CHAPTER

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Analysis of the economic and commercial impacts suffered by family farmers during the COVID-19 pandemic

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ABSTRACT
The article in question addresses the economic and commercial impacts suffered by family farmers during the Covid-19 pandemic. This is a field study, exploratory and descriptive in nature and quantitative and qualitative in approach. The research includes individuals over 18 years old who self-declare as family farmers and reside in any area of the Brazilian territory. Data collection addressed issues related to the production and marketing of products, the economic situation of individuals, difficulties, limitations, changes, and adaptations covering the period of the pandemic. During this research period, the three main activities performed by family farmers were: vegetable production (72.3%), grain production (36.9%), and fruit growing (30.8%). The family farmers interviewed used more than one way to market their products, the two main ones being: selling in open fairs (performed by 55.4%) and selling directly to consumers or establishments (32.3%), besides using public policies such as PNAE (29.2%) and PAA (26.2). However, during the pandemic, many faced difficulties, such as reduced demand due to the closure of consumer establishments and lack of access to emergency aid. In addition, 76.9% of the farmers admitted to having their marketing affected and 60% had a reduction in their income. Despite this, new alternatives were developed to face these challenges, among them the extensionist actions that were fundamental in the creation of a new form of commercialization (virtual fair). These results highlight the need for specific policies and support measures for family farmers during crises such as the Covid-19 pandemic.

Keywords: Public policies, Perspectives, Small farmers.

1 INTRODUCTION

The end of the year 2019 was marked by the identification of a new respiratory disease classified as Covid-19, caused by the novel coronavirus (SARS-CoV-2). The Epidemiological Bulletin Volume 51 (2020) made available by the Ministry of Health in January 2020, portrays for the first time Covid-19 then called "Pneumonia of unknown etiology", which had its first record in the city of Wuhan, in the country of China. "With the rapid growth of cases outside China and large numbers of countries affected, on March 12, 2020, the World Health Organization announced that the global spread of COVID-19 characterized a pandemic scenario" (BITTENCOURT *et al*., 2020, p. 1).

Due to this rapid advance of the disease, thousands of people have been affected directly and indirectly. Even those who have not been infected by the novel coronavirus have had their lives changed due to the restrictions and safety measures adopted throughout the global territory. Among these measures is social distancing, which has led to thousands of workers and students adopting remote work/study. However, not all professionals were able to maintain their activities within these measures, including family farmers.

According to data from the 2017 Agricultural Census, shared by the IBGE, 77% of rural establishments in Brazil practice family farming, which generated a production value of 107 billion reais, equivalent to 23% of all Brazilian agricultural production. In addition to being a huge economic force, family farming is responsible for feeding thousands of people and maintaining the support of several small farmers, indigenous people, settlers of agrarian reform, riverside dwellers, and all those classified as family farmers.

Thus, the present study was designed to analyze and describe the economic and commercial impacts suffered by family farmers during the Covid 19 pandemic.

2 METHODOLOGY

This is a field study, exploratory and descriptive, and with a quantitative and qualitative approach. The research includes individuals over 18 years of age who declare themselves family farmers and reside in any area of the Brazilian territory. The concept of family farming used here is by Decree No. 9,064, of May 31, 2017.

Data collection took place between May 2021 and August 2021, through a questionnaire distributed online through the google forms platform and disseminated through social networks. Addressing issues related to the production and marketing of products, economic situation of individuals, difficulties, limitations, changes, and adaptations covering the period of the pandemic.

The quantitative data were analyzed through the Microsoft Excel software and the narratives were used to compose the analytical arguments. In total, 65 responses were collected from family farmers from 14 Brazilian states, namely: Pará (PA), Paraná (PR), São Paulo (SP), Santa Catarina (SC), Minas Gerais (MG), Ceará (CE), Bahia (BA), Rio Grande do Sul (RS), Espírito Santo (ES), Maranhão (MA), Mato Grosso do Sul (MS), Sergipe (SE), Rio de Janeiro (RJ) and Paraíba (PB).

3 RESULTS AND DISCUSSION

3.1 CHARACTERIZATION OF THE PARTICIPANTS

According to Chart 1, the percentage of males was similar to that of females (50.8% and 49.2%), the prevalent age group was from 18 to 30 years with 30.8%, there was a high level of education, where 70.7% of the individuals reported having complete or incomplete high school or higher education, about the locality of the individuals, most of them are concentrated in the southern region of Brazil, and more than half (60.3%) were located in the state of Paraná.

Also according to Chart 1, with the time exercising family farming by the individual or his family, the minimum reported was 2 years while the maximum was 112 years, the range from 11 to 20 years was the one that presented the highest percentage with 29.2% followed by those who exercise 5 years or less with 23.1%. In addition, 72.3% reported having no other job than family farming, and almost half (49.2%) dedicated more than 40 hours per week to family farming.

The majority (75.4%) of the farmers interviewed stated that they owned the property in which they work and 12.3% that they were part of an agrarian reform settlement. Another point that deserves to be highlighted is the participation of 75.4% of farmers in cooperatives or associations. The associations and cooperatives formed by farmers allow new ways of adding value, such as increasing bargaining power with customers and suppliers of inputs, access to new marketing channels, and sharing of machinery and equipment and many can provide technical assistance to their associates / cooperative members (BATALHA, BUAINAIN, FILHO, 2004; BIAVA, 2016).

Table 1. Characteristics of the farmers who composed the research according to gender, age, level of education, state, time practicing family farming, if they have another job, hours per week dedicated to family farming, if they are the owner of the land on which they work if they are part of an agrarian reform settlement, cooperatives, and associations.

Feature	Number of Individuals	Percentage (%)
Gender		
Female	33	49,2
Male	32	50,8
Total	65	100
Age		
18 to 30 years	20	30,8
31 to 40 years	13	20,0
41 to 50 years	12	18,5
51 to 60 years	15	23,1
Over 60 years	5	7,7
Total	65	100
Education Level;		
Complete Elementary School	3	4,6
Incomplete Elementary School	7	10,8
Complete High School	10	15,4
Incomplete High School	5	7,7
Complete Graduation	9	13,8
Incomplete Graduation	16	24,6
Postgraduate studies	11	16,9
I have no formal education	4	6,2
Total	65	100
State		
Parana	41	63,1
São Paulo	2	3,1
Santa Catarina	1	1,5

Ceara	2	3,1
Mato Grosso do Sul	1	1,5
Sergipe	1	1,5
Minas Gerais	3	4,6
Rio Grande do Sul	6	9,2
Bahia	2	3,1
Maranhao	1	1,5
Paraiba	1	1,5
Holy Spirit	2	3,1
Rio de Janeiro	1	1,5
Stop	1	1,5
Total	65	100
Time working on family farming		
5 years or less	15	23,1
From 6 years to 10 years	5	7,7
From 11 years to 20 years	19	29,2
From 21 years to 30 years	6	9,2
From 31 years to 40 years	7	10,8
From 41 years to 50 years	7	10,8
More than 50 years	6	9,2
Total	65	100
Another job		
No	47	72,3
Yes	18	27,7
Total	65	100
Hours/week dedicated to family farming		
Up to 15h per week	9	13,8
15 to 25 hours per week	9	13,8
25 to 40 hours per week	15	23,1
More than 40 hours per week	32	49,2
Total	65	100
Owner of the land on which he works		
Yes	49	75,4
No	16	24,6
Total	65	100
It is part of an agrarian reform settlement		
No	57	87,7
Yes	8	12,3
Total	65	100
Is part of a cooperative and/or association		
Yes	49	75,4
No	16	24,6
Total	65	100

Source: Authors' Database, 2021.

3.2 PRODUCTION CHARACTERIZATION

According to Chart 2, which depicts the aspects of production, 63.1% of the farmers worked with more than one agricultural activity. This diversity of products is advantageous to the producer because it allows the entry of various types of markets, stimulating trade, and maintaining income stability throughout the year, in addition to becoming a financial security against possible risks generated by price fluctuation, climatic factors, and the attack of diseases and pests (CLEMENTE, 2015; NETO *et al*., 2010).

Within this study, the three main activities performed by family farmers were vegetable production (72.3%), grain production (36.9%), and fruit growing (30.8%). As cited by Clemente (2015), the production of vegetables has been generating employment and income for family-based farmers mainly in the south and southeast of the country, grain production in Brazil is highly expressive, being favored by the climate, adoption of technology in agricultural management and the vast territorial extension of the country (BARONI; BENEDETI; SEIDEL, 2017).

According to Gazolla (2004), the family farmer is induced to cultivate what is best financed by banking institutions and what stands out is the production of grains such as soybeans and corn. Fruit growing has also been financed by Pronaf (National Program for the Strengthening of Family Agriculture), which brings "an important role in the social reproduction of farmers outside the dominant pattern of grain production." (GAZOLLA, 2004, p. 203).

Another characteristic that deserves to be highlighted is the fact that a little more than half of the individuals interviewed (55.4%) maintained an organic production, which makes it possible to reach groups of consumers who seek this food, which is often related to healthy eating and without the use of pesticides (NETO *et al*., 2010).

3.3 CHARACTERIZATION OF THE COMMERCIALIZATION AND INCOME OF FAMILY FARMERS

In family farming, producers have access to several distribution channels. Some choose to sell their products through supermarkets, restaurants, and institutional sales, such as government programs (CARVALHO; GROSSI, 2019).

Also according to Table 2, 47.7% of the family farmers interviewed used more than one way to market their products, the two main ones being: the sale in free markets (carried out by 55.4%) and the direct sale to the consumer or establishments (32.3%).

The free markets maintain an important role in family farming, as they allow the "reproduction of local values, the productive inclusion of farmers, the supply of small towns, far from the food distribution routes and the heating of the urban economy, a result of the purchases of the fairgoers" (PEREIRA; BRITO; PEREIRA, 2017, p. 71).

In addition, fairs play a significant role in preserving the autonomy of producers, increasing their incomes, promoting the sustainable development of local agriculture, adding value to products, and reducing the bargaining power of local establishments such as supermarkets (CARVALHO E GROSSI, 2019).

Just like the free markets, the direct sale to the consumer and the establishments is an important point of commercialization used by family farmers, this modality of sale allows the reduction of costs related to the transaction, allowing the producers greater profitability (NASCIMENTO *et al.*, 2016).

Another possibility of a trade is through public policies, such as the Food Acquisition Program (PAA) and the National School Feeding Program (PNAE), both aimed at rural producers of smaller economic size (PEDROSO; CORCIOLI; FOGUESATTO, 2020).

In the present research, 29.2% of the interviewees stated that they participated in the PNAE and 26.2% in the PAA.

The main objective of the PAA is to promote access to food and encourage family farming (HESPANHOL, 2013). For this, the program operates in 5 modalities, namely: Direct Purchase of Family Agriculture, Purchase with Simultaneous Donation, Support for the Formation of Stock by Family Agriculture, Incentive to the Production and Consumption of Milk (for the states of the Northeast and Minas Gerais) and Institutional Purchase (CAMARGO, BACCARIN, SILVA, 2013).

The PNAE, on the other hand, is a program that seeks to ensure and provide school meals for students of basic education, including those of early childhood education, elementary school, high school, and youth and adult education, enrolled in public and private schools (CAMPOS, 2011).

As established by Law No. 11,947, of June 16, 2009, it is determined that at least 30% of the financial resources transferred by the FNDE (National Fund for the Development of Education), under the National School Feeding Program (PNAE), must be destined to the acquisition of food directly from family agriculture (BRASIL, 2009).

Table 2. Aspects related to production: type of production, diversity of production, organic production, form(s) of marketing, and diversity of marketing.

Feature	Number of Individuals	Percentage (%)
Type of production*		
Vegetables (lettuce, kale, carrots, etc.)	47	72,3
Fruit growing (apple, peach, strawberry, grape, etc.)	20	30,8
Dairy Cattle	6	9,2
Beef Cattle	5	7,7
Grains (corn, beans, soybeans, rice, etc.)	24	36,9

Swine	5	7,7
Poultry	17	26,2
Fishing/Fish farming	4	6,2
Agro-industry (of vegetables, baked goods, smoked, etc.)	8	12,3
Agroforestry	2	3,1
Apiculture	4	6,2
Goat/Sheep	4	6,2
More than one activity		
Yes	41	63,1
No	24	36,9
Total	65	100
Organic Production		
Yes	36	55,4
No	29	44,6
Total	65	100
Marketing Form(s)*		
Free Markets (family farming, organic, ecological, etc.)	36	55,4
Food Acquisition Program (PAA)	17	26,2
National School Feeding Program (PNAE)	19	29,2
A direct sale to consumers or establishments (markets, restaurants, refrigerators, etc.)	21	32,3
Cereal	2	3,1
Cooperative	5	7,7
State Supply Centers (Ceasa)	3	4,6
Atravessador	1	1,5
A community that Sustains Agriculture (CSA)	1	1,5
It does not sell the products, used for its subsistence	2	3,1
Uses more than one form of marketing		
Yes	31	47,7
No	34	52,3
Total	65	100

*The interviewee may indicate more than one alternative.

Source: Authors' Database, 2021.

According to Chart 3, which lists the difficulties faced by farmers during the pandemic, 55.4% of the individuals reported not having had access to emergency aid, some reasons cited were non-request by farmers (88.9%) and non-approval of the request (11.1%).

Emergency aid was implemented by the Federal Government as an alternative measure to mitigate the economic impacts of the coronavirus pandemic (COVID-19) on the most vulnerable portion of the population (CARDOSO, 2020).

Among the beneficiaries of the emergency aid, informal workers are included, whether employed, self-employed, or unemployed, of any nature, including those with an inactive intermittent contract, provided that they are enrolled in the Single Registry for Social Programs of the Federal Government (CadÚnico), are also considered eligible individuals with monthly per capita family income of up to 1/2 (half) minimum wage, or whose total monthly family income does not exceed 3 (three) salaries minimum (BRAZIL, 2020). Thus excluding family farmers.

Regarding the change in the income of family farmers, 73.8% admitted to having their income changed during the pandemic, with 60% saying their incomes were reduced and 13.8% increased.

The interviewees who had a decrease in their income attributed as determinants for this the factors such as the closure of consumer establishments, such as restaurants and hotels, reduction in the supply and demand of their products (including by public policies such as the PAA and the PNAE), increase in the prices of inputs, the difficulty of access to new consumer markets, interruption of free markets and reduction of the circulation of consumers in those that did not have their interruption.

Some of these factors described by the producers as harmful to their income were also related to marketing, and 76.9% of the interviewees who said they had the marketing of their products affected pointed to the interruption of free markets (38.5%), the decrease in demand (23.1%) and the interruption or decrease in the demand for programs (PAA, PNAE) (21.5%) as the main triggers of this loss.

It is worth mentioning that the PNAE as previously mentioned is a channel that guarantees school feeding and the commercialization of the products of family farming, with this it is verified that the interruption of face-to-face classes due to the pandemic did not only affect students but also professionals who depend on the operation of schools, among them, family farmers who depend on the National School Feeding Program (PNAE).

Soon with the onset of the pandemic and the closure of schools, the government decreed that the PNAE maintain the food of elementary school students (from public schools) through the distribution of food kits (PEREIRA *et al*., 2020). However, as already pointed out, a large percentage of the products generated by family agriculture is distributed in nature, such as vegetables (in this study it represents 72.3% of production), which hinders transport and distribution needs to be faster due to the high perishability of these foods.

In addition, the purchase of the products began to be made through a remote public call, which made it difficult for farmers who do not have easy access to the internet to participate (DA SILVA *et al*., 2020).

According to the FNDE (2020), the distribution of kits is directed to students enrolled in the public basic education network and is not directly related to the Bolsa Família Program or other local social programs. However, the legislation that regulates the National School Feeding Program (PNAE) does not prevent local management from using its resources to make a selection based on socioeconomic criteria.

Thus, some states did not distribute the food kits to all public school students, in some cases, the established criteria were restrictive, depriving many students who also need these foods (AMORIM; JUNIOR; BANDONI, 2020, s/p.). This fact, in addition to harming children and their families, impacted the economy of family farmers who had their demand reduced due to the restriction of kits to some families.

About the PAA, at the beginning of the pandemic, there was the postponement of purchases by the program, which negatively affected the guarantee of sales of farmers and the food and nutritional security of beneficiaries (BREITENBACH, 2021). In addition, Sousa and Jesus (2021) point out that PAA purchases have been significantly reduced in many cases since the beginning of the period of social isolation.

With the reduction of institutional programs and the restriction of free markets, markets became one of the main marketing channels during the pandemic since such establishments remained open because they were "essential services" (DE LIMA MEDEIROS; TRAMONTIN MASCARENHAS, 2021).

4 NEW ALTERNATIVES

Based on all these difficulties described, the farmers who had the commercialization of their products affected sought new alternatives to enable their sales, with the adoption of delivery and online sale being the most pointed out. These alternatives emerge as a way to respect social distancing, preventing consumers from leaving the house (DUTRA; ZANI, 2020).

In addition to the strategies mentioned above, virtual/online fairs have also emerged as a new marketing channel, such as the "Easy Genius Fair" created by the Association of Producers of Hortifrutigranjeiros de Ponta Grossa (ASPHPG) (DE LIMA MEDEIROS; TRAMONTIN MASCARENHAS, 2021) and "AGROUFAM em CASA" constituted by family farmers in the state of Amazonia (VASCONCELOS, 2020).

5 FUTURE PROSPECTS

Finally, given the debate presented, farmers rated the degree of change in routine during the pandemic (from 1 to 10), 27.7% of people classified the change in their routine as "8" and only 3.1% classified it as "1" and "2".

When asked with a view to prospects, 87.7% of farmers answered that after the pandemic they would have the conditions (financial, physical, and mental) to continue to exercise family farming, while 1.5% answered not and 10.8% did not know how to answer. Among the group that answered not having conditions, the arguments used were the physical limitation of the individuals, insecurity about the future, discouragement, and the price of inputs.

Table 3. Factors related to the pandemic according to access to emergency aid include factors that influenced the possible non-receipt, degree of change in routine caused by the pandemic, change in income, affected marketing and contributing factors, and the permanence in family farming after the pandemic.

Feature	Number of Individuals	Percentage (%)
Access to emergency aid		
Yes	29	44,6
No	36	55,4
Total	65	100
Non-receipt of aid		
I didn't request/I didn't need to	32	88,9
My request was not approved	4	11,1
Total	36	100
Degree of change in routine		
1	2	3,1
2	2	3,1
3	3	4,6
4	3	4,6
5	6	9,2
6	6	9,2
7	6	9,2
8	18	27,7
9	8	12,3
10	11	16,9
Total	65	100
Change in Income		
Yes, my income has increased	9	13,8
Yes, my income has decreased	39	60,0
My income has not changed	14	21,5
I can't tell	3	4,6
Total	65	100
Marketing affected		
Yes	50	76,9
No	11	16,9
He didn't know how to answer	4	6,2
Total	65	100
Factors that affected marketing*		
Yes, due to the interruption of the fairs	25	38,5

Yes, due to interruption or decrease in demand for programs of which I am part (PAA, PNAE)	14	21,5
Yes, due to the decrease in demand for the products I sell	15	23,1
Yes, there has been a decrease in products marketed due to health issues that I or a family member faced during the pandemic	3	4,6
Yes, another reason	8	12,3
The marketing of my products has not been affected during the pandemic	11	16,9
I don't know how to answer	4	6,2
After the pandemic, you will be able (financially, physically, and mentally) to continue to farm in family farming		
Yes	57	87,7
No	1	1,5
I don't know how to answer	7	10,8
Total	65	100

*The interviewee may indicate more than one alternative.

Source: Authors' Database, 2021.

6 FINAL CONSIDERATIONS

As seen, during the pandemic the restriction and closure of free markets, and the reduction and change of the PAA and PNAE government programs negatively implicated the commercialization of the products of family-based farmers. 76.9% of the farmers admitted to having their marketing affected and 60% had their income reduced.

These results underscore the need for specific policies and support measures for family farmers during crises such as the Covid-19 pandemic.

Despite the difficulties faced by family farmers during the COVID-19 pandemic, new alternatives have been developed to face these challenges, among them stand out the extension actions that were fundamental in the creation of a new form of commercialization (virtual fair), although it is necessary to keep in mind that the elderly class (9.2% of the individuals in the research) still has difficulties in interacting with this technology, What represents a challenge in the use of online selling, for this to be minimized it is necessary that cooperatives and associations maintain assistance related to this portion of farmers.

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