



Profile of family farming establishments associated with cooperatives in the Northeast region of Brazil

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Abstract

The objective of this article is to present a characterization of the family farming establishments in the states of the Northeast Region of Brazil, whose producers are affiliated with cooperatives. Based on data from the 2017 Agricultural Census conducted by IBGE, the study highlights the low participation of family farmers in cooperatives in the Northeast Region, a factor linked to various social and productive deficiencies within this segment. Some positive trends related to the organization of family farming through cooperatives were also identified, with improvements in indicators such as production, income, and access to technical assistance and credit services. Based on these findings, the study aims to foster a new perspective on the vast potential of cooperatives as tools for development, especially in structuring rural areas in the Northeast Region, as well as the need for more detailed analyses of the economic, social, and political context in which family farming is embedded, and how cooperativism can drive rural development processes.

Key words: agricultural cooperation. Agricultural census. Rural development.

Perfil dos estabelecimentos de agricultura familiar associados em cooperativas na região Nordeste do Brasil

Resumo

O objetivo deste artigo é apresentar uma caracterização dos estabelecimentos agropecuários da agricultura familiar existentes nos estados da Região Nordeste do Brasil, cujos produtores estão associados a cooperativas. Com base nos dados do Censo Agropecuário de 2017 do IBGE, o estudo evidencia a baixa adesão dos agricultores familiares da Região Nordeste às cooperativas, fator este relacionado a diversas carências sociais e produtivas deste segmento. Também foram identificadas algumas tendências positivas relacionadas à organização da agricultura familiar em cooperativas, com melhorias em indicadores de produção, renda e acesso a serviços de assistência técnica e crédito. A partir

desses resultados, espera-se promover uma nova perspectiva sobre o amplo potencial de expansão das cooperativas como instrumento de desenvolvimento, especialmente na estruturação do meio rural da Região Nordeste, bem como sobre a necessidade de análises mais detalhadas do contexto econômico, social e político em que a agricultura familiar está inserida, e de como o cooperativismo pode impulsionar processos de desenvolvimento rural.

Palavras-chave: Cooperação agrícola. Censo agropecuário. Desenvolvimento rural.

Perfil de establecimientos de agricultura familiar asociados a cooperativas en la región nordeste de Brasil

Resumen

El objetivo de este artículo es presentar una caracterización de los establecimientos agropecuarios de agricultura familiar ubicados en los estados de la Región Nordeste de Brasil, cuyos productores están afiliados a cooperativas. Con base en los datos del Censo Agropecuario del IBGE de 2017, el estudio destaca la baja participación de los agricultores familiares en las cooperativas de la región, factor vinculado a diversas carencias sociales y productivas de este segmento. Asimismo, se identificaron algunas tendencias positivas relacionadas con la organización de la agricultura familiar en cooperativas, con mejoras en los indicadores de producción, ingresos y acceso a servicios de asistencia técnica y crédito. A partir de estos resultados, se busca propiciar una nueva perspectiva sobre el amplio potencial de expansión de las cooperativas como instrumentos de desarrollo, especialmente en la estructuración del medio rural en la Región Nordeste, así como la necesidad de análisis más detallados sobre el contexto económico, social y político en el que se inserta la agricultura familiar, y cómo el cooperativismo puede estimular procesos de desarrollo rural.

Palabras clave: Cooperación agrícola. Censo agropecuario. Desarrollo Rural.

1 Introduction

The Brazilian's The 2017 Agricultural Census conducted by the Brazilian Institute of Geography and Statistics – IBGE (2019) identified a total of 5,073,324 agricultural establishments in Brazil, of which 3,897,408 (76.8% of the total) were classified as family farming establishments. These establishments are responsible for two-thirds of rural employment. In the Northeast Region, the 1.8 million family farming establishments represent 79.2% of the total establishments surveyed in the region and nearly half of the total family farming establishments in Brazil, employing 4.7 million people (73.8% of the total). This demonstrates their significant weight in the regional and national composition of the sector. Despite their quantitative relevance, the Census reveals severe deficiencies in Northeast family farming, including limited access to land, water, and economic, technological, and institutional assets necessary to develop their potential. Consequently, 89.2% (1.64 million) of these establishments are classified as low-income (target group B of the National Program for Strengthening Family Agriculture – Pronaf), holding only 26.1% of the agricultural land.

Among the strategies to address the deficiencies of family farming, the promotion of social, political, and economic organizational arrangements stands out, particularly associative and cooperative initiatives. These aim to make family

production viable, reduce subordination in commercial relations, and improve living conditions in rural areas. However, the 2017 Census found that only one-tenth of family farming establishments in Brazil are affiliated with cooperatives (Silva; Nunes, 2023). In the Northeast Region, this percentage is nearly ten times lower, reaching only 1.3% of the total family farming establishments, compared to 37.5% and 14.6% in the South and Southeast Regions, respectively. This does not mean that Northeast family farming lacks organizational tradition or strength, as 40.8% of the producers of these agricultural establishments participate in collective associative organizations (community and production-based) and unions, according to the 2017 Census (IBGE, 2019).

Therefore, it is necessary to identify the regional particularities of the Northeast regarding the low association with cooperatives. The assumption is that, compared to community associations, cooperatives are a type of organization that, despite their potential to enable economic activities—especially commercial ones—are quite complex in their institutional structure. In addition to these limitations, it is also essential to consider the social and productive characteristics of family farming establishments whose producers reported being members of agricultural cooperatives.

Thus, this study sought to understand, based on data from the 2017 Agricultural Census, the socioeconomic profile of family farming agricultural establishments in the Northeast Region whose producers are associated with cooperatives. From this characterization, it was possible to identify and analyze some trends related to the contributions of cooperative participation in enabling the productive and reproductive activities of family farming in the region.

Based on the systematization and analysis of the information, this article was prepared. In addition to this introduction and the final considerations, it is organized into four more sections. The next section presents a brief theoretical foundation on the themes of family farming and agricultural cooperation, followed by a detailed methodology. The presentation and discussion of the results are organized into two sections that describe the profile of family farming establishments associated with cooperatives and access to technical assistance and credit services. In the final considerations, the authors seek to answer the motivating questions of the study and point out contributions to the thematic debate and to support cooperation in family farming within the scope of public policies for rural development.

2 Theoretical Framework:

2.1 Family Farming and Cooperativism in the Northeast Region of Brazil

Highly representative in the Northeast Region of Brazil, according to Ortega *et al.* (2004) and Nunes *et al.* (2020a), family farming encompasses nearly half of Brazil's agricultural establishments. According to IBGE (2019) data, occupying about 43.5% of the total area with rural activities in the Northeast, family farming establishments account for 82.9% of rural employment and are responsible for over 40% of the regional gross agricultural production value, primarily producing basic foods necessary for food security. However, Northeast family farmers operate in an economically fragile environment, with low collective organization, developing their

activities based on precarious production structures, often resulting in low levels of productivity and profitability.

Regarding rural development, in recent decades, the Northeast Region, through state planning and intervention, has experienced dynamics with high dependence on harmful markets (monopoly and oligopoly). For Nunes and Schneider (2013), as well as Gomes *et al.* (2022), in these initiatives, family farming reflected regional dynamics with high dependence, as it lacked the capacity to define strategies at the local level. However, this logic, aligned with specialized models of agricultural production, has encountered resistance and rejection in more endogenous dynamics, where collective participation institutions, such as cooperatives, exist. According to Ploeg (2018), in dynamics considered endogenous, the relative autonomy of family farmers tends to intensify, gradually moving away from the state and market dependence, maintaining the traditional character of the agricultural system. Thus, Northeast family farming, acquiring the capacity to engender and intervene in regional development dynamics, can, according to Almeida *et al.* (2017); Nunes *et al.* (2020b); Silva and Nunes (2021); Gurgel *et al.* (2022); Morais *et al.* (2024), use strategies such as cooperativism and agricultural policies, such as credit, Technical Assistance and Rural Extension (ATER) services, and market construction, to design a new and promising scenario for rural development.

According to authors such as Veiga (1992), Abramovay (1998), Schneider (2003; 2006), Ploeg (2006; 2014; 2018), and Nunes *et al.* (2024), family farming is an important segment of the economy composed of family producers who develop production and social reproduction strategies, such as cooperation and pluriactivity, aiming to achieve self-sufficiency levels, differentiating themselves from business strategies whose efficiency is relative to the primary purpose of producing surplus to obtain maximum profitability. Thus, a fundamental characteristic of family farming is the construction of a resource base for self-sufficiency, moving away from dependence on harmful markets, especially monopolies and oligopolies, making internal combinations to the establishment, opposing the conception and logic of industry that increasingly dominate agricultural production processes.

In this way, family farming expresses a segment defined, in essence, as a complex and multidimensional phenomenon, where the family owns the land, and the work is carried out by its own members, without the capitalist definition determined by the employer-wage relationship. Even so, family farmers are characterized as part of the "working class" (Antunes, 2002), exposed to direct and indirect forms of exploitation and expropriation by sectors (financial, industrial, agricultural, among others) that hold capital. Furthermore, according to Nunes *et al.* (2024), the definition of family farming cannot be limited only by the size of the establishment, as when referring to small-scale agriculture or economies of scope, but by their praxis, that is, the ways in which people cultivate and live, which makes family farming also considered a way of life in rural areas.

Still regarding its general characteristics, Northeast family farming in Brazil is marked by structural deficiencies, especially land, socioeconomic, and collective organization problems. For Silva *et al.* (2020) and Nunes *et al.* (2023), these problems tend to further exacerbate their economic vulnerabilities and the precariousness of their infrastructure during prolonged droughts, which increase difficulties due to water scarcity. This diagnosis is not a current, conjunctural situation. For example, in

the mid-20th century, the report of the Working Group for the Development of the Northeast (GTDN, 1959) found that Northeast family farming is characterized by the vulnerability of agricultural production, which is a structural limitation that could be resolved through assertive regional policies for rural development.

As announced in the introduction, several studies (Lauschner, 1994; Rech, 2000; Gómez López, 2004; Christoffoli, 2019, among others) point to the importance of agricultural cooperation as a factor in confronting the atomization and isolation of small family farming establishments. These organizational arrangements enable the chaining of productive activities to reduce costs, access markets, ensure scale and regularity in supply, among other factors fundamental to reducing the subordination and subalternity of this segment in the market (Parreiras, 2007).

For Chayanov (2017), cooperatives are the basis for organizing an effective social and economic model, which allows combining the advantages of large-scale economies with small-scale units, enabling greater control over the stages of production, processing, and marketing of products. Thus, inter-cooperation allows access to broader markets and the development of productive modernization processes, including access to means of production, knowledge, and technologies. Studies by Silva (1999), Schneider (2006), Nunes and Gomes Silva (2023), and Oliveira and Nunes (2025) point to cooperation as a strategy for diversifying activities in rural areas, as a space of multiple dimensions, not restricted to agricultural activities, where multifunctionality and alloreactivity in family farming are increasingly present realities. In this way, cooperation is an important instrument for diversification and productive adaptation in the new contexts of rurality, which can contribute to the resilience of family farming.

Organizational strategies are also fundamental in the processes of resistance and valorization of agroecological practices of peasant family farming in Brazil (Wanderley, 2009; 2014), which, according to Ploeg (2006; 2014; 2018), is a broader phenomenon existing on various continents, which is not just about resistance but a process of “re-peasantization” as a way of life and production oriented toward agroecology, food security, and biodiversity preservation.

These processes are also marked by limits and contradictions, which can be identified from a micro perspective (in cases), as well as in a broader scope, considering, for example, regional diversities. For the study presented here, the greater or lesser adherence of family producers to a cooperative must also be understood from the historical particularities in the processes of space occupation and regional formation and in the ways of disseminating cooperativism as an organizational model.

In the case of the Northeast territory, cooperation was not an attitude foreign to the way of life of indigenous peoples, who were victims of the violent process of ethnocide (Menezes, 1970) in the occupation and colonization of the geographic space. Subsequently, with the dissemination of capitalist forms of sociability, guided by the commodification of all dimensions and spaces of life, processes of maximum environmental and human labor exploitation prevailed, generating the dispossessed. In this historical context, it is necessary to consider the impacts of the long period of slavery in the sugar-producing Northeast and the reproduction of servile forms and labor relations, which marked the occupation of the hinterland with cattle raising, complemented by cotton farming and sustained by subsistence. The issue is that,

according to Medeiros *et al.* (2021), even with the process of agricultural modernization, the maximum exploitation of human labor continued to be reproduced in semi-servile and semi-slavery forms in sharecropping and tenant farming regimes. In the Northeast, there was not even the “colonato” regime, as occurred in the South-Central region of Brazil, so that land concentration and political power, pillars of the so-called Northeast economic complex, further aggravate the situation of impoverishment and subordination of family-based agriculture.

These are limiting factors for the expansion of the capacities and potential of family farming, including regarding aspects of self-organization for the autonomous exercise of emancipatory initiatives. Control of land, water, political power, and lives (active violence of “coronelismo”) are structural factors that interfere with attempts to organize and expand authentic cooperatives that require autonomy of the associated producers, as well as access to knowledge and other assets necessary for the constitution and maintenance of these organizations. It is not, therefore, a natural aversion to associative form. On the contrary, individualism is not natural at all but depends on the predominant mode of social integration, based on how the production and reproduction of material conditions are processed, as indicated by Marxist critical social theory and economic anthropology studies (Sabourin, 1999; 2011). The replacement of reciprocity relations by utilitarianism in social relations, where obtaining individual advantage is a form of reproduction of social relations of production under the aegis of capital, so that individualism and isolation are a ruse of capitalist sociability to weaken the collective organizations of the working class.

This process of capitalist expansion in Brazil, from colonization to the present, has common traits, regardless of the region. However, considering the arguments formulated here, the greater expansion of cooperatives in the South-Central region of Brazil is understandable because, despite the similarities in colonization forms and capitalist exploitation, there was a greater expansion of associative and cooperative forms based on the ways of life and production of peasant family farming with access to small properties in areas of European colonization at the end of the 19th century, to replace slave labor. At the beginning of the 20th century, with the expansion of the “colonato” regime, many European migrants brought their practical experiences and the ideals of cooperativism and began to develop these initiatives in the South-Central region of Brazil.

Rural associative and agricultural cooperation in the Northeast began to have greater incentive and expansion in the mid-20th century, from the actions of the Catholic Church, in the context of community development practices (Amann, 1992), or, according to Nunes *et al.* (2015; 2024), of Community Driven Development. Similarly, social movements, such as the Peasant Leagues in the 1950s and 1960s, which fought for agrarian reform and better living conditions in the countryside, also encouraged the formation of cooperatives as instruments of organization and resistance.

When analyzing the formation of critical thinking in the Brazilian semi-arid region in the mid-20th century, Silva (2010) highlights the contributions of Guimarães Duque, Josué de Castro, and Celso Furtado, among others, who sought to break with the old paradigm of combating drought to build the bases of sustainability for the “sertanejo” economy, based on coexistence with semi-aridity. This process required structural changes to strengthen small “sertanejo” production with access to land,

appropriate techniques for managing water, soil, and vegetation, access to credit, access to education, and the creation of agrarian cooperatives.

However, in the context of the conservative modernization of the countryside, promoted by the Brazilian state in the 1960s and 1970s in the Northeast, according to Medeiros et al. (2021), cooperatives began to be encouraged in rural colonization processes and in the so-called special development programs (National Integration Project – Proterra, Polonordeste, etc.). Created more as instruments of control than of social change (Silva et al., 2003), these organizations were marked by the authoritarianism of the dictatorial regime that tutored the organizations, with subordinated, manipulated, and exclusionary integration of rural workers, so that cooperatives became yet another instrument for reproducing the domination relations of rural oligarchies, now with a business guise, according to Bursztyn (1985).

Such factors may explain the uncertainties and insecurities that family farmers have regarding cooperative organizations that, for the most part, were organized from a class structure, being commanded by large landowners and local and regional political leaders, according to Silva et al. (2003).

From the 1980s/1990s, in the context of democratization, social movements and other progressive political forces began to stimulate cooperatives in rural areas, as the ideal of cooperation gained strength in agrarian reform settlements, as an instrument to enable small production in rural communities. Even so, the expansion of cooperatives in the countryside occurs slowly, so that the low linkage to cooperatives—particularly revealing one of the weaknesses of family farming—because, as Nunes and Schneider (2013); Nunes and Gomes Silva (2022); Oliveira and Nunes (2025) affirm, an insufficient cooperative structure ends up distancing and reducing the action of technical assistance and rural extension (ATER) and the possibilities of innovation and access to markets.

At the end of the 20th century, the articulation and popular political mobilization that were incremented, from the democratization process of the 1980s, resulted in organizational conquests and spaces of incidence of rural social movements in processes of formulation, execution, and social control of public policies for agrarian reform and strengthening family farming in Brazil. One of the strategic components of these policies was precisely the strengthening of associative and agricultural cooperation. Already in the first decades of the 21st century, there were advances in the political incidences of family farming and the emergence of a national movement, which sought to resignify the processes and forms of collective organization, oriented toward the so-called solidarity economy (Singer, 2001; 2002), so that this process acquired a new dynamic and resulted in more complex organizational arrangements, such as the creation of centers and networks of production and marketing cooperation.

Thus, considering the historical aspects and their meanings briefly rescued here, we seek to describe and analyze the data from the 2017 Agricultural Census, regarding the low association in cooperatives by producers of family farming agricultural establishments located in the Northeast Region of Brazil.

3 Metodology

The 2017 Agricultural Census (IBGE, 2019) enables the understanding of a set of information about the performance of cooperatives linked to the sector, such as: (1) the identification of 1,090 agricultural establishments that have the legal personality of a cooperative; (2) the existence of 579,438 agricultural establishments with producers associated with cooperatives; (3) technical orientation services, which are carried out directly by cooperatives in 251,520 agricultural establishments; and (4) the provision of credit by rural credit cooperatives in 79,357 of the surveyed units.

The 2017 Census data also show that, of the 579,438 agricultural establishments with producers associated with cooperatives in Brazil, 412,305 are classified as family farming establishments, corresponding to 71.1% of the total. However, 82.7% of these 412,305 establishments are concentrated in the South and Southeast Regions, while the Northeast Region accounts for only 5.9% of the national total (24,212 establishments) (IBGE, 2019).

Given this finding, the present study seeks to analyze the agricultural establishments located in the Northeast Region of Brazil, which are classified as family farming, whose producers reported being members of cooperatives. The study considers that agricultural establishments are units of production or exploitation of agricultural, forestry, and aquaculture activities, with part of these classified by the IBGE as family farming, as they meet the criteria provided for in Law No. 11,326/2006 and Decree No. 9,064/2017, which consider the following criteria: (1) the size limit of the agricultural establishment, measured in fiscal modules; (2) the predominance of family labor in the productive process and income generation; (3) the source of family income from economic activities carried out in the establishment or enterprise; and (4) the management of the establishment being strictly the responsibility of the family.

Thus, to facilitate the process of collecting, systematizing, and presenting the results in this article, the data tables were extracted from the IBGE Automatic Recovery System (SIDRA), in addition to tabulated data available in IBGE (2019), based on the following typology:

Chart 1 – Typologies of Agricultural Establishments with Acronyms and Descriptions

Acronym	Description
EA	Agricultural establishment
EA Coop	Agricultural establishment associated with a cooperative
EA-AF	Family farming agricultural establishments
EA-ÑAF	Agricultural establishments not classified as family farming
EA-AF Coop	Family farming agricultural establishments associated with a cooperative
EA-AF Pronaf B ¹	Family farming establishments from Pronaf Group B (National Program for Family Farming Strengthening)

¹ According to the rules of the 2017-2018 Agricultural Plan (Plano Safra), Group B of PRONAF (National Program for Family Farming) was composed of family farmers with an annual gross family income of up to R\$20,000.

EA-AF Pronaf B Coop	Family farming establishments from Pronaf Group B associated with a cooperative
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Source: Source: Authors' elaboration (2025). Adapted from IBGE, 2019.

Thus, indicators and variables were selected to characterize the agricultural establishments and to verify some production factors, income level, and access to services that could indicate trends in the association of family farming with agricultural cooperatives in the Northeast Region, as shown in Table 2:

Chart 2 – Variables for Characterizing Agricultural Establishments with Producer Association to Cooperatives in the Northeast Region and its Federative Units

Characterization	Selected Variables
Family farming agricultural establishments (EA-AF) in the Northeast by Federative Unit with producer association to a cooperative and/or a class entity	Is associated (collective organization: union, association, or cooperative)
	Is associated with a Cooperative
Size of family farming agricultural establishments (EA-AF) in the Northeast by Federative Unit (UF)	Stratification of establishments according to credit access rules from the National Program for Family Farming Strengthening (Pronaf)
	Size of the establishment area
Profile of the producers responsible for EA-AF in the Northeast by Federative Unit	Producer's education
	Producer's age
	Producer's gender
Economic characteristics of EA-AF establishments in the Northeast by Federative Unit	Production of the establishments
	Purpose of production in the establishments
	Types and sources of revenues of the establishments
Access of EA-AF to rural development policies in the Northeast by Federative Unit	Access of establishments to technical guidance services
	Access of establishments to credit

Source: Source: Authors' elaboration (2025). Adapted from IBGE, 2019.

The collected data were organized, processed, and systematized in tables for presentation and generation of graphs in Excel, without the application of statistical significance tests, considering that the present study does not intend to analyze direct causal relationships between the condition of association with a cooperative and the socioeconomic performance of the establishment. In the analysis process, the EA typologies were classified considering the national scope, regional (Northeast); and the respective Federation Units - Maranhão (MA), Piauí (PI), Ceará (CE), Rio Grande do Norte (RN), Paraíba (PB), Pernambuco (PE), Alagoas (AL), Sergipe (SE), and Bahia (BA) -, which allows expanding the focus of approximation to state particularities, according to the results presented below.

4 Results and Discussion

4.1 Family Farming Establishments in the Northeast Region Associated with Cooperatives

As announced in the introduction, the motivation of the present study refers to the low association of family farmers with cooperative organizations, with this fact being more noticeable in the Northeast Region, as shown in Table 1.

Initially, it is noteworthy that 40.0% of EA-AF in Brazil participate in collective organizations, which is numerically expressive, with more than 1.5 million producers in unions, associations, and cooperatives. However, only 10.6% of EA-AF have producers who are members of cooperatives, representing a total of 412,305 EA-AF Coop in Brazil.

In this regard, there is a significant variation among Brazilian regions, with the South Region having a percentage of EA-AF Coop three times higher than the national average. In the Northeast Region, there are only 24,212 family farming agricultural establishments whose responsible producers are associated with cooperatives, representing 1.3% of the total EA-AF in the Region. (IBGE 2019)

Table 1 – Number of Family Farming Agricultural Establishments and Percentage of Producer Participation in Collective Organizations, Highlighting Cooperatives – Brazil, Major Regions, and Federative Units of the Northeast Region (2017)

Brazil, Regions, and Northeast UF (A)	Total EA-AF (B)	% of Producer Participation	
		Collective Organizations (C)	In Cooperatives (D)
Brazil	3.897.408	40,0	10,6
South	665.767	52,5	37,3
Southeast	688.945	38,1	14,5
Central-West	223.275	25,3	10,9
North	480.575	29,7	3,2
Brazil	1.838.846	40,8	1,3
Alagoas	82.369	22,8	2,8
Paraíba	125.489	48,1	1,8
Rio Grande do Norte	50.680	45,9	1,8
Bahia	593.411	37,6	1,6
Sergipe	72.060	23,0	1,6
Pernambuco	232.611	39,2	1,1
Ceará	297.862	46,9	0,9
Piauí	197.246	50,0	0,8
Maranhão	187.118	41,6	0,6

Source: Authors' elaboration (2025). Adapted from the 2017 Agricultural Census (IBGE, 2019).

Therefore, before deepening the specific analysis of association with cooperatives by family farming in the Northeast Region, it is necessary to broaden the perspective to verify the social participation of EA-AF considering adherence to

collective organizations—associations, unions, and cooperatives. The data expressed in Table 1 show that, in the Northeast Region, 40.8% of the producers responsible for EA-AF participate in these organizations, practically the same percentage verified at the national level.

However, the 2017 Census data also show that, in some of the Northeastern FUs, this percentage is higher than the national average, by 10 points, as is the case of Piauí (exactly 50.0% of EA-AF participating in organizations), followed by other cases also above the national and regional averages, such as: the states of Paraíba (48.1%), Ceará (46.9%); and Rio Grande do Norte (45.9%). In turn, in other Northeastern Federation Units (FUs), the opposite occurs, with participation percentages below the national and regional averages, as is the case of the state of Alagoas (22.8%), and Sergipe (23.0%).

Similarly, when the analysis considers only the participation in cooperatives by the producer responsible for the EA-AF, it is verified that some Northeastern FUs are above the regional average (of 1.3%). This is the case of the state of AL (2.8%, more than double), Rio Grande do Norte and Paraíba (1.8% each), Sergipe and Bahia (1.6%). Below the regional average, the situation of the states of Maranhão, Piauí, and Ceará is verified, with 0.6%, 0.8%, and 0.9%, respectively. When the analysis considers the relationship between the total of 24,212 EA-AF Coop in the Northeast Region, whose producers participate in cooperatives, the case of Bahia stands out, where almost one-third of Northeastern EA-AF are located (32.3%), but which concentrates no less than 40.3% of the total EA-AF Coop in the Region, with 9,750 cases registered in the 2017 Agricultural Census, as shown in Table 2.

Table 2 – Numbers and percentages of family farming establishments and producer participation in collective organizations - Brazil, Northeast Region, and Northeastern UFs (2017).

Scope (A)	Number of EA-AF (B)	% de EA-AF em relação ao total da Região Nordeste (C)	Number of EA-AF Coop (D)	% of EA-AF Coop in relation to the Northeast (E)
Brazil	3.897.408		412.305	
Northeast	1.838.846	100%	24.212	100%
Bahia	593.411	32,3	9.750	40%
Ceará	297.862	16,2	2.631	10,9
Pernambuco	232.611	12,6	2.457	10,1
Alagoas	82.369	4,5	2.324	9,6
Paraíba	125.489	6,8	2.244	9,3
Piauí	197.246	10,7	1.534	6,3
Maranhão	187.118	10,2	1.200	5,0
Sergipe	72.060	3,9	1.146	4,7
R.G. Norte	50.680	2,8	926	3,8

Source: Authors' elaboration (2025). Adapted from the 2017 Agricultural Census (IBGE, 2019)..

In addition to the state of Bahia, the situation where the percentage of EA-AF Coop in the FU (Column E) is higher than the percentage of EA-AF, considering the total of the Northeast Region (Column C), also occurs in the states of Paraíba, Alagoas, Sergipe, and Rio Grande do Norte. On the other hand, in the states of Ceará, Pernambuco, Piauí, and Maranhão, the opposite situation occurs. That is, it is necessary to identify which factors favor and which limit the association of EA-AF producers with cooperatives, both in relation to the regional reality of the Northeast and the specificities of each of the states in the Northeast Region.

4.2 Limiting and favorable factors for the association of Northeastern EA-AF in cooperatives

When seeking to base the present study, attention was drawn to the influences of the historical processes of occupation and formation of regional spaces, as well as other economic (material) and institutional factors and barriers, which will influence the adherence of family farming to agricultural cooperatives. It is noteworthy how agricultural cooperatives were encouraged and expanded in government programs, generally in a tutored and authoritarian manner, in the process of conservative regional modernization, according to Bursztyn (1985) and Medeiros et al. (2021), generating insecurity and distrust among EA-AF producers. In general, these and other factors tend to restrict the adherence and participation of family farmers in these organizations.

The data from the 2017 Agricultural Census (IBGE, 2019) also help clarify some current characteristics of EA-AF Coop, which may indicate favorable and limiting factors for the adherence to cooperatives by EA-AF producers. One of them is the masculinization of family farmers who are members of cooperatives. In Brazil, only 19.7% of the people responsible for EA-AF are women, but only 4.8% of them are associated with a cooperative. In the case of the Northeast, almost 1/4 of EA-AF (24.3%) are under the responsibility of women, yet only 0.9% of them are associated with cooperatives. Contradictorily, studies (Chacon et al., 2015) show the expansion of women's protagonism in organizations in rural areas, mobilizing and occupying spaces in unions and associations, as well as participating and constituting their own organizational arrangements in cooperatives and cooperation networks.

Another factor that may influence greater or lesser adherence to cooperatives by producers responsible for EA-AF is the family income range. In Brazil, EA-AF of PRONAF B (lowest income class), with 66.0% of the total establishments, covers 6.7 million people, but only 3.8% of these producers are cooperative members. In the Northeast Region, this adherence is even lower, with only 1.0% of the total associates.

On the other hand, Brazilian EA-AF with higher income, such as those in the PRONAF V²² income range (middle-income class), 25.9% are cooperative members. However, in the Northeast Region, in this same segment of EA-AF PRONAF V, only 3.7% are cooperative members. In the case of agricultural establishments that are not covered by PRONAF (with annual gross income above R\$ 360 thousand), 51.9% are cooperative members in Brazil, while in the Northeast Region, only 5.0% of this

²² As stipulated by the 2017-2018 Agricultural Plan (Plano Safra), Group V of PRONAF comprised family farmers whose annual gross family income exceeded R\$20.000 but it did not surpass R\$360,000.

segment are members of some cooperative. In other words, this variation, based on the income factor, becomes explicit when dealing with the national reality. However, in the regional reality, low adherence permeates, even with percentage variations (1.3% general average of EA-AF; 1% of EA-AF Pronaf B; 3.7% EA-AF Pronaf V and 5.0% EA Non-Pronaf), all segments.

The analysis of the 2017 Census data also allows verifying the existence or not of a relationship between the size of the agricultural establishment area and the adherence of the producer as a cooperative member. In general, the data reveal the continuity and aggravation of land concentration in the Northeast Region, considering that the average area of establishments that are not family farming is seven (7) times larger than the average size of those classified as family farmers (average of 14 ha). The analysis of Aquino et al. (2020b, p. 40) draws attention to the gravity of the land situation of Northeast family farming, when pointing out that: "Together, family production units with an area of up to 10 hectares correspond to 66% of the total but hold only 12.3% of the lands occupied by the category."

Still according to the 2017 Census data, when considering, when only the area classes of Northeastern EA-AF are considered, it is observed that establishments with smaller areas have a lower participation in these groups. Among establishments with less than 10 hectares (65.9% of the total EA-AF), only 1% of their producers are cooperatives. In establishments with areas between 10 and 50 hectares, the membership rate increases to 1.8%, and finally, in areas with more than 50 hectares, it reaches 2.1% of producers associated with cooperatives. It can thus be concluded that the size of the establishment's area is a factor that may be related to the association between EA-AF producers and cooperatives.

The level of education of family farming producers is a factor that may contribute to the adherence of cooperatives. The highest percentage of EA-AF cooperative membership is directly related to higher education levels, particularly for producers who have completed high school or higher education.

Table 3 – Percentages of family farming establishments, cooperative membership, and educational level of the responsible producer - 2017 (Brazil and Northeast Region)

Educational Level	NORTHEAST REGION		BRAZIL	
	EA-AF	EA-AF Coop		EA-AF
Total	100.0%	1.3%	Total	100.0%
Cannot read or write	42.2%	0.8%	Cannot read or write	42.2%
Literacy	25.4%	1.1%	Literacy	25.4%
Primary Education	15.8%	1.5%	Primary Education	15.8%
Secondary Education (Old Middle)	21.9%	1.5%	Secondary Education (Old Middle)	21.9%
High School (Old Scientific)	9.4%	2.3%	High School (Old Scientific)	9.4%

Higher Education	1.3%	4.1%	Higher Education	1.3%
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Source: Authors' elaboration (2025). Adapted from the 2017 Agricultural Census (IBGE, 2019)..

It is essential to emphasize that low educational attainment is one of the major challenges encountered by family farming in the Northeast region. Furthermore, the 2017 Census data indicate that 42.2% of those responsible for EA-AF cannot read or write, indicating a high illiteracy rate in rural Northeast Brazil. This represents a severe social problem with several negative repercussions. It constitutes yet another structural social barrier that limits initiatives to improve living and production conditions, as well as social and economic organization.

4.3 Trends in cooperative participation in family farming establishments in the Northeast Region

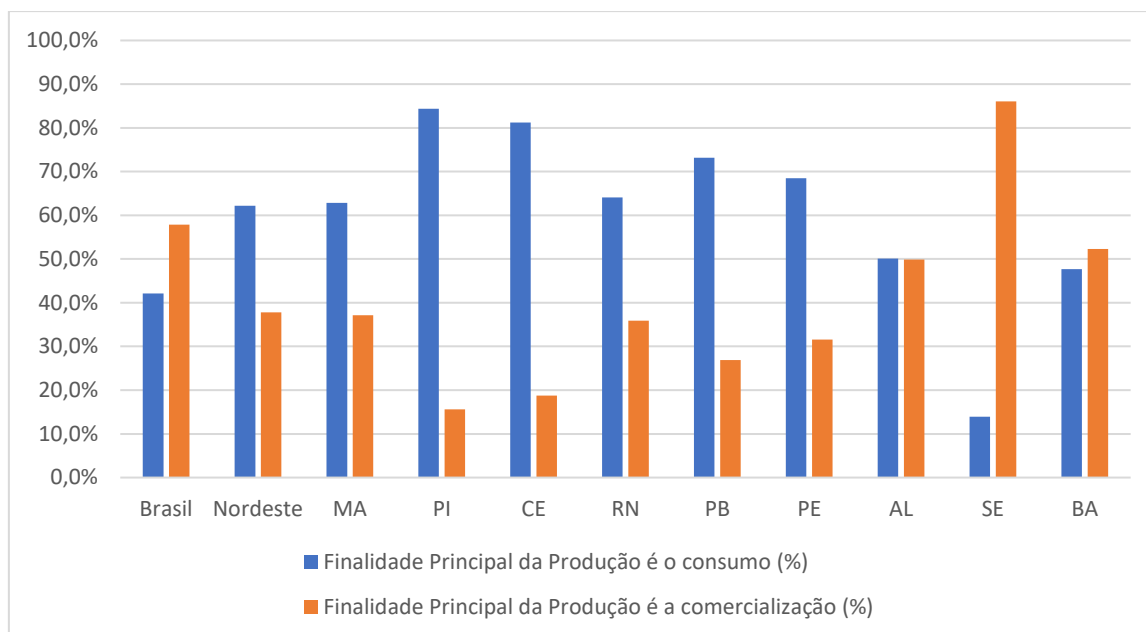
The 2017 Agricultural Census indicates if there is production and the primary purpose of that production: if it is for commercialization or self-consumption by the producer and relatives. The data reveal clear regional distinctions: while in the South and Southeast regions, where the highest percentages of EA-AF with commercialization as the primary production purpose are found (80.7% and 76.2%, respectively), the Northeast region shows the highest percentages of EA-AF whose main purpose is self-consumption by the producer and family (62.5%).

Before proceeding with the analysis, it is necessary to clarify that the 2017 Agricultural Census by IBGE addresses “priority” rather than “exclusivity,” meaning that other information fields verify the Total Production Value (VTP) without considering self-consumption. Additionally, it identifies, and discloses revenues obtained at the facility, comparing them to other sources of income from the producer and family. Another fundamental consideration is that this analysis does not intend to devalue or disregard the importance of production for self-supply, which is a characteristic of the peasant way of life, positively influencing food and nutritional security conditions, particularly in cases where the absence of commercial pressure may also indicate healthier production methods, such as reduced use of agrochemicals.

After completing these observations, we can analyze the trend between association, cooperatives, and the primary purpose of EA-AF production commercialization. When considering the specificities of each state (UF), regional diversity is evident, as demonstrated in Graphic 1.

In the states of Sergipe and Bahia, the primary objective of EA-AF production is commercialization (86.1% and 52.3% of the total), while in Alagoas, almost half of the EA-AF also have this as their primary purpose. On the other hand, Piauí has only 15.6% of agricultural establishments aiming solely for commercialization, and Ceará, where this percentage is 18.7%. In other UFs, the percentages are around or slightly below the regional average.

Graphic 1 – Percentages of family farming establishments by main production purpose - 2017 (Brazil, Northeast Region, and Northeastern UFs)



Source: Authors' elaboration (2025). Adapted from the 2017 Agricultural Census (IBGE, 2019)..

Considering that the main arguments favoring agricultural cooperation are related to product buying and selling processes, the 2017 Census data reveal a clear trend indicating that cooperative participation is a means of encouraging and likely enabling EA-AF production aimed at commercialization. Wanderley (1977; 2009) stated that cooperatives are the tool for this purpose, organizing small producers based on an egalitarian and solidarity-driven approach to counter the oppressive capitalist marketing system.

The fact is that, on the regional average in the Northeast, the percentage of EA-AF whose primary purpose is commercialization increases from 37.8% to 59.2% when producers are cooperative members—an increase of more than 20 percentage points. This trend occurs across all Northeastern states, with an average increase of 20 percent in the total number of EA-AF whose primary production purpose is commercialization. Nevertheless, in the state of Sergipe, nearly 95% of cooperative-associated EA-AF have this purpose, followed by Alagoas (about 75%) and Bahia (67%). In the states of Piauí, Ceará, and Paraíba, the percentage of EA-AF with commercialization as the primary purpose nearly doubles, resulting in a decrease from 15.6%, 18.7%, and 26.9% to 36.2%, 37.9%, and 51.1%, respectively.

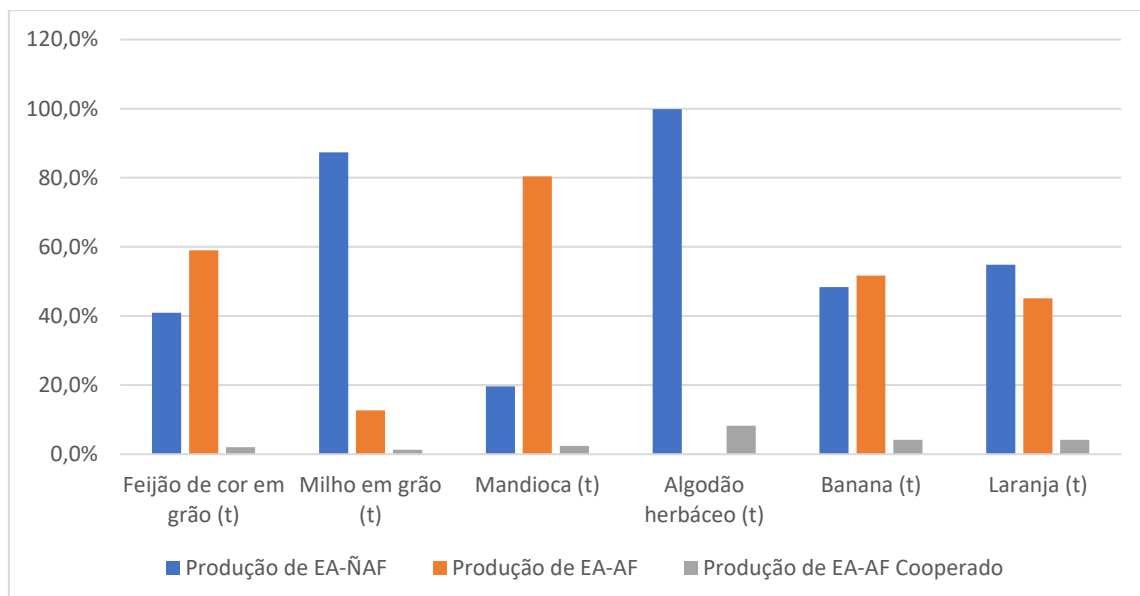
This analysis concerns the products that can be aimed at commercialization. In this regard, it is important to note that the potential and actual production of food by family farming for domestic supply have been among the factors recently enhancing the value of this lifestyle and production model in rural Brazil (Picolotto, 2014). Therefore, we choose to make some comparisons between EA-AF, highlighting those who are cooperative and those who are not considered family farming.

In Graphics 2 and 3, EA-AF accounts for a significant portion of basic food production in the region. In terms of plant production, the cultivation of colored beans (59.7%) and cassava (80.4%) stands out, while in fruit production, banana and

orange are the highlights. Regarding livestock production and its derivatives, EA-AF predominantly produce for self-consumption, particularly in the breeding of small animals (sheep, pigs, and goats) and the production of cow's milk, while nearly matching non-family farming in cattle breeding.

Observing the production of corn and herbaceous cotton, EA-AF is significantly lower than that of commercial agriculture, as these are high-value crops with large-scale plantations located in the northeastern Cerrado areas. These areas are increasingly being characterized as a new territory known as "Matopiba," which encompasses contiguous areas in southern Maranhão, northern Tocantins, southern Piau, and western Bahia. Access to these markets, dominated by agribusiness, requires greater organizational support from small producers. In the case of herbaceous cotton, as shown in Graphic 2, there is a significant increase in the participation of family farming establishments whose producers are cooperatives.

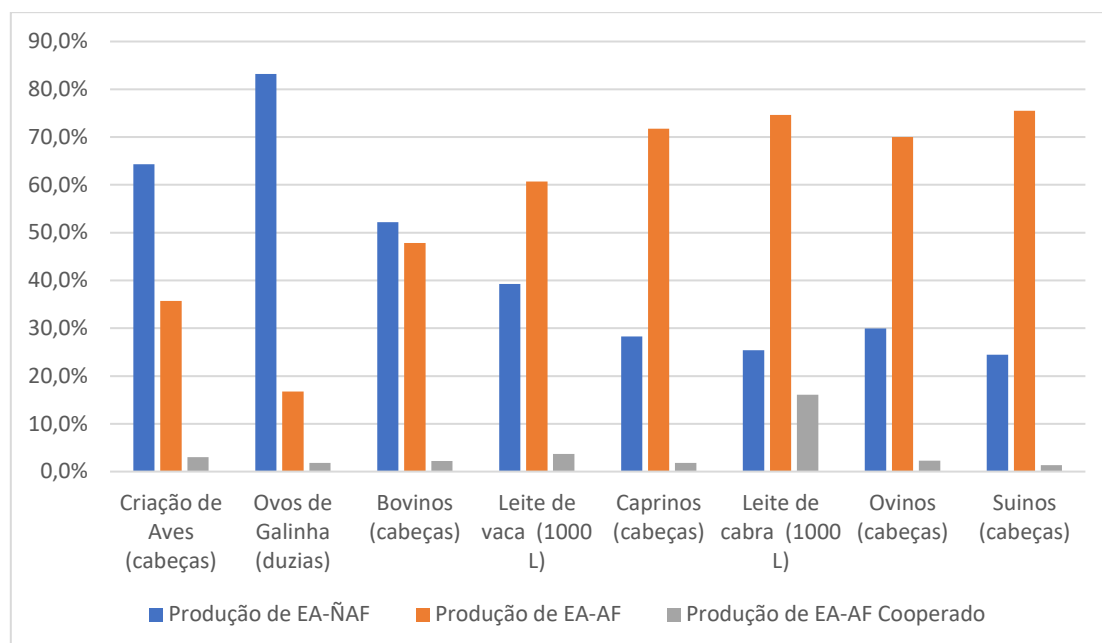
Graphic 2 – Percentages of plant production in the Northeast Region by type of agricultural establishment and producer's cooperative membership – 2017



Source: Authors' elaboration (2025). Adapted from the 2017 Agricultural Census (IBGE, 2019).

Graphic 3 shows that non-family farming establishments dominate poultry farming (for slaughter) and egg production—two commodities with a strong presence in conventional markets, which require large-scale production from industrial poultry farms.

Graphic 3– Percentages of livestock production and derivatives in the Northeast Region by type of agricultural establishment and producer's cooperative membership – 2017



Source: Authors' elaboration (2025). Adapted from the 2017 Agricultural Census (IBGE, 2019).

There is no significant involvement of EA-AF Coop in these segments. However, a different scenario emerges specifically in goat milk production, where family farming appears to be seeking greater organizational space within the sheep and goat farming segment, in which it has a substantial predominance in terms of production percentage. This aspect requires a precise and detailed analysis.

Considering the income factor, there is a trend that EA-AF whose producers are cooperative members tend to have a positive income differential, even for EA-AF within the PRONAF Group B. Another tendency is that producers who participate in cooperatives may act as a multiplier of income generated on the agricultural establishment. Data from the 2017 Agricultural Census (IBGE, 2019) demonstrate an increase in the relative percentages of income derived from on-farm activities compared to other sources of income when the producer is cooperative.

In the Northeast, for EA-AF, this increase reaches 13 percent when it comes to EA-AF Coop. Even among EA-AF Pronaf B, there is an increase in such cases—7.7 percentage points for EA-AF Pronaf B Coop—indicating that cooperative participation tends to contribute to improving the income generated from activities carried out on family farming establishments.

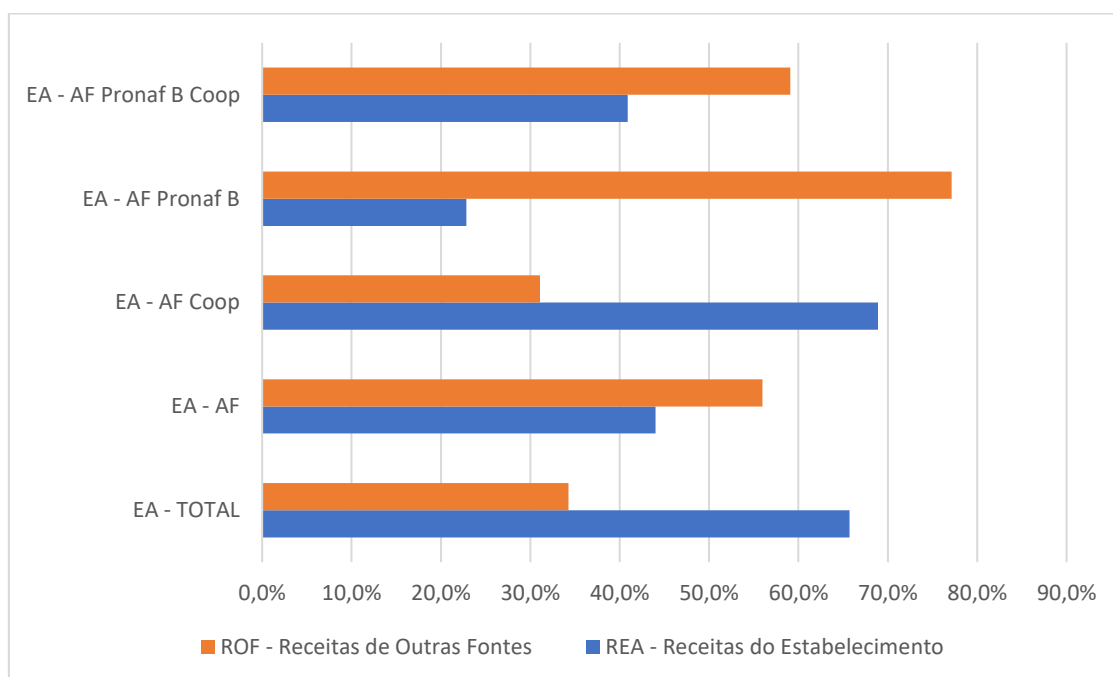
Considering the performance of EA-AF Coop in Northeastern states, census data indicate that Maranhão is the only state where income from activities conducted within these institutions is higher than other sources of income in more than half of the cases. Even so, participation in a cooperative further elevates this percentage. In Alagoas, Paraíba, and Bahia, there is an increase of 18, 17.6, and 16.2 percentage points, respectively, in the total of those establishments where income generated "from within the farm gate" is greater than the other incomes of the producer and their family (obtained "from outside the farm gate").

In contrast, the states with the smallest variations in this aspect between EA-AF and EA-AF Coop are Rio Grande do Norte (3.1 percent of positive variation) and Sergipe (3.6 points).

This comparison changes when it comes to the number of family farming establishments in the Northeast Region that obtained income within the establishment³. According to data from the 2017 Agricultural Census (IBGE, 2019), 69.2% of Northeastern EA-AF (1.27 million establishments) managed to generate income from agricultural, agro-industrial, and other on-site activities ("from within the farm gate". This percentage is significant, especially considering that the census data collection year coincided with the sixth consecutive year of drought for EA-AF, located in the semi-arid climate domain, which encompasses most of the Northeastern territory (Silva *et al.*, 2020).

Graphic 4 allows for a clearer representation of the comparison between the percentages of "Agricultural Establishment Revenues" (REA) and "Revenues from Other Sources" (ROF). In these instances, the trend of improvement in the initial source of revenue compared to the second is more evident for EA-AF Coop.

Graphic 4 – Comparison between "Agricultural Establishment Revenues" (REA) and "Revenues from Other Sources" (ROF) and the producer's cooperative membership status -2017



Source: Authors' elaboration (2025). Adapted from the 2017 Agricultural Census (IBGE, 2019)..

Note: Only cases of EA-AF with recorded revenue at the establishment in the year of the 2017 Agricultural Census are considered.

³ It is important to highlight that the absence of recorded revenue does not imply a lack of production. This is because data from the 2017 Agricultural Census reveal that 95.5% of all Family Farming Production Units (EA-AF) had some form of production in the year of data collection. However, revenue accounting only considers income generated from commercial activities, excluding production intended solely for the subsistence of the farmer's family and relatives.

Finally, regarding the analysis of the revenues of EA-AF in the Northeast Region, it is important to highlight the involvement of these establishments in the composition of the total revenue generated by agricultural establishments in the region. This factor is significant, considering that the revenue generated by EA-AF in 2017 amounted to R\$ 15.8 billion, corresponding to 29.7% of the total revenue from agricultural establishments in the Northeast Region (R\$ 53.5 billion). In other words, despite various limitations faced by family farmers in the region, as previously discussed, they manage to generate nearly one-third of the Northeast's agricultural revenue (Aquino *et al.*, 2020a).

In the case of EA-AF Coop, despite representing only 1.3% of the total EA-AF in the Northeast Region, these establishments contribute 2.4% of the total income of this segment.

The analysis of the data presented here suggests that cooperative participation can lead to a family farming establishment. However, this factor is not sufficient to overcome the obstacles and limitations previously imposed on this segment, which requires rural development policies to enhance family farming in the Northeast Region.

5 Cooperation and access of family farming to services and rural development policies

One of the current challenges of family farming is to enable the interaction, intensity, and continuity between three mechanisms: access to credit, collective organization, and technical assistance. The alignment, particularly of this group, can increase the potential of rural dynamization by strengthening family farming, such as integrating EA-AF into small-scale agribusinesses. To achieve this, farmers require greater technological resources and a more structured environment to develop their activities. This reaffirms the importance of ATER (Technical Assistance and Rural Extension) actions in the daily lives of farmers and their collective organizations, aiming to achieve technological solutions and improve the performance of this sector (Nunes; Cruz; Silva, 2020b; Ramos; Vieira Filho, 2023).

In particular, access to technical guidance is limited to only one-fifth of all agricultural establishments in Brazil; in the case of EA-AF, it is only 18.2% of the total. For EA-AF belonging to the Pronaf B group, the situation is even more critical, with less than 10% of the total receiving technical guidance—precisely those who most need these services, as shown in Table 4.

Table 4 – Percentage of EA-AF with access to technical assistance services and association of the producer with cooperatives - 2017 (Brazil, Northeast Region, and Northeastern UFs)

Coverage	Access to Technical Assistance Services (%)			
	EA-AF	EA-AF Coop	EA-AF Pronaf B	EA-AF Pronaf B Coop
Brazil	18,2%	61,5%	9,1%	35,2%
Northeast	7,3%	29,5%	6,3%	24,9%
MA	2,9%	17,8%	2,2%	13,5%

PI	2,8%	20,4%	2,4%	16,6%
CE	10,8%	28,7%	9,8%	24,7%
RN	14,0%	30,9%	12,1%	26,0%
PB	16,8%	34,4%	15,5%	27,8%
PE	6,0%	21,0%	5,1%	17,6%
AL	5,1%	32,4%	4,0%	23,2%
SE	8,0%	23,8%	6,2%	20,3%
BA	6,7%	33,5%	5,6%	30,1%

Source: Authors' elaboration (2025). Adapted from the 2017 Agricultural Census (IBGE, 2019).

In the Northeast region, only 7.3% of EA-AF recorded access to technical assistance. In some states, the figures are significantly lower than the regional average, such as Piau and Maranhão, where only 2.8% and 2.9%, respectively, of EA-AF have access to this service. The most favorable situations are found in Paraíba and Rio Grande do Norte, with 16.8% and 14.0%, respectively surpassing the regional average and reaching the national average in this regard.

There is an increase in the percentage of cooperative-associated EA-AF with access to technical assistance in Brazil. In the case of Pronaf B group EA-AF, which are cooperative members, the percentage of access to technical guidance increases from 9.1% to 35.2% in Brazil. In the Northeast region, producer participation in a cooperative is also beneficial in this regard. EA-AF Coop significantly increases the percentage of access (almost four times more) compared to the total number of family farming establishments. The same occurs with EA-AF Pronaf B Coop.

Considering the data from each Northeastern UF, the cases of Alagoas and Bahia are noteworthy, where there is a significant increase in EA-AF Coop with access to technical assistance. However, it is also important to consider the inverse relationship; that is, it is likely that access to technical assistance (systematic, comprehensive, and suited to the reality of family farming) is the fundamental motivating factor for producers responsible for EA-AF to opt for cooperation.

Data from the 2017 Census (IBGE, 2019) show that 43.4% of technical assistance services in Brazil are provided to EA-AF by government agencies, either directly or indirectly. However, it is noteworthy that in the case of cooperative-associated EA-AF in Brazil, 58.2% of the total technical guidance services were provided by specialized cooperatives or the internal services of the cooperatives themselves. In the Northeast region, this percentage reaches 42.4%. In many cases, cooperatives strive to expand their members' access to ATER precisely to make their productive and commercial activities feasible, thereby increasing technical efficiency and the economic dynamism of family farming (Costa et al., 2020; Ramos; Vieira Filho, 2023).

According to data from the 2017 Agricultural Census (IBGE, 2019), the access to rural development is limited to only 15.5% of the total EA-AF in Brazil. For EA-AF in the Pronaf B group, just over a quarter of the members have access to credit.

In the case of EA-AF in the Northeast region, it is observed that 12.6% of EA-AF obtained financing or loans, which is not far from the national average but significantly lower than the percentage recorded in the Southern region of Brazil (29.3%). For EA-AF in the Pronaf B group, 11.9% had access to credit. Considering the Northeastern UFs, Maranhão is the state with the lowest percentage of family

farming establishments accessing credit (9.0%), while Rio Grande do Norte and Paraíba have the highest percentages, at 18.3% and 16.9%, respectively, surpassing both the national and regional averages.

EA-AF whose producers participate in associative organizations (cooperatives and others) have a slightly higher percentage (22.9%) of credit access. However, the available Census data from SIDRA/IBGE do not permit a complete analysis by region or UF, nor for the EA-AF individually. It remains unclear whether cooperative members have more or less access to credit than the total number of family farming establishments.

The 2017 Census data also highlight the importance of credit cooperatives in facilitating access to financing for EA-AF, particularly in the Southern and Southeastern regions of Brazil, where they serve as significant financial agents for agricultural properties between 10 and 50 hectares. In contrast, in the Northeast, where there is a notable lack of family farming credit cooperatives, only 1.9% of EA-AF obtained credit through such cooperatives.

6 Final Considerations

Census data reveal low adherence of family farmers to cooperatives, particularly among the poorest EA-AF, which are located in the Northeast region of Brazil, with small agricultural areas and low educational levels. Understanding this reality requires considering the historical particularities of regional trajectories, which have shaped and continue to reproduce structural deficiencies and sociopolitical barriers to the autonomous organization and participation of family farmers in cooperatives.

On one hand, this study has shown that despite the importance of family farming in the Northeast—both in terms of producing essential foods for the regional diet and generating rural employment—the fragmentation of family farming establishments does not favor overcoming the conditions of rural impoverishment. Instead, it perpetuates precarious production structures and low productivity while maintaining significant challenges in promoting their products, characterized by subordination within commercial relationships.

Moreover, the data analyzed here reveal positive trends in agricultural cooperation within family-based farming. These include improved conditions for product marketing, increased income from on-farm activities, and improved access to credit and technical assistance and rural extension services. It is thus confirmed that, through organizational inputs, it is possible to establish a virtuous cycle of strengthening family farming—a result that has been criticized by numerous studies cited in this article.

Therefore, given that the potential of family farming has been constrained by historical structural, sociocultural, and institutional deficiencies, it can be asserted that agricultural cooperatives and new forms of network cooperation must be strengthened from an emancipatory perspective—in other words, overcoming conditions of subordination and marginalization. Authentic cooperativism should be fully aligned with social movements in rural areas and other organized sectors of society, including educational and research institutions, which aim to promote

changes in social production relations and achieve effective public policies for sustainable and solidarity-based rural development.

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