

Article

State Support in Brazil for a Local Turn to Food

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Abstract: The local turn to food is often claimed to be a way to increase the value-added component retained by primary producers and to provide healthy, fresh and affordable food to consumers. Rio do Grande do Sul in Brazil has several governmental support programs that aim to empower family farmers and open up new market opportunities for them. This article examines these programs, investigates how small-scale farmers engage with them and the resultant changes in farming and marketing practices that ensue. The article uses cluster and content analysis to identify and interpret the extent, and the different ways, in which these farmers engage with and make use of the local knowledge and innovation system. The results provide useful insights into how policy instruments improve the performance of family agribusinesses, helping them to make better use of the resources available to them, encouraging farm diversification, and strengthening local interrelations between producers and consumers.

Keywords: farm diversity; public programs and policies; regional development; rural entrepreneurship

1. Introduction

A holistic understanding of the term ‘local’, and its inherent relevance for connectivity, raises the notion that food systems are not external to their users but that they are created in, and through, practice [1,2]. A local turn to food, therefore, implies increasing the use of locally available resources and relating this to farmers’ on-farm diversification strategies, the development of new markets that connect producers and consumers with public and private sectors and knowledge institutions [3,4]. In such markets, ‘producers and consumers are linked through specific networks and commonly shared frames of reference’ [5] (p. 171). They also involve new social practices in which producers, production places, and consumers link (new) food qualities. These markets have been conceptualized as ‘nested markets’ characterized by a mix of connections between existing markets historically associated with the creation of new wealth and acceleration of development; there is the creation of new markets that are nested within wider (global) markets and the creation of new governance structures for both existing and new markets [5]. From this theoretical perspective, a local turn to production and consumption patterns should enhance the autonomy of farmers and local control over farming [6–8].

Transforming local raw materials into products, and connecting them to the supply of services is increasingly seen as a viable way for farmers to improve their incomes, quality of life and strengthen their autonomy. The adoption of such re-territorialized practices (based on endogenous or locally available resources) implies a local turn to food and contributes to sustainability as both producers and consumers are giving more consideration to ‘the use of environment and resources to meet the needs of the present without compromising the ability of future generations to meet their own needs (. . .) maintaining the capacity of ecological systems to support social and economic systems’ [9] (p. 2). Such approaches are often based on farmers’ personal interests and agency [10,11] and are mostly adopted by farmers who want to create added value, optimize the use of local resources [12,13] and develop active new producer-consumer relationships [14–16].

As such, a local turn to food holds the promise of promoting sustainable territorial development. However, it also requires changes in the social organization of the knowledge and innovation system. In Brazil, there are a number of different public policies that promote family farming and create a supportive context for farmers’ innovation, encouraging local sustainable development and entrepreneurship.

Following the proposition that a local turn to food can generate revenues for family farmers, but that farmers’ business strategies are based on their own personal interests and agency, the central question that this article explores is the extent to which family farmers make use of a supportive institutional environment in order to become involved in (different) processes of innovation. As such, we evaluate the support measures that promote different processes of innovation (product innovation, process innovation, and marketing innovation) for a local turn to food. In so doing, this article draws on case study research from Rio do Grande do Sul, Brazil, that identifies and evaluates the implementation of policy programs aimed at improving farmers’ incomes, providing consumers with fresh and healthy food and promoting new relationships between family farms and markets. The case study involved developing portraits of farmers (the ‘beneficiaries’ of the support measures) who have different interrelations with the knowledge and innovation system. The analysis combines local and regional levels, since this is where the ‘interactions between the socio-economic fabric, institutions and the creation and diffusion of knowledge take place’ [17] (p. 5). It is hoped that the results will inspire researchers, innovation brokers and policymakers to design and implement policy instruments that effectively contribute to the development of entrepreneurial skills, farm diversification and strengthen new (short) food chains. Together, these activities can help to sustain farming that is rooted in endogenous capital and generate sustainable economic growth. The next section presents the data collection and analysis, and introduces the case study area. This is then followed by the analysis of how farmers are differently involved in, and respond to, policy programs. Finally, we summarize the lessons learnt about how policy instruments can contribute to sustain farming and the provision of healthy, fresh and affordable food to consumers.

2. Materials and Methods

This article draws upon data derived from a larger research project that examined the potential of family farming to improve farmers’ incomes, their quality of life and autonomy. It identifies the actual innovations adopted by 19 family farmers in Rio Grande do Sul and how they interact with a supportive institutional environment [18]. It describes the implementation of different policy programs and regulations intended to promote dynamism and innovation in family farming.

Institutional support for family farmers in Brazil is provided through a number of policy programs. The longest established of these is PRONAF (the National Program to Strengthen Family Farming) which, since the 1990s, has supported family farming. Other programs include, the Food Acquisition Program (PAA), the National School Nutrition Program (PNAE) and the Program for Family-based Agroindustry (PEAF-RS) (see Table 1 for details). These programs aim to sustain family farms and family agro-food businesses either nationally or within the region.

Table 1. State programs in Rio Grande do Sul.

<p>The 'Programa Nacional de Fortalecimento da Agricultura Familiar' (PRONAF, National Program to Strengthen Family Farming) is an investment program, established in 1990, to support farmers' individual and collective projects to construct, expand or modernize their agricultural or non-agricultural production infrastructure and services. The program provides support for modernization and/or acquiring new machinery and equipment related to soil improvements, milk coolers, the genetic improvement of production factors (plants and animals), irrigation systems, orchards, greenhouses and storage as well as investments in tourism activities, such as craft workshops and cottages. The investment should strengthen the capital assets of family farmers and improve their standard of living.</p>
<p>The 'Programa de Aquisição de Alimentos' (PAA, Food Acquisition Program) is a federal program, established in 2003, that aims to reduce hunger and poverty in Brazil by strengthening family farming. The program promotes the creation of added value to fresh produce through on-farm processing of raw materials and organizes markets for these food products in the private sector and through public food procurement programs. Part of its remit involves building strategic food stocks and distributing these to socially vulnerable groups.</p>
<p>Since 1955, the 'Programa Nacional de Alimentação Escolar' (PNAE, National School Nutrition Program) has been acquiring food for school meals, usually from large suppliers. Since 1994, when the federal program was decentralized, there has been a move towards preferentially purchasing locally produced food. With a potential target group of 47 million students the further development of this local preference program has the potential to create new markets for small-scale farmers and to improve the nutritional quality of school meals.</p>
<p>The 'Programa de Agroindústria Familiar do Estado do Rio Grande do Sul' (PEAF-RS, Rio Grande do Sul's Program for Family-based Agroindustry, also known as Programa Sabor Gaúcho) has been operational since 1999. Firmly grounded in the principles of agroecology, it supports small-scale farmers (individuals and farmers' cooperatives) in the state by promoting diversification of farm activities (including on-farm processing of raw materials) and selling these farm products. Measures in the program include access to low interest credit rates and offering support to farmers engaged in the PAA and PNAE programs. It offers extension services on health and sanitary regulations on production and on-farm processing activities and promotes the delivery of end products to public entities and/or fairs and private market chains.</p>

Despite the expansion of milk and beef production, and particularly soy production, a number of different diversification strategies have been developed in Rio Grande do Sul, including organic production and direct selling [19]. Yet, the '*colonos*' (colonists), '*posseiros*' (squatters), '*parceiros*' (partners), '*assentados*' (settlers), peasants and other small-scale farmers [20] are also in competition for public resources and social legitimacy with the larger players in food production. Family farmers (90% of the 435,000 farm units in the region of Rio Grande do Sul) [21], work an average of 6.1 ha per person, and are widely seen as having the potential to use productive resources more efficiently than large mono-cultural farms.

Policy programs are increasingly supporting these types of farms by stimulating the adoption of small-scale food processing technologies and improving access to local markets as these measures increase the value added at the farm level. Through providing knowledge and expertise about on-farm processing and developing linkages with local and regional markets, these policy programs aim to make farmers and family members more entrepreneurial [22]. At the family and community level, the changes consist of adapting their on-farm practices (e.g., adopting organic production methods) and the processing and selling of fresh produce through new supply chains (mostly characterized by more direct market relations) [23,24].

The research methodology is rooted in the tradition of performance story reporting [25] and grounded case study research [26], and combines quantitative and qualitative methods. It applies multivariate techniques of data analysis: cluster analysis (using SPSS statistical software package) and content analysis [27,28] from primary and secondary sources (interviews and document analysis).

The study focuses on 19 family agribusiness farms (or family-based agroindustries that participated in the policy programs set out in Table 1) within the Regional Councils of Development (Corede) in Rio Grande do Sul. These councils were created by Law 10.283, 17 October 1994, and form a "discussion and decision-making forum regarding policies and actions that aim at regional development" [18,24]. Locations where the study was implemented are Serra, Vale do Caí, and Vale do Rio Pardo (see Figure 1). Serra consists of 32 municipalities. In 2012, it had 878,500 inhabitants spread over an area of 6949 km² (125.1 inhabitants/km²). The field research included 10 family-based

agro-industries in Antônio Prado, Carlos Barbosa, Flores da Cunha, Garibaldi, Nova Roma do Sul and Santa Tereza. Vale do Caí has 19 municipalities. In 2012, it had 172,400 inhabitants spread over an area of 1854 km² (92 inhabitants/km²). The field research included 5 family-based agro-industries in Bom Princípio, Harmonia, Montenegro, Pareci Novo e São. Vale do Rio Pardo consists of 23 municipalities. In 2012, it had a population of 65,946 people spread over an area of 773.24 km² (85.29 inhabitants/km²). The field research included 4 family-based agro-industries, all located in Venâncio Aires. The farms in the sample share a similar socio-economic, environmental, political and cultural context, and were selected as farms contributing to the main objectives of the Corede: to promote regional, sustainable and harmonious development, improving the quality of life of the population, the equitable distribution of produced wealth, attracting new settlers to the region and preserving and restoring the environment [18,24]. These objectives are also consistent with the goals established by the State's policy programs.

Family agribusiness are defined according to Article 2 of State Law No. 13.921/2012 [29], as a family enterprise, managed individually or collectively, located in a rural or urban area, that aims to use and/or transform (either artisanally or not) on-farm raw materials, which can (the agribusinesses in our sample do) but do not necessarily, include geographical, historical-cultural, local or regional aspects. These agro enterprises can process locally produced raw materials derived from vegetables, livestock, fisheries, aquaculture, or forest fruits. These operations can range from simple processes to more complex ones, including physical, chemical and/or biological operations. The raw materials are processed into an end product in small-scale, artisanal production units operated directly by the farmer and/or family member(s) using their own means of production and labor input or through a partnership contract.

The main criterion for our selection of municipalities was a high number of family family-based agro-industries involved in the PEAFF-RS program. The second criterion was proximity of farms to Porto Alegre, giving them relatively easy access to a large market, with low transportation costs. The family-based agro-industries mostly produced vegetables and drinks, and there were no farmers processing animal produce due to the difficulties of meeting sanitary regulations. A potential sample of 36 farms that met these criteria was identified, though time and money restrictions meant slimming down the sample to 21 farms of which two declined to be interviewed.

The research consisted of four phases. In the first phase, secondary data (including scientific books and articles, reports, regulations and historical data trends on the number of farms, agro-food businesses, and farming area) were gathered and analyzed. The second phase consisted of meetings with stakeholders, participation in seminars, fairs and events related to farmers, and interviews with key-informants. The third stage involved collecting primary, quantitative and qualitative data. This included the analysis of the cadaster, the collection of farm data of farms involved in the PEAFF-RS, and the definition of criteria for selecting the cases to be included in the sample. During this stage, 19 semi-structured interviews were held with farmers, as well as 15 with representatives of organizations involved in local and regional innovation systems, such as the Rural Development Secretary (SDR), Emater (the rural extension service), and the Union of Rural Workers. These representatives were asked about their opinions on the development of the regional councils (Corede), their budgetary allocations and the State actions to promote family farming. These interviews with non-farming actors provided qualitative information on the programs and helped us identify the variables used for selecting a sample. The semi-structured interviews with farmers were done on the farms, recorded and later transcribed. The fourth phase consisted of data analysis and interpretation, which included qualitative (content analysis) and quantitative techniques (cluster analysis within-linkage groups, Jaccard measure). The objective of content analysis is to infer knowledge from a large amount of text (the transcripts of the interviews, documents), turning qualitative contents into indicators for further quantitative analysis [27]. Content analysis was carried out in three stages [27,28]: (1) pre-analysis; (2) exploration of the materials; and (3) data treatment, inferences and interpretation. The pre-analysis included the organization, compilation

and preliminary evaluation of the primary data, organizing them in individual matrixes according to three dimensions: (1) the organizational and production characteristics of the family agribusiness (9 variables); (2) innovation processes (27 variables); and (3) interactions with the institutional environment (26 variables that were organized into two groups relating to how and why interactions took place). The exploratory analysis of the field materials resulted in the categorization of variables, on which further qualitative data evaluation was based. The data treatment involved applying a cluster analysis, which permitted us to group farms with similar innovation processes, and describe and interpret the results.

Nine variables were used for characterizing the family agribusinesses. These included the number of people involved in the farm, and the number of families involved in the production and processing of raw matter. Other variables included the type of production (vegetable, drink or both), the model of production (organic, integrated or conventional), the business model (mono-activity, pluri-activity) and the organizational structure (cooperative, family, association). Different governance structures (hierarchical or hybrid, based on the contractual relations among those involved) were also considered. These variables allowed us to make an initial qualitative analysis of the type and features of the 19 family agribusinesses.

Innovation processes were delineated according to 27 variables that covered three different types of innovation. First, for product innovation, variables on the use of new or diversified raw matter, the certification of raw materials, new end products or lines of products, new packaging or presentation of final products, and services (tourism, gastronomy) were used. Second, process innovation was framed by variables that included changes in the process of production of raw materials, new processing techniques, the construction of new facilities, the enlargement or adaption of the farm area, new equipment, new technologies, certified processing, waste treatment and the use of renewable energies. Market innovation included variables showing different ways of selling (direct from the farm, through fairs, in institutional markets, local markets and shops, street fairs, and e-selling); different sorts of communication (mouth-to-mouth, fairs and events, use of site, folders, journals, magazines, specialized catalogues, newspapers, radio programs, participation in contests, involvement in tourist routes); and the use of different types of certification (quality labels, organic, linked to family farming cooperatives, linked to specific programs, and institutional labels).

The third dimension, on institutional interactions, was defined by 26 variables. A group of 8 variables indicating how interactions took place (i.e., participation in training courses, technical and productive assistance, the use of consulting or other specialized services, participation in networks, associations and unions, the exchange of experiences and practice, the promotion in fairs, events, and participation in seminars). Another group of 18 variables delineated the aim of the interactions, that were either directly related to markets and marketing, or to technical issues (certification, compliance with different regulations, raw matter processing, etc.)

The primary data to run the cluster analysis originated from the answers given by farmers during the semi-structured interviews. These were transcribed and the data organized, processed and analyzed, first in Excel files, and then in SPSS. The answers were transformed in a binary code signaling the presence (1) or absence (0) of the variable. A hierarchical cluster was then run (using within-group linkage method, Jaccard measure) to identify groups of respondents with a similar behavior in terms of innovation processes. This method enabled us to group the presence of variables (1×1 ; 0×1 ; 1×0), ignoring those where these variables were absent (0×0) [30]. These were then interpreted, allowing us to identify different portraits of innovation pathways, which were then analyzed to identify any patterns in farmers' institutional interactions.

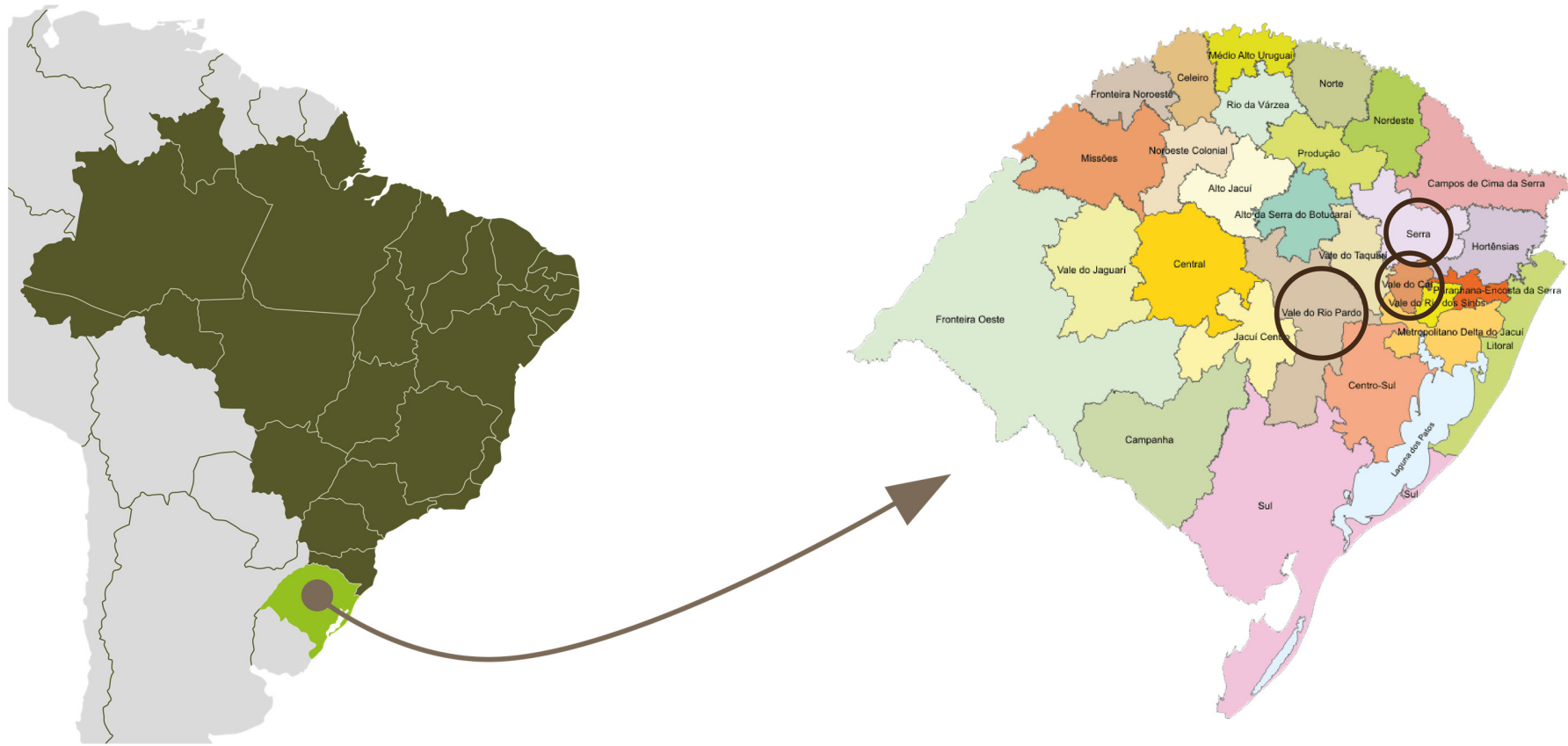


Figure 1. Rio Grande do Sul in Brazil and the location of the study areas.

A cluster can be considered as an exploratory, non-inferential, technique [31] and the results obtained should be strictly restricted to the specific sample and cannot be extrapolated or used to make more general inferences. The small sample size does not pose a problem as long as it is representative. In this case, the representativeness is assured by the researcher's contextual and conceptual knowledge, and by the definition and variables selected for the content analysis. At the end of the day, the clusters represent a consolidation of the qualitative information provided by the variables of the first dimension, the contextual knowledge of the researchers, and the results obtained by using descriptive statistics (frequency) to analyze the features and behavior of the farmers within dimensions 2 and 3.

The three 'portraits' of family-based agro-industries can be seen as prototypes within a typology [32] of a specific story of an imaginary farmer. As such, they are representations of the different practices and strategies pursued by the family farmers in the sample. To construct these portraits, we built upon a set of well-elaborated research methods that have been commonly used in farming styles analysis [33–35]. Our qualitative analysis of the interview materials focused on the policy programs to enable us to develop an understanding of the different ways in which family farmers, for practical reasons, respond differently to available public support measures.

3. Results and Discussion

The identification and definition of portraits (Section 3.1, below) is based on the different innovation processes and forms of interaction that farmers engaged in and captures the level of farmers' involvement in the supportive institutional environment framed by the various State programs.

The departure point for outlining those portraits is the grouping obtained by the cluster analysis that considered the variables related to different processes of innovation (product, processing, and commercial). By adding a description of state facilitation embodied in the different measures within the different policy programs, we can understand better how farmers within each portrait have been able to unleash their capacity for innovation. For each portrait, we describe how the programs encouraged entrepreneurship, and how farmers have benefitted from, and prioritized, elements from within these programs. Quotes from the respondents (the abbreviation AF is an abbreviation of family agribusiness) provide illustrations of, and evidence for, this. Finally, we show the qualitative impact of the policy programs within each portrait in providing financial, institutional, technical, operational, management and marketing support (Section 3.2).

3.1. Portraits: Innovation Processes and Institutional Interaction

The first result of the cluster analysis, run with the variables that show different innovation processes, enabled us to distinguish three portraits within the 19 family agribusinesses. Table 2 shows the frequency of the different types of innovation within every portrait. Next, Table 3 illustrates each portrait's level of participation in the different State programs. This shows the level of institutional interaction, i.e., the frequency with which farms within each portrait made use of the different measures within the four State programs. This helps us better define and understand each portrait.

The variables for institutional interaction are based on 16 measures contained in these various State programs (in the original work on which this article is based on, this set of variable was wider and included other more specific goals). These variables are: (1) providing training support to acquire specific knowledge about practice and/or management; (2) providing specialized consulting services, free of charge; (3) providing financial and informational support for promoting and increasing the market profile of small scale agribusiness products (i.e., assisting them to participate in fairs, events, workshops, etc.); (4) providing (subsidized) consulting and specific technical services that reduce financing costs; (5) policy articulation; (6) providing support for participating in cooperatives and non-profit associations; (7) financing access to loans and credit (8) providing management training; (9) providing financial support for improving old or constructing new physical infrastructure; (10) providing administrative support (information) to access environmental licenses; (11) facilitating market access (product promotion, access to new markets and commercialization circuits); (12) providing

technical and technological support for product development and improvement (possibly including laboratory tests); (13) providing technical information on specific sectors of production; (14) providing technical support on raw matter production and/or processing (Raw Matter P & P); (15) providing technical support to comply with sanitary controls; and (16) providing support for strengthening the image of products by stressing their quality and/or product differentiation.

Table 2. Portraits of family agribusinesses based on different types of innovation. Frequencies (%) of presence (Sample 19 Brazilian farms, 27 variables of innovation).

Types of Innovation	Portrait 1 (14)	Portrait 2 (5)	Portrait 3 (1)
Product innovation			
New or diversified raw matter	46%	80%	0%
Certified raw matter production	62%	20%	0%
New final products or line of products	100%	60%	100%
New packaging or presentation of final products	77%	40%	100%
Services (tourism, gastronomy)	69%	0%	0%
Process innovation			
Changes in the process of producing raw materials	85%	60%	0%
New process of production (processing)	92%	100%	100%
New construction of facilities	54%	0%	100%
Enlargement or adaption of the farming area	77%	100%	0%
New equipment	85%	80%	100%
New technologies	54%	0%	100%
Certified processing	46%	0%	0%
Waste treatment, use of renewable energies	69%	20%	0%
Market innovation			
Direct selling from the farm	79%	75%	0%
Selling at street fairs	71%	75%	0%
Selling to institutional markets	71%	0%	0%
Selling in local markets and shops	93%	100%	100%
Internet sales	14%	100%	0%
Mouth-to-mouth communication	93%	50%	0%
Communication in fairs and events	71%	75%	0%
Use of a web site, folders, journals, catalogues, newspapers, etc.	64%	75%	0%
Communication and participation in contests, prizes	29%	75%	0%
Communication and involvement in tourist routes	50%	25%	0%
Organic certification	64%	0%	0%
Certification link to family farming cooperatives	79%	25%	0%
Certification linked to programs (e.g., Sabor Gaúcho)	100%	50%	100%
Institutional certification (INPI)	36%	25%	0%

Table 3. Participation of family agribusiness (by portrait = P) in the different State programs as beneficiaries of different measures.

Programs/Portraits	PEAF-RS			PRONAF			PAA		PNAE	
	P 1	P 2	P 3	P 1	P 2	P 3	P 1	P 2	P 1	P 2
Training (courses, seminars)	4	1	0	0	0	0	0	0	0	0
Free consulting	3	0	0	0	0	0	0	0	1	0
Participation in fairs/events	12	2	0	0	0	0	0	0	0	0
Subsidized consulting	1	0	0	12	5	1	0	0	0	0
Policy articulation	1	0	0	0	0	0	0	0	0	0
Promotion of cooperatives	2	0	0	0	0	0	2	2	5	3
Financing Loans and Credits	7	0	0	12	5	1	0	0	0	0
Manag training	3	1	0	0	0	0	0	0	0	0
Physical infrastruc	0	0	0	11	4	1	0	0	0	0
Envir licences	5	1	0	0	0	0	0	0	0	0
Market and commerc	13	2	1	0	0	0	3	2	9	3
Product development	0	0	0	0	0	0	0	0	1	0
Tech support on sector	1	0	0	0	0	0	0	0	0	0
Tech Raw Matter P & P	2	0	0	12	5	0	0	0	0	0
Tec. sanitary control	1	1	0	0	0	0	0	0	0	0
Image strength	13	5	1	0	0	0	3	2	9	3

From the results shown in Table 2, we can say that, in general terms, Portrait 1 is very dynamic regarding all types of innovation (product, processing, and market), but is mostly engaged in product innovation. In comparison with the other two portraits, farms within this group engaged more in developing new products or lines of final products (100%). This was linked to a high level of process innovation in terms of raw matter production, both in changing from conventional to organic (85%) and market innovation (69% organic certification). This group is typified by an interest in meeting new societal demands, such as organic produce, but also by providing services beyond traditional agricultural production (e.g., tourism, gastronomy) (69%). Their participation in tourist routes (54%) is also indicative of a diversification in their activities. This group is also more inclined to opt for more sustainable approach to farming than the other groups with 69% choosing to use renewable energy and take over waste treatment (on farm compost production) (69%) with the aim of reducing costs. This group is also quite dynamic in terms of market innovation, preferring word of mouth communication and short distribution circuits especially small local shops and supermarkets (92%) and street fairs (71%). They are also more engaged in seeking recognition for their products and participate more than the other two groups in contests and prizes (46%). They also participate more in institutional markets than the other two groups (62% participation rate). In addition to organic certification, they also engage in other quality certification schemes (69%) and other types of brand protection (62%). In summary, this group represents an organic and diversified farming typology.

Farms in Portrait 2 are more focused on processing and marketing innovations than on product innovation. In product innovation, they pay more attention to new raw materials (80%), and less to product diversification (60%). Their only interest in 'moving beyond' farming is to engage in processing (100%). All members of this group invested in farming infrastructure, enlarging and/or adapting their farm area and most (80%) combined this with investments in new equipment (80%). While this group is involved in developing new processing facilities, they do not pay much attention to seeking organic certification although many (80%) participate in other quality label schemes such as Sabor Gaucho. They all sell their produce via small local shops and supermarkets and 75% sell directly from their farms, again showing a clear preference for short commercialization circuits. We consider them as a type of farmer that is looking to enhance product quality, but not wishing to convert to organic production. These farmers are aware of the opportunities of communicating the virtues of their produce to a broad range of consumers: all of them use a website, brochures and journals to promote themselves and 60% are engaged in e-marketing to consumers. This portrait then consists of conventional farmers who are aware of and profit from the opportunities of multifunctional farming, and can be described as a portrait of, conventional farming of quality products that are distributed through local short, circuits.

Portrait 3 only contains one farm, which makes difficult to justify any sort of representation in statistical terms. However, we have kept it as a separate typology because of its specificity: it is the only one out of the 19 family agribusinesses to adopt a totally new line of product and processing (including freezing the end-product) and therefore a totally different line of commercialization. The characteristics of this new activity required the farmer to establish a new business and to build new processing facilities. Apart from this, this farm is not interested in making other market innovations, except for the necessary use of new packaging and the presentation of the final product. This shows a rather different strategy than the other two profiles, which involves paying less attention to market segmentation (in terms of quality and demand) although this farm also only sells through local shops and markets. Thus, this farm represents a portrait in which the goal is to look for product differentiation based on a specific technological innovation and product processing and packaging rather than quality (however defined).

In the next section, we supplement the information provided by Tables 2 and 3 with some statements from farmers made during the semi-structured interviews, in which they directly expressed their motivations and their opinions about the impact of the programs on their businesses. This allows

us to build a more nuanced picture of each portrait and shows how the different programs have helped the farmers' expand and diversify their activities.

3.1.1. Portrait 1: Farming Organically and Activity Diversification

This portrait represents farm-based agro-industries that combine organic production with valorizing product qualities through participation in nested markets created by the policy programs. The 13 respondents include 11 families that produce organically, 12 that are involved with associations and 1 that belongs to a cooperative. They mostly produce drinks (juice and wine) and vegetables. The families are located in Serra (9 families), and Vale do Caí (4 families).

All farms in this group participate in the PEAFF-RS program, 12 out of the 13 business initiatives in this group also receive support from PRONAF and 9 from the PNAE, but only 3 from the PAA.

More than two-thirds have some form of product certification often through the Rio Grande do Sul Organic Program, linked to PEAFF-RS, which supports the commercialization of organic produce. They have made this transition in response to new demands for healthier products, which has led them to actively engage in product innovation. While they have benefited from public programs, they have also had to confront some problems, such as adapting to bureaucracy and complying with organic standards. Sometimes they have also had to make an effort to explain the value added of their products—in terms of nutritional and or environmental aspects, which also implies often a higher price.

There was an increase in demand for organic products and sales of the products from the PNAE. Our farm income improved and the PNAE contributed around 30% of the cost. However, the contracts we have with some public sectors have some requirements that we have difficulty meeting. They are not well adapted to the realities facing family farmers. The public tenders are sometimes quite a long way from the particularities at our farm and it is difficult to adapt to the application forms they send us. We always try to contact them in order to present and explain the nutritional values of our products so they are aware of their value and quality. (Cooperative member AF13)

Farmers in this group are also quite engaged in processing innovations, especially making changes to raw material production and introducing processing. Most have applied adaptation strategies that improve their use of locally available resources and have adopted new, innovative, processing methods that involved installing new equipment. Most received assistance from PRONAF to make these changes, which alongside PEAFF-RS, contributed to the investments by making low interest loans available.

I could only start my business after getting a loan of R\$ 10,000 (around 3000 Euro) through one of the funds of PEAFF-RS. (AF06)

I received R\$ 40,000 (around 10,000 Euro) to buy new equipment through PRONAF to improve my agro-industrial processes. It was very important to transform my business. (AF18)

Our agribusiness started after getting a loan through PRONAF and with (technical) support from Emater. In the beginning, our aim was to plant a new vineyard but when we realized the difficulties of selling the grapes we decided to go into processing instead and so the agro-business evolved. (AF17)

Certification is an important support measure, whether it is for organic standards, the Family Support Label coordinated by PRONAF or the Sabor Gaucho label created by PEAFF-RS. This group's products are mostly sold in local markets and small shops, directly from the farm, and at street fairs and are promoted through personal contacts and at fairs. State programs, such as PEAFF-RS, have promoted market innovation through direct selling, establishing small markets and fairs and promoting existing ones. PNAE has provided new market opportunities for selling to schools and public cantinas. While this opportunity is mostly welcome, some farmers also pointed out the problems associated with their dependency on public contracts and public calls.

I started my activity with the support of the Centro Ecológico de Ipê (Ipe Organic Center). I always liked to produce herbal remedies, and used to do so and sell them directly in fairs (green and undried), but I was losing money. With the support of the Ipe and Emater I introduced more varieties and PEAFF-RS's support allowed me to improve my commercialization which made my business profitable, allowing me to continue farming and to stay in the countryside. (AF10)

We sell our products to a large number of municipally-run schools (there are 340 in the RS). PNAE has had a strong impact in RS but PNAE also depends on the public calls and this creates uncertainty. (AF13)

Produce from farms in this group is mainly sold in local markets and shops and through the internet but also directly from the farm or at fairs. PEAFF-RS has played an active role in supporting and facilitating access to specialized fairs and events and promoted participation in competitions for quality wines, juices and cachaças (a Brazilian spirit), while PAA and the PNAE have provided support for market development and commercialization.

(...) We used to produce wine and sell it to another enterprise that bottled it, so we lost part of the benefit. We decided to sell the wine directly. PRONAF and PNAE helped us to access new markets and PEAFF-RS helped us to attend relevant events, such as fairs and to fulfill the requirements for certification. (AF08)

Wine production is a tradition in our family, but we sold through an intermediary. About 10 years ago, we decided to take control over the whole process of commercialization (. . .) and in 2005 we started to bottle our own wine brand, creating two new high-quality brands. PRONAF and PEAFF-RS were of vital importance in helping us to access new markets and new market circuits and to differentiate ourselves. (AF07)

3.1.2. Portrait 2: Conventional Farming of Quality Products and Distribution in Local Short Circuit Channels

This portrait represents farm-based agro-industries that are involved in conventional, but quality, production. Four out of the five respondents that fit this portrait produce vegetables (ranging from seeds, to horticulture and avocados, some of which are processed into oil), and one produces drinks (wine and grape juice). The initiatives are located in Serra (1 initiative), and Vale do Rio Pardo (4 initiatives).

All of them have received support from the PEAFF-RS and PRONAF programs, and 3 from the PAA and PNAE programs. The main features of their innovations, which received policy support from state programs, are new processing and marketing processes. The support mostly took the form of specific consulting services (support for identifying solutions and recommendations related to the specific demands of the farmers, including financial support for providing these services), technical support to change and/or introduce production processes (PRONAF) and financial support for investments in infrastructure.

The production of avocado oil required a large investment to change our production process and making changes to our infrastructure. The support of State programs like PRONAF for consulting and investments was required to overcome the instability of production processes, to adapt our production cycles and to be able to process without making a financial loss. (AF05)

Farmers within this portrait stressed the support of programs such as PEAFF-RS and PRONAF in supplying training to support them with their new processes of production and the adaptation of their business as well as the provision of financing.

(. . .) I had to follow some training to improve management, especially to reduce some costs because I need to enlarge and adapt my farm and invest in new equipment. (. . .) PEAFF-RS and PRONAF were a big help. (AF02)

In terms of marketing innovation, these farmers mostly sell their products directly from their farms, or via small local shops and supermarkets, showing a clear preference for short commercialization circuits (that reduce the involvement of intermediaries and means that the produce is sold close to the locus of production). Farmers in this group have pursued these commercialization strategies largely without calling on state agencies' assistance. However, some have made use of the publicly supported schemes for image labeling, such as Sabor Gaucho and INPI (national industrial property).

Although this group is less oriented to product innovation than the first group, product innovation still plays a significant role, with many (figures) producing new raw materials and diversifying their primary production, indicating a growing awareness about quality and consumer demands.

I produce 90% of my raw material. It is a priority to me to control the quality of my product and eventually to move from conventional to organic production. (AF04)

Although the production of wine is a tradition in my family, we did not care about the variety of grapes (. . .) we used to buy from other farmers to complete our production. But we realized that customers did not value the quality of our wine. So we decided to follow some training in enology and asked for technical support to improve our wine, grape juice, looking for better (grape) varieties. We also got training to improving the management and administration of our business, in order to also to improve our product commercialization. The PRONAF program played a supportive role in all. (AF11)

3.1.3. Portrait 3: Technological Innovation in Product Conservation and Packaging

The main characteristic that distinguishes this portrait from the others is the focus on product conservation and the packaging and presentation of products. This helps increase the value added and allows the products to find their way to more distant consumers in more 'anonymous' consumption circuits. This portrait contains just one farm (AF19), producing yucca. The farm radically reoriented its production processes by installing new processing facilities and equipment. PRONAF supported the investment in a new refrigeration plant, while PEAFF-RS supported the certification of the product under Sabor Gaúcho, which helped with market access.

Thanks to the PEAFF-RS and the Sabor Gaucho certification I could enter new markets. Although I mostly sell to big retailers, I also sell my product directly to a local supermarket network. (AF19)

We have maintained this sole example as a portrait in its own right as it shows a different development trajectory based around innovation in processing and marketing that could be followed by others.

3.2. Policy Programs, the Provision of Opportunity for Innovation

The qualitative analysis, based on the institutional performance through the implementation of the programs, and interviews with key actors close to those programs, allows us to evaluate the ways in which these programs encourage family farm innovation.

Institutional recognition of the significance of family farming started in Brazil in the 1990s. Social movements played a large part in this, but State regulation (starting with PRONAF) was also an important driving force for a turn towards supporting small-scale, and more sustainable, family farms [18].

Figure 2 illustrates that public support programs working at different levels (State and Federal) that are designed to improve infrastructure, markets and market access, sanitary control and management. These various measures enable family farmers to deliver fresh surplus produce (mainly fruits and vegetables) to markets with different target groups, and create opportunities for them to add value to their primary production, increase their incomes and to foster socio-economic development at the local, regional and state levels.

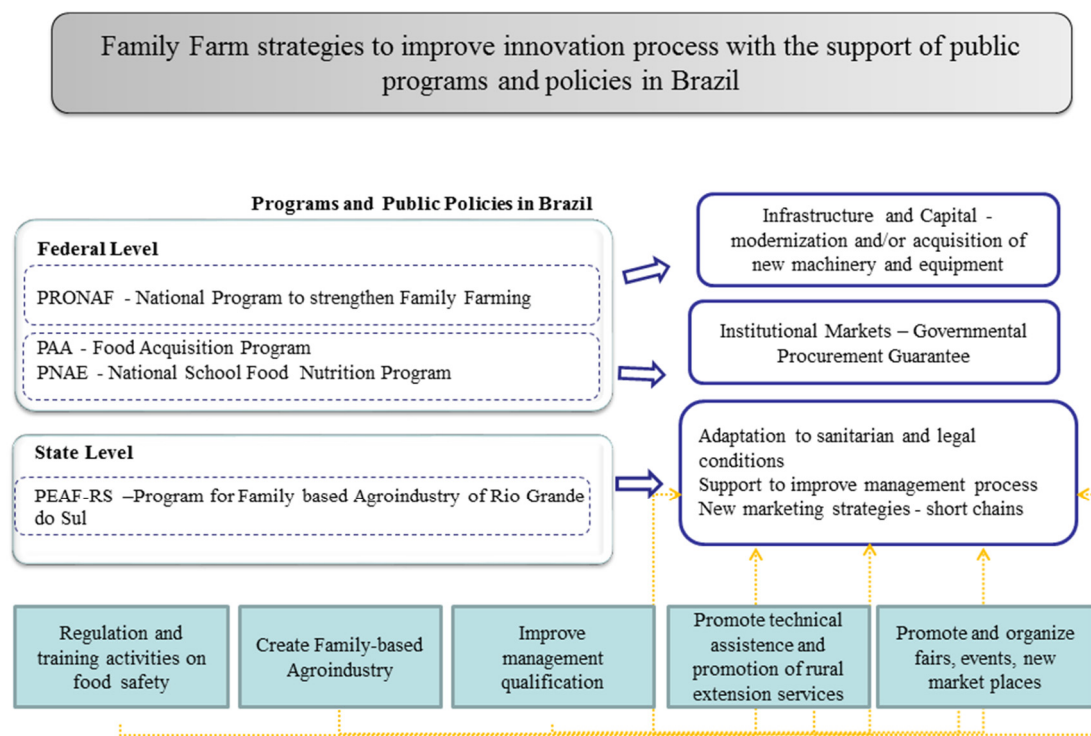


Figure 2. State programs: Support for small-scale farmers and public food procurement.

Some of these programs provide farmers with financial support to develop their infrastructure and or make capital investments in modern equipment. Others (especially the PAA and the PNAE) facilitate access to markets either by providing quality guarantees or opening up new public sector markets (school meals, etc.) At the state level, PEAFF-RS helps farmers to comply with legal and sanitary requirements through educational programs, management support and training, and also opens access to new markets (fairs and food-related events) and new (short) circuits. While there are other programs and contributions from private and public institutions, these four programs played a central role in promoting and enabling innovations at the farm level among our sample.

From the farmers' responses on their participation in public programs (Table 3), we observe that the PEAFF-RS and PRONAF programs provide more support to promoting innovation than the PNAE and the PAA. Counting the times that the agribusinesses in our sample made use of each different measure (their institutional interactions), we see that market innovations were the most commonly utilized: specifically in the domains of image strengthening, market and commercialization, and enabling participation in special events and food fairs. Support for processing innovation was also significant, mainly through technical raw matter production and processing. The provision of finance, on favorable terms, to enable innovation (of all types) has also been highly significant. Farms within Portrait 1 most frequently interacted with the PEAFF-RS program, which they used to help them promote the image of their produce, to access markets and other aspects of commercialization, such as enabling them to participate in specific events and fairs. PRONAF was also widely used, though more by farmers in Portrait 2, who found its subsidies for consulting services, provision of cheaper loans and credits and technical support over raw material production, processing and physical infrastructure, particularly useful.

4. Conclusions

This case study shows how supportive governmental frameworks in Rio Grande do Sul have encouraged and motivated farmers to engage in innovation processes so as to improve the family agribusiness. State programs, such as PEAFF-RS, PRONAF, PNAE, and PAA, have played a key role in

providing financial, technical, marketing and management support that allows family agribusinesses to find new opportunities to make a living from the farm. These mostly consist of extending the business to include on-farm processing activities and local marketing, although in some cases they also involve moving 'beyond farming'. Both strategies enhance farm livelihoods and strengthen the rural socio-economy. Farmers and society at large both benefit: consumers from access to healthy, fresh and affordable food, politicians through prestige and, technicians who are usefully employed in supplying services to farmers and processing cooperatives. The local food chains that emerge help producers valorize their products. At the same time, the programs help producers improve and develop their knowledge and skills so they are able to produce and process final goods from raw materials which are locally available.

The State programs considered in this article have promoted family agribusiness dynamics by facilitating access to technical knowledge in production and processing, in the possibilities and opportunities of product diversification and differentiation, and have helped farmers to access new markets. They also have reduced investment risks: investing in capital assets (such as constructing a processing plant) is costly and many farmers might otherwise consider it to be too risky. The financial and marketing support these programs offer make these decisions less risky and costly and ease the pressure of paying back the investments, as these are amortized over a longer time period than normal, thus stabilizing the farm's cash flow. Investments in product differentiation, facilitated by the provision of different types of quality certification, financial aid and information on how to access different sources of communication, have helped farmers to communicate key messages about product quality, which is often associated with place of origin. The support provided by the programs allows farmers to improve the balance between the resources available to them and market opportunities.

Furthermore, in interacting with various support agencies, members, and associations (promoted by support measures to cooperatives and creation of associations) farmers increasingly shared their knowledge with, and supported, each other. This has helped them to make better decisions and conduct their farm businesses from a more informed position. Participating in these support networks and making more contact with neighbors, friends, experts, technicians and politicians leads farmers to become more socially engaged whilst making their family-based agro-industry more visible.

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