of crops made from agro-ecological farming practices, and direct commercialization by means of agro-ecological fairs or solidarity purchase groups. There are also cases in which the production or, more frequently the commercialization, is carried out collectively, through the organization of peasants into cooperatives, associations or collectives. This concerns two opposing models, which have highly differing results on the countryside and the perspectives they hold on the future are quite different from each other. Understanding the paths of this crisis and the alternatives that country-dwellers come up with in order not to get carried away by it, is what we will do next.

### **The “food crisis” and the model of large corporations**

Several factors influenced the rise of food prices and, in particular, the continued high levels of prices. From a *contextual* point of view, the problems that directly affect agricultural production can be highlighted, such as drought or other weather phenomena; increased meat consumption in Latin America and Asia; increased cereal imports by hitherto self-sufficient countries and the decrease of grain stocks in national systems. However, beyond these *contextual* factors we find structural issues which were at the heart of the crisis being experienced. One factor was the very crisis of the model imposed by the Green Revolution which while on one the hand has resulted in the process of the modernization of agriculture and increasing agricultural production, on the other it has failed to solve the problem for which it was created: the problem of hunger in the world.

Another, no less important factor is that of the effect of neoliberal policies initiated in the 1990s, and still in force today. The numerous rules imposed, above all on developing countries, contributed decisively to the crisis being experienced in the present day. In terms of agriculture, it is worth highlighting that the neoliberal prescriptions for developing countries<sup>3</sup> included; the removal of subsidies for basic goods and the reduction of food inventories that make up the basic basket of various countries; increased exports of primary products (and the consequent increase in the area occupied by commodity-producing monocultures), followed by the reduction of agricultural production for the local market, and the lowering of customs barriers for foreign trade; a policy with major repercussions on the local economy. This, combined with



free market regulation, facilitated the entry of European and American agricultural products – both subsidized despite recommendations to the contrary by the World Trade Organization (WTO) – in the markets of developing countries that have chosen the neoliberal prescription.

The neoliberal prescription ends up transforming countries that were previously food exporters into food importers, which puts local agriculture in a state of crisis, especially that of peasants targeting the domestic market. If, initially speaking, the prices of products are convenient from an economic point of view – disregarding the impact that the imports, in offering domestically produced products at lower prices can have on local producers – once the change is consolidated, the country ends up in the hands of suppliers, usually large multinationals. With the monopoly of the market guaranteed, supply and prices are subsequently dictated by these large groups, subordinating the countries to their food policies, which can end up jeopardizing their food security policies.

Those who benefit from this situation are the multinationals, which, through a series of purchases and mergers, come to control the different stages of the production process; from the production of seeds to the sale of fertilizers, pesticides, industrial processing, distribution and the commercialization of food. By closing the loop and allying themselves with potential competitors, thereby ensuring a monopoly on the market, these companies determine much more than the price of food: they determine what we consume, what we buy, and, worst of all, how the production process takes place. As the capitalist logic of seeking the greatest possible profit is the one that predominates, the strategy for achieving this end is that of producing cheap food. From this perspective, the concern for quality – with regard to security, human health risks (for worker and consumer) and the nutritional characteristics of food – loses ground to the cheaper cost of production.

This whole process occurs through; agreements between political elites and international institutions, benefits offered by states for the establishing of large multinational companies in their territories, the spread of “studies” that only consider the advantages of the implantation or spreading of certain cultivars, the lobby for the liberalization of such crops – particularly with regard to GMOs – and international recommendations for greater liberalization of the market.

The fact is that today we are experiencing an unprecedented crisis, which started in 2008 and has yet to come to a close. It is a multifaceted crisis: an

economic, financial, energy-based crisis – caused by the dependence on fossil fuels and fossil fuel inputs – a biodiversity crisis – caused by the disappearance of animal and plant species due to the standardization of production and degradation of ecosystems – and a labor crisis, among others. Despite this crisis, the model of agriculture based on the *intensive use of land*, of evermore *industrial* character (marked by heavy use of mechanization and industrial inputs and by increasing enforcement of the logic of industrial production), greater *mileage* (due to the long distances that products must travel to reach the consumer’s table, the result of more ‘favorable’ production conditions, in other words, lower prices) and *oil-dependency* (both for production and for the distribution of goods) continues to reign (Vivas, 2009).

Such a model, in order to achieve some “success” requires the investment of a large amount of capital in the production process which controls much of the production line, that is, from the production of inputs to the commercialization of fresh or processed food. Such a condition is restricted to a very small number of large corporations that, through mergers and acquisitions, can control all stages of the line – from seed production to the commercialization of raw and industrially processed food – or agribusiness capitalists, who, by virtue of having large quantities of products, can negotiate lower prices, reducing the exposure of land income to commercial capital. For the majority of those who produce food not directly intended for the internal market, subordination to large corporations and subordination of land income to capital occurs both at the time of the purchase of inputs as well as at the time of the commercialization of food, not to mention when finance is needed to be able to continue producing. This situation creates a cycle of dependency which is hard to leave without making a loss, and the condition in which the freedom of production is, paradoxically, the increasing subordination to big business.

To escape this cycle of dependence and subordination and seek independent paths of production and commercialization of food, peasants organized in social movements or in small groups have sought alternatives to these hegemonic practices, which conceive a different logic in organizing production and commercialization, which, in turn, also involves control of the whole production line, that is, everything from the production of seeds and inputs to the marketing of food. These are practices that involve the production and storage of native seeds, production from an agro-ecological base, and the commercialization of produc-



tion at agro-ecological fairs and/or fair trade networks, based on principles of solidarity economy, and, in some cases, the collective organization of production and/or commercialization. In some cases all the stages of the production process are interconnected, in other words, the same peasant (or group) has – or participates in creating – a bank of native seeds, and produces and markets the products according to either principles of agroecology or solidarity, generally through some form of collective organization. In other cases, these three stages are realized through networks; in effect, those who produce the food access the seeds from a bank of native seeds – and also sell – and/or deliver their production to be put on the market at agro-ecological fairs or solidarity consumer groups. In yet another example, participation might be limited to one step, the most common being the agro-ecological production base. Such practices are found across different parts of Brazil but not Brazil alone, and this is what we will now consider.

### **The foundations of the peasant project for the 21<sup>st</sup> century**

Before discussing the peasant practices as another form of organization of production and commercialization, it is necessary to understand on what basis the peasants organize their production, in other words, the logic and the principles which guide them. Unlike capitalism, which organizes its production in order to obtain profit and collect income from the land, the peasant organizes his production in order to meet the needs of his family. Even if inserted in the capitalist mode of production and commercialization in the capitalist market, it is not the logic of the capitalist organization of production and commercialization that guides him. This means that in situations where the capitalist would stop producing because profit is not guaranteed, the peasant still produces because he hopes that the income from the sale of what he produces will guarantee the satisfaction of the needs of his family. There may be cases where, due to situations beyond his control, the proceeds from the sale of what he has produced do not guarantee that objective. This subjects him to a crisis, but not necessarily bankruptcy. This difference stems from the fact that, firstly, a peasant is unlikely to only produce one type of farming produce. Instead, they usually have a low level of specialization, which equates to greater diversification of production. This charac-

teristic allows them to rely less on the market to purchase products they consume and, more importantly, to have a greater variety of products to offer to the market, which reduces the impact of obtaining low prices through the commercialization of a particular type of agricultural produce as the difference can be met with the commercialization of another type of agricultural produce at a lower price; while the reduction of the proceeds from the sale may not necessarily prevent access to the goods and products required to meet the needs of the family since they would usually produce some of the foodstuffs that they consume directly. Ultimately, the crisis may imply a reduction in spending over the following year until the situation returns to normal, but is unlikely to lead the peasant to immediate bankruptcy.

Another important characteristic of the peasantry, and one that is at the heart of the organization of production, is that of the *family-orientation* of the workforce and ownership of land and means of production (Chayanov, 1974; Shanin, sdp; Tavares Dos Santos, 1978; Martins, 1990, 1991 and Oliveira, 1991). In fact, these are the two pillars on which peasant production is founded. They are the guarantors of this diverse organizational logic of life and production. Family workforce is the labor system by which this form of organization of production comes to life. It is from the family sphere – their needs and the availability of workforce it offers – that the peasant organizes their production, choosing which products to grow – those intended for the market and those intended for family consumption – the extension of the area for cultivation and the number of family members needed to tend to it. A balance is always under consideration between the needs of the family and the fatigue induced by the work, and the possibility of achieving that balance depends on the increase or decrease of self-exploitation of the workforce and meeting the needs of the family (Chayanov, 1974).

All family members are equally important to the progress of activities, as, within the domestic family group, no family member or productive activity can be considered more or less important. There is a sexual division of labor: men perform activities that require more physical strength, while also being responsible for contact with the market, with the commercialization of the product; women are mainly occupied with housework, raising children, tending the garden and the orchard in the backyard, family care and ensuring family members' well-being. Children start to work from a young age: boys follow the father and



girls follow the mother in productive activities. What starts as a “game” slowly progresses, until they are able to take responsibility for the whole or part of a particular crop, rearing or production cycle. When necessary, women, and younger sons and daughters complement the work of the men.

Agricultural and animal rearing activities complement each other and, in the case of peasant communities living in the vicinity and/or placed in an area where forest still exists and can provide for the community, they also engage in foraging activities. In some cases they still produce their own tools or various utensils for personal use or sale.

Furthermore, socializing with the community has an important role, from which the supply and/or receiving of aid through joint effort or exchanges of days of service occurs. Socialization also takes place at the congregation in the church, during games of bowls and football matches, and the meetings and celebrations of the Church and/or the Association; what with community life and exchange between neighbors being another important pillar of peasant life.

It is from this diverse and pluralistic universe that the practices we will now consider emerge, in opposition to the logic of the capitalist organization of production and commercialization. From the production and control of seeds, to production and commercialization in agro-ecological centres, peasant farmers have shown the possibility of imagining another project for the countryside of the 21<sup>st</sup> century, free of genetically modified seeds, standardization of cultivars and the subordination of the land’s income to capital.

## The peasant project for the 21<sup>st</sup> century

### *Native seed banks*

Among the many practices of organizing production developed by peasants, that of producing, storing and exchanging *native seeds* is undoubtedly the most important, as it ensures full autonomy in relation to the control of seeds used to grow food produce whether it is for personal consumption, or for commercialization. The peasants who produce and cultivate them are true *guardians of the seeds and biodiversity* and, in acting as they do, contribute to reducing the effects of genetic erosion caused by the homogenization of cultivars imposed by large corporations and their “improved” seeds. Nevertheless, the fact that these banks are now officially recognized is due to the organization of peasants in various social move-

ments and organizations to reverse some of the effects of the new Brazilian Law of Seeds and Seedlings (10,711/03) of August 2003, promulgated in substitution of that of 1977 (Londres, 2014). The 2003 law was the result of the aspiration of seed producing sectors and private companies involved in research on new cultivars and/or genetic improvement and its main innovation was that of encouraging private investment in research, facilitating the private concentration and control of the seed sector. The Law went on to classify the so-called commercial seeds in six different types<sup>4</sup>, with the objective of forcing the continuous purchase of basic or certified seeds, consolidating the dependence of food producers in relation to seed producing companies (Londres, 2014).

The changes made in the Law stimulated the organization of civil society sectors seeking changes in law to create recognition of the existence and value of *native seeds*, allowing for their production, trade and use. These efforts ensured important results such as the recognition of the existence of native seeds (Art 2, XVI.), formerly considered grains; permission for peasants, agrarian reform settlers and indigenous people to multiply seeds and seedlings for sale or trade among themselves (Article 8, § 3.); the exemption from registration with the Ministry of Agriculture (Art. 11, § 6) and the prohibition of restrictions on native seeds on financing programs or public programs (Art. 48) (Londres, 2014).

Despite these achievements, the Decree regulating the Seed Law (5,513/2004), being more restrictive than the Law, hindered the commercialization of seeds by peasants’ associations or cooperatives. This problem was only resolved in 2012 when the 7,794/2012 Decree created the National Policy on Organic Production and Agroecology (PNAPO). In its Article 12, the Decree made the exemption from registration with Renasem<sup>5</sup> for peasants and other categories of household scale clear, not only for *distribution* but also for *exchange and trade* among themselves; thereby removing the obstacle preventing cooperatives and peasants’ associations from trading seeds with non-cooperative members/associates and making the possibility of trading with other units of the federation clear (Londres, 2014). The problem of access to Family Agriculture Insurance (SEAF)<sup>6</sup> is yet to be resolved under the National Program for Strengthening Family Agriculture (PRONAF). The insurance in question aims to cover 65% of the expected revenue of the funded tillage, avoiding bad debt for peasants in the case of crop failure<sup>7</sup>. Although the Decree prevents the restriction



of financing programs for projects that declare the use of native seeds, to this day farmers who use native seeds in their crops do not have access to SEAF, and in cases of crop loss, can become insolvent and unable to access new credit until the debt is cleared<sup>8</sup>.

Despite all these difficulties, there are now many *native seeds banks* which have been created and organized in different parts of the country, which are of larger or smaller size, and maintained by family groups or created and accessed by a larger peasant group, the so-called **Community Seed Banks**. It is possible that the same peasant has his family seed bank and also participates in the community group, which he would normally use when his stocks are insufficient to guarantee produce in the next harvest. In some states of Brazil, such as Paraíba, the **Community Seed Banks** are organized in terms of region and state, which allows for a greater number of peasants to visit these banks. To this end, so-called **Mother Banks** are created, and usually located at the headquarters of the Rural Workers' Unions (STR). These are support structures for the **Community Banks**, which receive and store an annual quota provided by member Banks, thereby working as a supply centre (LONDRES, 2014).

With regards to the mode of operation of the **Community Seed Banks**, there are essentially two forms of organization. One is the system created in Paraíba, Northeast Brazil, named the **Passion Seed Bank**<sup>9</sup>. Its aims are the rescue, reproduction and storage of *native seeds* and the combating of hybrid and genetically modified seeds, ensuring peasant autonomy.

In the Acauã settlement, located in the municipality of Aparecida, PB, in the Alto Sertão<sup>10</sup>, the **Seed Bank** – the third of Paraíba<sup>11</sup> – began to operate before the land was even occupied, with eighteen families each deciding to deposit five kilos each of selected beans and ten of corn, in the **Seed Bank**, in order to guarantee the planting of seeds the following year. From then on the practice has only expanded.

Beans, corn, rice and sesame are the main seeds which are stored. The rules of the **Seed Bank** are established by a statute and may vary from location to location. In Acauã, the Statute calculates that each seed withdrawal from the bank is repaid with an increase of 20% for corn and 10% for beans. The goal is to increase the amount of stored seeds to help a larger number of peasants. When the associated peasants cannot pay off the debt in one year, they can do so the following year, with no increases. Unsettled debts may jeopardize

the operation of the **Bank**, whose conduct falls under the responsibility of a committee approved by the Assembly of the Association of Settlement, which serves for a term of two years.

Another example of the operation of Native Seed Banks is that of the Union of the Country Community Associations in Canguçu-RS (UNAIC), which was created in 1988 and brings together 50 community associations of Canguçu. The Union's Native Seeds programme, created in 1997, gained momentum in 2002 following the allocation of a specific space for the bank, at the headquarters acquired in 2000. Since it began, the Bank has had two aims, one *commercial* in aiming to be an income alternative for its members, and the other *social*, in aiming to preserve species of cultural importance to the communities involved. Initially about 40 families were involved in the new phase of the planting and multiplication of native seeds in Canguçu (SARAVALLE, 2010). In order to access the public state programmes such as *Swap-Exchange*<sup>12</sup> UNAIC registered with the Department of Plant Production (DPV) of the Secretariat of Agriculture, Livestock and Agribusiness of the State Government of Rio Grande do Sul (SAPA / RS) as a producer of specialized seeds, signing an agreement with the Federal University of Pelotas (UFPel) to use the Seed Processing Unit. Participation in the Swap-Exchange program enabled the preparation of a project for the construction its own Seed Processing Unit, which took place in 2001.

Seed production is carried out exclusively by peasants associated with UNAIC on an individual basis, and the commercialization is undertaken collectively by UNAIC, with the value – which is decided in meetings which happen twice a year – passed on to the peasants in accordance with the quantity and quality of the seeds provided. Commercialization takes place with or without associates, both locally and in other regions of the state and Brazil (Saravalle, 2010).

At the Processing Unit the seeds pass through eight steps: **1. technical monitoring** of the peasant seed producers at three different stages, two in the field – immediately after planting and at the time of flowering – and at the headquarters of UNAIC; **2. trailing**<sup>13</sup>, the third stage of technical support, which consists of cleaning and preparing the machines in order to avoid contamination of seeds, followed by the labelling of bags in which they are stored, with data on the variety and the producer's lot identification number; **3. germination tests**, carried out to verify whether or not the seeds will be processed<sup>14</sup>; **4. pre-cleaning of**



**grains** carried out in a hopper to separate the impurities from among the seeds; **5. drying** in a silo dryer, where the seeds remain at a constant temperature of 42°C until their humidity reduces to 13%; **6. classification of grains** also carried out mechanically, by type and size; **7. grain separation** on a gravity table, through which the seeds are separated in terms of impurities, transfers, and those which are approved; **8. purging and packaging**, in accordance with the requests to be met<sup>15</sup> (Saravalle, 2010).

With regards to the conservation of germplasm, UNAIC adopts two different strategies: *ex situ* conservation, which consists of conservation removed from the location where it develops naturally – in local or chilled chambers with low levels of humidity and oxygen<sup>16</sup> – and on farm conservation, which consists of the sustainable management of varieties of traditional crops with wild and herbaceous species developed on a local basis by peasants in agriculture, horticulture or traditional agroforestry systems (Saravalle, 2010).

#### *Agro-ecological crops*

Another dimension of the peasant project for the twenty-first century is that of agricultural production through agro-ecological principles. Created through Agroforestry systems, in the forms of mandalas or through traditional beds, these practices require a different organizational logic and a different treatment of production which in turn also ends up triggering changes in the ways in which production is commercialized.

The guiding principles of agroecology hold the general perspective of understanding property as a complete agricultural ecosystem, in which traditional agricultural practices and innovative ideas, secular knowledge and the discoveries of modern science engage in dialogue on equal terms. Its main purpose is to search for socio-environmental solutions to modern problems faced by agriculture, from distinct and complex socio-cultural realities. Moreover, in a broader perspective going beyond the technical dimension, the inclusion of the socio-cultural dimension means that relationships within the family and with external actors – generally consumers – also undergo a gradual process of change. The three main references on the subject are Gliessman (2001), Altieri (1989) and Guzman (2000), each bringing a different perspective relating to their different backgrounds, and, in practice, putting forward different ways of understanding and practicing agroecology.

Gliessman (2001), a qualified ecologist, occu-

pies the middle ground between pure ecology and applied ecology, based on the observation of traditional knowledge regarding agricultural management as being responsible for bringing ecology and agriculture together, especially that which is practiced on small farms. From this perspective, agroecology is understood as: “the application of ecological principles and management practices in the design and management of sustainable agro-ecosystems” (Gliessman, 2001:54). His understanding of agro-ecosystems: “a place of agricultural production – an agricultural property, for example – understood as an ecosystem” (Gliessman, 2001:61), enables a complex analysis of the food production system, including all the structural components of an ecosystem and their relationships, which results in the agricultural system being understood as something greater than the sum of its individual cultures. The diversity<sup>17</sup> of an agro-ecosystem is considered the main strategy for sustainable management, as it strengthens links between species and leads to reduced human interference and inputs, thereby achieving ecological stability more quickly. The sustainability of an agro-ecosystem is, in turn, understood as “the condition of being able to perpetually harvest the biomass of a system, because its ability to renew or be renewed is not compromised” (Gliessman, 2001:520). By aligning ecological components with social ones, the understanding that sustainability will only be achieved through changes in the relations of production that enable autonomy or independence from the capitalist market is deepened. Yet, the main focus of his theoretical construction is the ecological dimension, which results in the “human species” being seen as a “regulatory species” of the ecological processes (Biase, 2010).

Altieri (1989), qualified as an agronomist, contrasts agroecology with the agricultural modernization model, conceiving it as a counterstrategy of “autonomy and sustainable economic development”. To this end, he emphasizes the importance of developing technologies appropriate to local ecological and socioeconomic realities on the one hand, and on the other, the need for the production system’s full compliance with the principles of sustainability. From a techno-agronomical perspective which maintains ecological aspects at the centre of the discussion, Altieri realizes the politicization of agro-ecology, going on to define it as:

a scientific discipline that focuses on the study of agriculture from an ecological perspective and a theoretical framework whose purpose is to analyze the ag-



ricultural processes comprehensively. The agro-ecological approach considers agricultural ecosystems as core units of study; and within these systems, mineral cycles, energy transformations, biological processes and socioeconomic relationships are investigated and analyzed as a whole (Altieri, 1989:26).

Based on the principles of *biodiversity* and the *ecological balance of the ecosystem* he considers the management of natural and productive resources and identifies methodological elements related to agro-ecological procedures focused on the *optimization of the farming system*. His intention is not, however, to identify an “agro-ecological package” to replace the “green revolution package”. On the contrary, he encourages the creation of “appropriate technologies”, adapted to local ecological, agronomic and cultural realities. As a source of extensive experience in the field, his examples allow the reader – and in particular the technician/peasant who works within an agro-ecological framework – to gain insights, and examples to follow, as opposed to prescriptions to follow or a list of steps to be fulfilled.

Altieri also goes on to point out the need for a deep understanding of the reality experienced by peasants – in their ecological and socioeconomic dimensions – so that the proposed technology can be effectively appropriated. He therefore proposes the creation of differentiated rural extension methodologies, conducted by multidisciplinary teams capable of in-depth understanding of the social, cultural, economic, ecological and technical dimensions of the reality in which the interventions will be made. Altieri, with his agronomic reading of agro-ecology, searches the realm of traditional peasant knowledge for the necessary components to develop technologies appropriate to the economic reality and the agricultural ecosystem; wherein lies his most important contribution.

Guzmán (2000), of a sociological background, includes a socio-anthropological dimension in his discussions of agroecology, which immediately relates to studies of the peasantry. He seeks to establish symmetrical exchanges of knowledge between the natural sciences and human sciences, and especially between intellectuals and peasants. The need for proximity to the peasant results in the central concern of his proposal being that of in-depth knowledge of local realities – with special emphasis on the cultural and social dimensions – so that the local knowledge of the peasants is not only valued but also viewed as the main basis from which the proposed lines of action/intervention should be created.

Guzman develops his conception of agroecology from the convergence – on equal terms – between the ecological, agronomic, economic and socio-cultural dimensions of sustainable agriculture; criticizing discussions which in limiting themselves to the technical and environmental dimensions also restrict themselves to the development of ecological techniques of agro-ecosystem management, disregarding – or devaluing – the socio-cultural aspects inherent in such techniques. For him, the epistemological foundations of agroecology should be based on the study of the production and reproduction of different societies’ relationships with nature, since in ecosystems managed by men, the movement recognized inside them is the result of a *social construction*, the result of the transformations of the relationship between nature and society over time, especially in those established by peasants in rural communities; the nerve centre of his theoretical elaboration. From this perspective he denies the value of any form of intervention that comes from “outside” and does not consider this dimension.

As we can observe, there is a convergence between the three ways of conceiving agroecology, namely the need for valuing *diversity*: the ecological for Gliessman, the technical for Altieri and the sociocultural for Guzmán. Although they all point to the need for a complimentary relationship with the other dimensions, they end up prioritizing one element over the other, and this stems from their very formations. The challenge to achieve what is termed *complete agroecology* (Biase, 2010), is to reconcile these three dimensions of diversity without one imposing itself on the others. For this to materialize, it is crucial that a major change in attitude on the part of those who will interact with the peasant communities takes place. It is necessary for technicians, agronomists, and extension workers, apart from talking, to learn to listen, and to respect differences and to collectively construct knowledge regarding new production practices *with the peasants* and not *for the peasants*. In other words, *another complete agroecology* will only emerge when technicians, agronomists, and extension workers – regardless of what qualification they hold – also develop different ways of relating to the peasant communities with whom they interact.

#### *Agro-ecological production through the Mandala*

By way of example we present the experience of agro-ecological production through *mandalas*, present in various areas of rural settlements and



rural communities throughout Brazil, with special concentration in Paraíba, considered the perfect setting to become the main operating area of the *Mandala Agency*, the Civil Society Organization of Public Interest (OSCIP) that idealized it. The first *mandala* experiments were carried out in the Acauã settlement, as chosen by Willy Pessoa, then consultant of SEBRAE-PB, to check the feasibility of his idea. After several meetings a small group of peasant decided to accept the challenge of putting the idea into practice and making the necessary adjustments. The first *mandala* was built in the yard of the headquarters of the Association by a small group of peasants and served as a reference for the others built in the yards of each of their homes. The mistakes and modifications in the search for its improvement was part of a building process between peasants and technicians, being gradually incorporated into subsequently built *mandalas*<sup>18</sup>.

The minimum area required for the implementation of a *mandala* is ¼ hectare. A location close to home must first be chosen for its construction. The centre of the area where it is intended to be constructed will house the tank to store water for irrigation, and it is dug in funnel-shape and covered with cement. Fish, ducks and teals are reared in this tank to enrich the water that will be pumped to the beds. 2m should be left between the edge of the tank and the flower beds. The area is surrounded with a wire screen to prevent the ducks and teals from moving between the beds and ruining the crops. Within this enclosure is a nest for the ducks, the tank for the production of fertilizer, and an apparatus with hoses which takes water to the beds through a low pressure pump.

The water is pumped from the tank to irrigate the circular beds through perforated hoses, in which swab rods, cables or plastic chair stuffings are inserted and act as sprinklers. One of its ends is attached to the hole and the other is flame-sealed. The jet of water comes out of a cut made in the side of the swab, in any direction, activated by simply turning the rod<sup>19</sup>. Each circle has a hose to irrigate it and two faucets, each covering half of the circle. The distance recommended by the agency is of 1m between the holes, but experience has shown the need to reduce them or increase them, depending on the amount of water that the crop requires.

The circular beds are built around the tank's sealed enclosure. The width of the bed is 1.20 m to allow for harvesting without trampling. The first three circles correspond to the so-called "*circles of life*" and are to be used for growing vegetables

for family consumption. The five following circles (from the fourth to eighth) are intended for commercial crops. The ninth circle should be cultivated as a "hedge" to protect the mandala from the wind as well as from foreign pollination. Each construction site must have the widest possible range of cultivated varieties, alternating vegetable patches with fruit trees, medicinal plants, herbs and flowers whose function is to attract insects that can control or repel harmful pests/insects. The following are used as fertilizer: manure, compost, mulch and biofertilizer, usually made from cattle manure, ashes, dead matter, milk, whey, sugar, cattle urine, tobacco, lime and water, fermented for 30 days and then strained and sprayed on crops, once or twice a week. The periodic spraying of the beds, cultivation of plant repellents, and crop rotation to prevent the weakening of the soil are practices to enrich the soil and at the same time *prevent* the outbreak of possible diseases, within an agro-ecological framework.

#### *Commercialization through agro-ecological fairs and solidarity purchase groups*

With the resolution of a problem, the doing away with subordination relating to the technological packages imposed by the Green Revolution, another challenge makes itself felt: that of breaking out of the subjugation of the land's income to capital as occurs through subordination to the capitalist market. Direct sale to the consumer is undoubtedly the solution at hand, be it through agro-ecological fairs, or by selling to solidarity purchasing groups. Such a way out, however, requires an organization of peasants which exceeds the limits of a family organization, as it requires a diversity, quantity and continuity in the supply of products to consumers that a single family is not usually able to guarantee. These solutions are always collective, requiring commitments and respect for collectively defined rules in order to work. These practices find countless examples here in Brazil. As an example of its operation we shall present two cases we followed – the UFPB agroecology fair, located in João Pessoa-PB and two solidarity consumer groups through the Seeds of Peace Network and the Consumer Cooperative *Comerativamente* at USP in São Paulo-SP.

#### *The UFPB agroecology fair*

The choice of agroecology made by the peasants of four areas of rural settlements of the Paraíba Zona da Mata land area – Dona Hele-



na, Padre Gino, Rainha do Anjos and Boa Vista/Ponta do Gramame – stemmed from the need to seek alternative paths for commercialization. A discussion had begun in the late 1990s with representatives of peasants, secretaries of agriculture, the mayors of municipalities where the settlements are situated, representatives of the Bank of the Northeast, EMATER and the University. Avenues for overcoming the difficulties of production outflow were sought, with various ideas being proposed, such as selling to schools, kindergartens and hospitals and using itinerant trucks for sales, which gained little support. The idea of creating a Supply Center of Settlements, wherever direct sale of produce was possible, was quickly accepted. It was taken as far as identifying a location, by the BR 101 that connects João Pessoa to Recife, but another obstacle quickly appeared: the limited quantity and diversity of products offered by the settlements, which resulted in the idea being abandoned. The possibility of using an abandoned area near the site of the fair held in Sapé so peasants could exhibit their products was raised, but the city hall did not follow up the referrals. A fair in Santa Rita came under consideration, also without success. The difficulties led to reduced participation in meetings, which nevertheless continued to take place. At this point awareness of the need to seek new options emerged; that of offering different products in an equally different market.

Diversifying production was the first step taken. The next step was the most important: the opting for another means of production, agro-ecological production, a decision taken after a visit to experiments being carried out in Santa Maria-RS by a representative of Cáritas, where the group which was interested in the idea visited. Resources were requested from BNB and the Bank of Brazil, but the response was negative. The group did not give up and started to dedicate itself to the agro-ecological growth of vegetables with its few existing resources.

It took a few years for the situation to consolidate itself. In 2000 further steps were taken. The implementation of workshops on commercialization, which considered aspects relating to public relations, served as preparation for dealing with consumers. The exchange of products for other products among peasants was also encouraged, so that there might be greater diversity of food to consume for all, without compromising the proceeds from sales, a concept that was very well received. In 2001, Cáritas made a loan of R\$ 6,000.00 so that the commercialization process

could begin. The first stalls were created, and in November 2001 the first “*Agro-ecological Fair*” was held in a public square near the Mangabeira market, in one of the largest low-income neighborhoods in João Pessoa-PB

Another five or six other fairs took place in Mangabeira, but progressively less money was raised through these fairs. The group decided to bring the experiment to a halt to assess the reasons for its failure. In 2002, with support from the Federal University of Paraíba (UFPB), the fair moved onto Campus I, into the parking lot next to the Central Library, where it takes place to this day<sup>20</sup>. In 2004 an association was created for the fair, *The EcoVárzea Association of Agro-ecological Farmers in Paraíba*, whose aims are to; unite the peasants who opted for agro-ecological agriculture, guaranteeing the continuity of production and the commercialization of members’ production; create new production outflows; strengthen the peasants’ self-management and act as an intermediary in the development of projects which aim to improve the conditions of its associated members. The fair currently consists of 20 stalls and over 40 peasants are directly involved in running it, not counting those who participate indirectly. The peasant-farmers participating in the fair make a weekly contribution to the “fair fund” to cover any expenses for its maintenance<sup>21</sup>. The experiment was a success and the example was initially followed in the form of the Alto Sertão<sup>22</sup> settlements which in turn stimulated new projects in other places in Paraíba. Today there are about twenty fairs distributed in different municipalities across the state (SANTOS, 2010).

What is new about these fairs? It is hard to order key points. The peasants stand to benefit and offer society safe, agro-ecological products, grown without pesticides and using cultural practices that respect the environment. They are products of agrarian reform, proof that such reform is taking place and, above all, that it is viable. They are the ways which have been uncovered as a means of rebuilding what capital had divided: the producer/consumer relationship. These relationships, however, are reconstructed on other foundations; within the peasant logic of trust, solidarity, respect and friendship that develops between fellow *people*, and not between mere producers and consumers. The fair thereby constitutes *a meeting space, a space of unhurried conversation, and a space in which to exchange recipes*. Peasants are warning us that it is high time to change the pace, and to regain the control of time that capital so stubbornly takes away from us.



### *The solidarity purchase groups*<sup>23</sup>

Last but not least, the Solidarity Purchase Groups; whose practices require a different kind of organization to that of trade fairs. Generally speaking, these initiatives are undertaken by groups of consumers who express interest in consuming higher quality products, which are purchased directly from producers and allow for more or less direct links, at fairer prices for both parties. These groups are organized both informally – groups of friends, neighbors, co-workers/fellow students – or formally – in the form of an association or cooperative.

The first step is that of the establishment of a minimum number of consumers so that a wholesale purchase can be distributed among all participants. The next step is to identify the producers; which can be done through the personal suggestion of a member who knows a producer, or from a survey of areas with a concentration of production that satisfies the interests of consumers and, using this starting point, develop the contacts needed to form the supply. The third step is to establish an agreement to take into account consumer demands, and the producers' ability to supply with regard to quantity, frequency and price. With this agreement in place, the fourth and final step relates to the responsibility for logistics and transport costs, to ensure that the products reach the consumers. In general the total amount is delivered to a given site, and consumers take charge after collecting their respective purchases<sup>24</sup>. The costs are distributed among consumers and as a rule the value received by producers is of higher value than that normally paid by capitalist buyers.

The most common way it works is through the establishing of closed "baskets" at a fixed price. Consumers are to indicate their intention to purchase the baskets in advance as defined by the group so that those responsible for intermediation have time to process the requests and pass them on to suppliers who, in turn, should have time to harvest, store and distribute products to the group. The tendency, faced with the costs of transportation, is to concentrate suppliers in nearby areas. Another issue is that consumers need to be available to adapt to the new system, anticipating their consumption in advance and adapting themselves to what the suppliers can offer, which may result in having to learn to consume products hitherto outside their "consumer patterns".

Experiments of this kind have come across some obstacles which must be overcome, including: the need to maintain a minimum number

of steady consumers so as not to jeopardize the supply of food and/or overburden those who have committed to purchasing; high transportation costs, which also depends on steady consumption so as not to burden members; difficulties in terms of diversification of production for the suppliers; willingness or not to purchase previously unknown products; difficulties in remaining faithful to the principles of the solidarity economy in a capitalist market. On the other hand, it has also shown the possibility of building these practices effectively as long as the group that takes part is willing to build a solidarity economy collectively, to constantly reflect on their practices, recognize their responsibilities in regard to difficulties and search for shared solutions.

### *Collective commercialization practices*

In the cases considered here there are no cases of collective production, which is why we will not address the issues they bring to the discussion here<sup>25</sup>. What we would like to bring to the discussion, based on the experiences of agro-ecological fairs and solidarity consumer groups, are issues involving commercialization and consumption when carried out collectively. Such practices, while ostensibly 'simpler' than collective production, bring a need for collective commitment with them that is often difficult to consolidate. Although the peasants themselves possess more 'socializing' structures than other members of capitalist society, even unconsciously, they are also prone to more 'individualized' behavior; in practice such characteristics are strongest in the family or community context and tend to be less apparent within groups of 'strangers'. There are always 'individual', 'family' or 'community' to be defended and the collective construction of responsibilities is an exercise that requires a commitment to the group rather than the individual. It is necessary to understand that for the group to benefit, everyone should benefit, and crucially everyone should play their role in making that happen.

In cases of collective commercialization and consumption, there are three issues which have the most bearing on the success of the process. The first relates solely to commercialization and refers to the adjustments necessary to ensure a certain 'standardization' of production. Although the uniqueness of each production source is to be respected, it is necessary to ensure that the same 'standard' of product is to be offered so as to avoid 'preferences' among suppliers in the case of fairs



– thereby transcending personal affinities – and the consequent gains of some to the detriment of others. In other words, unlike most conventional fairs, agro-ecological fair prices are standardized; if more than one farmer sells lettuce, they should offer similar sized lettuces of a similar appearance, to prevent consumers from searching out those which are “bigger/nicer” and ignoring the “smaller/uglier” varieties, which would result in losses for the peasant who had harvested them, brought them to the fair and failed to sell them. The same applies in the case of consumer groups because the product kits should have the same appearance to avoid dissatisfaction among consumers and any eventual complaints or price reductions for the supplying peasants, who are responsible as a group for the sales, and not individually.

The second issue relates to the commitment to supply in the case of commercialization and acquisition of products in the case of the consumer. Once a commitment of supply and/or consumption is made, it is paramount that it should be maintained. This issue is of more importance in cases of supply to consumer groups where the amount is fixed in advance. At fairs a lack of produce entails direct damage to the peasant vendor, but in the groups the consequences are shared out among all. In the case of consumer groups committed to purchasing the baskets/kits it is also important because last minute waivers entail a rise in costs for those who honored their commitments and an eventual loss of products and damages for suppliers as well.

The third issue also applies to both groups – peasants and consumers – and concerns efforts in conducting management activities. Participation in meetings where commitments are defined, the distribution of activities among its members – and especially their execution – and the timely payment of fees established by the group, must be taken on as commitments and duly treated as priorities, to avoid overburdening one individual to the detriment of others, jeopardizing group activity as a whole.

### To keep moving forward...

The experiences discussed here clearly demonstrate that the peasants have found their own path and taken control of their own future in the construction of a *peasant territory* of / with *autonomy, freedom and solidarity*. This is proof that it is possible to consider a *different future for agriculture*, free of pesticides and GMOs, respectful of the en-

vironment, full of solidarity and stories, and not only of *seeds that enchant us*, and that this future can – and should – be built collectively.

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## Notes

<sup>1</sup> The following was written, with modifications, using the article "O projeto camponês para o campo do século XXI" as a basis, which was approved for oral presentation at the IX Latin American Congress of Rural Sociology (ALASRU), held in October 2014 in Mexico.

<sup>2</sup> It is estimated that by 2017 this figure will reach the milestone of 1,200 million (Vivas, 2009).

<sup>3</sup> These countries went through a process of privatization, decreases in wages and reduced spending on education and health.

<sup>4</sup> Genetic seed (produced by the breeder), basic seed (produced by the breeder or maintainer of the variety), certified first generation seed (C1), certified second generation seed (C2), uncertified seed with proven first-generation genetic origin (S1), uncertified seed with proven second generation genetic origin (S2). With each generation (planting/harvesting) these seeds go into a lower category, until they "expire".

<sup>5</sup> National Register of Seeds and Seedlings.

<sup>6</sup> Also known as *Proagro Mais*.

<sup>7</sup> Membership is mandatory for those who access Pronaf Costing.

<sup>8</sup> The justification made by the government for not providing access to the SEAF is that of *financing* and *insurance* being two different things. The response offered by the Ministry of Agrarian Development to resolve the impasse was the creation of the National Register of Native Cultivars (implemented in 2006), a *parallel register* for native seeds. Such a response, however, did not resolve the issue because the peasant organizations do not encourage Register membership. This is due to both the fear of private appropriation of local genetic resources made available in the Register and an insistence in regard to the general Law exempting native seeds from registration (Londres, 2014).

<sup>9</sup> These seeds also are called **Seeds of Resistance** in Alagoas and Goiás, **Seeds of Abundance** in Piauí, **Seeds of the People**

in Minas Gerais (Petersen et al., 2013). For details on the number and the distribution of banks see Marcos (2006), Londres (2014).

<sup>10</sup> The driest and hottest part of Paraíba state.

<sup>11</sup> The first Seed Bank was established in the Three Brothers settlement, near the municipality of Antenor Navarro. The second was in Guaraci in Valley Piancó.

<sup>12</sup> A program that encourages and facilitates the acquisition of up to two bags of twenty kilos of seeds for peasants who gain 70% of their income from agriculture and have an annual income that does not exceed R\$ 40,000.00 (Saravalle, 2010).

<sup>13</sup> The mechanical separation of the grains which will give rise to seeds.

<sup>14</sup> The minimum rate for processing the seeds is 75%. Normally the seeds of the peasant producers of UNAIC have germination rates of 90%.

<sup>15</sup> During packing the seeds are treated with Diatomaceous earth, an organic treatment which protects the grain mass and leaves no toxic residues on human health.

<sup>16</sup> In the case of UNAIC the conservation of 19 varieties of corn, 30 varieties of beans and 13 of green manure takes place, with these being stored in PET bottles or small sealed plastic pots, and placed in a small refrigerator. These stored seeds are planted each year to prevent them from losing their usability and value.

<sup>17</sup> He understood diversity as how the number of species make up a community at a particular location as well as its form of organization, which includes the spatial, functional and temporal distribution of species in a given agro-ecosystem.

<sup>18</sup> This concerns its unusual design. Although the first *mandala* already had a circular design, those built in the yards of homes have been adapted to the conditions of the site, and it is unusual to find mandalas with circular beds on these sites. Nowadays, the process of constructing the mandala begins with the visit of *Agency* technicians to carry out an inspection of the site, evaluate existing conditions and individual factors that can be leveraged and decide what needs to be purchased. The infrastructure already offered at the house does not enter the calculation and many of the costs need to be taken on by the farmer who has it built. For more details see Tavares, R.O. and Marcos, V. de. (2006).

<sup>19</sup> The range of the water jet will depend on the pump's power. In the case of using of low-power pumps, such as the 'frog pump', the water only reaches the first few circles with force, making it difficult to grow crops in the others. In the case of a complete *mandala* a pump with greater power would be required.

<sup>20</sup> The fair continues to take place on Campus I of the University, albeit in a space less exposed to the sun.

<sup>21</sup> The value is variable, corresponding to 2% of the determined day's earnings.

<sup>22</sup> The practice of agro-ecological production and commercialization in Alto Sertão is accompanied by the *agro-ecological farming network*, coordinated by Sertão CPT and ASA, with the objective of seeking food sovereignty and environmental preservation.

<sup>23</sup> Due to limitations of space, empirical details about these groups will not be given. For more details see Marcos (2004), Gonçalves (2011), Salgado (2014).

<sup>24</sup> Consumers can either go individually to the site to collect the products, or on a rotating weekly basis, or when deliveries arrive, (depending on frequency), one consumer may be responsible for the distribution of products among all the other group members.

<sup>25</sup> More details on this may be found in Marcos (1996, 2004, 2010), Thomaz (2010), Camargo (2010).

