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## **A Study on Sustainable Rural Development and Institutional Support in Brazil:**

### **The Case of Small Soybean Farmers in the State of Rio Grande do Sul\***

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### LIST OF ABBREVIATIONS

<b>ABCAR</b> - Brazilian Association of Credit and Rural Assistance
<b>ABIA</b> - Brazilian Association of Food Industries
<b>ABRASEM</b> - Brazilian Association of Seed Producers
<b>APRHOROSA</b> - Association of Horticulture Producers of Santa Rosa (Brazil)
<b>AS-PTA</b> - Assistance and Services to Projects in Alternative Agriculture (NGO)
<b>ATER</b> - Technical Assistance and Rural Extension
<b>BNDES</b> - Brazilian Development Bank
<b>BRDE</b> - Extreme South Region Development Bank (Brazil)
<b>CMN</b> - National Monetary Council (Brazil)
<b>CNA</b> - National Confederation of Agriculture (Brazil)
<b>COMPATER</b> - National Commission of Research, Technical Assistance and Rural Extension (Brazil)
<b>CONDRAF</b> - National Council for Sustainable Rural Development (Brazil)
<b>CONTAG</b> - National Confederation of Workers in Agriculture (Brazil)

**CTNBio** - National Technical Commission of Bio-safety (Brazil)  
**DATER** - Department of Technical Assistance and Rural Extension (Brazil)  
**DRP** - Rural Participative Diagnosis  
**ECOCERT** - is one of the leading international organic certification marks, enjoying a good reputation and trusted by both consumers and the organic industry (Europe)  
**EMATER/RS** - Association of Technical Assistance and Rural Extension of Rio Grande do Sul (Brazil)  
**EMBRAPA** - Brazilian Enterprise of Agricultural Research (Brazil)  
**EMBRATER** - Brazilian Enterprise of Technical Assistance and Rural Extension (Brazil)  
**EPAGRI** - Agricultural Research and Rural Extension Enterprise of Santa Catarina state (Brazil)  
**FAO** - Food and Agriculture Organization  
**FC** - Constitutional Development Funds (Brazil)  
**FETAG** - Federation of Rural Labor Unions (Brazil)  
**GEAGRO** - Management of Agriculture, Cattle Breeding and Rural Development of Maranhão state (Brazil)  
**GDP** - Gross Domestic Product  
**GMO** - Genetically Modified Organisms  
**ICMS** - Tax on Circulating Goods and Services (Brazil)  
**IMF** - International Monetary Fund  
**INCRA** - National Institution of Colonization and Land Reform (Brazil)  
**IPM** - Integrated Pest Management  
**MDA** - Ministry of Agrarian Development (Brazil)  
**MST** - Landless Movement (Brazil)  
**NGO** - Non-governmental Organization  
**OECD** - Organization for Economic Cooperation and Development  
**PRONAF** - National Program for the Strengthening of Family Agriculture (Brazil)  
**PT** - Workers' Party (Brazil)  
**RS** - Rio Grande do Sul state (Brazil)  
**SAF** - Secretariat of Family Agriculture (Brazil)  
**SNCR** - National Rural Credit System (Brazil)  
**TNC** - Transnational Corporation  
**UN** - United Nations  
**UNCED** - United Nations Conference on Environment and Development  
**USDA** - United States Department of Agriculture  
**WTO** - World Trade Organization

## DEFINITIONS

**Agroecology** - Agroecology is the use of ecological concepts and principles to the design and management of agro-ecosystems. Such an orientation is essential for developing alternatives that reduce purchased external inputs, diminishes the impacts on the environment and establishes a basis for designing systems that help farmers maintain their farms and communities (Altieri 1998).

**Institutional Host** - according to Peter Houtzager (2001), a professor at University of Sussex,

England, and also a researcher on Brazil, an institutional host is an elite actor who stimulates and supports group formation and goes beyond the traditional role of movement allies. Hosts draw unorganised peoples into their organizational and ideological fields; help redefine them as social groups and sponsor their constitution as new collective actors. In Brazil, the author argues that the Church and the State assume the role of institutional host for different segments of the rural workers' movement.

**Local** - grasping that the area chosen for the development of this thesis is South Brazil, and "local" in such a broad term - as it has been extensively used as the opposite to "global" - local will be considered an area familiar to both producers and consumers. As locality is the main factor that will provide strong basis for collective action, the area covered by the local organizations is expected to be wide enough to involve great number of farmers and restricted enough for the relationship with farmers to be personal. The fact that people know each other creates occasions where mutual assistance naturally occurs. People feel more connected and seems that there is a stronger sense of obligation at these levels than at state or national levels, which are by many times political structures (Pretty, 1995).

**Partnership** - (1) A legal contract entered into by two or more persons in which each agrees to furnish a part of the capital and labour for a business enterprise, and by which each shares a fixed proportion of profits and losses; the persons bound by such a contract. (2) A relationship between individuals or groups that is characterized by mutual cooperation and responsibility, as for the achievement of a specified goal. (3) A company of two or persons who co-own and manage a business and who are each liable to the full extent of their personal assets for its debts.

**Small Family Farmer (in Brazil)** - is the farmer that has a unit smaller than 100 hectares (in this thesis the average of size of farmland range from 10 to 50 hectares); resides on the property or at a nearby location; earn at least 80% of the family income through the establishment's farming and non-farming activities; and practices family agriculture. According to FAO (Food and Agriculture Organization) and INCRA (National Institution of Colonization and Land Reform), family agriculture is defined based on 3 characteristics: the management of the production unit is done by the family; the majority of the work in the unit is done by the family; the production factors belong to the family (except the land, sometimes) and are possibly inherited when the head of the family dies or retires.

**Sustainability** - according to the World Summit on Sustainability, the basic definition of sustainability is one that involves meeting the needs of the present without compromising the ability of future generations to meet their own needs. Sustainability is based on 3 pillars: people, planet and profit.

**Sustainable Development** - development that meets the needs of the present without compromising the ability of future generations to meet their own needs.

## Chapter 1

### Introduction: An Overview of the Global Reality

#### 1.1 General Background

In 1992, when the United Nations Conference on Environment and Development (UNCED) held in Rio de Janeiro advanced the concept of sustainable development as the answer to both environment and development crises, it generated hope and optimism around the world. Placing the environmental crisis at the top of the international agenda, the Conference linked environment with development in a new paradigm of sustainable development, leading to the creation of Agenda 21. Globally, expectations were high since a new partnership was about to emerge. Relations between countries from the North and South would tackle the growing global environment crisis and attempts would lead to more equitable international economic relations that would be the beginning for promoting sustainable development.

More than a decade later, the projects launched in Rio de Janeiro had largely failed. The world's environment continues to deteriorate: mass deforestation continues, greenhouse gases are increasingly pumped into the atmosphere, and new technologies allegedly create further environmental and health threats. However, the reason for failure is not to be found with the concept of sustainable development. Rather, the ongoing process of a "globalization from above", driven by the industrialized countries and their transnational corporations (TNCs), has undermined the concept of sustainable development.

It is relevant to stress that globalization per se is not an iniquitous tendency that is tearing down the concept of sustainability and as such must be fought against. Broader than this, as explained by Douglas Kellner (2002), *the present globalization is conflicting, contradictory, open to resistance and democratic intervention and transformation, not just a monolithic juggernaut of progress or domination*. Grasping this definition, there are two distinct forms of globalization; "globalization from above", the one mentioned before, driven by countries of the North and TNCs, and "globalization from below" which refers to the ways in which marginalized individuals and social movements resist globalization and/or use its institutions to further sustainable development and equity among and within countries. Briefly tackling the discussion, sustainable development - a goal of organizations that promote the "globalization from below" - is conflicting to and often undermined by capitalist interests of Northern countries and TNCs, expressed by the trend of "globalization from above", or simply globalization.

Today's international economic order is based on a capital accumulation market mechanism. A system that facilitates unbalanced distribution of wealth

and the domination of profit over solidarity has emerged. This inadequate regulation of the international economy has generated forces of “globalization from above” that exhaust the environment and impact the world’s poor. This trend allows TNC’s to exercise their increasing power. There are still no mechanisms which can in fact redistribute wealth at the international level, nor are there the means to alleviate the ecological and social costs of globalization (Barker 2002). “Globalization from above” has devastating impacts to ecosystems that are not being addressed by international bodies (i.e. World Bank) or policymakers.

Instead of addressing these issues directly, international bodies are embracing the globalization agenda pushed by TNCs as the answer to poverty and environmental degradation. International bodies, under the promise of a more sustainable development, are promoting an economic system that has further the gaps between rich and poor. That has caused environmental degradation on a scale never seen before. “Globalization from above” is arguably the biggest threat to the future sustainability of our planet.

“Globalization from above”, as a conjuncture, started to get stronger in 1994 after the establishment of the World Trade Organization (WTO). The WTO’s system, based on trade retaliation and sanctions, gave globalization a strong enforcement capability and its agreements infringed upon Agenda 21, which did not have a compliance system or a strong agency for its implementation. As the WTO agreements went into operation, the globalization paradigm far outshined that of sustainable development. The antagonism between the two paradigms, with globalization as the frontrunner, has resulted in more unsustainable development. On one hand, governments of rich countries have become obsessed with the competitiveness of their corporations, reducing their commitment to improve the environment. Needless to say, in the past few years, the power of TNCs has increased while there have been minor changes in their production patterns to meet the desires of civil society. Business practices have resulted in the continuation or even intensification of environmental pollution and resource depletion. Through globalization as a means of communication, the promotion of life styles adapted to TNCs’ own interests have had great impact in enforcing behavioral patterns that are environmentally unsustainable.

On the other hand, governments of Southern countries have done little or almost nothing to prevent the entrance of such corporations into their region. As a matter of fact, TNCs sometimes receive incentives such as tax exemptions when bringing a new industry to a developing region (i.e. Ford Motors in Bahia, Brazil). This pattern is often repeated because of the pressure of international agreements and to make modernization possible, increasing capital accumulation to pay the external debt. As Southern countries were dragged into the existing WTO regime and pushed to adjust their policies, governments increasingly embraced neo-liberal economic models to promote exports, ignoring the environment and



the needs of their local people, who often have no access to basic infrastructure. Although this neo-liberal model of development may sometimes seem successful at a macroeconomic level, social problems continue at high rates while the costs are not reflected in existent economic indicators. The South is still being held back by the necessity of meeting the basic needs of its people and by its unfavorable position in the world economy. With its national resources being drained through falling prices and heavy debt burdens, the reality in Southern areas seems far from changing.

Reviewing the discussion developed previously, sustainable development should involve not only the development of changes in Northern countries for a more conscious and appropriate behavior of transnational corporations and governments but it should also involve better practices and resource management in Southern localities and changes in the entire production system within a broader perspective. The development of local policies in the South focused on economic expansion or on the diminishment of social problems alone seems to only replicate previous mistakes.

Equity among and within countries in the control and use of resources in proper ways is a critical factor. It should be stressed that the elements proposed for a sustainable global order have to be taken together, as a package. Social justice, equity and ecological sustainability are all necessary conditions for this order, and the change must apply at both national and international levels. An advanced intensification of “globalization from below” may be the missing point to sustainable development. In an increasingly complex world of numerous power bases, innovative partnerships and networks are required. Integrated solutions are essential to bringing together incompatible groups and forces. Good governance must become the norm at the local, national and international levels in order to reflect the values and priorities of civil society. However, it is important to emphasize that simply developing better policies may not suffice. Policies that promote equity alone would not necessarily result in a fair world. Conversely, measures to solve the environmental crisis without being accompanied by a more equitable distribution of resources could lead to an even greater inequity and injustice (Sen 1984).

## **1.2 Brazilian Policies**

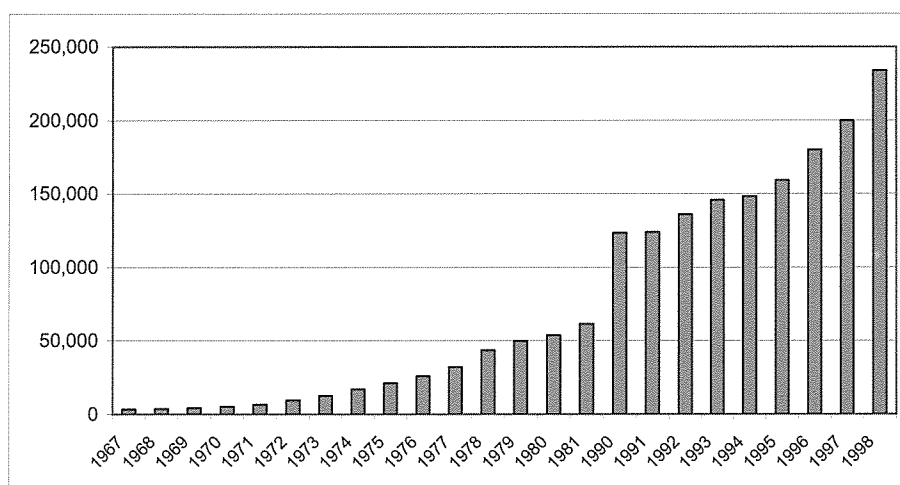
The history of Brazil's policies has been predominately focused on an economic perspective which has increased social exclusion. Inside a “vicious cycle”, the Brazilian federal government keeps on (re-) creating policies that lead the country far from its economic development targets. Focused on industrial development accompanied by the intensification of export-oriented agriculture, the Brazilian federal government has found itself imprisoned on a drifting cycle for decades. Making a brief summary of such trends, the three main apparent inter-connected reasons that lead the Brazilian federal government to keep on

developing misguided policies are as follows:

First, the Brazilian federal government takes exports of commodities as the starting-point for the process of intensification of agriculture and development of the industrial power. During colonialism, for example, the industrial development of Portugal was related to the primary goods produced in Brazil and later on, during the 1950s, commodity production inside the country made industrialization possible in Brazil. Until now, agriculture has been manipulated for the development of the industrial power, instead of being the means for food security.

The second apparent reason is the country's external vulnerability, a reflection of fluctuations in the prices of primary commodities on the world market (Furtado 1970). During the 1930s, the need to regulate coffee supplies obliged the federal government to undertake heavy financial commitments that took the form of a compensatory policy with profound consequences for the subsequent evolution of the national economy. The over-production of the commodity around the world caused its devaluation, pushing the country to get loans with international agencies (i.e. IMF and World Bank). Brazil's trade deficit increased putting more pressure on the economy. The Brazilian farmers were pushed to produce different cash crops to export (i.e. coffee and soybeans) and assist the economy once again - re-enhancing the previous point.

And, the third reason perceived is the need to increase GDP to meet external debt. Originated from the country's dependency on the external market, the Brazilian debt continues to roll over while interest rates increase. For decades, the federal government has promised to address the issue of external debt, though it has yet to even stabilize this and debts are continuing to grow (Figure 1.1 & Table 1.1).



**Note:** This graphic doesn't include the period of 1982 to 1989. Was not possible to collect the data.

**Source:** Banco Central 2001

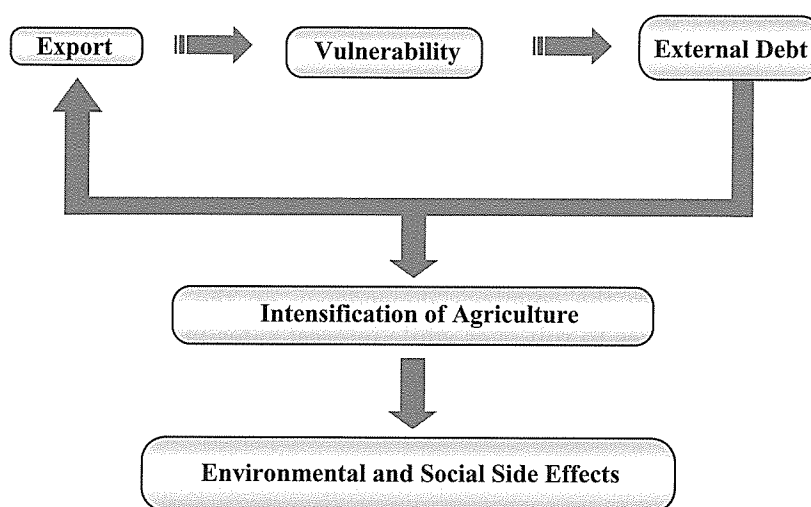
**Figure 1.1.** Brazilian External Debt in US\$ Million

These problems such as external debt and failing political economic policies are a large contributing factor to the degradation of the agricultural industry and social economic problems. Agriculture is manipulated in favor of the development of the industrial sector causing dreadful consequences to the country's environment and social structures (Figure 1.2).

**Table 1.1.** Brazilian External Debt and Percentage of GDP 1992–2000

Year	External Debt	
	Total (US\$ 1,000,000)	GDP (%)
1992	106,359	27.5
1993	105,091	24.5
1994	94,454	17.4
1995	98,582	14.0
1996	108,150	13.9
1997	138,186	17.1
1998	189,709	24.1
1999	190,371	36.0
2000	190,317	32.0

Source: Banco Central do Brasil 2001



**Figure 1.2.** The “Vicious Cycle” of the Brazilian Federal Government

### 1.3 Research Purpose & Some Conceptual Issues

The main purpose of this work is to discuss the possibility of some feasible changes in Brazilian policies and assistance – regarding small family farmers – for a more sustainable rural development. We will try to demonstrate that small family farmers and rural communities in Brazil need greater support from the government to improve their farming and enhance their social and economic reality.

Stimulated along the years to mainly produce commodities through policies developed to enhance exports, farmers have diminished the production of food for the local population. This misled intensification of agriculture disconnected farmers from local communities. For this reason, the reestablishment of local rural relations is vital to create a ground for the revitalization of agriculture, increase rural social capital and restore the environment. Policies, farming

practices and resource management, as well as rural local relations, are in need to be reviewed and new agricultural circuits created. However, as local relations in the countryside have deteriorated along with intensification of agriculture, small farmers and rural communities just find it difficult to work alone. In this regard, it can be said that at stake is to increase rural social capital, which features civic engagement and social organization, such as networks, norms and trust that facilitate coordination and cooperation for mutual benefit (Putnam 1993). Although the concept of social capital has provoked rapidly growing interest in the mainstream idea of rural development as well as in sociological literature, there are also some criticism as in Harris (2001) and Schuurman (2003).

These authors say that this concept implies that individuals, neighborhoods, villages, regions and countries are underdeveloped because supposedly they do not have the 'right' kind of social capital (Schuurman 2003). According to this logic, the poor are expected to pull themselves out of a problematic situation by developing the right kind of social capital. The social capital is regarded to be intervened and manipulated from the outside as if it is an independent variable. As such, this concept tends to obscure the structural political, economic and cultural dimensions of poverty, which is not caused by a decline in social capital: conversely a decline in social capital is the result of poverty.

Another problem with this concept is its exclusive focus on local actors within civil society, or a sphere of voluntary social association, which is commonly distinguished from political society and thought to be preferable to politics. The so-called social capital that is built up in small groups in which people interact face to face and develop norms of reciprocity should not be simply aggregated to constitute generalized trust (i.e. sustainable, equitable social relations) within the society as a whole (Harris 2001). The existence of civil society, and of generalized trust in a society, presupposes an institutional framework that is put into place through the agency of a state, where contestable politics and conflicts of ideas and interests are common. Nevertheless, we need to bring the government and political agencies back in so as to address the political economic context that is often undermined by the mainstream as well as by the actor-oriented sociological approach.

In the need to rebuild their social arrangements and create new networks, farmers and communities should be assisted by a facilitator or, as Houtzager (2001) suggests, an institutional host. Such an institutional support may be a feasible answer for many of the problems in rural areas. Some authors ponder that farmers need only to organize in order to survive (Mooney 1988); some other authors suggest that practices chosen by farmers are the answer for their sustainability (Long 2001). Our findings suggest that farmers in Brazil, specially the small family farmers, need more than just organization and better practices. Small family farmers need proper assistance to restructure their social configuration, help them rescue their knowledge together with new locally-tailored technol-

ogies and sustainable market opportunities to earn a living by farming.

This assistance may come from governments, as institutions within the state are important resources for communities and social groups. According to Harris (2001) the recognition of the numerous possibilities of participative, local-level alternatives, depends on the establishment of a political perspective that protects the rights of less privileged people. This political involvement would also facilitate the broad range of successful measures. The success of the achievement of the alternatives of participative action would better involve networks amongst actors at different levels and in different places, including local organizations and state agencies, as well as NGOs and social movement organizations.

The examination of various case studies in South Brazil reveals that small farmers may find feasible alternatives when working in partnership with local organizations. Local partners are very important to assist farmers on finding profitable market circuits. However, as it will be observed in chapter 4, they are not always working for the benefit of small family farmers. Some local organizations are working for capital accumulation or for reasons other than the well being of small farmers and rural communities.

Therefore, in this thesis we would like to test the hypothesis that the probability of achieving sustainable rural development is enhanced when small farmers and local organizations work together with an institutional host. The aim is to first, evaluate whether government programs related to institutional hosts can meet the needs of small family farmers; and second assess whether innovative small family farmers are more likely to contribute to sustainable development than export-oriented farmers.

#### **1.4 Scope of the Study**

The material base upon which the analysis will be developed is the material collected on the work of an institutional host in Rio Grande do Sul. The state of Rio Grande do Sul was chosen to be the main area studied for a number of reasons. Firstly, a large number of small family farmers reside there. Immigrants from Europe, especially Italy and Germany, organized themselves in a great number of rural communities and up to now cultivate the area in a family-based way (*minifundios*). Secondly, known as the most politically controversial state in Brazil, Rio Grande do Sul has been the center of many agricultural conflicts. Among other things, in the beginning of the 90s the state declared itself GMO-free (free from genetically modified organisms) and since then the area is known for its fight against/in favor of biotechnology. GMO is an important issue because this biotechnology is often perceived as an instrument used by TNCs for the spread of "globalization from above". The state government of Rio Grande do Sul going against GMOs represented the struggle of the entire state to protect itself from furthering intensification of agriculture and from the influence of TNCs in their fields. Third, the state has a very active rural extension

institution named EMATER/RS (Associação Riograndense de Empreendimentos de Assistência Técnica e Extensão Rural) that has been working with farmers since the 40s and is now increasingly developing a work based on environmentally sound agriculture.

Despite the fact that small family farmers in Rio Grande do Sul have inherited a multiplicity of unequal social relations from the past, they have the ability to change their situation if properly assisted. The social relations of agricultural production is ought to be reconstructed and an awareness of the significance of social inclusion enhanced. Among the options examined during the research conducted in the area, rural extension assistance was pointed out to be the most proper choice even though this type of assistance has previously been rejected as an appropriate alternative (Hassanein 1999 and 2000). Strongly criticized, rural extension agencies have been considered responsible for making agriculture unsustainable and promoting intensification of agriculture.

Indeed, rural extension agents in Brazil (at least the ones researched) promoted intensification of agriculture from the period of 1961 to 1980. At that time, rural extension agencies gave priority to the development and diffusion of modern technologies aiming to help build the Brazilian economy. However, from 1980 to 1990 concerns about the environment and the consequences of modernization of agriculture started to take place. The need to revive rural communities has increasingly been tackled. Alternative agricultural practices are the main focus of rural extension agencies in Brazil now. The search for different farming strategies are being addressed by extension agencies. From the beginning of the 90s a rural conversion for a more environmentally sound agriculture emerged.

With offices all over the state, EMATER/RS - the main rural extension agency researched - is an elite actor, partially public, linked to the state and federal governments. The main project embraced by EMATER/RS analyzed in this thesis is the one based on agroecology (Caporal & Costabeber 2001). As it will be observed, this approach chosen by EMATER/RS had extremely positive results. Small family farmers were enabled to implement environmentally sound practices and rural communities were revitalized. Changes implemented since the beginning of the 90s were the basis for the development of agroecological practices. The agroecological project was the necessary step taken to strengthen the desire of small family farmers to embrace environmentally sound agriculture.

### **1.5 Outline of the Study**

This thesis will be divided into three main parts. The first part (chapters 2 & 3) will examine historical trends in the social relations of agriculture production that are essential to the historical analyses of the rest of the work. The second part (chapter 4) will bring a more theoretical vigor to the discussion and

will present some local activities developed by local cooperatives, local organizations and NGOs. The third part (chapters 5 & 6) will analyze the assistance given by the institutional host in South Brazil. This part will be focusing on the work of EMATER/RS in Rio Grande do Sul, on policies developed by the state and federal governments and on the struggle of small family farmers and rural communities to create opportunities for a more sustainable rural development.

More specifically, the second chapter will address the identification of Brazil as a historically dependent country on trade relations and on the political effects derived from the interests of the world-system. This will be demonstrated by reviewing the work of Wallerstein (1974), Celso Furtado (1970), De Janvry (1981) and Bresser Pereira (1984). The books of those socio-economists will provide a context for developing an applicable model of agrarian economic configuration influenced by policies developed by a federal government constantly influenced by a world structure.

Chapter 3 will assess the importance of land grant, policies and rural labor as qualitative and quantitative relations of production inside the country. Warnken (1999) focuses on the soybean export-oriented model in which small-scale agricultural producers find difficulties on reproducing themselves as commodity growers. This discussion is very relevant to demonstrate the reality of small soybean farmers in Brazil and the need to divert them away from commodity production. As small-scale farmers don't seem enthusiastic about changing farming practices, the work of Dorward (1998) is referred to explain the reality of small farmers and their "addiction" to commodity production.

In Chapter 4 rural development will be looked upon more closely as well as the global and local trends. In this chapter, greater emphasis will be given to the necessity of the inclusion of local communities in rural changes and the question on how these communities may get involved will be raised. Some case studies of local organizations and NGOs will be presented and their strong points and limitations analyzed. One of the key aspects of this chapter is the necessity of the use of a facilitator to reconnect farmers to local organizations and rural communities in order to restore their local social fabric within a broader perspective. Based on the survey and on the case studies showed, the intent is to show the significance of appropriate support.

In Chapter 5 the work of EMATER/RS as the main facilitator located in the state of Rio Grande do Sul will take place. In this chapter, the historical background of the rural extension agency will be analyzed, especially the new environment-sound projects chosen since the end of the 90s. The agroecological program developed under Caporal's management in the area will be one of the main focuses of discussion. And, the main area explored will be the Santa Rosa region, where many interesting agroecological projects were established.

Chapter 6 is where the limitations of EMATER/RS as a rural extension institution will be analyzed. In not denying the structural limitations to be

surpassed, the aim is to re-think the work of the institution in Rio Grande do Sul and to present future possibilities for improvements in its approach to small family farmers.

In the concluding chapter, the summary of the main points of the thesis will be presented and the necessity for the involvement of an institutional host to press forward sustainable rural development emphasized. EMATER/RS has exerted great influence over the implementation of regulations and on promoting objectives of development in Rio Grande do Sul. And, even though programs embraced by EMATER/RS have some limitations, the use of this institutional host will be demonstrated as an indispensable tool on assisting small family farmers.

## Chapter 2

### Development Policy of the Brazilian Federal Government: Historical Overview of the “Vicious Cycle”

#### 2.1 Introduction

Before trying to explain anything related to the Brazilian rural reality, a brief historical retrospect is presented in an attempt to clarify the possible roots of commodity-oriented production and policies developed by the Brazilian federal government. The aim is, with a broad vision, to show how local policies developed along the years influenced farmers inside the country. Attentive to economic facts, the intention is to make a historical analysis to evaluate the results of the ever-changing economical process.

Even though historical facts are crowded with conflicts of interpretation, this retrocession will begin with a simplification of the social influence of European colonialism, analyzing Brazilian industrial development and touching on the Brazilian economy during the end of the 20<sup>th</sup> and beginning of the 21<sup>st</sup> centuries. This chapter will look at the facts related to commodity production and agricultural matters, analyzing possible historical facts that still influence the Brazilian agriculture.

#### 2.2 Colonial Brazil: Supporting Portuguese Industrial Development: 1500-1822

At the beginning of colonialism (15<sup>th</sup> century) the “world” was controlled by some colonizer countries (i.e. France, England, Spain and Portugal). The political centralization of such states was at the same time their strength and weakness. The strength was because the colonizer states would guarantee economic flows from the colonies by force and by unfair, one-sided-benefit trade. The weakness was due to bureaucracy, which would tend to absorb a great part of the profit, especially after military expenditure became necessary. More than anything, by the means of political centralization, colonialism made possible the



increase on the flux of surplus from the poor to the rich (from periphery to the center), by eliminating rigid political structures (McMichael 1996).

The sequence of increase and decrease on the production of different crops has had an extensive influence over the Brazilian economy and society. Officially a colony of Portugal from 22 April 1500 until 7 September 1822, Brazil and its society were strongly influenced by the main colonizer, Portugal, as well as other European nations (i.e. Spain, Italy and Germany), which are the roots of non-native Brazilians.

The basic pattern of Portuguese colonialism was to establish in Brazil specific production of raw materials and primary goods that were hard to grow in Europe. The Crown would give large grants of land (*latifundios*) to grantees and would provide the necessary means for them to use their lands in order to produce a surplus, which were converted into cash and partially transferred to Portugal. In chain, Portuguese manufacturing was able to develop on the basis of such products since they became industrial inputs as well as the supply for the Portuguese industrial labor force. In a broader sense, this type of agreement between Portugal and Brazil became part of what is known as the international division of labor. This relation had two effects; it stimulated Portuguese manufacturing (industrial development), and pushed Brazil to raw-material (and export commodity) production. Such trend destabilized Brazilian "native culture"; displacing local crafts and decreasing mixed family farming. In this way, not only did the Brazilian native handcraft industry almost disappeared, but also local farmers were pushed to adapt their farming to an export-oriented monoculture - where small family farmers became producers of single crops for the export market (Russell-Wood 1992).

Brazilian farmers' exports provided the raw goods for the Portuguese capitalism, while the local labor was detached from its traditional or colonial-like agricultural model. The capitalists in Europe induced the immigrants and native Brazilians to produce cash crops, employing many kinds of methods such as slavery and cheap recruitment for immigrant labor contracts (Russell-Wood 1992). In the Northeast region, for example, the Portuguese distributed land on which it organized large-scale sugar-cane farming based on slave labor. The consequence of these measures was the development of a twofold agrarian structure. On one side, there were the large-scale farmers geared to export production and, on the other a small-scale farming sector was created, which usually practiced subsistence agriculture and had no title to land.

Within changes in colonialism, capitalism was consolidated, offering alternative markets and lucrative sources of surplus from the colonies. In the capitalist "world-economy" that was taking form political strategies were developed to protect monopoly. As capitalism developed along the years, the colonizer states started to be less the central economic power and more the mean of securing benefits to European capitalists during transaction. In this way, the market

created incentives to increase productivity (especially of export commodities in the colonies) and the modern economy developed. It was already an economic, not a political system (McMichael 1996).

This “world-economy”, or “European world-economy”, was a social system that the world was experiencing for the first time and which is the basis of the modern trade system. It is a “world” system, not because it covers the whole world, but because it is larger than any political unity and it is a “world-economy” because the link between the parts of the system is mainly economic (Wallerstein 1974).

As capitalism was not related to specific areas in the center, capitalists in the colonies also started to influence the development of policies to transform commercial relations with Europe into less dependent and more reciprocal ones (instead of being one-sided-beneficial like before). Beginning in 1755, the Brazilian Secretary of State, Marques de Pombal, made some reforms in order to grant companies a monopoly over Brazilian trade and to promote national production. The goal was to strengthen the state and to break the domination of European credit. He closed Brazilian ports and hired military experts to organize Brazil’s defense. To promote agricultural growth, Pombal distributed coffee and also advocated production of cotton, cocoa, and rice (Country Studies 2003). With the development of cotton and cocoa, exports increased so much that, during the period of 1796 to 1807, the percentage of exports was almost the same or greater than imports (Table 2.1).

Brazilian commercial development centered on agricultural exports to Europe. The city of Rio de Janeiro grew as immigrants came to the country wanting to prosper from the export commodity boom initiated in the end of the 1800s. Sugar, banana and coffee production expanded along with industrial crops such as cotton. Because of the profitability of commodity export, successful landowners in coalition with wealthy traders dominated the Brazilian political arena. Those traders were part of the national counterpart of the European industrial-financier coalition that sponsored the European industrial development. Creating one single capitalist process, the traders in Brazil would commercialize commodities to European capitalists who would develop their industry and in return enrich traders back in Brazil.

As European industrial development matured in the 19<sup>th</sup> century, the process of colonial independency in Brazil started to take place. The main purpose was for the achievement of political independence to pursue national economic

**Table 2.1.** Brazilian Imports and Exports, 1796 - 1807

Port	Imports (%)	Exports (%)
Rio de Janeiro	38.1	34.2
Salvador	27.1	26.4
Recife	21	22.7
São Luís	8.7	11.7
Belém	4.6	4.2
Paraíba	0.2	0.8
Santos	0.2	0.8
Fortaleza	0.1	0.8

Source: Russell-Wood, 1992

growth. Brazil obtained its political independence as the Portuguese empire started to decline while others started to get empowered (Dutch and English). The 1800s was a period of change. First, the Portuguese royal family was forced to flee to Brazil in 1808, and for some time, the colony became the home of the Portuguese royalty. Additionally, in 1808 Britain persuaded Portugal to open up the Brazilian economy to trade with the rest of the European world, and Portugal withdrew prohibition against industrialization. These events were followed by Brazil's official independence on September 7, 1822 (Country Studies 2003).

### **2.3 Agricultural Development for Stimulating Industrial Development: 1822-1898**

The political independence of Brazil was the launch for local industrial development. To guarantee a steady industrial base, the Brazilian state built coalitions with distinct social groups in order to attain rapid industrialization. The capitalist elite related to such coalitions aimed at shifting the economic resources away from the specialization of raw material exports. The elite were trying to get out of commodity production because the early years as an independent nation were difficult. Exports were low, and the domestic economy depressed. The only segment that achieved some change was the subsistence economy. In order to increase national economic growth, the federal government redistributed private investment from export sectors to domestic production (Country Studies 2003).

Also, after independency, the increasing substitution of wage labor (especially European immigrants) for slave labor resulted in the establishment of a domestic market. During period, coffee production and trade became one of the most important businesses for the Brazilian economy. Introduced in the early eighteenth century, coffee was initially planted for domestic consumption. Just around the late 1820s and early 1830s coffee was turn into a major export item due to high prices in the "world market". Land was abundant, and production expanded through the incorporation of new areas. The Brazilian economy experienced great growth in the second half of the nineteenth century (Country Studies 2003). By 1891 coffee was the basis of the economy, followed by sugar, cotton, tobacco, cocoa, and rubber.

By 1898, because of agricultural growth, the rural-based oligarchy regained control over the political system and coffee production became a priority. Brazil produced coffee in great scale and the policies would reflect the rural capitalists' belief that Brazil was mainly an agricultural country whose task was to supply Europe with natural resources.

However, these export-oriented policies didn't last long. With an increase in competition, coffee prices fell, forcing the government to devalue the currency. This devaluation increased the price of imported goods, decreasing consumption and reducing government taxes from imports. Those losses led to the suspension

of payment of foreign debt and the poor economy caused banks and firms to go bankrupt. In response, the rural capitalists decreased national industrial production and increased support for the agricultural economy, encouraging European immigration through small grants of land guaranty (*minifundios*) to provide inexpensive rural labor and changing the pattern of labor.

Between 1822 and the First World War, society witnessed the establishment of a new international division of labor and the re-shaping of the “world” economic system. This new pattern displayed some interesting features. The first one was the rise in the economic growth rate of many of the countries that invented this new pattern. With the industrial development, the accelerated output of goods and services made it possible to double a community’s purchasing power in the course of a single generation. The second one was the remarkable rise in the rates of population increase that came with urbanization, improvements in public services and the rise in the gross domestic product (GDP). The third was the creation and expansion of technical knowledge (Furtado 1970). Transmission of techniques took the form of a straightforward commercial transaction, and it became possible to transform an entire productive sector at an undreamed speed. The result of the interplay of these three factors was the growth and integration of the “world” economy in the nineteenth century and the intensification of international specialization. World trade expanded rapidly. The value of world trade, which was no more than 1.5 billion dollars in the 1820s, rose to 3.5 billion in the 1840s and to 40 billion just before the outbreak of the First World War (Furtado 1970).

#### **2.4 Industrial Development of Agriculture for the Export Market: the 20<sup>th</sup> Century**

During the first three decades of the twentieth century, the Brazilian economy went through periods of growth but also difficulties caused in part by the First World War, and the increasing trend towards coffee overproduction. The fall in coffee prices permitted an increase in the volume of exports and the prices of imported manufactured goods rose. The Brazilian elite and state were continuously pressured to adapt Brazilian production to the needs of the “world-system”, since Europe never ceased to influence the economy.

Starting from 1911 until mid-1900s, gross national product (GNP) grew at an annual rate of 6.5 per cent. With the population growing at around 2.1 per cent per year, per capita growth averaged 4.4 per cent a year (Goldin 1990). This growth was led by agriculture, since Brazil was integrated into the “world” process of capital accumulation as an agro-exporter to the capitalist countries. Exchange of its products was subject to the forces of free trade under British hegemony and to both European and American imperialism (de Janvry 1981). However, by the late 1930s, coffee production had been drastically reduced, and the Brazilian industry was ready to grow. Output increased through proper

utilization of the existing industrial capacity but there was little local investment. A crisis was installed and it was so severe that the country was forced to suspend payments on the external public debt.

At the end of the Second World War (around 1945) the federal government developed measures in favor of industry and the industrial growth accelerated past that of agriculture, even though the industrial capacity was poor and transportation infrastructure inadequate. Early in the 1950s, convinced that the only way to achieve economic growth was to change the structure of the Brazilian economy, the federal government adopted the import-substitution industrialization (ISI) policy. The most important tool of this policy was the utilization of foreign-exchange control to protect certain segments of domestic industry as well as to ease import of inputs for them (Pereira 1984).

However, the measures adopted by the federal government ended up limiting exports, and the balance of payments became a major problem. The system turned out difficult to manage, and in 1953 a more flexible system was introduced. Under the last version, essential imports were brought to the country at low rates; imports of goods that could be domestically attained had higher rates and were available only on small portions. This system was the main tool used to promote import-substitution industrialization, but the performance of the export sector was still very modest (Pereira 1984).

Regarding the agricultural sector, Brazilian exports strongly relied on coffee during the 1950s and the subsistence sector produced staples for the domestic market, even though the population did not impose great demand on agriculture. With the import-substitution industrialization, however, this situation changed. This strategy pushed the agricultural sector to generate most of the economy's foreign exchange, produce food, industrial inputs, and transfer goods. As a consequence, the cheap domestic food policy lowered prices in favor of the expansion of industrialization and the Brazilian economy experienced rapid growth. In 1960, GDP exceeded 15 percent compared to 13 per cent in the end of the 50s (Table 2.2). Industry was leading growth while agriculture was left behind. The structure of the manufacturing sector experienced considerable change and agriculture became less important.

**Table 2.2.** Macroeconomic Relations 1959 - 1963, Brazil

	1959	1960	1961	1962	1963
Gross Domestic Product/Year	13.8	15.3	15.5	15.5	16.3
Gross Capital Formation/Year	15.9	16.5	17.1	16.3	16.5
Imports	8.5	8.4	8.6	8.1	12.6
Exports	7.4	6.9	7.9	6.2	12

Source: Pereira, 1984

#### 2.4.1 The 60s: Green Revolution and the Industrial Development

Governing Brazil from 1956 to 1961, Juscelino Kubitscheck transformed the

country into an effective instrument of industrial development. Despite its limitations and the “complexity” of semi-colony, the Brazilian federal government was able to take decisive action to promote Brazilian economic development. The stimulus created by industrialization provided conditions favorable to national and foreign private investments. The national income increased, and the country became more industrialized (Tables 2.3 & 2.4).

**Table 2.3.** Real Domestic Product and Industrial Production, Brazil

Period	Real Domestic Product (%)	Industrial Output (%)
1940-1945	4.7	6.2
1946-1950	7.3	8.9
1951-1955	5.7	8.1
1956-1961	6.0	11.0

Source: Pereira, 1984

**Table 2.4.** Direct Foreign Capital Movement in Brazil

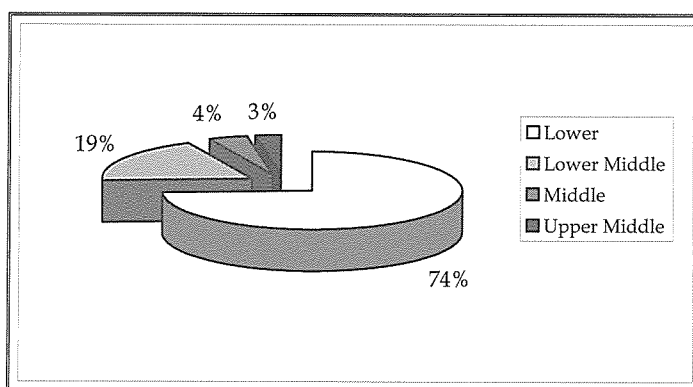
Period	Investments	Profit Remittance	Balance
1947-1953	97	327	-230
1954-1961	721	269	452

Source: Pereira, 1984

Agricultural exports improved, but the benefits were not evenly distributed. The development of policies focused only on the improvement of industry while manipulating agriculture and disregarding society, limiting benefits to a small industrial elite (Figure 2.1 & 2.2).

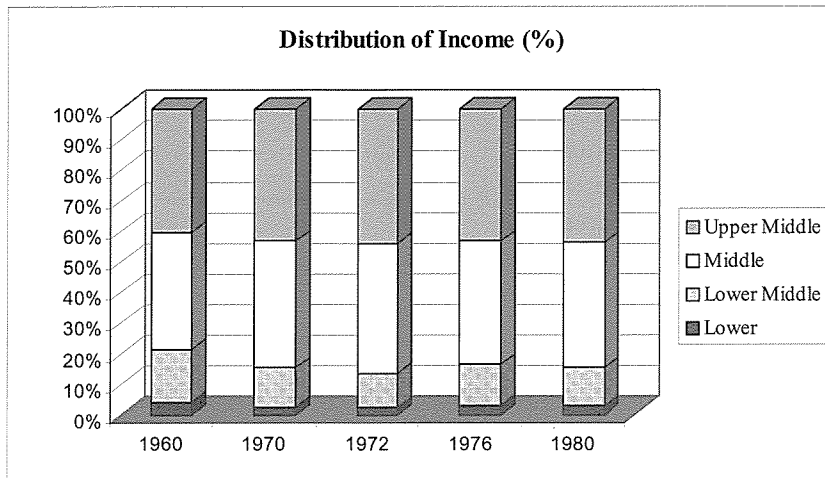
As a consequence, in the beginning of the 60s there was an emerging demand for the reform of social and economic structures. The *societal plea* was to facilitate development and improve distribution of income. The conflict of ideologies between reformism and conservatism separated the Brazilian policy-makers into “leftists” and the industrial elite. And, even though Brazil was better in a macro-perspective, the social problems were just increasing inside the country. In addition, in order to improve its industry, Brazil made loans with international agencies (i.e. IMF and World Bank), massively increasing its foreign debt (especially when Brasilia was built to develop the *cerrado* area).

Between 1962 and 1967 the Brazilian economy lost much of its vigor. Political troubles negatively influenced prospects and didn’t permit the develop-



Source: FGV 1995

**Figure 2.1.** Social Classes in Brazil - 1950's Census



Source: IBGE 1996

Figure 2.2. Distribution of Income (%) - 1960 to 1980

ment of partnerships to support the introduction of tough measures to control inflation (Pereira 1984). By the end of the decade, growth of agriculture was reaching its limits and increases in productivity were essential for a production expansion. The growth strategy developed by the state required a fast expansion of exports, including agricultural export commodities. Thus, the government implemented a modernization strategy consisting of technical change for a restricted number of sub sectors and incentives for the formation of agribusiness complexes (Hasse 1996).

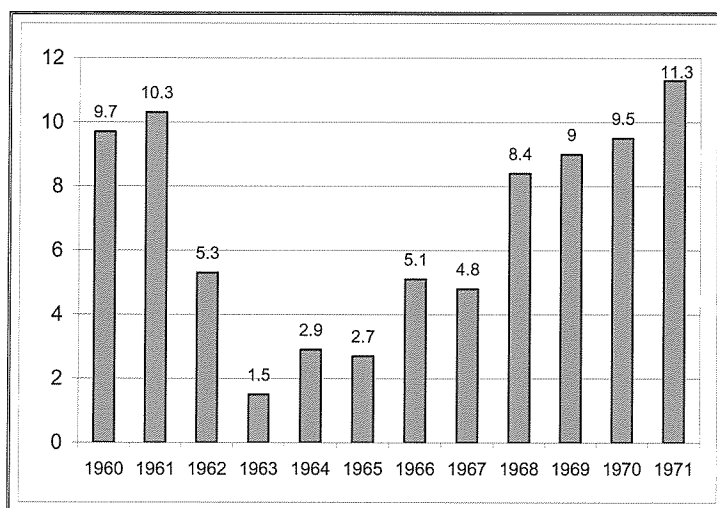
In order to pay the foreign debt, the Brazilian federal government progressively started pressing farmers to invest in rural technology to increase export commodity production. Aiming for the export market and constantly meeting threats from its world's competitors (i.e. Argentina and USA), the Brazilian federal government implemented and updated market-oriented policies as to mechanize agriculture. In response, farmers inside Brazil invested as much as they could in technological packs, decreasing the number of labor, lowering the price of commodities and pushing those farmers who couldn't mechanize out of rural life.

Technical change concerned the development of "green-revolution" technologies (i.e. machinery and chemicals), adapted mainly to large-scale agricultural operations. Regarding the agribusiness complexes, the federal government gave many incentives for the assembly and expansion of processing and input industries. Products benefiting from agricultural mechanization responded well to the modernization strategy. The soy meal and oil, processed beef, poultry, orange juice and alcohol (from sugar-cane) complexes received credit, tax exemptions and subsidies when exported. The production methods experienced technical

change, and the yields increased.

#### 2.4.2 The 70s: Economic Miracle and *Abertura*

During the Brazilian economic miracle of 1968 to 1973 GDP grew at an annual rate of about 11 per cent (Figure 2.3), industry grew at about 13 per cent a year and agriculture at 3.9 per cent (Goldin 1990). However, traditional agricultural products suffered heavy taxation and price control. With limited access to credit and price-control policies, staples failed to modernize. They were frequently subject to export restrictions and to competition from subsidized imports when they failed to supply the domestic market. As a result, significant levels of conflict between the state elite and the rural oligarchy characterize this period from 1964 to 1974 (Houtzager 2001).



Source: FGV 1995

Figure 2.3. Growth Rate of the Brazilian GNP

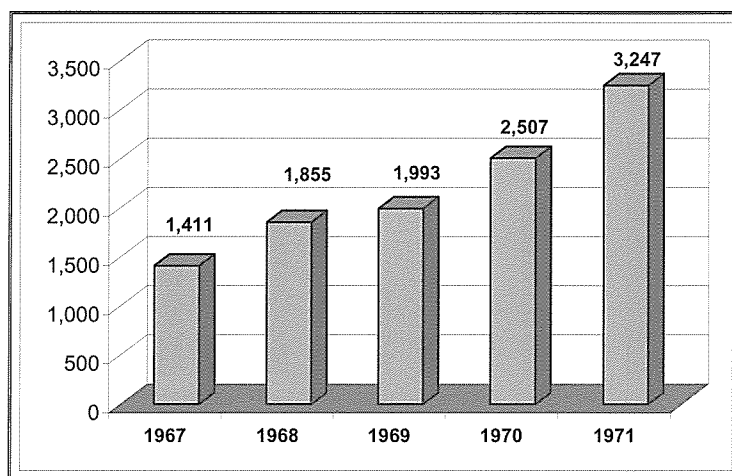
Under this scenario, farms became more industrialized, inputs became more expensive and fewer farmers could meet the costs; forcing poorer farmers to sell their land to richer farmers or agencies that could afford to do so. As a consequence, farm size and rural exodus increased, shifting Brazil from a predominantly rural to a largely urban country, while investment towards agriculture was directed to the development of technologies. The more modern agriculture became, the more industrialized it turned out to be, placing small family farmers in an underprivileged position. Prices for machinery and inputs became particularly high, especially those of commodities, and support for small family farmers (i.e. rural credit) extremely scarce.

Unsatisfied with high prices and unfair trade caused by the new policies developed by the state (ruled by an authoritarian and modernizing military



regime since 1964), in 1974 Brazilian society, led by the elite, started to undergo a transition “back to democracy” called *Abertura*. The elite, made up from small to large industrial and agricultural producers, wanted to be not only the economically dominant class, but also the political control promoting capitalist beliefs and the defense of private initiative (*iniciativa privada*) as the only rule compatible with democracy. The *Abertura* initiated great number of conflicts that were related to new patterns of accumulation and to new democratic political pacts (Pereira 1984).

By the end of the 60s, Brazil, that had been a great exporter and, to a certain extent, a self-sufficient producer of grains, became increasingly dependent on imports (Figure 2.4). A new form of economic dependency took form. Brazil now had its dependency associated with the new structure of global accumulation (with the US as the central position of global power) based on “undistributed” profits and loan funds.



Source: Banco Central do Brasil 2001

**Figure 2.4.** Total Imports in Millions of US\$ - Brazil

During the 1970s, international prices were determining prices for agricultural exports, industrial inputs and luxury goods, while maintaining price control over staples. The consequence was a serious favoritism in prices that led to the modernization of the first set of activities while production of food stagnated for the local market. Exports were given priority over staples mainly because the pressure to pay the foreign debt imposed priority to the production of export commodities that is far greater than the provision of cheap food (which could be fulfilled through imports). The role of international agencies (i.e. IMF) was determinant in establishing this priority. As a result, between 1968 and 1973 the area planted in traditional food crops (i.e. rice and black beans) fell, while the area planted for export and industrial crops (i.e. soybeans) expanded (De Janvry

1981).

In the end of the 70s and beginning of the 80s a series of external shocks (i. e. the second oil price shock in 1979 and the recession in the OECD countries during 1980–82) and major crop failures (in 1978 and 1979 the combination of low stocks with lower levels of output damaged the federal government's attempt to restrain prices and improve the trade balance) torn the Brazilian economy down. The resulting crisis forced the federal government to give priority to agricultural production in 1979 aiming to improve the agricultural trade performance and to fulfill local demand. This priority was sustained by two initiatives to support agriculture: i) heavily subsidized rural credit and ii) more effective use of minimum price policies. Both policies aimed to improve agricultural output and the balance of payments. As a result, between 1979 and

**Table 2.5.** Quantities Financed by the Federal Government 1979 - 1987, Brazil

Year	Cotton (%)	Rice (%)	Beans (%)	Wheat (%)	Soybeans (%)
1979	71.5	12.2	6.4	7.2	33.2
1980	83.1	17.3	1.6	7.8	41.2
1981	72.3	20.3	5.5	18.1	44.9
1982	72.4	20.9	10.6	14.5	59.9
1983	81.2	28.1	4.5	12.3	50.5
1984	46.3	11.5	3.5	8.5	22.9
1985	21.9	20.6	5.3	7.6	17.9
1986	50.6	36.4	6	8.3	20.3
1987	32	29.7	5.3	6.9	25

Source: Goldin, 1990

1988, increases in the rates of growth of rice, corn and wheat were at a record high, while beans and cassava production held stable (Table 2.5). Sugar cane maintained its earlier growth levels, while soybeans, cocoa and coffee decelerated (Goldin 1990).

### 2.4.3 The 80s and 90s: Transitional Crisis, Stabilization and Real Plan

During the 1980s, the Brazilian policies towards agriculture changed substantially. Cattle breeding and production for the domestic market became increasingly important. Expansion of agricultural frontiers declined in importance and agriculture started to be integrated into the economy as a whole, becoming more vulnerable to changes. More opened to the international market, larger benefits were given to exporters while production costs were cut down through cheaper imported inputs. However, such changes were not accompanied by a rural restructure or proper policies, causing reduction on cultivated area, employment and income (David 2000).

As the military power started to deteriorate, accentuated conflict levels between the Catholic Church and the state elite over political power increased (Houtzager 2001). These political conflicts summed to the major economic crisis that prevailed in Brazil until mid-90s (also called the transitional crisis) made inflation rates at times very high (2,708% in 1993), urging for the implementation of shock-stabilization programs.

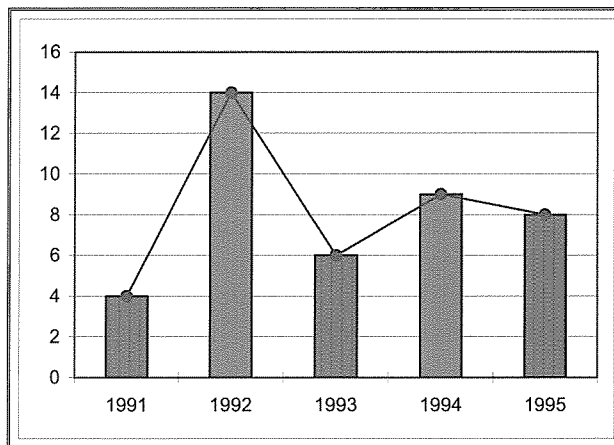
In 1990, the first president elected by popular votes after militarism, Fernando Collor de Mello, introduced a stabilization plan, together with a set of neo-

liberal reforms aiming at stimulating competition, privatizing public enterprises, and increasing productivity. In 1992, the President announced the conclusion of an agreement on restructuring the country's debt with international banks. As policies started to change, agriculture started to develop more and technology improved. However, just few of the new programs succeeded. Many difficulties with the stabilization and reform programs were caused by the federal government inability to secure political support. Furthermore, the stabilization plan failed because of management errors.

In September 1992, President Collor de Mello was impeached on charges of corruption. Vice-President Itamar Franco was pointed out as the new president (1992-94). Continuing the neo-liberal line of thought, the president appointed Fernando Henrique Cardoso as Minister of Finance and a high-level economic team to develop a new stabilization plan. Implemented early in 1994, the Real Plan (*Plano Real*) had little public resistance because it was gradually explained to the population and avoided drastic measures (i.e. price freezes). Efforts were made to liberalize the economy. The private sector was offered to have a major role and there was hope to integrate the country into the international market. Economic forces did not entirely support this idea and the reforms, fiscal and agrarian ones, were not easy to implement.

When the Real Plan really took effect, the Brazilian economy experienced positive real GDP growth, less inflation and a more opened market for external capital. Before implementing even more neo-liberal policies and opening the market to TNCs, the Brazilian government finally assisted farmers in September 1996. The government published a new law eliminating the state value-added tax (ICMS) on primary and semi-manufactured exports. This would boost exports of commodities (see chapter 3). In addition, under the Real Plan, government policy and support started changing from paternalistic (protectionist) to market-oriented. The government gradually removed itself from direct management, intervening as little as possible and letting decisions to be made within the market. Brazilian farmers had to get involved directly in the global restructuring of the market. The government would only get involved through institutions and organizations linked to it.

By the end of the first quarter of 1994, the second stage of the stabilization plan was implemented and Fernando Henrique Cardoso was elected president on January 1<sup>st</sup>, 1995. In this same year Congress started constitutional reforms, including economic deregulation, eliminating state monopolies (Figure 2.5) and changed election and party legislations. By July 1995, the Congress had approved modifications related to privatization of companies related to telecommunications and petroleum, and eliminated the distinction between domestic and foreign firms. In addition, Brazilian agricultural sector started to show positive growth. The Central Bank of Brazil estimated that the agricultural sector grew by 5 per cent in 1997 reaching US\$ 102 billion (USDA 1998) and in 1998 the country



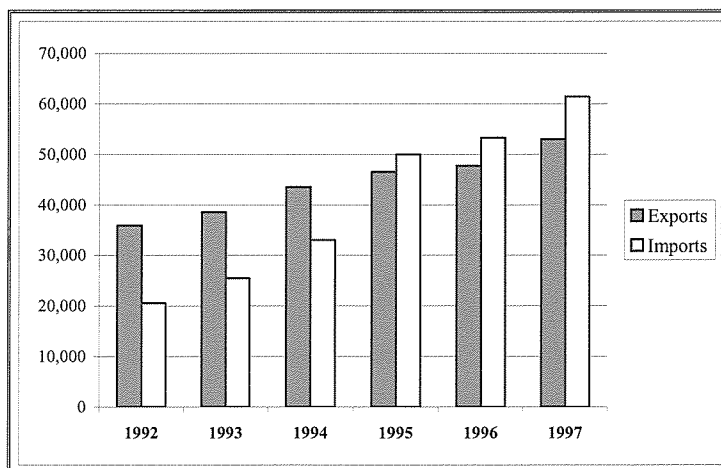
Source: BNDES 2000

Figure 2.5. Number of Privatisations per Year - Brazil

started to export more.

However, even though Brazilian farmers expanded the sector, scarcity of credit was damaging. Taxes related to the agricultural sector and interest rates were lower than market rates, but banks became more selective when giving new loans, making it harder for farmers who were indebted to get access to funding. The price for commodities (i.e. orange juice, sugar and corn) decreased due to market retraction and the Asian financial crisis of 1997. And, the number of imports surpassed exports (Figure 2.6).

From 1995 to 2000 the federal government concentrated its efforts in finding a solution to the debts owed by producers that were jeopardizing part of the



Source: Ministry of Development, Industry and Commerce 1998

Figure 2.6. Brazilian Trade Balance 1992 - 1997 (US\$ 1,000,000 FOB)

financial institutions and adopted a gradual decrease in the interest rates charged by the rural credit system. Rural credit was provided by credit cooperatives and by the commercial banks, participants in the National Rural Credit System (Sistema Nacional de Crédito Rural - SNCR). The rules and conditions to be observed regarding loans were established by the National Monetary Council (Conselho Monetário Nacional - CMN), a body connected to the Finance Ministry, and the application of these rules and conditions were examined by the Central Bank of Brazil (Sobrinho 2001).

In 1999, the currency (Real) started to devalue and the price for agricultural inputs (fertilizers and pesticides) skyrocketed. In August 1999 the value of rural production fell for coffee (33.8%), sugar cane (14.6%) and soybeans (10.6%) related to the same period of 1998 (Almanaque Abril 2000).

### **2.5 Recent Changes in Agricultural Development Policies and Challenges for the New Federal Government**

Agricultural exports were not excellent, and the disparity between the performance of the production for the export market and the one for the internal market was even less admirable, as imports increased. Financial credit was small for agricultural production, but exporters could benefit from credit given by countries that imported commodities. The interests charged by these importer countries would be lower than those charged in Brazil. This would guarantee lower costs for the export industry, compensating the lack of credit and the storage inability inside the country. As for the internal market production, the opened market stimulated the entrance of international agricultural products, which would compete at the same level as the local ones, damaging production for the internal market. Through high tax rates inside the country, prices of local products were higher than the imported ones; especially after the Brazilian federal government decreased the number of policies to support agriculture. Besides, the federal government was not able to combine the neo-liberal measures with the inclusion of the large portion of the population living below poverty line (Coelho 2002).

However, in 2001, the grain harvest was 98.6 per cent higher in yields than in the previous year. The recovery of the price of agricultural goods led the Brazilian GDP in 2002 to a record growth of 8.18 per cent (Belmonte 2002). The last year of the second mandate of Fernando Henrique Cardoso ended with great expansion in agriculture even though the support from the federal government was not sufficient. In addition, the export revenue of 2002 was 5,664 billion US dollars while in 1990 was just 2,854 billion (Cardoso 2002).

Until the end of 2002, under the official system of rural credit, the main origins of resources to the rural loans were: i) obligatory resources or compulsory funds; ii) resources from the Constitutional Development Funds (Fundo Constitucional de Desenvolvimento - FC); iii) resources from the Rural Savings

Accounts; iv) equalized resources; and v) resources from the foment programs. The principal sources of finance throughout the agricultural sector were, in descending order of quantity, those originating from the deposit accounts into the banks (compulsory resources) and those equalized. The use of the biggest loan source (compulsory funds) did not imply any burden of the public accounts. However, the use of the second biggest loan source (equalized resources) involved considerable government expenses, making a deep incursion on public funds (Sobrinho 2001). The available loans not only didn't give enough support for farmers but also increased public debt.

Democratically elected president of Brazil, Luiz Inácio Lula da Silva started his mandate in January 2003. Known for being a politician from the people, the election of Lula meant to Brazilian people the election of a man who would fight for social justice. From the Workers' Party and with a coalition to the MST (Landless Movement), Lula promised to change the rural reality in Brazil. During his campaign and after his election, the former president promised to give priority to the development of policies to support farmers as well as increase exports of agricultural products. The federal government promised to invest in small family farming in order to increase the number of jobs and fairly divide revenue. The federal government's intention was to intensify the programs of rural assistance for farmers (Cardoso 2003) and ameliorate the Brazilian agricultural policy.

One of the most popular programs developed by Lula's administration is the Zero Hunger Program (Projeto Fome Zero). This program places primary importance on the reduction of hunger, undernourishment and extreme poverty. The approach is inspired by the World Food Summit and Millennium Development Goals, which call for cutting hunger and extreme poverty by half by 2015. The program foresees the establishment of linkages between programs aimed at enlarging access to food and the family farming sector, creating opportunities for income improvement, both in farming and non-farm rural activities. By intentionally connecting the increase in demand for food, which will be created by programs based on supplies derived from the family farms, the program will play an important role in stimulating market access (Belik 2003). In its first year, Zero Hunger was already assisting 1.9 million families in 2,238 municipal districts in Brazil (Medeiros 2004) with great perspectives of expansion for the next coming years.

For the export sector, the federal government created a program entitled Brazil Exporter (Brasil Exportador). Launched in November 2003, this program aims to, through 45 different projects, develop actions to expand exports. In that same year Brazilian agribusiness exported around 30 billion dollars, an increase of 20 per cent compared to the year before - accounting for 42 per cent of total exports - and the production of grains was of 122.6 million tons, an increase of 26.7 per cent compared to the year before (Relatório 2003).

Both programs launched by Lula's administration are quite promising, but as shown on the small summary about the last 500 years of commodity production and export-oriented policies, it is hard to accept as true that these two ventures alone will give long-term solutions to the Brazilian agricultural problems. It is difficult to conceive that in only four years not only small family farmers will be socially included, but also that large-scale farmers will reach great number of exports without demanding excluding policies. Small family farmers have along the years suffered from the displacement of food production over the stimulus to produce commodities. Impoverished and distant from the local communities, more than projects, small family farmers need proper support from the Brazilian federal government to restructure their local social fabric and market circuits.

Based on historical facts, it is questionable that the federal government is going to accomplish the marks positively planed solely developing policies to improve economy. Small family farmers are in need to be reconnected to their communities. Without appropriate assistance and projects developed to properly support small farmers, these new economic policies will most likely once again end up enhancing social and environmental problems. More than new policies, rural Brazilian is in need of a structural transformation for a more sustainable development, as this thesis will illustrate.

## **2.6 Concluding Remarks: Need to Break the "Vicious Cycle"**

Locked in the habit of developing policies to favor the export market, protecting export-oriented farmers and indirectly harming small-scale subsistence farmers, the Brazilian federal government finds itself in an exceptionally sensitive position at the beginning of the 21<sup>st</sup> century. With a population of 170 million people, unemployment rates in the order of 6.2 per cent and an illiteracy rate of 29.4 per cent (IBGE 2002) the policies developed until the beginning of this century had not ensured the inclusion of 25 million Brazilians who were living in conditions of deprivation (Coelho 2002).

In this thesis the intention is to show how the current Brazilian federal government is developing policies, delineating programs of rural credit and working in partnership with rural extension institutions in order to transform rural Brazil and develop the economy. In analyzing historical facts, the intention is to make a comparison between the past and the present Brazilian realities, analyzing the possibilities of success of the new federal government.

To make such a comparison, the first step needed and already taken was to get familiarize with Brazilian history. The second step is to look at agricultural history, farmers' reality and commodity production. Analyzing the national scenario and the need to increase exports, the attempt is to show the facts that have been influencing the Brazilian policy makers from the beginning of mechanization of agriculture (1960s) until late 90s. The aim is to understand the reasons that influence the Brazilian federal government to repeatedly develop policies

that lead to greater exports and at the same time exacerbate socio-economic problems.

## **Chapter 3**

### **The Influence of Agricultural Development Policies on Soybean Production and Small-Scale Farming**

#### **3.1 Introduction**

After analyzing the Brazilian economic history, in this chapter the intent will be to analyze rural production in Brazil. Soybean was chosen to be the crop explored in this thesis because of its relevance in Brazilian agriculture. The history and policies related to the increase in production of soybeans have influenced decision-making and built the configuration of large and small-scale farmers inside the country.

Soybeans are not a staple food in Brazil. Produced as a commodity for the export market, this crop is very controversial and raises the question of whether it is suitable or not for small family farmers to grow. In analyzing the influence of the crop in the Brazilian policy making, this chapter aims to demonstrate how the Brazilian federal government is continuously influencing changes for the improvement of exports while developing contradictory policies at a small family farmer's point of view.

#### **3.2 History of Soybean Production in Brazil: External Stimulus and Internal Policies**

Brazil depends heavily on agriculture (Sampaio, 2000). The agribusiness sector represents 27 per cent of the GDP, 25 per cent of all employment and nearly 40 per cent of overall exports. Through the year 2000, while agribusiness generated a US\$ 13 billion trade surplus, other economic sectors combined for a US\$ 13.7 billion deficit (Jank, 2001). Traditional export commodities like coffee and cocoa have become gradually less important as a supply of export revenue since the end of the last century. In contrast, the values of exports of soybeans have risen substantially (Smith, 1997). This commodity, together with orange juice and livestock products, mainly poultry, account for about 15 per cent of exports revenue and are important items in the trade with OECD countries, principally the United States and the European Union. This reliance on soybean occurs as a result of a long history and several different policies that will be analyzed along this chapter.



### 3.2.1 The 50s and 60s: The Beginning of Soybean Expansion and Intensification of Agriculture

From 1950 the soybean expansion was impressive (Table 3.1). During the 1960s, soybean became an important commodity for the Brazilian export market. More than 600 thousand hectares planted in 1966 fascinated producers and the federal government. In the international market, Brazil was already making great profit from exports. Double-cropped with wheat, farmers could reduce production costs by 15 to 20 per cent (Hasse 1996).

Glimpsing an increase on the production capability and demand for soybean in the international market, in 1967 Minister Delfim Netto launched a project called Operation Armadillo (Operação Tatu). This new agricultural project implied plowing the earth deeply and recommended the use of limestone to ameliorate soil acidity and chemical fertilizers to feed the plants. All the work was to be done with modern machinery to prepare the soil, to plant and to harvest. This project was one of the first technological agriculture packages in the capitalist world. It implied on the intensification of agriculture (Hasse, 1996). Attracting many urban businesses, soybean could be industrially commercialized in 3 main different forms: grain, oil or soy-meal (for animal feed).

Also in 1967 the Extreme South Region Development Bank, BRDE (Banco Regional de Desenvolvimento do Extremo Sul) promoted a first meeting among factory managers of the three southern states (Paraná, Santa Catarina and Rio Grande do Sul); this meeting had a clear objective: organize the industrial "appetite" of entrepreneurs who were interested on soybeans. Favored by fiscal incentives and highly subsidized rural investment credit, Brazil's agricultural input industry underwent rapid growth (Warken, 1999). Increased domestic soybean production offered the ideal way to address the foreign exchange savings concern, and because soybean must be industrially processed, it also addressed the issue of growing domestic industry. Soybean oil industry, located exactly halfway between the fields and the consumers, turned out to be the most profitable one. Consequently, the federal government gave support for the establishment of a strong soy oil industry.

As mainly small family farmers in Center-South Brazil would produce soybeans, it was of great economic interest that they would receive proper assistance to grow the new commodity. Through the work of local extension institutions linked to the federal government (i.e. ABCAR - Associação Brasileira de Crédito e Assistência Rural), small farmers and their families would be "educated" on how to grow and commercialize the new crop. Rural extension staff would organize activities with farmers in order to implement state policies. The aim was to transform agriculture into a more dynamic means of production, more

**Table 3.1.** Soybean Expansion in Brazil

Year	Soybean Tons
1950	34,429
1955	106,884
1960	205,744
1965	523,176
1970	1,598,540

Source: IBGE 1996

adequate to capital circulation and economic development. Rural extension staff would advise farmers of how to ameliorate the acidity of the soil, how to get loans from the banks to acquire machinery and how to implement new technologies developed by research institutions and multinationals, all financed by the federal government (Caporal 1998).

### 3.2.2 The Early 1970s: The Soybean Boom

Early in the 1970s, various conditions brought about a soybean boom in Brazil. Firstly, the country was living the Economical Miracle (*Milagre Econômico*), which began in 1969 and lasted until 1973. Secondly, President Emílio Garrastazu Médici wanted to attract external investments to the country to develop the agricultural, industrial and mineral sectors. The federal government received loans from international agencies (i.e. World Bank, IMF) and invested in the country (Almanaque, 2000). Thirdly, coffee plantations were facing serious problems with frost, forcing farmers to look for other alternatives. And, due to the climate and to federal government policies, soybean was the main crop planted. Also, wanting to increase the wheat cultivation, farmers in Rio Grande do Sul were double-cropping the plantation with soybean. Both cultivations increased and the result favored soybean, as wheat prices were not sufficiently attractive and yields were low. Besides, the external market was demanding for an alternative soybean supplier due to a series of events that were taking place in the world (Warken, 1999): the official devaluation of the U.S. dollar (1971), the Soviet Union's purchasing U.S. grain crop in 1972 and the failure of the anchovy harvest in the Peruvian coast due to the harsh El Niño of 1972-73 (which contributed to the high soybean prices). Also, the U.S. embargo on soybean and soy-meal (June 1973) forced Japan and European countries to look at Brazil as an alternative source.

The Brazilian soybean boom was also stimulated by the government through political economic goals (Warken 1999); (i) saving foreign exchange by import substitution of vegetable oil and processed foods, (ii) increasing foreign exchange earnings by growing soy-meal and soy-oil exports, (iii) improving the national diet by stimulating increased production of poultry fed on soy-meal, (iv) stimulating industrial development, (v) holding down food price increases, and (vi) territorial occupation, as soybean had been regarded as the engine of demographic and economic growth in the *cerrado* region (central western and northern Brazil).

### 3.2.3 Reformation of Organizational Support for Soybean Expansion in the Mid 1970s

In 1973, the Brazilian soybean harvest reached more than 5 million tons. Three and a half million tons of grains, meal and oil were exported (Hasse, 1996). Soy became a popular agricultural product and investing in the crop was guaranteed profit. Due to the abundance of financial credit made available by the

federal government, many venture farmers started to grow soybeans, sometimes with little or no knowledge of the plant or of the rural world itself. The easy money was enough to buy machinery, cars and trucks. As a consequence, large amounts of urban capital were diverted to buy land, increasing the prices of land everywhere in the country.

The demand for larger properties encouraged farmers from the south to go to central Brazil, as the price of land in the *cerrado* was low. Even though there were questions about whether anything could be grown in central Brazil due to the acidity of the soil, the federal government was engaged on developing that area and its entire production capability. Aware of the opportunity to boost exports with soybean, the federal government (military, at the time) decided to invest more in rural research and extension programs. Under the supervision of one major organization, COMPATER (Comissao Nacional de Pesquisa, Assistência Técnica e Extensão Rural), two other organizations would develop the work planned by the state: EMBRATER (Empresa Brasileira de Assistência Técnica e Extensão Rural), for technical assistance and rural extension; and EMBRAPA (Empresa Brasileira de Pesquisa Agropecuária), for mainly technological research. The idea was to concentrate funds and increase control over research and extension programs at the same time.

Founded in 1974, EMBRATER drastically reduced the autonomy of existent rural extension organizations. Centralizing the financial resources and the power of determining the programs implemented, EMBRATER would be active in each state of Brazil through several smaller organizations named EMATER (Empresa de Assistência Técnica e Extensão Rural), see Figure 3.1.

Some of these organizations already existed before EMBRATER was founded, but they had to change their names and their approach in order to survive. Locally active and linked to the state governments, these rural extension organizations became the closest link between farmers, state government and federal government. Not only that, but also became the most active disseminators of rural mechanization (Caporal 1998). Stimulating farmers to produce commodities, the rural extension organization “educated” farmers to do exactly what the federal government wanted: increase exports. Subsistence production and the local market were set aside while mechanized mono cropping for exports

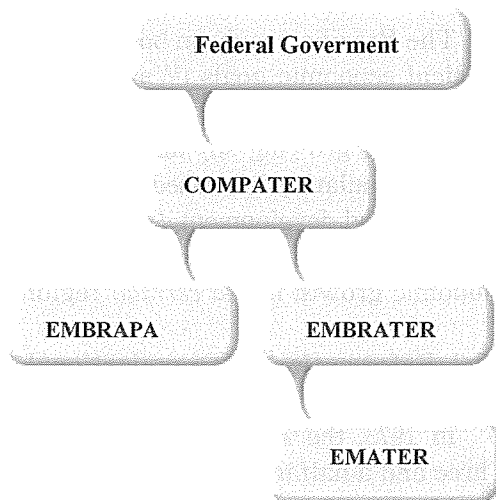


Figure 3.1. COMPATER Organization Chart

became synonym of success.

Founded a bit earlier than EMBRATER, in 1972 EMBRAPA was responsible for developing new technologies to increase soybean production. Until the beginning of the 1980s, soybean production was concentrated in the center-south region of Brazil, since then, after extensive investments on research financed by the federal government, the *cerrado* soybean production rose from 2 to 13 million metric tons. Even though this increase was small compared to solely the 10 million ton oil industry capacity of the state of Rio Grande do Sul (Hasse 1996), it was already a great achievement making such increase possible in the *cerrado*. These new technologies applied and developed by EMBRAPA were based on new varieties developed for local conditions plus the improvement of soils and infrastructure.

### 3.2.4 Structural Shifts in the Recent Soybean Production

Large, corporate-like farms that were highly mechanized could now dominate production, unlike in the more traditional regions (Table 3.2). On account of the development of EMBRAPA's and other research institutions' new varieties, soybean production on the Central Western region of Brazil increased significantly (Figures 3.2, 3.3 & 3.4). From the 80s, production has increased a great deal in the *cerrado* region (Minas Gerais, Mato Grosso, Mato Grosso do Sul, Goiás, Tocantins, Distrito Federal, Bahia, Piauí and Maranhão) while the traditional region (Rio Grande do Sul, Santa Catarina, Paraná and São Paulo) remained constant.

Although the traditional region is regarded as the most modern in Brazil - in 1995 it produced about half of the national soybean production; the entire traditional region has shown little change in production or yield over the past two decades. Since 1980, most of Brazil's soybean output growth has come from the *cerrado*. By comparing the two regions using harvested area and yield data, we can see that soybean production in the *cerrado* has been more dynamic. And, regarding the future, Brazil's *cerrado* occupies an estimated 207 million hectares - 24 per cent of the nation's territories, providing great capacity for further increase in soybean production.

Both in the traditional region and in the *cerrado*, soybean growth is one of the greatest symbols of modern agriculture in Brazil. Cultivated in an area of 9,479, 893 ha, in 1995, among five states in Brazil, it is the most prosperous commodity in the country. The magnitude of growth in Brazilian soybean output since 1970 (1,547,000 ha) has been impressive. In this century, no other internationally traded commodity of any other country has had such an output expansion (Abiove 2004).

Brazil is the second biggest producer of soybean in the world and, unlike the United States and Argentina, its two biggest competitors in the world market, the country concentrated until 1999 on exports of soy meal for animal feed (9,977 thousand tons). One of the reasons Brazil has concentrated on production of soy

**Table 3.2.** Comparisons between Brazil (total), Central-west (cerrado) and South (traditional), by Size Groups in 1995/96**a. Number of Farms Producing Soybeans by Size Groups**

Size Groups of Total Area (ha)	Brazil		Central-west*		South*	
	Number	%	Number	%	Number	%
Less than 10	57,203	23.5	567	5.3	55,771	25.1
From 10 to less than 100	157,148	64.7	2,574	24.2	149,921	67.5
From 100 to less than 1000	24,713	10.2	5,298	49.8	15,670	7.1
From 1,000 to less than 10,000	3,774	1.6	2,099	19.7	895	0.4
More than 10,000	153	0.1	96	0.9	4	0.0
TOTAL	242,999	100.0	10,634	100.0	222,265	100.0

**b. Quantity of Soybean Production by Size Groups**

Size Groups of Total Area (ha)	Brazil		Central-west		South	
	1,000t	%	1,000t	%	1,000t	%
Less than 10	357	1.7	10	0.1	338	3.1
From 10 to less than 100	5,060	23.4	186	2.3	4,585	42.7
From 100 to less than 1000	8,602	39.8	2,695	32.7	4,761	44.4
From 1,000 to less than 10,000	6,657	30.8	4,626	56.1	1,035	9.6
More than 10,000	912	4.2	729	8.8	14	0.1
TOTAL	21,588	100.0	8,246	100.0	10,733	100.0

**c. Production Value of Soybeans by Size Groups**

Size Groups of Total Area (ha)	Brazil		Central-west		South	
	1,000 R\$	%	1,000 R\$	%	1,000 R\$	%
Less than 10	75,336	1.8	1,869	0.1	71,391	3.2
From 10 to less than 100	1,042,391	24.6	34,309	2.4	949,008	42.3
From 100 to less than 1000	1,728,286	40.7	483,472	33.2	998,958	44.6
From 1,000 to less than 10,000	1,229,123	29.0	807,854	55.4	218,966	9.8
More than 10,000	166,952	3.9	130,068	8.9	3,177	0.1
TOTAL	4,242,124	100.0	1,457,571	100.0	2,241,501	100.0

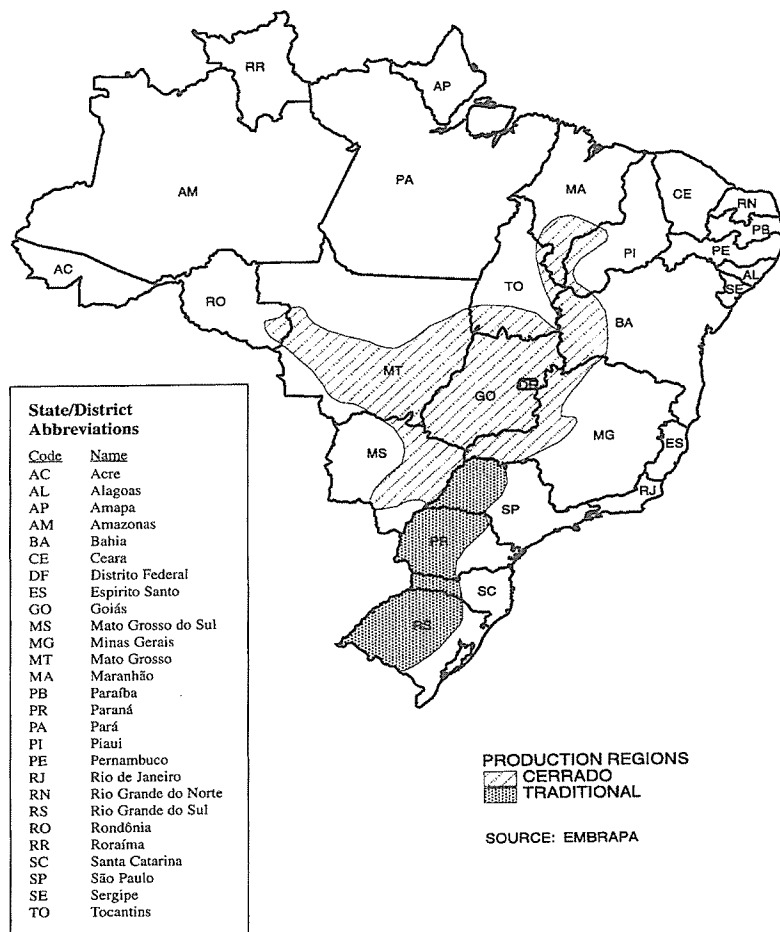
**d. Percentages of quantity and value in total, by Size Groups**

Size Groups of Total Area (ha)	Brazil		Central-west		South	
	Quantity	Value	Quantity	Value	Quantity	Value
Less than 10	1.7	1.8	0.0	0.0	1.6	1.7
From 10 to less than 100	23.4	24.6	0.9	0.8	21.2	22.4
From 100 to less than 1000	39.8	40.7	12.5	11.4	22.1	23.5
From 1,000 to less than 10,000	30.8	29.0	21.4	19.0	4.8	5.2
More than 10,000	4.2	3.9	3.4	3.1	0.1	0.1
TOTAL	100.0	100.0	38.2	34.4	49.7	52.8

**Note:** Central-west consists of Mato Grosso, Mato Grosso do Sul, Distrito Federal and Goiás (however, Minas Gerais, Tocantins, Bahia, Piauí and Maranhão are usually included in the *cerrado*). South consists of Rio Grande do Sul, Santa Catarina, and Paraná (however, São Paulo is usually included in the traditional area).

**Source:** IBGE, Censo Agropecuário, available on the website ([www.sidra.ibge.gov.br](http://www.sidra.ibge.gov.br)) accessed on October 30, 2002.

meal for many years is because the type of soybean largely cultivated in the country has black hilum, making it less appealing for direct human consumption. Recently however, due to changes in the consumer's market, Brazil exported more grains than soy meal. In the year 2003, for example, the country exported



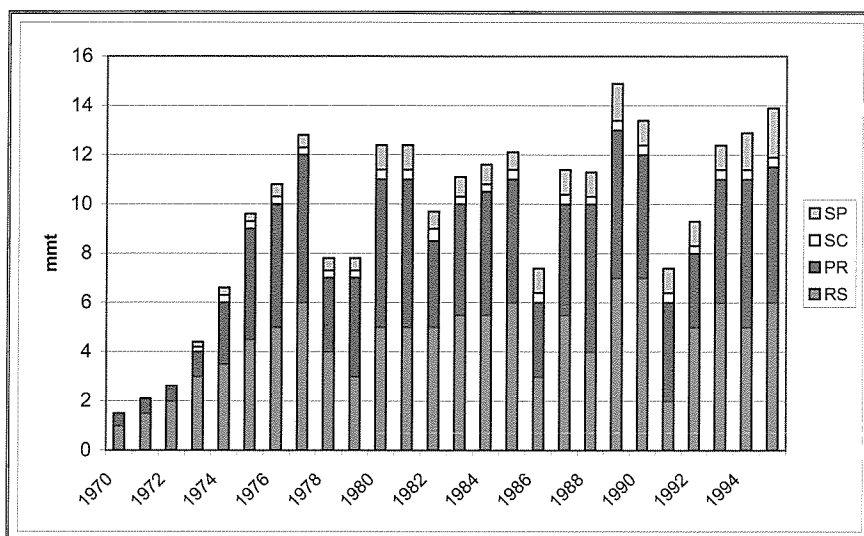
Source: Warlen 1992

**Figure 3.2.** Brazilian Cerrado and Traditional Soybean Production Regions until 1992

19,987 thousand tons of grains and 13,577 thousand tons of soy meal (Abiove 2004).

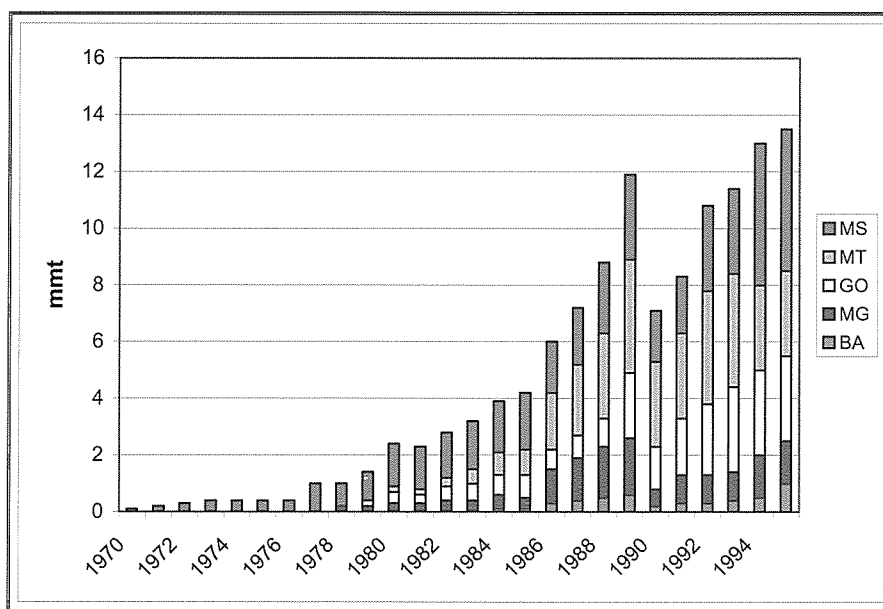
Brazil is responsible for around 20 percent of the world's soybean production. The soybean complex is the main item in the country's Trade Balance, with estimated export revenue of US\$1.131 billion in 2004, 29.2% greater than the US\$ 875 million in the previous year. Imports decreased 5.3%. In 2004, there was also an increase of 118% of the shipment of soybean oil, which subjected US\$ 37 million, 132% more than the value registered in September 2003 (Salvador 2004).

Export-oriented, the main import markets for soy meal and grains are located in Europe, specially the Netherlands; while the main importers of soy oil are



Source: Warken 1999

Figure 3.3. Soybean Production in the Traditional Region 1970 - 1995



Source: Warken 1999

Figure 3.4. Soybean Production in the Cerrado 1970 - 1995

China and Iran (see Table 3.3). The domestic consumption of grains is very small, concentrating the efforts of the internal market on soy oil and soy meal for animal feeding (Tables 3.4-A to 3.4-C).

**Table 3.3.** Soybean Complex: production, area, yield, imports, and exports, Brazil - 1996 to 2000

	1996	1997	1998	1999	2000
<b>Production (1000 t)</b>	23,190	26,160	31,370	30,765	31,887
<b>Harvested Area (1000 t)</b>	10,663	11,381	13,155	12,995	13,327
<b>Yield (kg/ha)</b>	2,175	2,299	2,385	2,367	2,393
<b>Imports (1000 t)</b>	1,106	1,151	1,051	741	913
Soybean	937	1,024	828	582	807
Soybean Oil	169	127	223	159	105
<b>Exports (1000 t)</b>	16,240	19,479	21,102	20,899	21,966
Soybean	3,646	8,340	9,288	8,917	11,517
Soy Meal	11,262	10,013	10,447	10,430	9,375
Soy Oil	1,332	1,126	1,367	1,552	1,073
<b>Main States Producers (1000 t)</b>					
Mato Grosso	4,687	5,721	7,150	7,134	7,463
Paraná	6,241	6,566	7,191	7,723	7,288
Rio Grande do Sul	4,402	4,770	6,616	4,764	5,356
<b>Exports/Main Countries (1000 t)</b>					
<b>Soybean</b>					
Netherlands	2,076	4,321	2,972	3,022	3,449
Spain	309	808	956	1,416	1,182
Germany	200	440	1,094	857	1,053
<b>Soy Meal</b>					
Netherlands	4,177	3,155	2,422	2,617	2,383
France	824	1,152	1,942	1,992	2,350
Germany	332	605	758	374	483
Spain	1,097	610	658	993	470
<b>Oil</b>					
Iran	177	168	637	772	322
China	780	501	183	121	63

Source: SECEX/MDIC; CONAB/MA 2001

**Table 3.4-A.** Brazilian Soybeans 1997 - 2003 (1,000 tons)

SOYBEANS	97/98	98/99	99/00	00/01	01/02	02/03	03/04
Beginning Stocks	450	360	624	459	429	341	294
Production	27,327	32,665	31,337	34,127	39,058	42,769	51,875
Imports	1,453	355	615	799	849	1,100	1,124
Exports	8,326	9,324	8,912	11,778	15,522	16,074	19,987
Crushing	18,944	21,832	21,645	21,578	22,773	25,842	27,796
Ending Stocks	360	624	459	429	341	294	1,124

Source: ABIOVE 2004

**Table 3.4-B.** Brazilian Soy Meal 1997 - 2003 (1,000 tons)

SOY MEAL	97/98	98/99	99/00	00/01	01/02	02/03	03/04
Beginning Stocks	408	361	417	438	460	358	622
Production	14,786	17,135	16,868	16,831	17,699	20,040	21,407
Imports	308	135	75	119	213	372	288
Exports	9,754	10,780	9,977	9,861	10,803	12,579	13,577
<b>Domestic Consumption</b>	<b>5,387</b>	<b>6,434</b>	<b>6,945</b>	<b>7,066</b>	<b>7,211</b>	<b>7,569</b>	<b>7,878</b>
Ending Stocks	361	417	438	460	358	622	862

Source: ABIOVE 2004



**Table 3.4-C. Brazilian Soy Oil 1997 - 2003 (1,000 tons)**

SOY OIL	97/98	98/99	99/00	00/01	01/02	02/03	03/04
Beginning Stocks	164	131	208	195	253	114	170
Production	3,559	4,157	4,142	4,111	4,369	4,959	5,349
Imports	154	190	133	111	66	110	47
Exports	1,064	1,444	1,468	1,148	1,639	2,076	2,402
<b>Domestic Consumption</b>	<b>2,682</b>	<b>2,826</b>	<b>2,820</b>	<b>3,015</b>	<b>2,935</b>	<b>2,936</b>	<b>2,962</b>
Ending Stocks	131	208	195	253	114	170	202

Source: ABIOVE 2004

### 3.3 Barriers for Small Soybean Farmers to Develop Market Circuits

For Brazilian farmers in general to compete fairly in the international market they have to overcome four main barriers: transportation costs, number of tax rates, concentration of power and scarcity of credit. Compared to international competitors' costs, the transaction costs are very high for cash crops produced in the country.

#### 3.3.1 Transportation Cost

The cost of transportation is extremely high. Trucks transport most of the raw beans, processed meal and oil. The cost of this kind of transportation is very high due to long hauls, poor roads and equipment shortages in post-harvest periods. Besides trucks, there are two other alternatives for transportation and neither seems any better. One is the use of the national rail system, which is not feasible. In some areas of Brazil the maximum speed the train achieves is 4 km/h. The other option is the use of the waterways, which is difficult due to the endless problems in the underdeveloped ports. Brazilian ports are high cost and plagued with labor problems. In addition, port logistical inefficiencies (i.e. long delays in loading ships) contribute to high transfer costs (Warnken 1999).

Aware of transport limitations in the country, the former Brazilian federal government, wishing to improve the transportation system and wanting to privatize the railroads, developed construction projects for a new rail system (Warnken 1999). Additionally, the same federal government planned the construction of a waterway in the Paraguay-Paraná River and a major port in the heart of the Pantanal (the world's largest wetland), which was very controversial due to environmental issues (Halwell 2000). However, neither one of the projects took place until the end of the last administration, year 2002.

#### 3.3.2 Tax Rates

The second big problem that farmers have to face in Brazil is the huge number of different taxes. Initially, there were supposed to be four (04) different basic taxes; an intrastate tax, two interstate taxes and an export tax. But, instead of only four tax rates, there are more than four hundred (400) different

taxes in Brazil (Warnken 1999). This large number makes it difficult to estimate the incidence and impact of the tax on specific agricultural products. Producers are receiving less for their products than they would in the absence of such outrageous taxation.

In 1996, the Brazilian federal government was aiming to restructure the economy, stabilize the currency and stimulate exports. Consequently, the federal government eradicated the state sales tax (ICMS) on primary and semi-manufactured products to export. The ICMS tax on exports varied from 5 to 13 per cent, depending on the area and commodity. This tax was one of the most important elements, along with an overvalued exchange rate, to start decreasing what has come to be known as the "Brazil Cost" (Custo Brasil), the difficulty Brazilian agriculture faces in competing on the world market (Smith 1997). This measure had a great impact on exports and pumped up the soybean sector, increasing soybean exports to a record of 8.3 million tons in 1996/97. In 1997/98, planted soybean area was forecasted to have grown 9 per cent. The removal of the ICMS it is said to have prompted this increase (Wainio 1988).

However, for the elimination of the ICMS, Brazil received a US\$ 41 billion IMF bailout and devalued the currency (Real - R\$), increasing the price of domestic Brazilian soybean by nearly 30 per cent (Krebs, 1999). As a market strategy, exporters started getting credit from foreign importers who charged lower interest rates than those inside Brazil. This guaranteed low-export cost, compensated somewhat for the lack of credit and insufficient storage and distribution in the internal market. But, not all farmers had direct contact with importers and could get those incentives. As a consequence, small family farmers were damaged by an opened market that stimulated the entrance of international agricultural products, which would compete at the same level as theirs. Because of the high tax rates inside the country, the prices of small farmers' products were higher than of the imported ones. One of the side effects of this was an increase in rural unemployment (Almanaque, 2000).

### **3.3.3 Monopoly of Power**

The third problem for farmers is that Brazil is known for large-producers' monopoly over power. Until 1995 the great properties, comprising at least 1,000 hectares, represented only 1.02 per cent of the total yet controlled 45.2 per cent of the area (Table 3.5).

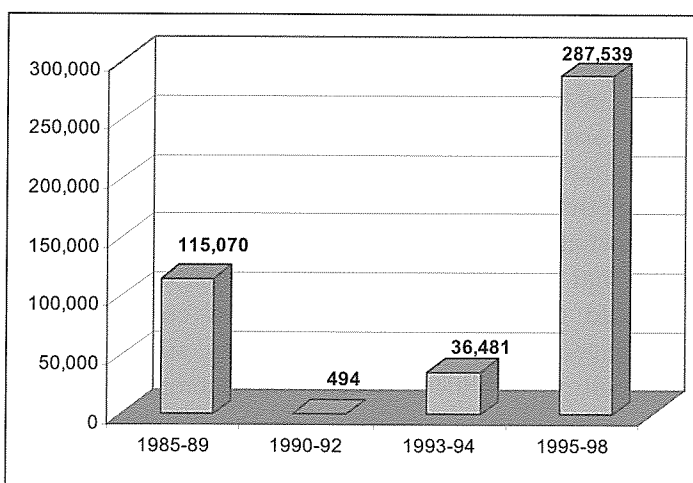
Around 2 per cent of the population owned two-thirds of Brazil's arable land, while 60 per cent of Brazil's farmland lay idle and 25 million peasants struggled to survive by working in temporary agricultural jobs (IBGE 1996). More than 3 decades before, in 1964, the Brazilian federal government, already trying to change this reality, edited the Estatuto da Terra (Land Statute), in an attempt to start a land reform and give land to around 500 thousand potential small family farmers. This statute only took effect in 1985 and by 1995 the government had

**Table 3.5.** Number of Farms and Acreage, by groups of farm sizes, in percentage – Brazil 1980, 1985 and 1995

Farm Sizes (ha)	1980		1985		1995	
	Units %	Area %	Units %	Area %	Units %	Area %
Less than 11	50.35	2.47	52.83	2.66	49.43	2.23
From 10 to 50	31.49	10.18	29.68	10.52	31.2	9.97
From 51 to 100	7.58	7.5	7.55	8.04	8.24	7.76
From 101 to 500	8.33	23.74	7.89	24.13	8.47	23.57
From 501 to 1000	1.12	11.01	1.03	10.92	1.2	11.36
More than 1000	0.92	45.13	0.87	43.74	1.02	45.2

Source: IBGE 1996

given land to 60 per cent of these families. The plan for 1999 was to give land to 85 thousand families, however, by October 1999, only 44.6 thousand families had received land (Almanaque 2000). To some extent land reform is taking place in Brazil (Figure 3.5), but there are many limitations that slow the process down.



Source: INCRA 1999

**Figure 3.5.** Settled Families (Land Reform) 1985 – 1998

### 3.3.4 Scarcity of Credit

The fourth most important problem for producers is scarcity of credit. This scarcity and the high cost of credit forced a change in the way agriculture is financed and how it interacts with the agro-industry. Because the federal government has increasingly reduced funding for subsidized credit since the 60s, farmers were finding harder to rollover their debts during the 90s. Rates for the agricultural sector and interest rates were lower than market rates, but banks became more selective when making new loans for farmers.

In order to increase availability of rural credit and stimulate small-scale food production, in 1996 the federal government changed its assistance. Instead of

giving money to the banks, which would give loans to farmers, gradually the federal government increased the use of the equalization system (a kind of economic subvention). Through this interest rate, it became more viable for financial institutions to grant loans to the rural producers at rates established by the National Monetary Council, using funds collected from savers. The idea was to provide loans to farmers based on money collected from the market and at the risk of financial institutions, avoiding pressures for governmental discontinuance if loans were based on government funds (Sobrinho 2001).

Nevertheless, although the government support was an important contribution to financing farmers, it was far from attending the demand. There was still need for more specific assistance. With all the logistic problems previously mentioned, even the loans given by the Brazilian federal government did not substantially diminish the Brazil Cost (*Custo Brasil*). Transaction costs were high and to get a worthwhile profit in the international market a farmer had to grow crops on an increasingly larger scale.

As such, as long as those four barriers persist and the Brazil Cost still high, the development of new technologies, programs and policies are unlikely to change or to improve the economic condition of small-scale cash crop farmers. In the short run, commodities seem like an unattractive alternative for small family farmers.

### 3.4 “Addiction” to Cash Crops: Small Family Farmers’ Dependency on Commodity Production

For some adverse reasons, a great number of small-scale farmers want to keep on growing soybeans in Brazil. This happens because cash crops have many characteristics that attract farmers (Dorward et al, 1998): i) they are high-valued; ii) they are handled through concentrated marketing systems; iii) they are internationally tradable, such that their domestic price is closely linked to a world market price. The economic risks of planting soybeans are far smaller than of a common staple crop (i.e. black beans) and its production has an expected potential to be a major source of income. In addition, the World Bank and some authors (Govereh 2003) argue that there is a *complementarity* between food and cash crop production, recognizing some contributions that cash crops can make to agricultural development, convincing small farmers that growing soybeans are not only good economically but also helps the development of the country.

In the paper of Govereh (2003), the author explains that there is non-separability between crop choice and access to inputs and training and other investment decisions that need to be considered in understanding the implications of agricultural commercialization strategies. From the author’s point of view, cash-generating crops can help farmers overcome lack of capital on the purchase of assets and inputs, which can be used to expand food crop as well as cash crop

production. However, this is not necessarily the case in Brazil. As de Janvry (1981) explains in his work, the existence of both limited natural resources and a limited public budget implies that there is competition between the production of food for domestic consumption and that of agricultural products for exports. In Brazil, the development of soybean production for exports led to the massive displacement of black beans, a staple in the Brazilian diet.

Furthermore, because policies for increasing exports held back the development of policies for food self-sufficiency and staple production, the Brazilian federal government created huge dependency on small family farmers for commodity production. For decades, the export market has been a major priority in the country. As a consequence, small family farmers became “addicted” to commodities and it is becoming increasingly difficult for them to stop growing it. In addition, soybean became a symbol of prosperity. The golden crop is easy to plant, easy to grow, easy to harvest and the market is paying relatively good money for it.

However, as the federal government should know, the fluctuation in the prices of primary commodities on the world market generates certain instabilities for soybean (see chapter 1). The profit acquired from commodity production is not reliable. Small-soybean farmers in Brazil may be in an imminent economic crisis. In Argentina, for example, the increase on soybean production has been accompanied by massive increases in hunger and malnutrition, even though the country was long accustomed to produce 10 times as much food as the population required (Joensen & Semino 2004). According to Lilian Joensen and Stella Semino (2004), the production of soybeans has expanded from 5.9 million in 1996 to 10.3 million in 2000/01 and 14.1 million in 2003/04 (almost 97% of which is genetically modified), while the percentage of the population below the poverty line rose from 12% in 1980, 30% in 1998 and 51% in 2002. Undernourishment among infants is between 11% to 17% and rising. The authors explain that the export model seriously threatens food sovereignty in Argentina. Mixed farming (with animals and crops) receives no support from the government. Soybeans have replaced the production of food staples, which are now being imported at high prices for consumers.

In Brazil, like in Argentina, soybean production should not replace or destroy the production of staples. The Brazilian federal government should foresee possible problems when further stimulating soybean production for exports. As Aristotle (cited in Polanyi 1944) would insist on his work: *...production for use as against production for gain as the essence of house holding proper; yet accessory production for the market need not destroy the self-sufficiency of the household as long as the cash crop would also otherwise be raised on the farm for sustenance, as cattle or grain; the sale of the surpluses need not destroy the basis of house holding.* The market and the profits derived from the production of a commodity like soybean should be a plus point to a self-sufficient household, not the

substitution of it.

Before further changes in policies, further financial assistance or incentives to change agriculture in Brazil (i.e. development of new technologies), small family farmers need to be aware of the facts surrounding the production of a cash crop like soybean. Small family farmers should be informed of consequences of mono cropping and intensification of agriculture (in Argentina, for example). And, here it is important to emphasize that, to bring this consciousness to farmers doesn't simply imply on "educating" them like it was done during the 60s. More than "trained", they need to develop a more critical thinking style, they need to know about the reality of farmers who only grow commodities, other opportunities available for them instead of soybeans; and probably most important of all, small family farmers need to be reintegrated to their rural communities in order to receive support and sustain changes.

### **3.5 Need to Re-evaluate Policies and Programs for a More Sustainable Development**

It is not simple to get small farmers out of commodities and back to food production. As Jules Pretty suggests (1995), the social costs of modernization of agriculture were high; commoditization of agriculture had consequences on farmers' social fabric. There has been a decline in the number of jobs available for local people, as agriculture has increasingly substituted external inputs and resources for internal ones. Decision-making has been taken out of the hands of farmers and local institutions; standardization has reduced the range of managements skills needed. There has been a breakdown of the social structure of rural communities. And, it will take a long time to rebuild it all.

If the actual federal government, through Zero Hunger project (see chapter 2), is expecting small-scale farmers to stop growing commodities, start growing food and act locally, there is an ever-increasing need for the reconstruction of rural networks. The success of changing from soybean monoculture to a more sustainable agriculture highly depends on actions taken by local groups and communities as a whole. Just developing new policies or making individual farmers aware that sustainable agriculture can be as profitable as cash crop production will not be sufficient. What is also required is an increasing attention to community-based action through local institutions. And, at the small-scale farm level, decisions and actions oriented towards sustainable development are not likely to be long lasting unless they are coordinated with what other farmers are also doing (Pretty 1995).

Previous Brazilian federal governments suffocated farmers' organizations and local institutions during agricultural modernization. These federal governments have on many occasions substituted the local management for governmental institutions, leading local people to an increased dependence. Local information networks have been replaced by research and extension activities, banks and

cooperatives have substituted for local credit arrangements; and cooperatives and marketing boards have been replaced by input and product markets. These interventions from the federal and state governments, sometimes alleged as necessary, were responsible for weakening local networks. Time and again the federal and state governments have suffocated local proposals and responsibility or diverted local initiatives and resources for purposes other than developing the local rural areas.

For a new rural development to take place, the Brazilian federal government has to be more concerned about small family farmers and develop programs focused on their needs. These programs should not be rushed on presenting immediate results, but on succeeding on assisting small family farmers and their communities on building up leadership in the localities. Success should be measured in terms of developing social relations and institutional strength. If this is done, local groups will become stronger and more self-reliant, improving the livelihoods of their members and the reality of their communities.

### **3.5.1 Adapting Policies to Better Assist Small Family Farmers**

#### **3.5.1.1 PRONAF - National Program for the Strengthening of Family Agriculture**

The Brazilian federal government has to be more active on its participation, enabling rural development. Not working alone but in partnership with the local communities and the private local sector, the federal government should first develop some strategies based on reducing the Brazil Cost (Custo Brasil). Based on Dorward et al (1998) a number of governmental actions may be important: i) review and removal of legislative impediments to the development of private property rights and enforceable contracts; ii) the provision of coordinating activity where this would be helpful; iii) the discouragement of tendencies to monopolistic contractual forms, where analysis shows these to be harmful; iv) policy intervention based on an understanding of the critical role of asset-specificity in the development of some markets; v) discovery and dissemination of information on “best practice”, because much institutional innovation is taking place at local level in environments where information moves slowly. Based on these five actions, the actual Brazilian federal government should adapt existent policies and programs to enable small farmers place for maneuver for the development of their own local arrangements.

Already on going in Brazil, some projects developed by former federal governments are achieving some good results related to the inclusion of small family farmers on food production and other practices (i.e. fishing). One of the most successful programs developed on the last decade is PRONAF (Programa Nacional de Fortalecimento da Agricultura Familiar).

This on going program has as its main strategy to gradually include small producers in commercial agriculture through financial assistance. Adopting the

annual family gross income as a parameter, the program classifies its beneficiaries into five different groups (see Table 3.6), each one under specific conditions and loan limits (PRONAF 2004).

**Table 3.6.** PRONAF - Groups of Beneficiaries

GROUP	Beneficiary	Investment	Finance
<b>A</b>	Settled farmer- land reform	R\$ 13,500 to be paid in 10 years	
<b>B</b>	Income from R\$ 2,000/year	R\$ 1,000 to be paid in 2 years	
<b>C</b>	Income between R\$ 2,000 to R\$ 14,000/year	R\$ 5,000 to be paid in 8 years	R\$ 2,500 to be paid in 2 years
<b>D</b>	Income between R\$ 14,000 to R\$ 40,000/year	R\$ 18, 000 to be paid in 8 years	R\$ 6,000 to be paid in 2 years
<b>E</b>	Income between R\$ 40,000 to R\$ 60,000/year	R\$ 36,000 to be paid in 8 years	R\$ 28,000 to be paid in 2 years

Note: In 2004 R\$ 3,00 was roughly equivalent to US\$ 1,00.  
Source: PRONAF/SAF/MDA 2002

Until 2002 however, PRONAF was limited by its main existing purpose. As it was developed not only to support small family farmers but also rural workers, more people started applying for it. As a result, this program, which was supposed to be a solution for monetary needs, increased the dispute over financing. As a matter of fact, small farmers who wanted to get a loan through PRONAF until 2002 had to wait

**Table 3.7.** PRONAF - Number of Contracts

Region	1999	2000
	No. of Contracts	No. of Contracts
North	20,177	40,139
Northeast	178,437	239,169
Southeast	93,950	111,409
<b>South</b>	<b>486,673</b>	<b>541,246</b>
Cerrados	24,153	33,882
<b>Brazil</b>	<b>803,390</b>	<b>965,845</b>

Source: Minister of Agrarian Development, 06/06/2001

around 6 months to receive it and the amount of money was usually not enough to solve their basic needs. In addition, although PRONAF was directed at small farmers who had no access to formal banking systems, in practice, as shown in Table 3.7, the program served the more organized farmers in the South-Central region of the country (David, 2000). Although the program helped and still helps Brazilian farmers to some extent, it was not solving the problem of scarcity of credit.

In response, since the beginning of Lula's administration in 2003, the federal government has tried to improve PRONAF's lines of credit. Major revision in the program was made to improve access. First, the federal government is combining the PRONAF funds to the Zero Hunger Program (see chapter 2) for food production. Small family farmers who grow the five products of PRONAF Alimentos - rice, beans, corn, cassava and wheat - will be guaranteed the purchase of their production if the market doesn't absorb it all. The intention is to sell these products in the local market combined with the goals of Zero Hunger. Small family farmers who choose to grow these crops for the program will



receive 50% more credit. Second, paying a minimum equivalent of R\$ 2,500 (an estimated US\$ 800) for each farmer or group, the federal government is encouraging the production of food and the alliance between small family farmers. Third, in an attempt to encourage the strengthening of small farmers relations in the rural communities, priority will be given to small family farmers who are working in partnership with other farmers (in a cooperative, for example).

Besides PRONAF Alimentos, there are other 09 lines of credit for different kinds of farmers' groups, as shown on Table 3.8. In 2004 the federal government approved a sum of R\$ 5.4 billion (an estimated US\$ 1.8 billion) to support family farmers. With this amount of money, the number of contracts of PRONAF was

**Table 3.8.** PRONAF - New Lines of Credit (2004)

<b>PRONAF</b>	<b>Beneficiary</b>
Alimentos	Staple producer (rice, beans, cassava, corn, wheat)
Semi-Árido	Farmers who live at the semi-árido region
Mulher	Women
Jovem Rural	Youngsters
Pesca	Fishermen
Florestal	Farmers with environmentally friendly management
Agroecologia	Agroecological farmers
Pecuária Familiar	Farmers who raise cattle, sheep and goat
Turismo Rural	Farmers who want to use their properties for rural tourism (restaurants, hotels)
Máquinas e Equipamentos	Farmers who want to purchase machinery

Source: Jornal da Agricultura Familiar, Ministério do Desenvolvimento Agrário (MDA) 2004

expected to increase from 970,000 to 1,400,000 during this same year.

However, with PRONAF combined with Zero Hunger, the question lays on the ability of small-scale producers to adapt their production for the development of food products to be locally consumed. As Zero Hunger project was developed to stimulate small family farmers to grow staples and increase job opportunities, PRONAF should be used to financially support farmers to grow food for the local market. However, there is no pre-condition or contract for the local selling of such products. Small family farmers may not necessarily sell the production in the locality. Small family farmers may grow corn for the local cooperative that will export it, for example, nullifying the attempt to stimulate the local market and rebuild rural communities.

Grown as cash crops by small-scale farmers, commodities like corn and wheat, included in PRONAF Alimentos, are most probably still seen as an investment with guaranteed profit return. As such, even though the federal government is investing a great sum of money and stimulating small family farmers to grow staples through PRONAF, it is questionable if small family farmers will actually stop intensively growing commodities and embrace a more diversified farming style.

### 3.5.1.2 Enforcement of Existing Technical Assistance and Rural Extension Services

Betting on strengthening the already existent technical assistance and rural extension service (ATER) to stimulate small farmers to grow food crops, the federal government presented in November 2003 the final version of its proposal for a more sustainable rural development (MDA, 2003). Developed by the Ministry of Agrarian Development (MDA) and the Secretariat of Family Agriculture (SAF) this new policy is projected to enhance institutional actions aimed at the execution and consolidation of strategies developed to promote sustainable agriculture, increase revenue and create new jobs. The federal government will make use of the existing local organizations linked to the governments (i.e. GEAGRO in Maranhao and EMPAER in Mato Grosso do Sul), the reminiscent EMATERs, and local NGOs (i.e. ASA and Sabia). The aim is to make use of groups that are already involved in local changes and are familiar to each local reality. It is expected that the specific changes implemented in each rural area will be of proper use.

The involvement of each institution and organization may occur in a democratic way, where participative methodologies may be used and Paulo Freire's humanitarian constructivist pedagogy adopted vis-à-vis community reality. The extension service applied might incorporate in its actions and intervention a holistic approach, articulating locality, the community and its territory to the strategies that lead to rural sustainable development and to a transition for sustainable farming styles. The national coordination of public ATER will be directed by the Ministry of Agrarian Development (MDA), through the Department of Technical Assistance and Rural Extension (DATER) of the Secretariat of Family Agriculture (SAF). Thus, DATER will organize the structure for the coordination, execution, administration and evaluation of the decentralized actions of ATER (MDA, 2003).

As an attempt to stimulate these changes even further, the federal government is giving tax exemption for staples that are being produced for the internal market. Already approved by the Chamber of Deputies, the Projeto de Lei 244/03 foresees fiscal benefits for: unrefined sugar, rice, beans, corn, egg, milk, fruits, vegetables, cassava flour, maize flour, meat and animal fat. The main goal of this project is to foster food production, diminishing the costs for producers and consequently furthering access of impoverished consumers to food (Informativo 779, 2004).

### 3.5.2 Some Contradictions of the Federal Government Policy: The Approval of GMOs

The federal government under Lula's administration seems extremely focused on programs concerning small family farmers who are expected to produce food for the local market and eradicate hunger; however, contradictorily

to all these measures, the same federal government approved the plantation and commercialization of GMOs. Through the Medida Provisória (MP) 131 published on the 26<sup>th</sup> September 2003, it became legal to plant and commercialize GM soybean inside the country until December 31<sup>st</sup>, 2004. Later on, this measure was extended until January 31<sup>st</sup>, 2006 with another MP signed on October 14<sup>th</sup>, 2004.

Even though the federal government states that this measure is been taken actually to help small family farmers who have been smuggling GM seeds from Argentina, this action alone goes against any attempt to give incentives for small family farmers to stop intensively growing commodities and revitalize agriculture. The actual biotechnological products (i.e. Roundup Ready and Bt Cotton), designed to improve production on industrialized farms, are being marketed to small farmers as indispensable tools to increase yields, reduce the use of herbicide and ease farmers' work. In sub-Saharan Africa, for example, Bt cotton is been considered a success for small family farmers (Bhattacharya 2003). With increases on yield up to 129%, the farmers (60% women) said that they were satisfied with the increase and that fewer seeds were needed, saving labor and reducing pesticide poisonings. However, researchers note that the Bt cotton-seeds are twice the price of conventional ones and that the contracts small farmers are signing prohibit them from keeping seeds for subsequent years, limiting the success of these results for 3 or 4 years (Bhattacharya 2003; Myers 1999). In Argentina, as another example, as almost no labor is required for directly sown GM soybeans, small farmers cannot afford the massive machines used for the direct drilling technique and many people have sold or rented their land and left for slums in the cities (Joensen & Semino 2004).

Proponents of GM technology in Brazil (i.e. CTNBio and ABIA) suggest that, even though there are still so many uncertainties concerning different aspects of GMOs, the utilization of GM seeds have great potential and can offer real benefits to agriculture and health, increasing the quantity of food, among other benefits (i. e. decrease the amount of herbicide). The huge publicity and marketing strategies in favour of GM seeds are pushing Brazilian small family farmers to adopt the new technological package and keep on growing commodities (Altoe 2001). Scientists, government officials and multinationals' representatives often speak out about how this new technology will perform in the best interests of farmers. Yet, policies and biotechnologies directed towards small family farmers are rarely implemented, and actual benefits to them remain unknown.

If the actual federal government keeps on developing programs to stimulate small family farmers on growing food for the local population at the same time as approving the legalization of GM crops one action will most probably outshine the other and small family farmers will tend to keep on growing commodities. This can be foreseen for a simple reason: small family farmers are used to grow commodities and sell them to the local cooperatives; changing production and trying to find new markets are quests that will most probably be avoided if small

farmers can. Even though production of food is attractive to small family farmers, changing agricultural practices is very frightening; the risks are often very high. The losses on the first years are enormous as a result of lack of knowledge. It is easier to keep on growing a cash crop they are already familiar with.

Having said that, small family farmers shouldn't receive incentives to simply "go local" and produce food crops. Too "addicted" to cash crops and specialized on production of commodities for the export market, small family farmers nearly lost their connection to rural communities and practically lost track of the internal market. For this reason, the local networks are in need to be reconstructed, before any local market-oriented strategy takes place. Instead of focusing on programs to solely stimulate production, for the local or external markets, the federal government should invest more on rebuilding with small family farmers their social structures. Once farmers are more knowledgeable of the local arrangements, they may gradually learn about local markets, directing changes to meet the interest of local consumers and communities.

### **3.6 Concluding Remarks: The Need to Rebuild the Rural Social Fabric and Increase Food Production**

The Brazilian federal government has along the years developed policies to increase commodity production for the export market. Setting aside staple crop production and small-scale farming, food production has been disregarded. Small family farmers have received incentives to grow commodities and became "addicted" to the easy production. Until year 2004 contradictory policies have been taking small-scale farmers away from food production while stimulating commodity production.

Confused and limited by their poor market circuits and rural social fabric, small family farmers are in a crossroad. On one hand, the federal government is developing policies to stimulate staple production and diversification of agriculture; on the other hand, it legalized plantation and commercialization of GMOs, indirectly stimulating small farmers to keep on growing the export commodity.

Distant from their own local communities, small-scale farmers are unaware of the numerous possibilities of production for the local and niche markets. Already used to the easiness of exporting conventional soybean, small farmers lack knowledge about their locality and the variety of market opportunities available. For the achievement of a sustainable rural development, small family farmers are requested to be reconnected to their local arrangements and find opportunities within the local communities.

## Chapter 4

### **Local Responses to External Realities and the Need for Institutionalized Support: The Analysis of Case Studies in Rural South Brazil**

#### **4.1 Introduction**

Other than simply going for the local market, small family farmers are in need to increase their awareness over the importance of community-based actions through the work of local organizations and institutions. Without the reconstruction of small farmers' local social fabric, strategies for the local market may not succeed. For a sustainable rural development to actually take place, small family farmers and rural communities are required to work together.

Across time, the relationship between small family farmers and rural communities has deteriorated. The need to overtake the local arrangements is essential for the development of sustainable market circuits. Before the intensification of agriculture, local actors have worked together on resource management, labor sharing and trading. Formal and informal groups, such as cooperatives, church groups, mothers' groups and local foundations constantly got involved in numerous activities in order to support farmers. In this sense, farming has been at least a partially collective business where communities contributed for the success of rural changes (Pretty, 1995). This involvement of local actors should be reorganized and local opportunities enhanced.

Local opportunities vary according to individual actors and their diverse socio-economic settings. In this chapter some local organizations and their market strategies will be looked upon more closely while the need for the revitalization of rural communities will be discussed. Based on concepts and theories of rural development, this chapter aims to address small farmers' prospects and their responses to market opportunities. While it is becoming increasingly difficult to remain disassociated from the processes of globalization and intensification of agriculture, the work of local organizations seems exceptionally challenging and in need of greater support.

#### **4.2 The Basis for a Sustainable Rural Development: A Theoretical Survey**

Analyzing some schools of thought in the search for the one that most suitably defines rural development, the one chosen was the one of Wageningen School. Controversially, Van der Ploeg and his colleagues (2000) recognize the term as a multi-level, multi-actor and multi-faceted process rooted in historical traditions. At all levels identified by the authors, rural development has emerged as a series of responses to the earlier paradigm of rural modernization.

Based on reconstructing relationships in the localities and reorganizing rural communities for the achievement of rural development, this theory seems not to be solely about the creation of a new reality in the countryside but more likely about the combination of recently emerging and historically embedded realities. In this line of thought, rural development is about the interweavement and improvement of networks, the revalue of natural resources and the improved use of social, cultural and ecological capital. In order to make rural development possible, the use of existent networks and the knowledge acquired by communities throughout the years become indispensable.

According to this school of thought, the combination of the use of farmers' knowledge and their local (re-valued) inputs may enhance not only the valorization of what is already familiar to them but also the valorization of locality as a whole. Combining the local knowledge to the existence of a growing global market as a unit, farmers may learn how local and global processes are impacting upon their farms and rural communities as well as the extent to which those processes provide the basis for a more sustainable rural development. This knowledge is essential for small farmers in rural South Brazil because the great majority of them are still growing soybeans or other commodities (i.e. coffee) to export.

Perhaps as a result of the controversial nature of the term global and its trends, however, it still remains unclear the relationship between the existent market opportunities and the viability of local communities (Almas 2003). For this reason, to strengthen the discussion on sustainable rural development, instead of separating the local possibilities from the global structure, the proposal is to accept globalization as coupled with the idea of localization (Long 2001).

Long (2001) suggests that patterns of agricultural development are subject to the combined effects of globalization and localization; that is, local situations are transformed by becoming part of wider global arenas and processes, whilst global dimensions are made meaningful in relation to specific local conditions and through the understandings and strategies of local actors. This produces a variegated pattern of responses, with some farms or production sectors orienting themselves towards producing for international markets, while others increase their commitment to local consumption and distribution markets. The author also adds that the relationship between global and local dynamics is especially important for understanding the management of agro-ecological resources.

Another author that suggests that it makes no good sense to define the global as if the global excludes the local is Roland Robertson (1995). Robertson maintains in his work that *the global is not in and of it counter posed to the local. Rather, what is often referred as local is essentially included within the global.*

Based on the discussion of these authors, local practices are in need to make constructive actions with the global market. Not only because the local has to be perceived within the global but also because the reality of small family farmers

in South Brazil comprises both production for the local market and exports. "Addicted" to the production of commodities (see chapter 3) and unaware of the opportunities in a already forgotten local market, small farmers cannot simply change their farming style from global to local without greater knowledge of the entire picture. For rural development to be sustainable it needs to come as a reconsideration of the multiple and heterogeneous realities of the local rural life within a global structure.

However, many of these local realities have been neglected or forgotten, perceived as insignificant within the intensification of agriculture. In order to reconsider such realities and revive relationships between farmers and local communities, community members should want to get more involved in the farming process. Projects developed by external institutions (i.e. World Bank and NGOs) are important for the reconstruction of local relations, but local communities have yet an undeveloped consciousness about rural reality that will continue to be undeveloped until they attain a collective awareness indispensable to articulate an effective confrontation to the entire food production system (Pretty 1995).

In the areas researched, the relationship between farmers and local communities is so deteriorated that for both sides to learn about their mutual interests, it becomes essential the involvement of a facilitator to stimulate communication and attain a collective awareness of the heterogeneous rural realities. Aware of this necessity, Peter Houtzager (2001) acknowledges the involvement of an institutional host. Defined by the author as elite actors, institutional hosts stimulate and support group formation and go beyond the traditional role of movement allies. Hosts draw unorganized peoples into their organizational and ideological fields, help redefine their social groups and sponsor their constitution as new collective actors. Such elite actors therefore have a significant impact on the identities and organization of hosted actors. The degree of autonomy such actors are able to negotiate from their hosts varies over time according to broader political regime dynamics.

### **4.3 Four Case Studies**

Strategies led by the desires of local organizations in partnership with small family farmers and communities may be profitable, but as it will be demonstrated, limitations are also apparent. The call for a wide-ranging support from an institutional host is essential on stimulating the reconstruction of small family farmers' social fabric and local networks. By analyzing four case studies in rural South Brazil, the attempt will be to present different alternatives in the localities and the need to improve the contribution of those local organizations. Working as a collective business, farmers and organizations are finding alternative market circuits that may be enhanced with proper assistance.

Based on field surveys conducted on August 2000, December 2001, July 2002

and May 2004, supplemented by literature reviews, three types of local responses will be presented: i) managing to survive by integrating to the mainstream technological paradigm and the global market (Agricultural Cooperative of Integrada, Paraná); ii) seeking to differentiate itself as a niche but still within the export market (Agriculture Cooperative of Cotrimaio, Rio Grande do Sul); iii) the well-intentioned activities of NGOs and community groups to keep farmers away from the external market, finding opportunities in the locality (NGOs in both Paraná and Rio Grande do Sul).

#### **4.3.1 The Agricultural Cooperative of Integrada: the choice for the conventional soybean market**

In response to external constraints and opportunities in the export market, a cooperative in Paraná state developed a strategy within the conventional soybean market. This strategy was developed because, even in this southern state of Brazil where great number of small family farmers live, there are increasing numbers of middle and large sized farmers who have been aggressively adopting new technologies (i.e. machinery) to industrialize farming. Not only agricultural cooperatives but also subsidiaries of TNCs are creating business by linking localities directly with the conventional world market. A typical example is the case of the agricultural cooperative of Integrada (Cooperativa Agropecuária de Produção Integrada do Paraná).

This agricultural cooperative is one of the successors of the agricultural cooperative of Cotia (Cooperativa Agrícola de Cotia), which was founded by Japanese immigrants in the 1920s and had grown to become one of the largest agricultural cooperatives in Brazil until the head-office was dissolved in 1994. Initially, the purpose of establishing Cotia was to protect the member-farmers from the whims of the market and to improve their livelihood. However, as it is often the case with agricultural cooperatives during periods of economic growth, its original aim receded into the background as business grew. The more successful it became, the more the pursuit of business became profit-oriented (Corum et al 2001). Although the deterioration of the Brazilian economy accompanied by the drastic change of politics is considered the direct cause of Cotia's failure, it is more likely that its dissolution occurred due to the huge amount of debt produced by its expansionists' business style.

According to Tanaka (2002), the trajectory of Integrada mirrors the later stage of Cotia rather than embracing a legacy of early dates (i.e. decentralization and bottom-up producers' activities). As a successor, Integrada has become the largest agricultural coop in the northern Paraná, where a relatively large number of middle-scale farms exist. The coop members' average farm size is around 100 to 200 hectares.

Integrada's main business is the marketing of crops, including soybeans, wheat and corn. Among them, soybeans' share of total sales is around 60



**Table 4.1.** Five-year Summary of Integrada's Marketing Business (R\$1,000)

Year	1996			1997			1998			1999			2000							
	Volume	/96	Sales %	Volume	/96	Sales %	Volume	/96	Sales %	Volume	/96	Sales %	Volume	/96	Sales %					
Soybean	125,523	100	31,627	64	175,782	140	52,037	57	184,797	147	43,646	47	214,260	171	60,961	49	232,137	185	69,826	62
Wheat	74,353	100	4,237	9	103,659	139	20,053	22	133,156	179	24,242	26	101,235	136	23,397	19	37,775	51	16,109	14
Corn	55,648	100	5,827	12	88,942	160	10,003	11	102,947	185	14,298	15	136,943	246	23,420	19	85,795	154	17,587	15
Cotton	17,387	100	4,335	9	8,700	50	1,498	2	13,016	75	4,241	5	11,239	65	5,643	5	13,046	75	5,019	4
Others	4,991	100	3,690	7	7,886	158	8,410	9	8,702	174	5,894	6	7,532	151	10,185	8	4,878	98	4,973	4
Total			49,716	100			92,001	100			92,321	100			123,606	100			113,514	100

Source: Integrada, Relatório Anual de Atividades 1997-2000.

percent. The volume of soybean marketing constantly increased during the period of 1996 to 2000 (Table 4.1). About 90 percent of the main crops are sold to transnational grain trading companies such as Cargill, through the Chicago Trading Market, and about 30 percent of soybeans are traded at the futures' market through these companies (Tanaka 2002). As for the purchasing business, it is worth noting that sales of agrochemicals and fertilizers have increased more than fourfold during the period between 1997 and 2002. Meaning they are still following the mainstream path for the modernization and intensification of agriculture.

Also as a possibility of furthering the intensification of agriculture (Lewontin 2000), transnational corporations like Monsanto have been promoting the utilization of genetically modified soybeans in Parana through agricultural cooperatives. Regarding GMOs, Integrada had no particular vision at the time the interview was conducted with its executive staff members, in August 2000. They stated that the production of GM soybeans in the region would be more than half of the total cropping area in a few years. They also said whether farmers would adopt GMOs or not would depend on the extent to which this technology would reduce their production costs. The staff understandably expressed their concern about external market trends; however they did not show any strategy for coping with this issue. This was despite the suggestion of market consultants connected to the cooperative saying that it would be possible to segregate non-GMOs from conventional soybeans (including GMOs because they are not officially handled as such) due to the close relationship between the cooperative and member farmers (ACP 2000). Rather, it seemed that they took the dissemination of GMOs for granted as an inevitable path for the intensification of agriculture. Subordinating their business to the world market order is a rational and acceptable option for them. So long as TNCs keep purchasing their products, the agricultural coop and its member farmers do not need to concern themselves with GMO issues. This is still one probable response for local agents to survive the international harsh competition under globalization: to accept what happens at the global level.

Locally based, the agricultural cooperative of Integrada has played a symbolic role as the leading institution of agricultural modernity in its region in

Paraná. This role is reflected in the relationship with its community and its influence with member-farmers. Successor of one of the richest cooperatives in Brazil, Cotia, Integrada is the basis of the region's revenue. However, excessively relying on mainstream agriculture and lacking strategic room for maneuver, this cooperative seems doomed to follow the same path as Cotia. Perhaps because of an elderly ruling staff or perhaps because of a tendency to try to repeat former rules for success, the leading strategists in Integrada seem to be seriously concerned about the external market but not with a strategy that will favor local small farmers (as it is going for the mainstream market). If the staff members continue to stimulate conventional (and/or GMO) production in the local region aiming for the broad export market, Integrada may soon meet numerous obstacles to keep on succeeding. Working only with conventional (and GMO) production, this cooperative is choosing for a very competitive market, where it will be on the same footing as TNCs and Argentinean and U.S. American soybean growers.

#### **4.3.2 The Agricultural Cooperative of Cotrimaio: organic agriculture as a profitable possibility**

As a market strategy, organic soybean production would be one valuable option to help small farmers to find a profitable niche market. In Brazil, organic soybean production started as an isolated initiative in some regions, especially in the southern states - Paraná, Santa Catarina and Rio Grande do Sul (Fonseca & Feliconio 2000). Although commercial production is still very limited, growth of organic farming was estimated to be around 20 percent per year during this decade (USDA 2002). In 2001, the survey conducted by BNDES (Banco Nacional de Desenvolvimento do Extremo Sul - Brazilian Development Bank) already recorded 12,590 organic farms cultivating 203 thousand hectares of certified and in-conversion farmland (Neves et al. 2001).

This interest for organic production may come from growing concerns of consumers about food safety and environment problems other than small farmers' interest on the production style. The number of supermarket chains interested in commercializing organic products has recently increased, creating steady market opportunities for organic foods in Brazil (USDA 2002). Here it is important to highlight that one of the key elements defining sustainability of alternative practices lies on the reliance on consumption patterns (Miele 2001).

According to farmers interviewed, though, for the first years organic farming requires harder work than conventional farming, while productivity seems to be about the same. Pest and weed control have to be done without chemicals; fertilizer has to be organic; and several other requirements have to be fulfilled for organic certification.

In spite of these factors, other recompenses are contributing to an increasingly interest on organic farming. Because of the extreme high cost of conventional

agricultural inputs in Brazil, farmers' benefit from the reduced production costs with organic products and the attractive prices tend to compensate for other existent disadvantages. With high prices being offered on the external market, already some agricultural cooperatives are dealing with organic soybeans. Among them, the agricultural coop of Cotrimaio (Cooperativa Agropecuária Alto Uruguai) represents a remarkable example of agricultural cooperatives. Cotrimaio is a large cooperative, consisting of about 10,000 farmers with more than R\$ 213 million (an estimated US\$ 71 million) sales in 2003 (Cotrimaio, 2003). This cooperative, located in the city of Três de Maio, RS, is attentive to the increasing demand in Europe and United States for organic and GM-free soybeans.

However, because of the instability of the organic market for soybeans, the agricultural cooperative is facing some troubles. As shown in Table 4.2, in the year 2000/01, the cooperative produced 74,000 tons of non-GMO and 750 tons of organic soybeans (including 500 tons of 'transitional' organic) in contrast to 24,000 tons of conventional soybean that may contain GMOs.

By 2003, because the federal government approved the sowing and commercialization of GMOs, the production of conventional and GM soybean rose in the area and in that same year the amount of soybean purchased by the cooperative was of more than 2 million bags where less than 0.8 per cent was of organic soybeans.

Also because of the legalization of GMOs in Brazil the agricultural cooperative lost its business connection in France. Since 1998 Cotrimaio was developing in association with French cooperatives and the French Ministry of Agriculture a program called OPTIMA. In this program, Cotrimaio would guarantee GM-free soybeans to the French market through the use of a traceability system. Certified by the ECOCERT from the European Union, the cooperative in Tres de Maio would pay 3.5 times the price of normal soybean for farmers who would deliver non-GM soybeans. However, when the Brazilian federal government approved the sowing and commercialization of the GM seeds, the negotiations stopped and the program was off.

Despite the failure of commercialization of organic soybeans during year 2003, the coop kept on working closely with farmers, sending technical consultants to help them understand how profitable it can be to become organic and to sell their crops in the international market. In the beginning of 2004, the cooperative was trying to launch a program with Germany and for this purpose was still paying a 30-40 percent premium for organic soybeans and offering a small premium for non-GMOs. In the latter case, the market price for non-GMOs is just 2 to 3 percent more than for conventional, meaning that Cotrimaio cannot

**Table 4.2.** Soybean Handled by Cotrimaio (tons)

Type of Product	2000/01	2001/02 (estimated)
GM-free	74,000	108,000
Conventional	24,000	18,000
Organic (in-conversion)	500	500
Organic (certified)	250	600

Source: Interview with Cotrimaio conducted in December 2001.

receive much financial compensation for dealing with non-GMOs. In an interview conducted in 2001, an executive staff member from the coop complained that an eight percent or more premium price in the consumer market is required to fully cover handling costs (e.g. DNA screening and segregated distribution) and to ensure proper benefit for its business. In 2004 the staff complained about GM contamination of production due to the machinery used at harvesting time. They said it was very hard for conventional farmers to avoid contamination, as the same machine would harvest GM soybeans and conventional ones.

When it comes to farmers' preference, a common opinion some on the reason they started to grow organic soybeans was the high premium price promised by the cooperative staff; some others prefer to grow organic crops because of environmental concerns. Those perceptions of the two groups of farmers are very distinct from each other; however, neither can be expected to continue without a steady consumer market for organic soybean and proper support from the government through suitable policies and programs.

Moreover, dependency on organic markets has another limitation for small family farmers, the conventionalisation of organic farming (Guthman 2004). As Guthman suggests (2002), conventionalisation is the mechanization and intensification of organic production. Large-scale producers are incorporating organic farming and the production style is becoming highly mechanized. The author suggests that organic food must be precious and limited (i.e. contained to a niche market), a characteristic that does not match the expansion of organic production. And, as it is often the case in some Northern countries, intensification of organic production would increase the number of export-oriented large-scale growers to enter this market and compete directly against small farmers (Jussaume 2000).

In Brazil, conventionalisation of organic farming may be turning already into a reality. The rapid growth of organic farming has prompted the Brazilian government to regulate the sector. In October 1998, the Ministry of Agriculture and Food Supply published Directive 505 with the purpose of establishing national standards for the certification of organic products. The Directive was legislated in April 1999 and such legislation of standards is controversial. So long as the establishment of nationwide standards helps legitimize organic production in the eyes of consumers and makes it easier for small farmers to sell products to a broad consumer base, it should be nothing but welcomed. Although if the reality in Brazil mirrors the one in the Northern countries, then small family farmers will have their competitive capacity reduced in this niche market. In year 2000 already, in the cerrado and in North Brazil, large-scale producers were deforesting areas in order to specifically grow organic soybeans.

Because of these difficulties with small farmers and the conventionalisation of organic agriculture, Cotrimaio is in need of support to find further profitable arrangements. With a good strategic response to the competitive soybean

market, the agricultural cooperative of Cotrimaio is betting high on organic production and exports. This cooperative shows great effectiveness on succeeding within the soybean market, negotiating in the European market. However, considering the volatility of policies developed by the Brazilian federal government and the premium price the cooperative was offering to farmers until 2003, this strategy may meet failure.

Also, as Cotrimaio is a common agricultural cooperative and not a fair-trade organization, the relationship between consumer cooperatives in Europe and producers in Três de Maio may not be considered one of its main priorities. This strategy may not be sustainable as the consumer market is far from producers and the reality of each side is practically unknown for each other. The stability of this kind of trade seems quite unpredictable when not related to fair-trade organizations. In addition, dependency on organic markets in Europe or anywhere else has great limitations for small family farmers, such as the conventionalisation of organic farming mentioned before. Cotrimaio requires assistance to meet other alternatives.

#### **4.3.3 NGOs and Community Groups in a Locality: agroecology as a possible sustainable strategy**

In the states of Paraná and Paraíba (mainly), an NGO named AS-PTA (Assessoria e Serviços a Projetos em Agricultura Alternativa) has been helping small family farmers to succeed in using agroecology. The approach implemented by AS-PTA is to identify constraints in their farming through participatory methods and to develop solutions through research involving small family farmers. This participatory process is exemplified in the program in central/southern Paraná (Weid & Tardin 2001). AS-PTA's staff members offer agroecological alternatives and let farmers choose technologies and ideas that are thought to be adaptable to the local conditions. In order to structure its work, AS-PTA divides its alternatives into: genetic resources, ecological soil management, agro-forestry, and family gardens. Seed production on the farm has also increased with the aim of financial savings as well as diversification and yield increase (Weid 2001). Until 2002 the program was covering 22 municipalities with a population of 250 thousand including roughly 55 thousand family farmers, among whom around 10 thousand are directly involved in the intensive experimentation on agroecological practices.

Similarly, the Diocese de Santa Maria (from the Catholic Church) has also initiated agroecological experimental activities using sustainable farming methods in the state of Rio Grande do Sul (Dill & Buske 2001). For the purpose of educating local individuals to become better entrepreneurs and to develop products in an ecologically and economically viable way, a project named Projeto Esperanca involving 82 families was introduced in the region of Santa Maria in 1982. Since then, farmers started rethinking the conventional farming style,

opening their minds to agroecological alternatives such as the multiple farming of organic rice, fish and ducks – the wet rice fields can be rotated with fish farming and the ducks are expected to control weeds and insects in the rice fields. Farmers have also been working on sharing experiences and trying feasible alternatives in a farm-level trial and error. Another notable achievement is the marketing of their products at local markets based on the concepts of 'alternative cooperativism' and 'popular/solidary economy'. A commerce centre called Coesperança was established in 1989 to distribute their products directly, and to foster a fair business and solidarity between producers and local consumers.

To sum up, these two examples, AS-PTA and Projeto Esperança, can be seen as a case of a local response to globalization and intensification of agriculture in favor of sustainable development, by changing farming from conventional to agroecological, diversifying farm-style and encouraging farmers' participation. Although the impressive results of these local activities are undeniable, these experiences have to be evaluated carefully. In the first example, Weid (2001), an executive staff member of AS-PTA, points out several obstacles and limitations: the farmers' lack of access to capital and adequate credit systems slows the process down; their access to seeds for green manure is also restricted due to cost and lack of availability; the regional market is controlled by a handful of intermediaries, and because of this, prices have been lowered and production has been discouraged; and the funding available for AS-PTA to support farmers is very limited despite the fact that public authorities are providing loans for the use of 'technological packages'.

On the other hand, Projeto Esperança has also expanded to involve 123 groups and has reached more than 10,000 consumers. The reason for such success can be attributed to its focus on creating alternative markets. Another reason is its close partnership with public bodies, i.e. the State government (through several relevant departments), local municipalities, the regional EMATER/RS, and the Federal University of Santa Maria. Indeed, as well as this project, many noteworthy examples can be observed across the state of Rio Grande do Sul. In many cases, organizations play the vital role of a host to facilitate and mediate small family farmers to organize themselves collectively towards adopting suitable alternatives, some of which are initiated locally by rural extension organizations, NGOs and community groups.

Noteworthy, the main limitation of Projeto Esperança is the range area of the project. The Diocese of Santa Maria cannot assist many small farmers further away from the region of Santa Maria. The agroecological venture will be limited to the physical area of the region.

#### **4.3.4 Some Limitations of the Local Organizations**

Shortening the discussion (Table 4.3), Integrada is mainly limited by its lack of a local strategy vis-à-vis the reality in the international market. The staff

**Table 4.3.** Profile of Some Local Organizations in South Brazil

	Funding	Covered Area	Local Strategies	Broader Concept	Partners
<i>Integrada</i>	From associate farmers and profit from business	City of Londrina and surroundings	Conventional soybean	International Crop Market	TNCs and international corporations
<i>Cotrimaio</i>	From associate farmers and profit from business	Town of Três de Maio and surroundings	Organic and conventional soybean	External market and cooperatives	Consumers' cooperatives and external buyers
<i>AS-PTA</i>	Development agencies (i.e. OXFAM) and public funding	Mainly Paraná and Paraíba states	Develop sustainable agricultural practices with farmers (agroecology)	---	Development agencies, federal government and NGOs
<i>Projeto Esperança</i>	Profits from the project and public funding	Santa Maria region	Develop sustainable agricultural practices with farmers (agroecology)	---	Catholic Church, state government, EMATER and local University

should understand better the global market and create some room for maneuver; Cotrimaio is mainly limited by the constraints of organic production and exports; AS-PTA is mainly limited by its restricted funding; and Projeto Esperança is mainly limited by its covered area.

In summary, an institution to surpass all these obstacles and properly stimulate the achievement of a sustainable development would have to be attentive to the ways locality relates to the global market, would have to develop projects for rural sustainability not only focused on organic production and/or export markets, would have constant or alternative funding and would have a great ranging capability. Not only that, but the institution that would most properly assist small farmers would include rural communities and organizations on every project developed and make them increasingly responsible for the success of changes.

#### **4.4 Concluding Remarks:** The Need for an Institutional Host

The four case studies presented are attempts of local organizations in promoting alternatives for small family farmers to succeed in selling their products: Integrada with conventional soybean; Cotrimaio with organic soybean; and AS-PTA and Projeto Esperança with agroecological alternatives. These organizations and their market strategies are to some extent helping farmers to improve their social status and enhance their income. However, they are lacking strategies for a sustainable rural development, a long-term approach that will assure small farmers better living conditions. In order to discuss an approach to build up ground for sustainable rural development it becomes necessary to present some already existing theories about the subject and analyze the limitations and positive aspects of each organization previously mentioned.

As globalization has often conflicting interests from localization and the local practices should be thought of within the global, small family farmers need the assistance of a body that will be knowledgeable of both the global structure of transnational corporations, international trades and WTO agreements as well as their local reality. To support small family farmers and local organizations

a facilitator is needed to help them revive their own communities, embracing local responses within the global structure. This becomes necessary for two very important reasons.

Firstly, it is necessary that small farmers are knowledgeable of the benefits and hazards of technologies developed by global structures (i.e. transnational corporations). Sometimes, because of publicity and market strategies adopted by corporations through the use of mass communication, farmers become uninformed or partially informed of all benefits and hazards of some specific products. For this reason, it becomes necessary that small farmers become knowledgeable of the entire global structure. In the case of controversial technologies like Round-up Ready soybean and Bt corn, for example, this global knowledge becomes vital. TNCs' strategies vary according to which sector they are primarily dealing with and certainly not as a function of small family farmers' interests. For crop-feed/food complex companies like Cargill, dissemination of GMOs in Brazil would enable them to source a cheaper and stable amount of raw materials. For biotech-chemical complex companies like Monsanto, biotech industrialization would open up their market both for seeds and agrochemicals outside their saturated market in the North. Pushing small farmers to sign contracts that will drive them to dependency on these technologies, these two transnational corporations are changing the way farmers deal with their inputs and creating an unfair relationship (i.e. in sub-Saharan Africa and Argentina), while side effects of such biotechnologies on health and environment are still unknown.

Secondly, the growing evidence for the economic and ecological viability of environmentally friendly technologies appears to suggest that a more locally suitable agriculture is a more likely outcome than Roundup Ready Soybean and Bt Corn. For example, in the case study previously presented, the AS-PTA in partnership with farmers developed local technologies applicable to the area and solved many specific problems. Acting locally, the NGO and rural communities worked together to improve soil management and to organize their genetic resources. These small technological changes made rural improvement possible for 55 thousand family farmers. If other facilitators also disseminate technologies developed by research institutions and talk to farmers about potential benefits, then the transition to a more sustainable rural development may be under way.

**Box1: Development of Applicable Technologies for Small Family Farmers**

Aware of the environmental threats and of the market pressure small-scale commodity producers are facing, great number of



institutions, NGOs and local organizations are assisting family farmers to develop their own locally suitable technologies to overcome their limitations (de Freitas 2000). Stimulating farmers to develop their own technologies and strategies, organizations linked to the Brazilian state and federal governments are achieving great results and furthering the possibility of a more sustainable rural development.

In the last few years there have been increasing interests in establishing development programs for agriculture in Brazil. During the 1990s, aware of the need to keep on developing technologies for the achievement of a more sustainable rural development, the research institute EMBRAPA in Londrina (Paraná state) created innovative technologies and invested in the development of a clean biological pest control. The major breakthrough was the discovery of a virus called *Baculovirus anticarsia*, which kills the soybean caterpillar *Anticarsia gemmatalis* (EMBRAPA-Soja 2004). A pilot project led by EMBRAPA in cooperation with small-scale soybean producers showed that the control of caterpillars using the baculovirus was as efficient as the one provided by chemicals and needed only one application. Used on 1.4 million hectares of soybean plantation, the baculovirus provides an economic benefit of approximately US\$ 5 million a year, once the annual utilization of 1.2 million liters of pesticides has been eliminated. EMBRAPA also developed powdered baculovirus, which is very easy to handle at soybean plantations.

Developing many other technologies for small-scale farming, EMBRAPA is revolutionizing research on maize as well. Since 1998, financed by the federal government through research on sustainable development for family farmers, EMBRAPA developed a maize variety called Sol da Manhã NF (Rising Sun). Cheaper than the normal maize (around 50 percent), this variety is more productive and more resistant to worms. Already tested in rural communities in South, Southeast and Northeast Brazil, this maize has been distributed to farmers and tested with the help of more than 40 non-governmental organizations. To help farmers even further, EMBRAPA developed a manual to teach farmers to reproduce the seeds and save them for the coming years (UNESP, 1998).

Following these same lines of research, EMBRAPA is adapting its

policies to the new plans of the federal government. Known for the development of commodities in past governments, and responsible for the “soybean miracle”; since 2003 because of the growing interest of the federal government in technologies for small family farmers, EMBRAPA has been increasing the number of projects directed to small-scale production. With an on going project on tailor-made biotechnologies for small farmers in partnership with the University of Wageningen (the Netherlands), EMBRAPA is entering a new phase of technological development.

EMBRAPA is developing specific technologies adapted to local needs. This institution is solving some basic problems of farmers and enhancing their desire for the achievement of a more sustainable rural development. However, EMBRAPA is a research institution, not a rural extension institution. When EMBRAPA works in partnership with other local extension institutions or local NGOs the technologies developed are used on a daily basis, but without these partnerships, the work of EMBRAPA on stimulating farmers to keep on using the technologies is very limited.

The local technologies developed by EMBRAPA are important for farmers to improve production and are most probably better than the technologies sold by transnational corporations, but it is questionable if only implementing these new locally developed technologies without proper extension services are a long-term answer for the achievement of rural development. As mentioned before, for these suitable technologies to be fully adopted, whole groups of farmers and rural communities are supposed to be involved and there is need for a constant supervision of the changes implemented. There is need of a facilitator to grant access to technologies and sustain changes chosen by small family farmers.

For a sustainable rural development to actually take place in rural South Brazil there is need for a broad restructure of the countryside. As perceived on the case studies presented in this chapter, locally based strategies or market responses out of the mainstream are not the most suitable answers for the revitalization of the local economies in the rural areas; focusing purely on the global export market or the local market detached from the rural reality may not be sustainable. Small family farmers are in need to get out of commodity production and reconnect to the local market. Without the (re-) construction of the rural social fabric and an increase on food production, it is difficult to accept

the achievement of a sustainable rural development.

As also analyzed in this chapter, for rural communities to be revived the simple organization of small family farmers based on market strategies may not suffice. Small family farmers and local organizations are in need of greater support for the interweavement of market circuits. There is need for an institutional host to stimulate communication among the local organizations, small farmers, communities and the local governments. A host that is attentive to the external realities, which is able to develop projects for rural sustainability, which has a reliable funding and which has a great ranging area. Not only that, but an institutional host that is able to include rural communities and organizations in the projects and make them as responsible as farmers for the achievement of rural sustainable development.

## Chapter 5

### **Feasibility of an Institutional Host, EMATER/RS: The Analysis of Case Studies in the State of Rio Grande do Sul**

#### **5.1 Introduction**

As mentioned in chapter 3, the Brazilian federal government structured during the 70s a great number of local organizations named EMATER to work with farmers in rural communities all over the country. Under the regulation of EMBRATER, the locally based rural extension agencies would follow programs directed to the industrialization of agriculture and enforce the desires of an export-oriented federal government. However, in 1990 the centralized authority of EMBRATER was over and the strong influence of the federal government was broken while the EMATERs were directed to the reality of each locality. From that period onwards, EMATER has been gradually reconnected to the needs of small family farmers and rural communities, developing programs based on environmental and social matters.

In this chapter, attention will be given to the role of this rural extension institution in the state of Rio Grande do Sul. EMATER/RS is a non-capital oriented organization that has been enrolled on supporting farmers for decades. Linked to the state and federal governments, EMATER/RS is known by local organizations, cooperatives, communities and enterprises. Small family farmers are already familiar to the work of EMATER/RS and trust the institution because of its long history of assistance. In this thesis, EMATER/RS is perceived as a promising possibility of institutionalized support.

#### **5.2 EMATER/RS: Its History and Environmental Turn**

To better understand the history of EMATER in the state of Rio Grande do

Sul it is important first to understand that rural extension agencies were brought to Brazil in 1947 as a consequence of programs for the development of Third World countries directed by the United States. Introduced as “prefabricated” models, the rural extension agencies were launched as development tools, centered on the search for apparatus to develop the country. According to Dr. Caporal (1998), a former technical director of EMATER/RS and now a worker for the Ministry of Rural Development, the models, programs and actions taken by rural extension agencies did not represent local demands nor were theoretically based on the Brazilian local rural reality. Brazilian rural extension programs followed the same tendencies and definitions established in the United States. The projects were seen as activities of formal education, directed to men, women and youngsters in the rural areas. The relationship between the extension staff and rural communities happened in a top-down process where new ideas were brought by the rural extension staff and spread out through the use of teaching methodologies. Rural extension activities were actions developed to influence local intellectuals.

The history of rural extension agencies in Brazil can be divided into four phases each of which characterized by the philosophy and emphasis on extension programs. The first period is from the 50s to 1960, when the extension agencies adopted the classical approach of rural extension, based on the improvement of production and productivity on the rural areas. The rural extension agents would work on a more assistance-oriented approach, focused on poor families and rural communities. The extension agents would aim for the dissemination of knowledge. During this phase, rural credit was a tool to help transform and modernize agriculture. The second period is from 1961 to 1980; modernization of agriculture was promoted and rural extension services prioritized the development and diffusion of modern technologies. The education process in this period was based on motivating farmers to adopt new practices and Green-Revolution type technologies. When the national extension agency (EMBRATER) was established under the military government in 1976 and imposed limits on the state-level extension services, some states had to adapt their already existent rural extension agencies or to establish new ones. In the state of Rio Grande do Sul, ASCAR (Associação Sulina de Crédito e Assistência Rural) that was established in 1955, changed its approach and its name to EMATER/RS (Associação Riograndense de Empreendimentos de Assistência Técnica e Extensão Rural). After the military dictatorship, however, rural extension agencies experienced a moment of appraisal concerning their practices, starting a participative period of transition. This third period is from 1980 to 1990 and is characterized by the increasing concern about the environment and about the consequences of the modernization of agriculture, even though the priorities were still to improve production and productivity. Influenced by Paulo Freire, changes were suggested for the development of a new process of rural extension (Caporal 2002).

The fourth period is from 1990 until now. The rural extension agencies are under an environmental transition to a more environmentally sound agricultural style. Aiming at a more sustainable rural development and with financial support from the World Bank, many programs were implemented in Brazil especially in the state of Rio Grande do Sul, where important actions for the dissemination of IPM (Integrated Pest Management) took place. Even though the environmental transition is the strongest characteristic of the fourth period dated from the 90s, since 1985 EMATER/RS was already initiating its conversion. At the same time the institution was disseminating intensification of agriculture and increases on productivity, it was also sustaining isolated projects aiming to recuperate and preserve the environment. Yet the environmental subject was not present on every action taken by the rural extension institution, environmentally friendly practices were promoted through the execution of individual programs with conservationist characteristics. The evolution of some small environmentally sound programs (i.e. direct drill) makes evident the effort that the institution was making towards a more sustainable rural development.

In 1995, the rural extension program developed by EMATER in Rio Grande do Sul already verified the necessities of promoting and implementing actions and programs to stimulate a more sustainable rural development. As a matter of fact, the environmental perspective that was receiving more emphasis during the last few years was about to become the main institutional policy of the institution by the end of that same year. EMATER/RS, several other public institutions and NGOs, signed an "Agenda of Commitment" based on a program of technology and sustainable rural development for the state of Rio Grande do Sul and since then, started to implement changes in each one of its administrative regions (Caporal 2002).

From the period of 1995 to 1998, EMATER/RS established the challenge to promote sustainable rural development in the state. The institution was suggesting that through the use of "environmental education", it would execute rural extension actions in order to build a ground for more favorable attitudes towards preservation of natural resources. However without question, the main goal of EMATER/RS would still be to increase productivity through the development of production systems, improve the cultivated area and rationalize costs. Even though the rural extension institution was embracing a more environmentally sound agriculture, EMATER/RS once again reaffirmed that productivity was still the dominant desire of the state and that the ruling paradigm was still the diffusion of modernization. The strong difference now was that it could be already noticed some inhibited precursor signs of a path to a real environmental transition.

As an impelling force to start concrete changes in the state of Rio Grande do Sul, a political event reinforced the desire of the rural extension institution to implement environmentally friendly actions. As the state government of Rio

Grande do Sul wanted to differ its soybean production and was aware of the fact that great number of consumers in Europe and Japan were not willing to buy GM soybean food products, the state government started considering blocking the plantation of GM crops as an interesting market strategy. Elected in 1998, Governor Olívio Dutra (left wing Workers' Party - PT) issued a decree making the state of Rio Grande do Sul a GM-free zone. The government was convinced that the introduction of GMOs would not be a good market strategy due to consumers' concern in the consumer market and the increasingly production of such crops by Brazil's main competitors (USA and Argentina). The government was also concerned that patented industrial seeds wouldn't be affordable or appropriate for small-scale farmers, and stated that being GM-free was a good commercial move (Bell 1999). Constitutionally, the Governor was acting legally as states cannot approve GM plantation, but they can ban it on their own (Paarlberg 2001).

Aware that the entire production of soybeans in the state of Rio Grande do Sul was about to be differentiated from the rest of the country, the staff of EMATER/RS envisioned a great opportunity for implementing environmentally friendly practices and finally embrace sustainable rural development as the institution's main goal. With the proposal of going against GMOs, EMATER/RS came along with various different long-term alternatives, with agroecology as its basis.

### **5.3 The Agroecological Approach of EMATER/RS**

Agroecology was chosen as the main alternative because it is an innovative and multidisciplinary approach that was already taking form in the state as an answer for a very clear and scientifically proven crisis on the dominant production model (Caporal 2001). Agroecology was not a new approach; it had already been used by individual farmers for many years and had already slowly been implemented by EMATER/RS along the past decades. With positive and negative aspects, as the great majority of programs developed to improve agriculture, the new paradigm chosen by the institution focused on promoting sustainable rural development based on environmentally friendly practices.

The staff of EMATER/RS during the period from 1999 to year 2002 had to learn about the advantages of agroecological practices, limitations of GMOs and malefactions of intensification of agriculture (Table 5.1). EMATER/RS staff weve trained to work on making farmers aware of the problems related to the environment and possible problems deriving from an intense production of GM soybeans. As an alternative for small soybean farmers, EMATER/RS staff learned agroecological practices that could take place in each different region.

In an effort to implement its programs, EMATER/RS taught its staff about the new concept of Sustainable Rural Development (DRS) and specifically how to apply it with farmers, acknowledging the importance for the development of local

solutions within a global outlook involving rural communities (Table 5.2).

**Table 5.1.** Training of EMATER/RS Staff - 1999 to 2002

Year	No. of Events*	Participants**	Hours Worked	Investment (RS)***
1999	217	6,862	6,434	1,078,316.10
2000	442	8,606	11,115	1,795,289.00
2001	373	7,393	10,756	2,211,429.55
2002	229	4,737	6,431	718,900.70
<b>Total</b>	<b>1,261</b>	<b>27,598</b>	<b>34,736</b>	<b>5,803,935.35</b>

\* Among the events, the concentration would be on the courses on Sustainable Rural Development (55 courses, 1,605 participants) and Agroecology (268 courses, 4,467 participants).

\*\* Total number of staff participants on the training of EMATER/RS, not only about Sustainable Rural Development and Agroecology

\*\*\* The value of the Real was of RS 3 to US\$ 1 at the time.

Source: EMATER/RS 2002

**Table 5.2.** Courses of Sustainable Rural Development (DRS) and Agroecology for EMATER Staff

Year	Number of Events	EMATER/RS staff
<b>1999 (Total)</b>	<b>240</b>	<b>5,021</b>
DRS Courses	30	2,007
Agroecology Courses	23	648
<b>2000 (Total)</b>	<b>442</b>	<b>8,606</b>
DRS Courses	28	841
Agroecology Courses	74	1,801
<b>2001 (Total)</b>	<b>373</b>	<b>7,393</b>
DRS Courses	28	749
Agroecology Courses	110	1,433
<b>2002 (Total)</b>	<b>251</b>	<b>5,550</b>
DRS Courses	15	371
Agroecology Courses	22	616

Source: EMATER/RS 1999-2002

Focused on preservation, management of natural resources and relevant technologies, this agroecological project turned out to be more than just a conversion of farming; it was a social process that required a collective change of attitude towards sustainability, stability, productivity, equity and improvement of quality of life (Caporal 2001). The agroecological project would imply on a lot more than just working with small family farmers on changing practices. The agroecological project was about assisting small family farmers to rebuild their relations with the local communities and to restore their social fabric.

In order to achieve such goals, EMATER/RS, in partnership with local cooperatives and various other local entities, organized projects like one entitled ATER - Actions of Technical Assistance and Rural Extension (Ações de Assistência Técnica e Extensão Rural). ATER, as its name suggests, is a project designed to develop actions of *technical* and *rural extension assistance* for farmers. These two main tasks would generate a great number of small locally executed projects; the main one among which was the drafting of a DRP - Rural Participative Diagnosis (Diagnóstico Rural Participativo) for each rural community (Table 5.3). The DRP would be the first step to gather the rural communities to talk about their situation and to remember how their lives were before the

**Table 5.3.** Actions of ATER - EMATER/RS 1999 - 2002

Actions	1999	2000	2001	2002
Visits	198,091	191,233	246,856	216,234
Meetings	29,365	31,072	37,159	37,406
Demonstrations of Methods	14,510	11,978	14,861	41,798
Courses	2,997	2,612	2,884	2,352
Trips	1,521	1,376	1,647	1,634
Field Work	288	200	294	310
Seminars	1,047	802	1,178	1,419
Newspaper Articles	5,713	4,262	4,863	6,116
Radio Programs	14,414	10,815	10,983	14,386
TV Programs	534	370	342	382
Development Plans		466	647	610
DRP/Number of Families*		204	1,091	627
Campaigns		529	952	1,079
Expositions/Fairs	1,313	784	931	1,101
Observation Unities	1,307	848	1,139	1,135
Experimentation Unities (UEP)	818	325	584	1,063
Staff Meeting			9,763	6,849
Agroecological Stores		2,551	6,137	7,524
Studies		44	143	178
Assistance in local offices	438,987	449,050	553,672	556,543
Plans to receive financial support	43,125	72,305	77,497	89,200

\*The DRP is the first step to gather rural communities and learn about the problems of each area.

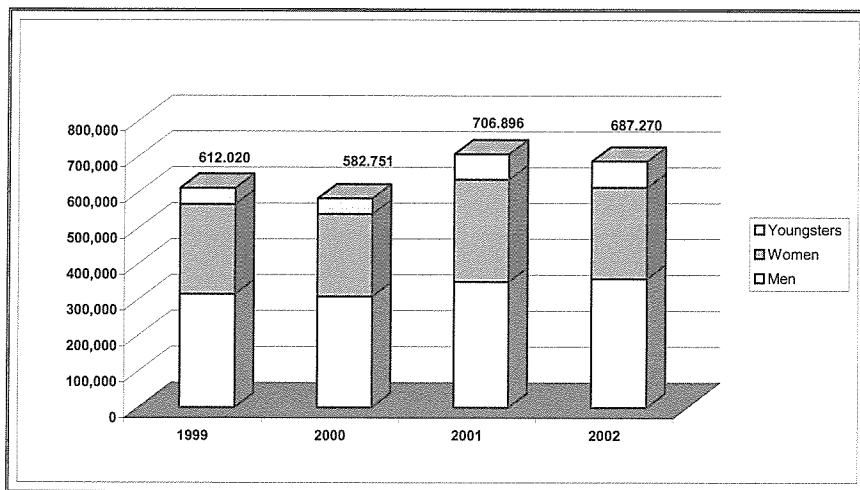
Source: EMATER/RS 2002

intensification of agriculture. The main purpose of conducting a DRP was to mobilize rural communities to identify main concerning problems and opportunities and prepare specific plans of intervention in areas chosen. The data was surveyed and displayed in a complex process where maps, diagrams, time lines and semi-structured interviews were used. The DRP would be the basis for agroecological changes.

Subsequent to the DRP, potential technologies were evaluated based on environmental, economical and social aspects expressed by local tenants. Participatory measures were employed to involve entire rural communities in the process (Figures 5.1 & 5.2). Even though the DRP was implemented by EMATER/RS staff as an instrument used for basis of the development of the agroecological programs, changes implied in the program didn't come from top-down, but placed EMATER/RS staff, farmers, rural communities and relevant organizations on the same level of commitment. The implementation of the agroecological ventures started with locally executed projects developed for each area (Table 5.4). The work was clearly interactive.

The goal of EMATER/RS was not only to change farming and identify local problems to be solved but also to create local market circuits that were economically affordable, ecologically balanced, socially fair and culturally acceptable. In 2001, the number of agroecological groups totaled 106, with 2,436 members. Their agroecological products were sold at farmers' outlets or in local/regional markets with the support of public institutions, NGOs and farmer's associations

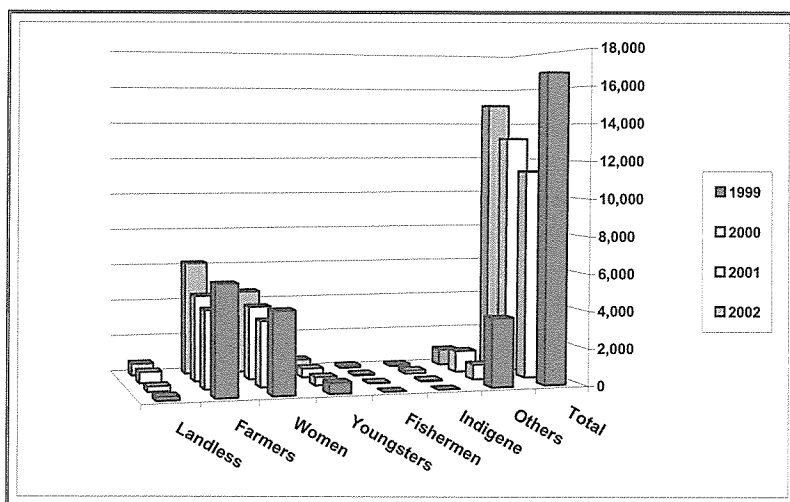




Note: The total population of Rio Grande do Sul in 1995 was of 1,377,022 persons. Men 852,102; women 524,920; and youngsters 140,967

Source: EMATER/RS 2002

Figure 5.1. Number of Individuals Assisted per Year (all activities of EMATER/RS)



Source: EMATER/RS 2002

Figure 5.2. Number of Groups Assisted per Year (all activities of EMATER/RS)

as well as some organizations from the Catholic Church. In that same year, there were already 107 established weekly markets through which more than 800 participant farmers would sell their agroecological products (Caporal 2002). These fairs were meant to organize farmers and communities in the neighborhood areas in order to distribute the products among the local people. Additionally, as shown in Tables 5.5 & 5.6, in the entire state EMATER/RS initiated a number of collaborative relations with agricultural cooperatives that would seek to

**Table 5.4.** Agroecological Projects

Project	Specification
Environmental Sanitation	Protection of water resources, waste treatment and environmental protection
Social Organization	Intensify the work with social groups
Biodiversity	Creation of seed banks
Conservation, Restoration and Wield of Soil and Water	Restore the quality of soil and water
Clean Meat Production	Use of home made medicine on the cattle
Rotational Grazing	Rational use of the grazing land
Swine on Straw	Grow swine on top of straw instead of on water
Rural Tourism	Organization of areas for tourism

Source: ASCAR, 2001

**Table 5.5.** Cooperatives Working with EMATER/RS for Agroecological Production

Area/Region	Products	Cooperatives
Serra do Sudeste and RS	Vegetables, Chicken	Cooperativa da Coolmeia
Ipe, Antonio Prado and Sarandi	Grapes, Wine	Cooperativa da Coolmeia
Northeast RS and Alto Uruguai	Subtropical Fruits	Cooperativa da Coolmeia
Vale do Cai	Citrus	Cooperativa dos Citricultores do Vale do Cai
Constantina	Wheat	Cooperativa de Pequenos Agricultores (Coopac)
Barra do Rio Azul (Alto Uruguai)	Brown sugar, jam, sweets, pickled fruits, juice, milk, bread, cheese	Associação de Agricultores Familiares Agroecológicos de Campo Alegre, Centro de Apoio ao Pequeno Agricultor (CAPA); Cooperativa Central Alto Uruguai (COCEL); Sindicato dos Trabalhadores Rurais de Aratiba; Cooperativa de Produção Agropecuária Aratiba (COPAAL) and Movimento das Mulheres Trabalhadoras Rurais
Centro-Serra	Vegetable, fruits	Cooperativa Ecológica (COAGRICEL)

Source: EMATER/RS, 2002.

**Table 5.6.** Cooperatives, Associations and Fairs Organized with EMATER/RS

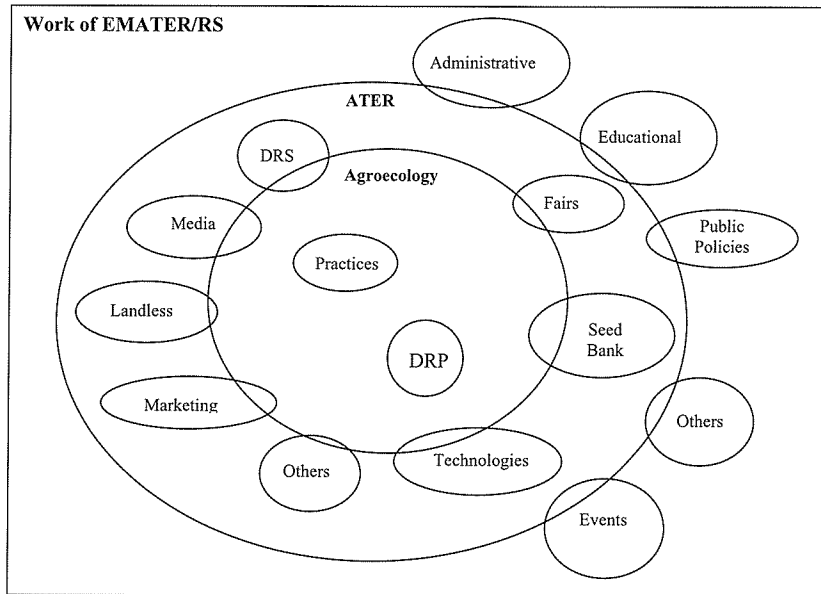
Specification	Unit	1999	1999	2002	2002
Agroecological cooperatives	No./Participants	1	46	4	265
Fishermen cooperatives	No./Participants			1	45
Weekly organized fairs (traditional)	No./Stall holders	306	3,252	393	3,059
Weekly organized fairs (ecological)	No./Stall holders			138	880
Fish fairs	No./Stall holders			286	1,144
Association of ecological farmers	No./Participants			354	3,604
Other associations linked to ATER	No./Participants	1,204	44,197	1,553	46,827

Source: EMATER/RS 2002

commercialize those local-oriented agroecological and organic products.

The role of EMATER/RS during this agroecological “boom” in the state was not much different from the work of NGOs and community groups, which can also create feasible programs to develop a sustainable agricultural model. It can be said, however, that EMATER/RS had a pivotal role as a facilitator or institutional host given the institution’s broad range in terms of area and beneficiaries. Indeed, out of 623 thousand families (as estimated in 1999) in the state’s rural area, EMATER/RS gave assistance to more than 350 thousand families in 2001, and among these nearly 285 thousand families received continual assistance. In 2002,

EMATER/RS had more than 2,300 staff located in one central office, ten regional offices and 470 county offices (95 percent of all 497 counties in the state) (Caporal 2002). There is no other service in the state of Rio Grande do Sul available to so many farmers and rural communities. In addition, EMATER/RS works with many different projects and minority groups (Figure 5.3).



**Figure 5.3.** The Work of EMATER/RS

With the aim of disseminating the agroecological idea, EMATER/RS in partnership with the state government, had also organized five international seminars on agroecology since year 2000. All five international seminars were held in Porto Alegre (state capital) and the lecturers would range from local farmers (Sélio Darci Buske from Santa Maria) to professors from renowned universities in the United States and Europe (Miguel Altieri from University of California and Eduardo Sevilla Guzmán from University of Córdoba). In the localities, EMATER/RS organized 2,945 events across the state, involving 141,649 farmers until year 2002. These events aimed at reintegrating small farmers to the local communities. Fairs, rural games and field trips would work as tools to increase interaction among local actors.

In the region of Santa Rosa, for example, 26 events were held in April, other 37 events in May and 25 in June 2002. These events would include field trips, technical demonstrations, technical speeches, campaigns and meetings for farmers, women and young farmers. All the events would be free of charge and opened to anyone who would be interested. Sometimes other enterprises or local organizations interested in rural services would sponsor these events (EMATER/

RS 2002). Furthermore, EMATER/RS was trying to reach farmers across the state through radio and TV programs.

### 5.3.1 The Concept of the Agroecological Approach and its Achievements

According to the historical analysis conducted on EMATER in Rio Grande do Sul, it can be observed that for many years the programs developed implied on responses to the desires of the federal and state governments. When analyzing the different approaches used, it is possible to perceive that the programs adopted have been successively based on top-down processes. Under different foci, the tendency has been quite strong on favoring agriculture as a support for the desires of the government rather than on solely assisting small family farmers (Caporal 2002). Even in the particular case of agroecology, which was based on a more participatory approach aimed at learning about farmers' practices and knowledge, the process was designed by the top of EMATER/RS hierarchy, taught to the regional staff members and explained to small family farmers. Even though the agroecological approach had an environmentally friendly program, it was also developed to bring the dynamic of local initiative into line with the interests and perspectives of public authorities (to be GM-free), reproducing the image of the state government as being the key to a more sustainable rural development.

During the agroecological approach, however, EMATER/RS could merge the desires of the state government to the satisfaction of the needs of small family farmers. During the changing process, the focus was neither for the modernization of the rural areas nor for the development of an urban-industrial model. EMATER/RS focused on an environmentally friendly-based agricultural style for the diversification of agriculture and to increase GM-free soybean production. It was a considerable change for a locally based set of agricultural practices.

Small family farmers were able to use, manipulate and adapt the agroecological approach to their own benefit. The practices (i.e. organic soybean production) chosen by small family farmers resulted on changes that benefited farmers, the environment and local communities. In year 2002, the area produced free from herbicide was quite large (Table 5.7). In each area, locally based alternatives emerged. In the region of Santa Maria, for example, a soybean bug (*percevejo*) was biologically controlled. Working in partnership with EMBRAPA Soja, EMATER/RS made the use of a natural predator to control the soybean bug. Supplying wasps (*Trissolcus basal*) to 22 small family farmers in 13 different municipal districts, small family farmers did not need to use chemicals to kill the bug (EMATER/RS 2002).

In other regions, making use of a product already familiar to small farmers, the baculovirus, EMATER/RS coordinated a campaign for the biological control of the soybean caterpillar. As may be observed in Table 5.8, more than 2,000 producers in more than 30,000 ha used the baculovirus. Different actions of

assistance developed by EMATER/RS reached more than 35,000 producers (25% of soybean producers in the state of Rio Grande do Sul) in more than 400,000 ha (12% of the soybean area in the state, year 2002) (EMATER/RS 2002).

EMATER/RS was successful not only with soybean producers, but also with other crop producers. The rice producers in year 2002 harvested an area of 972,022 ha with a production of 5,458,503 tons and productivity of 5,616 kg/ha. This was possible due to the irrigational system developed under EMATER/RS's assistance. In that same

year there were 276 families in the transitional production to organic rice in 3,990 ha, producing 22,634 tons of rice, and 66 family farmers were redesigning their farmland according to agroecology in 3.9 ha and producing 1,406 tons of rice (EMATER/RS 2002). Among others, the fruit farmers also benefited from the agroecological program (Table 5.9).

This flexibility in adapting its model for each different type of production and region also makes EMATER/RS the most fitting institutional host available in the state of Rio Grande do Sul. During the research, the majority of small family farmers interviewed found it beneficial to work with EMATER/RS. Comparing the type of production of farmers inside and outside the state of Rio Grande do Sul it is possible to perceive the positive outcome of the assistance given (Table 5.10).

The majority of farmers interviewed who receive constant assistance from EMATER/RS are changing practices to more sustainable alternatives. The farmers who are numbered as 11, 12, 14, 15, 16, 20, 21, 23, 25, 26 and 28 are now cultivating organic products. Some of them, like farmers 11, 26, 28 and 23, changed production to 100% organic. Their farmlands have been re-organized to produce food crops and organic cash-crops. Producing staples and commodities at the same time, small family farmers are able to fulfill their daily needs while benefiting from the profit acquired on the selling of cash-crops (often

**Table 5.7.** Production Areas free from Herbicide - 2002

Culture	Number of Farmers	Area Free from Herbicide
Maize	7,666	23,407 ha
Soybean	2,858	19,811 ha
Wheat	2,247	14,148 ha

Source: EMATER/RS 2002

**Table 5.8.** Biological Control of the Soybean Caterpillar - 1999 to 2002

Monitored Farming		Use of Baculovirus		Collection of Baculovirus	
N. Producers	Area (ha)	N. Producers	Area (ha)	N. Producers	Doses
2,397	31,083	2,586	49,441	154	5,047

Source: EMATER/RS 2002

**Table 5.9.** Fruit Farmers Assisted by EMATER/RS, 2002

Fruit	Number of Farmers Assisted		
	Conventional	Transition	Redesign
Pineapple	98	34	11
Banana	1,332	610	219
Fig	1,739	528	118
Orange	2,542	1,963	375
Lime	159	175	31
Watermelon	606	245	40
Strawberry	302	174	57
Peach	1,065	625	60
Grape	5,721	3,72	499

Source: EMATER/RS 2002

**Table 5.10.** Farmers Interviewed in Brazil - 2000/04

Year	Farmers	State	City	Farmland (ha)	Age	Cooperative	Work with EMATER	Varieties
Aug/00	<b>Paraná</b>							
	1	PR	---	12	---	Integrada	Constantly	Soybean, wheat, com, vegetables, fruits, coffee, chicken (7,000)
	2	PR	Cambé	968 (6 fam)	36	Corol-Rolândia	No	Soybean, com, wheat, beans, coffee
	3	PR	Cambé	28	40	Corol-Rolândia	Seldom	Soybean, com, wheat, coffee
	4	PR	Cambé	25	48	Corol-Rolândia	Seldom	Soybean, grapes, coffee, grass (animal feeding), chicken (27,000)
	5	PR	Cambé	4	54	Valcoop	No	Soybean, com, coffee, chicken (12,500)
6	PR	Maravilha	774	61	Integrada	Seldom	Soybean, com, grass (animal feeding)	
Dec/01	<b>Porto Alegre</b>							
	7	RS	---	Less than 10	40	---	Constantly	Beans, com, cassava, pumpkin, melon
	8	RS	---	Less than 10	30	---	Constantly	Lettuce, rucula, radite, parsley, naganagi, spices
	9	RS	---	Less than 10	35	---	Constantly	Diversified plantation.
	10	RS	---	Less than 10	25	---	Constantly	Diversified plantation.
	<b>Santa Rosa</b>							
	11	RS	Três de Maio	28	58	COTRIMAIO	Constantly	Organic soybean, wheat, com, oat meal, popcorn, bean, sugar cane, cassava, 1 cow, 3 sheeps, chicken, rabbit, pig
	12	RS	São José do Inhacorá	30.5	63	COTRIMAIO	Sometimes	Soybean (organic and conventional), wheat, com, cassava, grapes, plum, peach, fig, orange, lettuce
	13	RS	São José do Inhacorá	40	25	COTRIMAIO	Sometimes	Conventional soybean, com and milk.
	14	RS	São José do Inhacorá	9	41	COTRIMAIO	Seldom	Organic soybean, com, wheat, cassava, potato, tomato, garlic
15	RS	Boa Vista do Buricá	14.4	28	COTRIMAIO	Sometimes	Organic soybean, organic cassava, com (2nd year), soybean C2	
16	RS	Boa Vista do Buricá	36	54/ 51	COTRIMAIO	Seldom	Soybean (organic and conventional), com, pig (500), cow (40), chicken (20)	
17	RS	Porto Mauá	103	76	COTRIROSA	Seldom	Conventional soybean, wheat, com, cows (22)	
18	RS	Porto Mauá	80	51	COTRIROSA	Constantly	Conventional soybean, oatmeal, corn, cassava, chicken, pig, cow	
19	RS	São Lourenço das Missões	20.8	39	COOPATRIGO	Constantly	Soybean, wheat, rice, cassava, com, mamoná, cow (4), pig (8)	
Jul/02	<b>Santa Rosa</b>							
	20	RS	Missões	12	60	COPEROQUE	Constantly	Organic sugar cane, peanuts and com, conventional soybeans
	21	RS	Vila Santa Catarina	120	25	COPEROQUE	Constantly	Organic cassava, conventional soybean, com, wheat, cow (36), pig (10)
22	RS	Tucunduva	21	39	Na	Constantly	Conventional soybean, cow (60), pigs (900)	
Apr/04	<b>Santa Rosa</b>							
	11	RS	Três de Maio	28	58	COTRIMAIO	Constantly	Organic Soybean, wheat, com, oat meal, popcorn, bean, sugar cane, cassava, 1 cow, 3 sheeps, chicken, rabbit, pig
	20	RS	Missões	12	60	COPEROQUE	Constantly	Organic sugar cane, peanuts and corn, GM soybeans
	22	RS	Tucunduva	21	39	Na	Constantly	Conventional soybean, cow (31), pigs (1200)
	23	RS	Três de Maio	20	44	COTRIMAIO	Constantly	Organic soybean, com and wheat, beans and cassava, cows (02), pigs (360)
	24	RS	São Pedro do Butiá	29	25	Na	Seldom	GM soybean, chicken (14,000)
	25	RS	Dezesseis de Novembro	19	53	Na	Constantly	Organic cheese and milk, subsistence farming
	<b>Public Market</b>							
	26	RS	Santa Rosa	2	50	Na	Constantly	Organic fruits and vegetables
	27	RS	Santa Rosa	9	45	Na	Constantly	Vegetables, fruits and fish
28	RS	Santa Rosa	38	42	Na	Constantly	Organic flowers, vegetables, fruits, cattle, soybean, maize, wheat	
29	RS	Santa Rosa	0.5	55	Na	Constantly	Processed meat	
<b>Brasília</b>								
30	DF	Brasília	1000	55	Na	No	Cattle (1000)	

organic).

It is also important to note that some small family farmers interviewed who are producing organic cash-crops are also related to the cooperative Cotrimaio. Working in partnership with EMATER/RS, this cooperative is stimulating small family farmers to produce organic cash-crops. Selling the production in the European market, Cotrimaio guarantees a premium price to small farmers. This advantage promotes the transition to organic. As the first years are difficult for farmers, a premium price gives stronger incentives to stimulate small farmers on changing production.

The network among cooperatives, local organizations and EMATER/RS is beneficial to small family farmers. Working with different market circuits, with EMATER/RS as the main institutional host, the opportunities of success are greater. The use of a facilitator to assist small family farmers on reconstructing their local network and market circuits is essential. As observed in other case studies in the country (Cavalcanti 2004), when it comes to change production,

small family farmers are at an advantage when properly supported by an institutional host that is capable of instructing them on how to address the issue of new standards to market their products. With proper support, small family farmers are often able to stay competitive in new market environments. The network enabled by EMATER/RS during the agroecological approach allowed small family farmers to develop competitive strategies and strengthen partnership with local organizations.

To effectively instruct small farmers on how to cope with new arrangements, EMATER/RS made use of its staff individuals and associated organizations that understand what makes the local markets attractive. The combination of knowledge on the external market and on local components was essential. Rather than focusing only on the localities, EMATER/RS was able to link small family farmers to external socio-economic realities. The interlocking of knowledge was essential for rural changes to effectively take place.

### **5.3.2 Alterations to the Agroecological Approach**

The agroecological project designed by EMATER/RS was rather successful. The acceptance among small farmers was relatively high and the socio-economic results were quite positive. Centralizing its approach on the development of strategies for small family farmers, EMATER/RS started out in Brazil an innovative way to deal with problems surrounding agriculture. Far from being the ultimate answer for all small family farmers who have been relying on commodities for many decades, this agroecological venture served to principally divert small soybean farmers away from GMOs and external competitive pressures. Making use of a few illustrative case studies that will later on be presented here, it will be possible to perceive that the agroecological program is still on going in the state - even though some resistance has been taking place.

Since the beginning of the implementation of the agroecological program, some small farmers were already contrary to agroecology and unwilling to change from conventional soybean production to an unknown practice. Already "addicted" to the easiness of soybean production, those farmers were eager to try the GM technology, even though plantation was illegal in the state. Believing that they would pay cheaper prices for GM seeds (because they don't pay royalties) and use fewer chemicals on the farmland, farmers in the state started smuggling GM seeds from Argentina and planting them inside their properties. Indeed, it is reported from ABRASEM (Brazilian Association of Seed Producers) that around 30 percent of soybeans planted in 2002 originated from smuggled seeds.

This severe adoption of GM soybeans in Rio Grande do Sul probably happened for 2 main reasons: i) the effectiveness of multinational corporations' publicity; and ii) the great dependency of small farmers on the revenue derived from the commercialization of the commodity. In addition, some small farmers

perceived agroecology as an anti-GMO movement and saw the program as an idea from the former left-wing state government to convince them not to use the new technology.

This belief was reinforced after the election of the following state government. Giving priority to the establishment of locally family-based enterprises and multifunctional activities, the new right-wing state government is more interested on the development of economic ventures other than implementing agroecology *per se*. Even though the government is still supporting cleaner agricultural practices, the main focus is different. The new mission of EMATER/RS is to “promote and develop actions of technical assistance and rural extension through educative programs, in partnership with rural families and organizations, aiming sustainable rural development, through the improvement of quality of life, food security, job creation and environmental preservation.” Because this new mission omits the word agroecology, the number of DRPs – known to be the first step towards the development of agroecological measures – decreased from 627 in 2002 to 296 in 2003 (EMATER 2004).

The decrease on the number of DRPs shows that the inclusion of rural communities in the farming changes is not a priority. The DRPs would require the gathering of the rural communities to analyze their present lives and the rural life before intensification of agriculture. This diagnosis would then lead to solutions chosen by the community as a group. The implementation of isolated environmentally friendly practices will not necessarily lead to the restructure of the rural social fabric. This change on EMATER/RS’s approach made the aim of the agroecological project somehow weaker.

The main focus of EMATER/RS work now is on clean agricultural practices (i.e. alternative practices to prevent and control cattle diseases). Even though both projects are similar in farming practices, from year 2003 onwards the change threatened the implementation of new agroecological programs. However, EMATER/RS maintained the support on the agroecological programs implemented before. The agroecological programs implemented during the period from 1999 to 2002 are still on going and still receive incentives from the state government (Table 5.11). To analyze some projects that are enduring for more than 4 years, a small region of the state of Rio Grande do Sul will be the basis for the analysis of EMATER/RS’s work.

**Table 5.11.** Agroecological Transition - 2003

Crop	Districts	N. Farmers Assisted		
		Conventional	Transition	Redesign*
Rice	77	2,012	673	224
Beans	191	13,797	3,733	1,361
Maize	290	45,575	8,261	1,795
Soybean	186	22,198	3,406	479
Wheat	129	6,125	1,698	202

\* Redesigning the farmland according to agroecology  
Source: EMATER/RS 2004

#### 5.4 The Case of EMATER Santa Rosa

The region of Santa Rosa, in Rio Grande do Sul, is formed by 6 micro administrative regions with 45 municipal districts and an area of 17,616 km<sup>2</sup>.



Shaped by a range of economically deprived rural communities, EMATER Santa Rosa works with a great number of impoverished small family farmers who are interested in inexpensive but promising farming approaches. As such, the idea of productive systems adapted to agroecology was welcomed because it required low-cost inputs as well as the use of natural resources. Until 2001 the extension staff of EMATER Santa Rosa had conducted approximately 700 DRPs for 9,045 people in the region for the execution of the agroecological local actions (ASCAR, 2001).

Working in partnership with more than 300 entities (i.e. cooperatives, the Municipal Secretary of Agriculture, Banco do Brasil, and the Federation of Rural Labor Unions - FETAG), EMATER Santa Rosa encouraged small family farmers not only to improve their farming practices but also to work with organizations interested in agroecological projects related to rural development. The partnership with these institutions was stimulated on the ground that the proposal was to help small farmers implementing agroecological changes in the farmland, to help them developing their own farming techniques, and to get them to work together with enterprises that would assist them in a longer term. Participating more as a facilitator, EMATER Santa Rosa aimed the independency of small farmers from the rural extension institution, the revitalization of local communities and to endure relations with other local entities.

Stimulating farmers to embrace long-term ventures in the area, EMATER Santa Rosa worked with small farmers in innovative ideas to improve their farming and increase income through the adoption of different strategies in each region. In each different municipal district, EMATER Santa Rosa helped farmers to implement locally suitable alternatives ranging from the creation of local small-scale family enterprises to the production of organic soybeans for the export market. Accepting that each small region has a distinct reality, EMATER Santa Rosa adapted the agroecological idea to the real needs of local farmers.

In order to illustrate on how the agroecological approach changed farming practices, four case studies will be presented (Table 5.12). The intention is to show the reality of small family farmers before and after the model was

**Table 5.12.** Former Conventional Soybean Small Family Farmers in Santa Rosa

Farmer	Locality	Ha	Age	Production
22	Tucunduva <sup>1</sup>	21	40	Rotational grazing, swine on grass and subsistence farming
11	Três de Maio <sup>2</sup>	28	61	Organic soybean and subsistence farming
25	Dezesseis de Novembro <sup>3</sup>	19	53	Organic cheese and milk and subsistence farming
20	Salvador das Missões <sup>4</sup>	12	64	Organic sugar cane, organic peanuts, GM soybeans and subsistence farming

1 - The small family farmer was interviewed in July 2002 and April 2004

2 - The small family farmer was interviewed in December 2001 and April 2004

3 - The small family farmer was interviewed in April 2004

4 - The small family farmer was interviewed in July 2002 and April 2004

introduced in their farmland. The purpose is to simply illustrate what has already been demonstrated by the statistics presented on the work of EMATER/RS during the agroecological program (1999 to 2002).

#### **5.4.1 Four Illustrative Case Studies of Agroecological Ventures in the Region of Santa Rosa**

##### **5.4.1.1 Tucunduva:** the case of a small family farmer raising cattle and pigs

In the micro-region of Tucunduva a young small farmer (22) wanted to stop producing soybeans in his 21 hectares because of weather instability in the region and because of problems with commercialization. The history of this small family farmer until February 2000 was of extreme financial difficulty, with increasing debt, although the farm was productive. This small family farmer used to harvest more than 45 bags of soybean per hectare and produced around 450 liters of milk per day with 19 cows raised on the conventional system. However, the work was quite intense. The farmer was getting sick and the perspective of the family was to sell the animals, pay the debts and move to the city. His wife was already working at a clothes factory.

However, the small family farmer decided to contact EMATER Santa Rosa on the search for alternative farming practices. After talking to the staff and visiting some other farmers in the neighborhood areas (Crissiumal and Tiradentes do Sul), the small farmer decided to decrease soybean production and start raising his cattle on a rotational grazing system. Rotational grazing consists on periodically moving livestock to fresh paddocks, to allow pastures to regrow. The possible positive outcomes are that feed costs decline and animal health improves. The animals harvest their own feed in a well-managed rotational grazing system. The grazing system is an interesting solution to an economically viable pasture-based operation (Beetz 2004).

To implement the necessary changes in the farmland, 2 extension agents from EMATER Santa Rosa started to develop the rotational grazing program with the farmer. An area of 3 hectares was divided on 42 small plots and the cattle would stay on 2 of these plots per day. Until year 2004, when the last interview was conducted with the farmer, he was still using the same area and the results were outstanding. The cost of production had decreased and there were fewer diseases while the presence of ticks had diminished considerably. Apparently, the behavior and well being of the cattle had improved and the milk was tastier. From the beginning of the agroecological project, the number of cattle ranged from 19, to 60 and now (year 2004) to 31. The farmer said that the agroecological way of raising the cattle was far better than the conventional, but because the local market and cooperatives were not paying an additional premium for organic dairy products or meat, it was not worth working with too many milky-cows.

A second agroecological project introduced in the farmland, swine on Tifton

grass, was implemented to sustain the rotational grazing. As there was an increasing need for organic fertilizer on the pasture, the small family farmer started to grow hog and use the manure as fertilizer. The response from the organic fertilization was very positive. There was a decrease on the use of chemicals to fertilize the pasture and an increase on milk production. However, the results from the swine production itself had ups and downs during the four years analyzed. Until year 2002 there were two different areas for the pigs. In one area 300 pigs would be living on top of concrete and running water and on the other area 600 pigs would be living on top of grass. The pigs that were raised on water were far more stressed out, the death rate was high and the smell in the area was awful. It was easy to see how low was the quality of life of those pigs and the difference to the other pigs raised on top of grass. The pigs raised on grass looked healthier, had a bigger area to walk around, death rates were lower and the level of stress was also very low. The farmer said that he enjoyed working more with the pigs on grass and that the quality of the meat was far better, the meat was redder and tastier. The only problem was that the grass was more expensive than the water (at least on a short term basis) and the market was not paying more for organic pork meat. The farmer at the time was worried about the sustainability of the project.

Not surprisingly, in 2004 the project of swine on grass was abandoned. Even though the small farmer thought that the system was excellent and he enjoyed it more than the conventional one, he couldn't afford the additional cost of the grass. The financial support he received to implement the agroecological venture was great, but it was not enough to keep the changes for a longer period of time. Commercializing the pigs in the local market (with ALIBEM, a local private enterprise) there was no premium price for the organic meat. The quality was far better, but the cost of it was also higher for the farmer, becoming unsustainable on the long term.

But, the changes implemented by EMATER Santa Rosa had a positive effect on the farm. Finding a solution in between conventional and agroecological, the small farmer decided to continue to raise the swine in a more environmentally and animal friendly way. Not using the grass anymore, the small farmer increased the area available for each animal inside the two areas available. With 1,200 pigs been grown in the area where there were before 1,500, the well being of the animals is higher. The swine are raised on top of the concrete with running water, but they seem less stressed out than the ones living on top of the water in year 2002 and the quality of the meat is good. Even though they don't seem as healthy as the ones grown on top of grass, the swine now are nicely treated.

The small farmer said that, after the changes implemented with the assistance of EMATER Santa Rosa, he doesn't want to go back to conventional soybean production ever again. He said that the changes implemented gave him opportunities that he couldn't perceive before the agroecological project and that

he wouldn't want to go back to soybean production. The agroecological approach still seems far more interesting for this small family farmer in Tucunduva.

#### **5.4.1.2 Três de Maio:** the case of a small family farmer growing organic soybean

In the micro-region of Três de Maio, the reality of small family farmers is a little different. Supported by the cooperative Cotrimaio (already mentioned in chapter 4), small-scale soybean organic producers have a market opportunity that cannot be overlooked. Taking the small farmer number 11 as an example of a successful organic soybean grower, it becomes possible to demonstrate how interesting the organic market may be for small farmers who are properly assisted by a rural extension institution and a local cooperative.

Owner of a property of 28 hectares, farmer 11 was tired of using so many different chemicals in his cash-crop plantation (soybean and corn). On his late 50s, this farmer could no longer afford the threat to his health on using so many chemicals. Concerned about his family and wishing to change production, farmer 11 decided to contact EMATER Santa Rosa and the local cooperative for more information on organic production. Aware of the commercialization of organic soybeans to Europe, farmer 11 contacted the experts of Cotrimaio and EMATER Santa Rosa for advice on how to implement changes. He wanted to become an organic farmer. After learning more about organic production and agroecology, the small farmer started to rearrange his farmland. Organizing the area in a way to properly grow staples and cash-crops, the small farmer started to change production. During the first 2 years, the small family farmer had to learn from and rely on the assistance given by EMATER Santa Rosa and Cotrimaio.

Changing production was more complicated than the farmer had expected. The production loss was quite high and the work was intense. Without proper assistance the small family farmer believes that would be hard to succeed. Also, for the first 2 years the cooperative Cotrimaio was giving a good premium price for the transitional organic products. This premium would be the perfect stimulus to keep changes going. Farmer 11 had the guarantee of producing organic crops for a better price.

From the third year on farmer 11 said that it became more satisfying (cheaper, healthier and less tiring) to grow organic, with the supplementary advantage of a better price. Cotrimaio at that year was paying a premium price of 30-40 per cent more than for conventional soybeans. However, the benefits of growing organic were not only related to the economic benefits but also to health and social and environmental issues. The small family farmer and his family felt more proud to be working the land without spraying chemicals. Farmer 11 said that his health was stronger than of his neighbors', who would now envy him for his organic production. Besides, the small family farmer said that from the third

year on the work required on producing organic soybean was almost the same as on producing conventional. The difference now would be that the small farmer wouldn't need to buy expensive inputs.

Commercially growing organic soybeans for human consumption, wheat, corn and rye, the small family farmer is still improving his quality of life, increasing income and keeping on farming. Farmer 11 also explained that he doesn't grow only commodities, but inside his farmland the subsistence production allows his family to live on the products extracted from his own land. Managing the area on an agroecological way - growing organic black beans on his front yard and raising hog, cattle and chicken on his back yard - the farmer gets enough staple food for his entire family and lives on the products of his own property. Assisted by agents from EMATER Santa Rosa and Cotrimaio, farmer 11 doesn't need any additional financial support. The assistance from the two institutions, the food he extracts from his land and the profit he gets from the commercialization of organic crops are enough for a comfortable life in Três de Maio.

#### **5.4.1.3 Dezesseis de Novembro:** the case of a local school assisting small family farmers within the rural community

Attentive to not only linking small farmers to independent institutions, cooperatives and enterprises but also trying to intensify local social relations so that entire rural communities get involved in the agroecological projects, EMATER Santa Rosa is developing programs joined by local schools. In Dezesseis de Novembro, a municipal district of Santa Rosa, for example, the local school Escola Estadual São Jerônimo was stimulating the dialogue between farmers, rural workers, EMATER Santa Rosa staff and the Catholic Church since 2000.

Led by Neuza Nunes Colbek, the headmaster of the school at the time (who has a postgraduate degree in history and geography), the community conducted a DRP and started to organize meetings, finding small solutions for their everyday chores by simply exchanging information. The more people would exchange ideas, the more they became interested in learning new ways to progress. With financial support from the state government through the RS Rural, the community gained access to better electricity and improved their water system. The school staff had encouraged the youngsters (a little more than 90 students) to grow agroecological products, and for that purpose a vegetable garden and a small cultivated-area with medicinal herbs were set up in the schoolyard. These products were consumed on a daily basis in the school lunches and also sold at local and regional fairs.

More importantly, the rural transformation in Dezesseis de Novembro was not limited to agricultural improvement in the area. The entire community was involved; women worked together with the school; students were increasing their

interest in farming; and many individuals were committed to improve the local reality. Besides, these changes were meant to be long term. In fact, the local groups were getting stronger and mobilizing the interest of the entire community to sustain their actions further from the period of direct commitment of EMATER Santa Rosa. During the first interview conducted in the area in 2002, Ms. Colbek said that the students, their families and the rural community were willing to work together to improve the quality of life in Dezesesseis de Novembro.

When interviewed again in year 2004 Neuza Nunes Colbek was not the headmaster of the school anymore. She was a teacher at both the Escola Estadual de São Jerônimo and at the other local school Escola Estadual de Ensino Médio Padre João Baptista Réus. Ms. Colbek was not only continuing the agroecological work but also developing programs with students and their parents for increasing the awareness for water preservation, alternative food production, medicinal herbs and the creation of a seed bank (maize, *milho crioulo*). The local schools were working as incubators of new interesting ideas for the local community and also strengthening relationships in the area. Through works developed in partnership with local NGOs (Grupo Geração, Rede and STRF), EMATER Santa Rosa, Christian Churches and a local syndicate (ASF, sindicato fronteiriço), the local schools were helping the community to restore basic social values and increase the awareness for a more sustainable rural development through the use of songs, theater plays and poetry.

Neuza Nunes Colbek also explained that since year 2000, when the work with EMATER Santa Rosa started in the region through the DRP, the community got more interested on revitalizing the local rural area. With the agroecological project as the pioneer project for these changes, the community in year 2004 was more aware of better local social relations. Poor farmers were less embarrassed of their social situation and more proud of their work, the community was developing more projects based on the need to improve the community basic hygiene (i.e. sewerage system), to improve health conditions and to improve the environment (i.e. creating orchards). The community in these 4 years became more solidary. The community united and staple food production for the local market increased (black beans, maize, cotton and vegetables). Cattle production for local consumption also increased and the neighbors became friendlier with each other. The social changes perceived were achieved because of the approval of the agroecological projects developed to revitalize the rural area.

A good individual example in the region is of a small family farmer who became a local cheese producer through a project developed by EMATER/RS and assisted by the local schools. Before this project was launched, the family of farmer 25 was in a bad social condition and the 2 daughters were very skeptical about a bright future in the rural area. Even though both daughters like to farm, they couldn't see themselves getting out of university and going back to farming.

With the agroecological project, their feeling changed. Organized by the

mother (farmer 25) and supported by the 2 daughters, the structure of the farm was improved. In its 19 hectares, where the family used to grow crops and raise cattle, the family now is producing cheese, raising cattle, swine, chicken, producing maize and sugar cane. With a rocky soil, not very favorable for planting grains, the family decided to invest more on animal production and on the small-scale cheese production. Obtaining from 48 to 50 liters of milk per day, the farmer is able to make a good quantity of cheese every 2 days, even during the driest seasons. Besides, as the cattle are fed with organic products and the diseases cured through the use of homeopathic medicine, the cheese is now being labeled as organic and sold in the local market with some additional value.

After the development of the cheese production and the stimulus given by EMATER/RS and the local schools, the family is more stable economically and more interested on investing in the neighborhood area aiming for the establishment of interesting market relations. The family is already planning to start a cooperative, including some of their neighbors. The daughters are dreaming on going back to the farm and implement their knowledge acquired at university.

The schoolteacher Neuza Nunes Colbek adds that this family was very successful due to the work developed with the entire community when EMATER Santa Rosa started to implement the agroecological venture in the region. She said that the DRP was the first strong “push” necessary to stimulate local people like farmer 25 to envision changes in their lives and embrace a more sustainable rural development. Because of the rural transformation initiated by EMATER and its project, the community increased the awareness of agricultural and rural local matters. Reviving the local community through the use of agroecology was a great opportunity to develop other projects related to environmental and economical issues.

#### **5.4.1.4 Salvador das Missões:** the case study of a small family farmer producing a local sweet

Impoverished and looking for an alternative out of conventional cash-crop production, the small family farmer 20 contacted EMATER Santa Rosa in 1999. Advised by the extension agents, the small family farmer decided to write a project to the state government to get financial support to open a small family enterprise. Based on the agroecological program, the small farmer 20 and his family wanted to produce organic sweets (*rapadura de amendoim*) for the local market. EMATER Santa Rosa assisted the farmer on writing the project and submitting it to the government. After 6 months, the project was approved and the small farmer received R\$ 15,000 (approximately US\$ 5,000) to be paid back in 8 years. The small farmer now had only to learn how to produce the organic sweets on a large scale and on how to organize sales.

The sweet is made of sugar cane and peanuts. At the beginning of the project, the small farmer was only producing sugar cane in a large scale and had

to buy peanuts elsewhere. The best alternative found was to buy peanuts from Paraguay. The quality and the price were better across the border. In the meanwhile, the small farmer re-organized his farmland in order to produce organic sugar cane, peanuts and staples. The small farmer was aware that would be healthier to grow only organic products in his farm. He is already an elderly man and he was worried about his grandson's health. However, because of their economic instability the small family farmer was worried about stopping growing conventional cash-crops. Thus, his son decided to keep on growing conventional soybeans outside his father's farmland. His son got financial support from the Banco da Terra to rent more land - around 30 hectares - and kept on growing the crop away from their home.

In 2001, the organic production of sweets became a priority. The production was dynamic and the family developed their own technologies. The family designed and built their own oven to roast peanuts and developed a new production method. The family would make the *melado* from sugar cane, roast the peanuts, cook the sweet, put them in small tins and pack the final products. Everything would be done inside their farmland with only the family work force. From year 2002 the small family farmer was already growing both organic sugar cane and peanuts, and improving the production of the organic sweet. Even the wrapping and labeling were done by the use of their own developed machinery.

In year 2004, when the last interview was conducted in the farmland, farmer 20 and his family were producing and selling around 24,000 units of the organic sweet a year. Selling straight to the local market, the small family farmer would avoid intermediates and the profit would come entirely back to the farm. The selling would generate an income that was allowing the family to improve the quality of their lives. However, this small family farmer is not entirely aware of the benefits of becoming entirely agroecological.

Living in an area where he cannot easily commercialize organic commodities, farmer 20 is now (year 2004) growing genetically modified soybean in the area rented by his son. Benefiting from the GM soybean because of the easiness of its production, the small farmer is not interested on growing organic soy because he commercializes the transgenic one for the export market in an interesting deal. As the farmer uses less herbicide and he is saving the seeds smuggled from Argentina for the coming years, the cost of producing GM soybean is far cheaper than the production of conventional soybean and less hard-working than transforming his production into organic. Unaware of the benefits for the environment and for his family's health, this small family farmer did not take part on the agroecological activities in the region. In this sense, farmer 20 didn't favor from the opportunity of learning more about the benefits of a more environmentally friendly agricultural production and didn't get involved with the rural community. Even though farmer 20 is producing an organic product, he is not fully aware of the benefits of agroecology.



#### 5.4.2 Beyond Agroecology toward Local Market Linkage

For the reconnection of small family farmers to local communities, EMATER Santa Rosa encouraged the organization of the local market structure in the town of Santa Rosa. In stimulating the dialogue between the Municipality and the Association of Horticulture Producers (APRHOROSA - Associação dos Produtores de Hortigranjeiros de Santa Rosa), EMATER Santa Rosa came across a sustainable option for the sales of local products. After some negotiation between the three organizations, a public market was established to enable small family farmers to sell their products to local consumers. These family farmers who used to sell their products in a local fair once a week were offered a place where they could more comfortably sell their production three times a week (Mondays, Wednesdays and Fridays) all year round. Ranging from organic vegetable producers to local butchers, these small family farmers were able to change their reality with the establishment of this local public market. Assisted by EMATER Santa Rosa's staff, farmers understood that they had now a more stable consumer market that would continuously absorb their production. In assisting these producers, the rural extension agents could help them on changing practices and finding local market opportunities.

When talking to the farmers at the local market, four stories were particularly worthy of attention (see Table 5.13). The first farmer interviewed, 26, was a rural worker who had been contaminated by agrochemicals and couldn't find a job. Impoverished and without means to support his family, the farmer looked for help at EMATER Santa Rosa's office. Assisted by the staff, farmer 26 was financed by PRONAF and was enabled to buy 800m<sup>2</sup> of land. Working with his wife, the farmer was assisted to start growing organic vegetables and fruits. In eight years, this small family farmer increased his farmland to 2 hectares and now he produces enough to sell at the market three times a week. His products are extremely well taken care off. The quality is superior to the conventional ones sold at the market and the prices are the same.

**Table 5.13.** Small Family Farmers at the Farmer's Market - Santa Rosa

Farmer*	Age	Ha	Previous Reality	Actual Production
26	50	2	Sick rural worker intoxicated by the use of herbicides	Organic production of fruits and vegetables
27	45	9	Commodity production for the export market	Production of vegetables, fruits and fish
28	42	38	Commodity production for the export market	Flowers, vegetables, fruits, cattle, soybean, maize, wheat
29	55	0.5	Conventional vegetable production	Small family industry of processed meat and sausage

\* The small family farmers were interviewed in April 2004 at the local market in Santa Rosa

This small family farmer said that consumers in the local market wouldn't agree on paying a premium price for organic vegetables. The local consumers believe that organic and conventional vegetables and fruits should be sold at the same price. However, the consumers prefer to buy the products from this small

farmer rather than from the conventional producers. Around 50% of his consumers come every week and buy vegetables and fruits only from him. This probably happen because the quality of his products are very high. Farmer 26 is very careful with his production and does everything himself, no machinery is used. Farmer 26 also makes pickled fruits and vegetables for the consumers.

Farmer 26 now has a stable income, his own house and a car, which he uses to transport his production to the local market. The small family farmer wants to keep on farming as long as he can. Farmer 26 is now thinking about buying more land and increasing production. He wants to keep on growing organic but in a larger scale. He said he will try to negotiate with his brother, who is also an organic farmer, to increase production and work together. He wants to get assistance from PRONAF and already talked to EMATER Santa Rosa staff about it.

The second farmer interviewed, small family farmer 27, used to grow conventional soybeans, wheat and maize for the export market. As his farm is small (9 hectares), he couldn't profit enough from commodity production and his income was quite low. The small family farmer was depressed and wanted to stop farming. In 1986, when EMATER Santa Rosa staff came to his farm and pondered with him the possibility to change production to vegetables, fruits and fish he was skeptical and afraid of the new challenge. After some discussions with the staff, the young farmer decided to give it a try. The farmer built a tank to raise fish and started growing vegetables and fruits. For the first 4 years he couldn't obtain good results from the fish or orchard. He experienced some money loss and his faith decreased, but with constant assistance from EMATER Santa Rosa and a lot of persistence, the farmer resisted the temptation of going back to commodity production.

In 2004, when the farmer was interviewed, the whole family was working together on the farm. Not only he is profiting from the commercialization of organic products, but his family is also benefiting from the changes in the farm. He farms together with his wife and 3 other family members. He has a young daughter and he believes that she will also assist him in the farm when she is old enough to go to school. Farmer 27 believes that a small family farmer has to be very courageous to change production. He said that changing from conventional soybean production to organic vegetables is quite a challenge. There is need for a lot of experience and the losses in the first years are quite high. After changing production, however, the benefits are enormous. Farmer 27 is happy with his decision and his stand is one of the most visited in the public market. Farmer 27 is considered a successful farmer by the local society.

The third farmer interviewed, small family farmer 28, used to produce only conventional commodities for the export market. In his 38 hectares, farmer 28 and his family were growing soybeans and corn and were not satisfied with the amount of chemicals used. Farmer 28 wanted to change production but he didn't

t know how to do it and what to grow. He was raised at the farm and his parents were already producing the same crops for many years. So, he decided to ask the staff of EMATER Santa Rosa to assist him on changing production.

Assisted by EMATER Santa Rosa, the farmer changed his entire production. Based on environmentally friendly agriculture, the staff advised farmer 28 to start producing vegetables, fruits and organic cash-crops. In year 2004, the production was already 100% organic. Farmer 28 and his family were producing flowers, vegetables, fruits, soybeans, maize and wheat. The flowers, vegetable and fruits were been sold at the local market 3 times a week since the market was opened. The cash-crops were sold to the local cooperative (COTRIROSA) and to a local private enterprise (Camera). Soybean is grown in 26 hectares of the farm and the family uses machinery to harvest the production. Even though the soybean is organic the family cannot avoid the use of machines. Farmer 28 said that because his farmland is rather large it is profitable to continue producing commodities in a large scale. Producing only organic vegetables and fruits for the local market would not be economically viable.

Farmer 28 is satisfied with the productivity of his land. He wants to keep on growing staples and cash-crops, but he doesn't want to buy any more land for the moment. He has no interest in getting financial support from the state government, but he wants to keep on receiving assistance from EMATER Santa Rosa. The farmer now wants to improve his production and start growing and harvesting peanuts to be used on the make of sweets. The small family farmer and his wife said that they want to sell peanuts already on the coming year. They were already questioning the EMATER Santa Rosa staff on how to get a machine to thresh peanuts.

The fourth farmer interviewed the small family farmer 29, wanted also to get out of conventional production of commodities. His wife was quite sick and his son didn't want to work on the land anymore, he wanted to go to town and find a job there. The small farmer contacted EMATER Santa Rosa staff and decided to build a small butcher shop in his 0.5 hectare. Financed by PRONAF, the small family farmer started to buy the meat from the neighbor farmers and process it in his shop. In 2004, when interviewed, farmer 29 was making ham and sausages to sell at the local market.

The wife of farmer 29 was still very sick when interviewed. She believes that she will not be able to help the farmer with the business and that he will have to do it all by himself. His son also was present during the interview and said that he has no interest on going back to farming or to process meat. He is working for the local radio station and he is about to get married to a girl who also lives in Santa Rosa. She also said that she doesn't want to work in a farm. Farmer 29 will probably have to continue his production of meat on his own, but he doesn't complain. The small farmer said that if he was producing conventional commodities he would most probably have to stop working the land and

move to town. However, as he is only processing meat, he is able to continue the business alone and sell the products in the local market.

With four different stories, all four farmers had something in common. The farmers made clear that, without the local market and the support from EMATER Santa Rosa they would not be able to achieve good results. And, as EMATER Santa Rosa is a non-capital oriented organization, the small farmers said that they could trust the advice given with the assurance of future benefits from the stable local market. The staff that worked with those farmers made clear that the main goal of the institution was to stimulate changes in the rural areas and assured that small farmers may improve their social status by simply changing their focus. EMATER Santa Rosa's staff assisted small family farmers to embrace changes for a more sustainable rural development.

#### **5.4.3 Some Implications for a More Sustainable Development of Rural Communities**

Aware of individual cases, EMATER Santa Rosa is conscious that the agroecological project didn't reach all small family farmers the way it was supposed to. With many ongoing projects, EMATER Santa Rosa hasn't been able to focus on only increasing the awareness of farmers towards a more sustainable rural development, but the institution is making small changes possible combined to the reality of each farmer and each rural community. As agroecology couldn't be implemented in each area of Santa Rosa, EMATER Santa Rosa is now searching for feasible clean alternatives, working together with farmers, local churches, local schools and local organizations.

Agroecology was the scientific basis for many changes embraced by the local communities in the entire region of Santa Rosa. EMATER Santa Rosa, through this agroecological "boom", increased the awareness towards many environmental and social aspects that were disregarded by rural communities for a long time. Far from being the perfect answer for every farmer in the region, the agroecological venture was the beginning of a more sustainable rural transformation in South Brazil.

The promotion of the agroecological project served to divert some family farmers away from GMOs and, despite of the plantation of Roundup Ready soybean smuggled from Argentina, a great number of small farmers are showing great interest in changing their farming model (Table 5.14). In addition, many of them said that they relied on EMATER Santa Rosa for such a transformation and appreciated its close relationship with local farmers. EMATER Santa Rosa's activities based on agroecology played a key role in enabling farmers to access alternative technologies and markets, and diverting small farmers away from GMOs without addressing a political ideology or emotional perception.

As mentioned before, with the election of a right-wing governor (Germano Rigotto) in Rio Grande do Sul, the priorities of the state government slightly

**Table 5.14.** Farmers' Opinions in Santa Rosa Regarding Agroecology and GMOs

Farmer	Age	Size (ha)	Growing Organic	Agroecology			GMOs		
				Positive	Not Sure	Negative	Positive	Not Sure	Negative
14	41	9	X	X					X
20	60	12		X					X
15	28	14	X	X					X
22	39	21		X					X
11	58	28	X	X					X
12	63	31		x (if profitable)			x (if legal)		
16	54	36	X		X			X	
13	25	40		X					X
18	51	80			X			X	
17	76	103				X		X	
21	25	120			X		X		

Source: Authors' Survey in Santa Rosa, RS, Brazil, in December 2001 and July 2002.

changed. Even though the government still helps small family farmers and still supports the utilization of clean agriculture practices, the main foci is different. The new governor is more interested on stimulating the economy. His administration is prioritizing the establishment of small rural enterprises, job creation and other alternatives to generate capital in the rural areas. Removing the agroecological program from being a priority in the state, projects for the establishment of locally family-based enterprises and multifunctional activities are taking place. Even though EMATER/RS is still aiming for a more sustainable rural development and is still implementing environmentally friendly agricultural practices, agroecology and the implementation of DRPs in the local communities are not priorities anymore. The inclusion of rural communities on the choices for agroecological programs is not required anymore.

Taking the region as Santa Rosa as an example, in the end of year 2003 EMATER Santa Rosa presented to the president of EMATER/RS the results of the works developed that year (Table 5.15). Comparing this report to the one of year 2001, it is very clear how the institution is now displacing the implementation of DRPs and giving more emphasis to other activities (i.e. field work, courses and seminars). However, even though agroecology is not a priority anymore, EMATER Santa Rosa is still trying to revive the rural areas through the development of locally based programs, fairs and festivities. EMATER Santa Rosa

**Table 5.15.** ATER - EMATER Santa Rosa 2001 and 2003

Action	2001	2003
Visits	23,273	28,320
Meetings	3,406	5,638
Demonstrations of Methods	1,160	3,395
Courses	292	458
Trips	145	256
Field Work	30	83
Seminars	149	251
Newspaper Articles	489	973
Radio Programs	2,721	4,398
TV Programs	107	195
Development Plans	71	40
<b>DRP/Number of Families</b>	<b>698</b>	<b>38</b>
Campaigns	84	136
Expositions/Fairs	82	61
Observation Unities	160	158
Experimentation Unities (UEP)	82	36
Staff Meeting	809	1,629
Agroecological Stores	525	695
Assistance in local offices	71,613	116,503
Plans to receive financial support	3,750	5,917
Projects for PRONAF	2,016	2,582

Source: EMATER/RS 1999-2002

is still trying to make farmers aware of social and environmental issues.

According to the report presented by EMATER Santa Rosa in December 30<sup>th</sup> 2003 (C.C.ERSR 061/03), the regional office shows an increase in the number of beneficiaries. With a total of 110,958 people assisted, EMATER Santa Rosa had an increase on assistance by the order of 21% from the previous year. Assisting farmers, women, youngsters and schools EMATER Santa Rosa proves how committed the institution is with the local communities. While the number of participants in DRPs decreased by 48%, as an evident proof of the disregard to the agroecological project, the number of farmers going on field trips increased by 83% and the number of farmers assisted in their own properties increased by 69% (Table 5.16). Not only that but also the number of families assisted were more than 30 thousand and of the communities more than 1 thousand, an increase of 12 and 7 per cent respectively from the previous year (EMATER/RS 2003).

These numbers come as an evidence of the commitment of EMATER Santa Rosa to the local communities. Even though the state government changed, the institution is still working for the benefit of rural communities and individuals in the region. EMATER Santa Rosa’s approach is a model that should be repeated in the entire state of Rio Grande do Sul. The local institution is implementing a very educative and participatory approach that seems sustainable, as it remains constant. EMATER Santa Rosa also shows that the concern with small family farmers still the same even with the different strategies implemented by EMATER/RS. Embracing agroecology or clean agriculture, the aim is to improve the well being of small family farmers.

**5.5 Concluding Remarks:** The Need to Reach to the Local, to the Regional and to the State

As shown on the illustrative case studies presented on Santa Rosa region, it seems plausible to acknowledge the positive influence of an institutional host on stimulating rural changes. Small family farmers by many times are interested on making changes but don’t know exactly how to do it. The work of an institutional host on stimulating farmers to change production to more environmentally friendly alternatives, which are also profitable, is essential. Small family farmers need assistance on making such changes. The work of the institutional host presented in this chapter, EMATER/RS, has been important on promoting changes in the localities. The responses of small family farmers in the region of Santa Rosa were rather positive.

**Table 5.16.** EMATER Santa Rosa - Comparative 2002-03

Activity	Percentage
Number of farmers assisted	+ 21%
Number of families assisted	+ 12%
Farmers at meetings	+ 31%
Farmers at demonstrations of new techniques	+69%
Farmers at courses	+28%
Farmers at field trips	+83%
Financial credit beneficiaries	+9%
Farmers at plans for participative development	-34%
Farmers at DRPs	-48%
Expositions and Fairs	-12%

Source: EMATER Santa Rosa 2003

As mentioned all along this thesis, the relationship between small family farmers and among rural communities has deteriorated. Small family farmers hardly interact with each other and rural networks are weak. As such, the use of an institutional host to promote interaction is fairly significant. With good stimulus, small family farmers may learn from the experience of their neighbors; rural communities may intensify their relations; local cooperatives and institutions may adapt their strategies to the needs of local actors. This stimulus, however, may be stronger coming from a facilitator.

For the achievement of a sustainable rural development, not only small family farmers are in need to rebuild their social arrangements and create new networks, but policies are ought to be adapted to the needs of local actors. The state and federal governments have to give more room for maneuver for local institutions to stimulate changes in the localities. Policies should favor the opportunities created within local communities and their networks. Sustainable rural development will only be achieved when the entire rural arrangement is reconstructed.

The state government should give EMATER/RS more autonomy and authority. Making use of this institutional host in Rio Grande do Sul is a great strategy that shouldn't be overlooked. Even though EMATER/RS is limited by some structural problems that will be analyzed in the next chapter, this institutional host has been playing a great role on linking small farmers and rural communities to the local networks.

## Chapter 6

### **Re-thinking the Partnership between EMATER/RS & Small Family Farmers**

#### **6.1 Introduction**

As analyzed in chapter 5, the work of EMATER/RS as an institutional host is important for the reconstruction of small farmers' rural social fabric. Addicted to commodity production and distant from the local communities, small family farmers are in need of proper assistance to reconnect themselves to the heterogeneous local realities. Small farmers may not succeed alone.

Based on the agroecological approach embraced by EMATER/RS, in this chapter the attempt will be to show the structural limitations of this rural extension institution. Analyzing some minor problems during the development of actions of technical and extension assistance, the proposal will be to show the need for some structural changes.

## **6.2 The Structural Limitations and Challenges for the Improvement of the Rural Extension Assistance**

During the agroecological approach, the goal of EMATER/RS was meant to be the complete implementation of agroecology in the state. However, a full-scale agroecological project was not fully implemented. In many regions, small family farmers were not empowered as they were supposed to and rural communities were not entirely involved in the changes applied in the farmlands. This happened mainly because of limitations in EMATER/RS's role as a rural extension institution.

During the agroecological project, some characteristics of previous periods of assistance remained. As seen in chapter 5, for decades this extension institution didn't request small farmers to create their own strategies or to develop their own local arrangements. On the contrary, while under the military federal government, for example, EMATER/RS would expect farmers to simply do what the institution was told they should do.

Maybe because of this long history of putting into effect the desires of the state and federal governments, the agroecological project met some limitations. During the agroecological approach EMATER/RS had the tendency to stimulate small family farmers to adjust their needs to the implementation of agroecological practices. Sometimes the small family farmer didn't want to become agroecological or sometimes the small family farmer couldn't really become agroecological because of problems with ants, for example. The EMATER/RS staff would consider the problem, ponder with farmers some strategies, but in the end the staff would always try to implement agroecological alternatives. Sometimes it would work, but for many times agroecology was not the most appropriate solution for some of those farmers. The result was that some small family farmers had to give up their project because the costs were too high or because in the end the project was not really suitable for the local reality. EMATER/RS agents implemented projects that were very interesting on paper, but actually didn't really work in the way it was expected to. The agents would often come with ready-made solutions and not really develop new alternatives with small family farmers.

On the other side, small farmers also tended to expect these ready-made alternatives from EMATER/RS. Instead of creating their own circuits with the support of EMATER/RS, some small family farmers had the tendency to expect the institution to create the arrangements for them. This would happen often because small family farmers are already used to rely on the government and on institutions related to it. They've been taught along the years to believe the government is supposed to solve problems for them. Many small family farmers interviewed believe that the solutions for their problems are to be found within the government.

For small family farmers to change this belief, the work developed by the



government through its rural extension institutions will have to change. During the agroecological project some changes can be already perceived, but there is need for further improvement. EMATER/RS still has to further the reconnection between rural communities and small farmers. EMATER/RS has to reform its own intervention policy. For changes to take place, three basic requirements need to be fulfilled: decentralization of authority, reconstruction of small farmers' social fabric and the development of stronger local leadership.

### **6.2.1 Paternalistic Tendency and Need to Decentralize Authority**

During the agroecological approach analyzed, EMATER/RS maintained a tendency to centralize authority on the development of practices. When developing actions of rural extension assistance, EMATER/RS staff would set up new practices for small farmers (i.e. rotational cattle pasture) and assist them on implementing changes in the farmland. Agroecology was supposed to be followed and farmers were expected to choose practices that would meet the model.

This probably happened because of the style of intervention chosen by EMATER/RS along the years. The main difference now was that, with a different goal, during the agroecological approach the practices brought from the staff would be environmentally and socially sound. Once the new practices would be implemented, the focus would be on the farmers and on finding with them adjustments within agroecology. However, the practices brought by the institutional host maintained EMATER/RS's authority, even though they largely favored the farmers, communities and environment.

The benefits to small family farmers were undeniable, but the need to further decentralize authority should be clear. For changes implemented to be sustained, small family farmers have to increase control over their choices on practices. Following the agroecological guidelines, the heterogeneity in practices and responses developed for small family farmers pointed to the generation of multiple social forms, which offered local solutions to similar problems faced by farmers. In this sense, a centralized body cannot easily control these heterogeneous responses; they have to be locally sustained. Small family farmers and rural communities need to increase their authority over the changes implemented.

It is important to clarify that the agroecological intervention of EMATER/RS was different from the previous programs adopted by the institution. Through the agroecological approach, EMATER/RS was enabling small family farmers to adapt agroecological practices according to their different local realities. The agroecological approach was important to enhance the necessity of furthering changes based on the well being of local communities and environment preservation. However, as observed, small family farmers were not fully empowered on choosing their own practices and on sustaining changes after the involvement of EMATER/RS.

To increase small family farmers' autonomy, EMATER/RS has to decentralize its authority even more. In some rural areas agroecology was not the right answer for local problems. As observed, different realities require different responses and different approaches. Small family farmers should be able to find out by themselves the most appropriate answers for their local needs. If small family farmers develop more authority over their own choices and over the practices chosen, the rural changes implemented may further their autonomy within local organizations and communities. EMATER/RS's work will never cease to be valuable. Even after small family farmers increase autonomy the work of EMATER/RS as a facilitator will continue to be useful.

### **6.2.2 Lack of Local Leadership and Need to Rebuild Local Arrangements**

As Neva Hassanein (1999) suggests, a rural community organizing approach seems to work particularly well when there is a clear target and a decision maker who can give the group what it demands. In the particular case of the rural communities researched, both a clear target and a decision maker were lacking in various communities. It seemed quite rare that a local individual would embrace the challenge of rebuilding rural local networks as his or her own quest. Even though EMATER/RS has to some extent empowered farmers, it is apparent that the institution was overlooking the reestablishment of local leaderships and networks. The only atypical case observed was the one in Dezesseis de Novembro (chapter 5) but even then, when the focus was to be shifted from the local level to the national or global levels, the decision maker seemed less identifiable, less accountable and therefore unable to effectively influence small family farmers.

The need for EMATER/RS's assistance is still essential in the entire state because the local leaders and rural communities are still in need to rebuild their local arrangements. Without the support offered from the institution, the small changes identified in the areas researched will most probably not last. Local organizations are still relatively weak and rural communities remain rather passive. The lack of a strong leadership in the areas researched was clear. After agroecology was not a priority of EMATER/RS anymore, organizations and associations decreased in number. The number of agroecological associations, for example, decreased from 354 in 2002 to 154 in 2003; a decrease of 200 associations in only 01 year (EMATER/RS 2003 & 2004).

Until local leaderships naturally arise and community networks are rebuilt, the intervention of EMATER/RS still necessary. The institutional host needs to further stimulate farmers to initiate changes and assist them on implementing new practices. Nurturing local leadership is essential. Due to the migration of young farmers to urban areas and the aging of communities, young leaders are a rare piece in the local set. Also, maybe because of a long history of oppressed daring leadership (i.e. during militarism) farmers are often skeptical on engaging on local movements organized for implementing changes. Small family farmers

are in need of rebuilding confidence in individuals who will lead them to progress. Small farmers need to rebuild trust on local individuals, and on local organizations.

As a matter of fact, EMATER/RS should implement new empowering actions. Small family farmers are ought to be less dependent and reliant on assistance. New leaders are probably the most long-lasting response for such dependency. However, this change is not likely to happen spontaneously. Rural extension institutions and local organizations have to gradually stimulate small family farmers to rebuild their own local social arrangements.

So far, the attempt of EMATER/RS to empower local actors hasn't been enough. During the agroecological project EMATER/RS tried to reduce the dependency of small family farmers on the government, but the result was not satisfying. Perhaps the lack of success happened because of policies developed by the Brazilian federal government. The Brazilian federal government tends to develop policies that have a highly paternalistic outcome. This tendency should be lessened through the implementation of rural extension programs.

### **6.2.3 Need to Reconstruct Local Social Fabric**

The work of EMATER/RS should be more to facilitate the reconstruction of the relationship between farmers and communities, and not to get so much involved on the ability of the two sides to sustain local changes. EMATER/RS should focus more on stimulating the local actors to identify opportunities within their own local realities.

When a facilitator works more on reconnecting farmers to local communities, sustainable changes may be obtained. As observed on the case study of Projeto Esperanca (chapter 4), in Santa Maria region the need to organize the sales of agroecological products at the local market based on the concepts of 'alternative cooperativism' and 'popular/solidary economy' was indispensable. The commerce center Cooesperanca was established fostering a fair business between producers and local consumers. Most probably, this center will be sustained as long as it properly reaches the demand of local consumers. Said that, EMATER/RS as a facilitator should further the participation of local communities on the design of new market places, like it was done in Santa Rosa (chapter 5). Even though EMATER/RS cannot respond to this limitation by simply building a commerce center in each region, EMATER/RS should create the ground for dialogue between local consumers and producers for the design of sustainable market structures.

During the agroecological approach, EMATER/RS developed many market strategies to sell agroecological products in a way that could not be sustained after the program was not considered a priority. As already mentioned on chapter 5, in 2001 more than 107 weekly markets were established for the selling of agroecological products. EMATER/RS would organize the local commu-

nities and provide the structure for those fairs to take place. After the change on the state government, the priority was not set on agroecology anymore. As a result, in the region of Santa Rosa, for example, the organization of expositions and fairs decreased in the order of 12% (see table 5.6) and the sale strategy of many small agroecological farmers was displaced.

The importance of small family farmers attaining market stability on their own or with the support of local organizations is crucial. During the agroecological project, the support given by EMATER/RS was very important, but its support should not be essential. Organizing fairs and hosting events for agroecological products EMATER/RS often created market arrangements that were not sustainable in the long-term. As a matter of fact, after agroecology was not a priority anymore the number of agroecological fairs decreased. In 2002, the number of ecological fairs was of 138 fairs per week while in 2003 the number decreased to 121 fairs per week (EMATER/RS 2003 & 2004).

The relationship between small farmers and local consumers is still weak and the network between communities is fragile. For local autonomy to be attained, the establishment of a stable local market (as seen in chapter 5) is essential. Simply stimulating farmer to “go local”, to grow organic food or to grow more staple crops is not enough. If the local regions are not autonomous, if the relationship between local consumers and local producers is not strong, there will be no maintenance of changes in the farmlands. The local market support is as necessary for food production as the export market is essential for commodities.

### **6.3 Concluding Remarks**

Sustainable agriculture in rural South Brazil may be socially, economically and environmentally achieved. There are already inexpensive environmentally friendly practices developed, a strong local institutional host and enabling local organizations. However, there are still some limitations to be surpassed. Mainly, the institutional host still has to make some changes on its structure. The agroecological project was full of promising outcomes, but the limitations on the way small family farmers were approached limited the results. The major inadequacies that need to be corrected lie on the need to decentralize authority, reconstruct local social fabric and on building up local leadership. For a more sustainable rural development to take place, rural extension programs must not repeat the past mistakes of coercive intervention and control. Rather, they will have to be enabling, so creating the conditions for sustainable development based on local resources, skills and knowledge. The greatest challenge therefore, will be to reform assistance. EMATER/RS will have to focus more on social mediation if the complexities of sustainability are to be addressed.

## Chapter 7

### Conclusion

#### 7.1 Précis

The four most important considerations that have emerged throughout the analysis in the previous chapters are as follows. The first consideration (discussed in chapter 2) is the drifting “vicious cycle” of the Brazilian federal government. Re-creating policies focused on the manipulation of agriculture in favor of the industrial development, the Brazilian federal government finds itself imprisoned in a wicked triad: the significance of exporting commodities for the process of development; the country’s external vulnerability; and the need to increase GDP to meet external debt. This feature of Brazilian politics based on economic trends largely accounts for the dreadful consequences to the country’s environment and social structures.

The second consideration (discussed in chapter 3) is the “addiction” of small family farmers to commodity production. Even though the federal government is giving incentives for small family farmers to grow food crops, a great number of small family farmers want to keep on growing commodities. Dorward and his colleagues explain this persistence on presenting some characteristics that attract small farmers to commodity production, suggesting that the economic risks of planting soybeans are far smaller than of a common staple crop. However, it is argued that the fluctuation in the prices of primary commodities in the world market generates certain instability to commodities. The profit acquired from soybean production is not reliable. Small-scale soybean farmers in Brazil may be in an imminent economic crisis.

The third consideration (discussed in chapter 4) is the need to (re-) connect farmers to their rural communities in order to sustain changes in agriculture. For the achievement of a more sustainable rural development, the reconstruction of relationships in the localities and the reorganization of rural communities are necessary. For rural development to be sustainable it needs to come as a reconsideration of the multiple and heterogeneous realities of the local rural life. However, many of these local realities have been neglected or forgotten, perceived as insignificant within the intensification of agriculture. Thus, it seems rather difficult that local actors will restore their social relations spontaneously. There is need for some stimulus.

According to the research conducted in rural South Brazil, the assistance of an institutional host to further the communication among local actors is essential, leading us to the last consideration. The fourth consideration (also discussed in chapter 4 & 5) is the need of an institutional host to assist small farmers on

rebuilding social networks. In the areas researched, the relationship between farmers and local communities is so deteriorated that, for both sides to learn about common interests, it becomes necessary the involvement of a host to stimulate interaction. An institutional host that is attentive to the global reality, which is able to develop projects for rural sustainability, which has a reliable funding and which has a great ranging area. An institutional host that is able to include rural communities and organizations in the projects developed and make them as responsible as farmers for the achievement of a rural sustainable development.

In chapter 5, through the illustration of the case studies in Santa Rosa region, it became clear that EMATER/RS might be the most appropriate host to stimulate small family farmers to change practices and rebuild their social fabric in Rio Grande do Sul. Even though this institutional host is limited by some structural problems (chapter 6), its latest approach has resulted in innovative practices and on the restructuring of local networks. The environmentally friendly practices that emerged as a sustainable alternative to what has been largely criticized as cash-crop production had a great range of positive impacts on rural society.

## **7.2 Reflections on EMATER/RS as an Institutional Host**

When analyzing the case studies presented, special emphasis has been placed on the necessity of a host to stimulate changes. The results of the surveys presented in chapters 4 & 5 suggest that small family farmers are in need of proper support and alternative strategies to sustain changes in agriculture. Even though local organizations may assist small farmers on finding new niche markets, without the involvement of an institutional host to assist them on rebuilding local networks, changes for a sustainable rural development may take a long time to (or not even) occur.

The research conducted in rural South Brazil demonstrates the necessity for the involvement of a host to press forward local rural interaction. In its participation, EMATER/RS implemented not only the coordination for financial support (i.e. PRONAF), but also promoted an active interaction between local actors. In the specific case of the agroecological approach, the state government and EMATER/RS exerted great influence over the implementation of proper regulations, proposing and promoting objectives of development. EMATER/RS played an active role in connecting local actors with broader networks within local organizations (i.e. Cotrimaio) and national institutions (i.e. EMBRAPA).

During the agroecological program, EMATER/RS assisted small farmers and rural communities to implement changes that may be sustainable. An evidence of this observation is that, even though the agroecological approach is no longer a priority, the state government still supports environmentally friendly agriculture in Rio Grande do Sul. Not only that, but the federal government, under Lula's administration, is implementing national policies for rural extension

assistance based on the positive results of EMATER/RS's work.

### **7.3 Political Implications for Structural Changes to Improve Rural Extension Assistance and Enhance Sustainable Rural Development**

An analysis that is centered in the government needs not and should not be insensitive to the impact of societal forces on policy processes (Arce 1994). The work of EMATER/RS then should be less about enforcing the desires of the state and federal governments, and more about the development of strategies sensitive to socio-economic impacts on small farmers. The relationship between the federal and state governments and small farmers and rural communities through EMATER/RS should not be summarized into a simple form of intervention. The results of this involvement should not be simply reflections of the political and economic needs of the government. The results should be based on the arrangements resultant from the room for maneuver developed by local actors.

Because of the close relationship with the Brazilian federal government, EMATER/RS is required to assist small family farmers on exploring alternatives by identifying possibilities within the needs of local communities. The focus of this rural extension institution need to increasingly be on the room for maneuver found within the intermediate area between the choices that emerge from the activities of governmental institutions (i.e. EMBRAPA) and the actions chosen by the actors participating in the rural development process.

As previously discussed, in Brazil the choice for a more sustainable agriculture needs to be coordinated by an institutional host to encourage and nurture the transition from the modernized commodity system towards more sustainable alternatives. Programs developed by these hosts should focus on small farmers' reality while agricultural policies developed by the government should focus on enabling rural people to make use of available social and natural resources. For that to happen, the Brazilian federal government needs to establish a national strategy linking together existent extension institutions and local organizations to support the development of appropriate strategies, putting farmers at the center of problem solving tactics.

Understanding the need to create new strategies for rural extension institutions, the actual federal government (under Lula's administration) decided to establish a national council. In the resolution number 40 of April 5, 2004 the Ministry of Agrarian Development established the National Council for Sustainable Rural Development (CONDRAF). Published on the Official Diary on April 7, 2004 this council is a unique attempt from the federal government to combine the ministries, rural extension institutions, local NGOs and local institutions for the development of strategies to assist small family farmers. The aim is to enable these institutions to develop together decentralized local strategies to enhance rural realities. With the right to vote, 32 members (16 from the government and 16 from the society) will chair this council. As already mentioned in chapter 3,

the strengthening of already existent technical assistance and rural extension service has already been embraced by the federal government and this new council is meant to reinforce the involvement of each institution and organization in a democratic way.

The most important distinction in this new council is the involvement of NGOs (i.e. AS-PTA) and local institutions (i.e. CONTAG). However, as this council is still new and its work cannot be analyzed yet, the question here lies on the council's authority. As the Brazilian federal government is rather paternalistic and small family farmers are somewhat in need of support to reconstruct their social fabric, this attempt from the federal government may not really focus on decentralized actions with a centralized organization, but actually on centralizing authority. If the Brazilian federal government is indeed interested in promoting sustainable development, it would do well to focus on supporting small-scale farmers rather than on implementing policies designed to promote exports and international agreements (or "globalization from above").

The establishment of this new council without properly restructuring policies may not suffice. As Pretty suggests (1998), an enabling policy environment is missing not only in Brazil, but in every country. The author explains that almost all policy measures used to support agriculture, currently act as a powerful disincentive against sustainability. The processes essential for sustainable agriculture are not yet promoted. For all benefits of sustainable agriculture to take place, policies should be more integrated and more directed towards local alternative arrangements.

Making use of EMATER/RS and other local organizations to get farmers attention to the development of a more sustainable development is essential. Working in partnership with other institutions, EMATER/RS is capable of enabling farmers to make substantial changes in agriculture. The interrelationship between national institutions, for example, was significant during the agroecological approach. The contribution of EMBRAPA on developing environmentally friendly technologies like the baculovirus and the varieties of maize (chapter 4) brought incontestable benefits to small farmers. The development of specific technologies was necessary to make changes possible in many regions. The authority EMATER/RS had on working together with EMBRAPA to develop specific technologies for small-scale farming has been indispensable.

EMATER/RS then needs to have more authority on intervening with research institutions to reform agricultural research policies and agricultural science towards lines of investigation more appropriate to the complexities of sustainable agriculture. As Long (2001) suggests, development intervention models become strategic weapons in the hands of those charged with promoting them. EMATER/RS may not only work as a tool from the federal government to assist farmers but also as an important ally of small farmers inside the government. The institutional host should be enabled to work for farmers



whenever it becomes necessary that specific research should be done and science applied for the improvement of practices and sustainable production. EMATER/RS is supposed to get more involved on the development and dissemination of knowledge by creating alternative knowledge systems that function outside of the institutions of agricultural research and extension.

Policies and programs developed by the Brazilian federal government have to further decentralize decision-making. The support given to small family farmers needs to be improved. Small family farmers excessively rely on the federal government for problem solving. This behavior is not new and there is a historical background behind it. The dependency of small family farmers on the government has been passed down along decades. It is a behavior that affects small family farmers' ability to develop their own strategies of survival. It is harmful because in adapting their farming practices to each different program, small family farmers are not choosing for sustainable changes, but for changes that satisfy the desires of the federal and state governments.

Small family farmers have "learned" to disregard their own needs sacrificing the production of their basic needs (i.e. food) to join in programs supported by the government. They have lost contact with their own reality and desires and disconnected themselves from the communities and neighbors. Local actors now rarely interact, seldom confront the need of restructuring their local social fabric and don't trust one another. They also find it hard to simply go back to a more sustainable agricultural practice. Some try to adjust to the development of different commodities, others develop strategies to reach a niche market, but these changes may not be sustainable in the long run.

EMATER/RS has good intentions on assisting farmers on reconnecting them back to their rural realities. This institutional host has been trying to assist small farmers who are experiencing difficulties caused by cash-crop production. EMATER/RS took an innovative role during the agroecological approach and became the benefactor of many small farmers. EMATER/RS achieved feasible solutions by developing the DRPs and group discussions through which small farmers rediscovered their needs and identified their dependent behavior. The agroecological program succeeded on helping small farmers on reconstructing local networks.

A lot of change and growth is still necessary for EMATER/RS. As an institutional host, EMATER/RS has to identify and stop any policy and program developed by the state and federal governments that enables dependence to continue. EMATER/RS shall guarantee that small family farmers are empowered enough to identify and embrace practices to respond to his or her needs. This may include teaching them to say "no" to programs developed by the government and teaching them on how to be less dependent. Small family farmers may find freedom and strength in their own local arrangements.

Hope lies in learning more. The more EMATER/RS and the state and

federal governments understand the heterogeneous realities of small family farmers, the better the institutional host will cope with the effects of programs and policies. Searching for more information in the livelihoods of small farmers can help the institutional host to develop more fulfilling strategies for the achievement of a rural sustainable development.

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## ANNEX

### **Annex 1: EMBRAPA**

EMBRAPA is an institution linked to the Brazilian Ministry of Agriculture and Food Supply. It was created in 1973 with the mission to “*provide feasible solutions for the sustainable development of Brazilian agribusiness by generating, adapting and transferring knowledge and technology that benefits Brazilian Society*” (EMBRAPA 2004). The objective of EMBRAPA is to find and implement technological solutions for the development of a competitive agricultural market, increasing productivity, enhancing the quality of products, improving the performance of production chains, and making more efficient use of resources and inputs. These technological solutions should also promote the sustainability of commercial farming activities while ensuring the development and conservation of the natural resource base, without sacrificing production efficiency and environmental quality.

Networking through 37 research units, 3 services and 15 central units, EMBRAPA is present in almost all the States of Brazil, each with its own unique ecological conditions. EMBRAPA-Soja is located in Londrina, Paraná State, and has as its priority the development of technologies, services and products to provide solutions for the soybean sector. EMBRAPA-Soja has released more than 100 new high yielding and disease resistant cultivate, and developed the first cultivars adapted to tropical regions, which made soybean production possible in the *cerrados* region. For several years, EMBRAPA was well placed to fund its own studies. The Government directed investment towards biotechnology and agricultural innovation. At that time, the private sector wouldn't invest in this area due to the lack of favorable business conditions, leaving the entire market to EMBRAPA.

By the end of the 1970's EMBRAPA's research was oriented towards modern monocultural commercial farming. This reality went against the interests of small farmers, who were the main client base of the rural extension services. So, support for “alternative agriculture” developed and opposition to the negative impacts of the accelerated expansion of soybean growth in southern Brazil reinforced it. At the same time, NGOS became active in promoting alternative assistance programs directed at small farmers, which gave preference to traditional technologies (Wilkinson 1992).

In the end of the 1980's, EMBRAPA's budget had started to diminish and Government expenditure on research and technical services had decreased by 26 per cent from 1986 to 1987 (EMBRAPA 2004). In 1997, after the approval of the Lei das Cultivates, the market situation changed and it became more feasible for private companies to develop their own seeds or to import them from foreign

countries. The Brazilian Government incorporated new concepts in technological development and market competition, forcing EMBRAPA to adapt itself to the new environment. Under these drastic government policy changes, EMBRAPA could not get enough money to compete at the same level as its private competitors. As a result, EMBRAPA is starting to collaborate with transnational corporations, like Monsanto, in the research and development of GMOS<sup>6</sup>, as explored in the next chapter.

EMBRAPA is establishing two forms of association in the competitive market (Paula 2000). The first one is a partnership with certain foundations of seed producers. Through these partnerships in more than 7 States, 67 soybean varieties have been released, satisfying a great number of producers in different regions. The second type of association is partnerships with private companies, Monsanto in particular to develop and research genetically modified varieties. Under this agreement, Monsanto authorized EMBRAPA-Soja to use Roundup Ready technology to develop original varieties that will belong to EMBRAPA.

To help small farmers and create innovative technologies, EMBRAPA-Soja is also investing in the development of sustainable biological pest control. A major breakthrough in this area was the discovery of a virus called *Baculovirus anticarsia*, which kills the soybean caterpillar *Anticarsia gemmatilis* (EMBRAPA-Soja 2004). A pilot project undertaken by EMBRAPA-Soja in co-operation with soybean producers showed that control using the *baculovirus* was just as efficient as that provided by chemicals and needed only one application. Used on 1.4 million hectares of soybean plantation, the *baculovirus* provides an economic benefit of approximately US\$ 5 million a year, once the annual utilization of 1.2 million liters of pesticides on Brazilian farms has been eliminated. EMBRAPA also developed powdered *baculovirus*, which is very easy to handle at the plantation level<sup>7</sup>.

Besides caterpillars, *percevejos* (bugs) are one of the main pests found in soybean plantations. The wasp *Trissolcus basal* has proved very efficient in the biological control of three species of *percevejos* (little green, green and brown). *Trissolcus basal* was identified by EMBRAPA-Soja as one of the natural enemies of the percevejo and has been grown in the laboratories of EMBRAPA. Using this wasp, the reduction of chemicals on the plantations is already a reality. Nowadays, *Trissolcus basal* has been successfully used in the State of Palanã.

Besides the biological control of pests, EMBRAPA also develops varieties of soybean that are able to survive in the different climates inside Brazil. In the year 2000 alone, researchers developed nine varieties as shown in Table 1.

All this investment in the natural improvement of soybean has helped increase farmers' interest towards the crop. Presently, soybean is the second major crop in Brazil, behind coffee. And, if the market tendencies shown during the year 2000 continue, it is possible that interest in the production of the 'golden bean' will increase even more. The only drawback is that internal commercial-

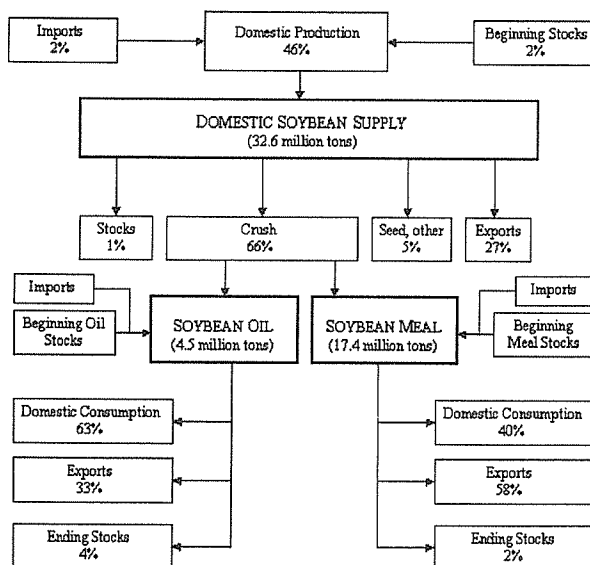


ization is very low and domestic consumption primarily consists of soy-oil (cooking-oil lecithin etc) and soy-meal (animal feed), see Figure 1.A. Around 27.4 percent of the domestic soybean supply is exported, and around 66.4 percent is crushed for soy-oil and soy-meal (ABIOVE 2004).

**Table 1.** Soybean varieties developed by EMBRAPA

Variety	State
BRS 205	RS
BRS 206	MS(S)
BRS Flora	GO DF
BRS Nina	GO DF
BRS Nova Savana	GO DF
BRS Pétala	GO DF
BRS GO Santa Cruz	GO DF MT BA
BRS GO Luziânia	GO DF MG MT BA
BRS MG Virtuosa 2	MG SP

Source: EMBRAPA-Soja 2004



Source: ABIOVE (Brazilian Vegetable Oils Industry Association) 2004 and Wanken 1992.

**Figure 1.** Soybean Product Marketing Channels in Brazil(1999/2000)