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# TERRITORIAL DISTRIBUTION OF ORGANIC PRODUCTION IN THE STATE OF RIO DE JANEIRO: A PERSPECTIVE FROM THE NATIONAL ORGANIC PRODUCERS REGISTRY

## DISTRIBUIÇÃO TERRITORIAL DA PRODUÇÃO ORGÂNICA NO ESTADO DO RJ: UM OLHAR A PARTIR DO CADASTRO NACIONAL DE PRODUTORES ORGÂNICOS

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REVISTA BRASILEIRA DE GESTÃO E DESENVOLVIMENTO REGIONAL
V.19, N°3, Set-Dez/2023 | Taubaté/SP - Brasil | ISSN 1809-239x

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## DISTRIBUIÇÃO TERRITORIAL DA PRODUÇÃO ORGÂNICA NO ESTADO DO RJ: UM OLHAR A PARTIR DO CADASTRO NACIONAL DE PRODUTORES ORGÂNICOS

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**Received:03/19/2021**
**Accepted:09/16/2023**

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## ABSTRACT

This study falls under the thematic framework of organic food production, employing a territorial approach to examine the evolution of organic production units in the state of Rio de Janeiro, Brazil. The interdependence of territory and development is emphasized, underscoring the necessity to scrutinize developmental processes to elucidate dynamics across various levels and dimensions. Within this framework, the research centers on three primary areas of investigation: (i) mapping and tracking the territorial distribution of organic production units in the state of Rio de Janeiro, (ii) evaluating the prevalence and significance of mechanisms ensuring organic quality, and (iii) scrutinizing the correlation between organic production units listed in the National Register of Organic Producers (CNPO) and access to the Declaration of Aptitude for Pronaf, an instrument facilitating public policies targeting family agriculture. The research methodology employs a qualitative-quantitative approach, characterized as exploratory research based on its objectives. Data retrieved from the CNPO, managed by the Ministry of Agriculture, Livestock, and Supply (MAPA), are analyzed in relation to the government regions of the State of Rio de Janeiro. The data compilation enables the creation of a historical series spanning the years 2013-2019. The findings indicate a discernible upward trajectory in organic production throughout the state of Rio de Janeiro. Regional disparities underscore that developmental processes are molded by regional dynamics and specificities, accentuating the imperative of a regional development agenda that takes into account social actors and local dynamics in advancing development.

**Keywords:** Territory, Regional development, Family agriculture, Organic agriculture.

## RESUMO

O presente trabalho insere-se na temática da produção orgânica de alimentos a partir da abordagem territorial as unidades de produção orgânicas em desenvolvimento no território fluminense. Território e desenvolvimento são considerados em perspectiva indissociável, determinando a importância da análise dos processos de desenvolvimento que possibilite a expressão das dinâmicas em múltiplos níveis e dimensões. Nesta perspectiva foram contemplados como eixos de investigação: (i) o mapeamento e evolução da distribuição territorial das unidades de produção orgânica no território fluminense; (ii) a ocorrência e relevância dos mecanismos de garantia da qualidade orgânica; e (iii) a verificação da correlação entre as unidades de produção orgânicas presentes no Cadastro Nacional de Produtores Orgânicos (CNPO) e o acesso a Declaração de Aptidão ao Pronaf, instrumento de habilitação para políticas públicas direcionadas à agricultura familiar. A metodologia da pesquisa contemplou a abordagem quali-quantitativa, considerada quanto aos fins como pesquisa exploratória. Os dados obtidos a partir do CNPO, cuja gestão pertence ao Ministério da Agricultura, Pecuária e Abastecimento (MAPA), foram considerados em relação às regiões de governo do Estado do Rio de Janeiro. A sistematização dos dados possibilitou a obtenção da série histórica referente ao período 2013-2019. Os resultados demonstraram tendência de crescimento da produção orgânica ao nível do território do estado do RJ. As diferenças evidenciadas entre as regiões indicam que os processos de desenvolvimento são constituídos por dinâmicas e especificidades regionais, estabelecendo a importância de uma agenda de desenvolvimento regional, que considere os atores sociais e as dinâmicas locais para promoção do desenvolvimento.

**Palavras-chave:** Território. Desenvolvimento regional. Agricultura familiar. Agricultura orgânica.

## INTRODUCTION

This work falls within the thematic framework of organic food production, focusing on the territorial approach to organic production units under development within Rio de Janeiro's territory. By highlighting the territory or territories involved, it recognizes that development processes are inherently interconnected with and interdependent on regional and local socio-economic dynamics. Consequently, the field of knowledge related to regional development is considered a fundamental axis for understanding and, in turn, managing development processes at the territorial level.

As Carniello, Santos, and Pimenta (2022) point out, the development concept has undergone a significant transformation recently, overcoming the direct association with economic growth and embracing a multidimensional and systemic approach. In light of these reflections and debates, the

authors emphasize that research on territorial development stems from an awareness of the unique characteristics of each territory and the inherent challenge of achieving homogeneous development conditions. Underlying these findings is the perception that the territory is disputed in the social, political, and economic spheres (Carniello; Santos; Pimenta, 2022).

In a similar vein, Egler, Bessa, and Gonçalves (2013) emphasize that the application of territorial foresight to regional development has been widely disseminated, asserting that the choice to establish roots in the territory implies considering the environment, economy, and society in an integrated manner. Furthermore, it should be noted that social dynamics within space are contradictory and reflect the articulation of different scales, where movements do not always point in the same direction. Therefore, the importance of a regional development agenda lies in its capacity to incorporate territorial planning as a tool for boosting the potential of regions while valuing their endogenous components (Egler; Bessa; Gonçalves, 2013).

When considering the insights put forth in the discourse surrounding development processes and their connection to specific geographic areas, this study assumes the form of an exploratory research project designed to advance our comprehension of the mapping and evolutionary path of organic production within the state of Rio de Janeiro. This endeavor is grounded in systematically collecting and analyzing data sourced from the National Registry of Organic Producers (CNPO). It embodies a collaborative undertaking cultivated through dialogue and engagement with interinstitutional social stakeholders, with the overarching objective of contributing to the reinforcement and exploration of research and development agendas.

According to data from the Research Institute of Organic Agriculture (FIBL) and the International Federation of Organic Agriculture Movements (IFOAM), organic food production encompasses approximately 71.5 million hectares worldwide, involving a total of 2.8 million farmers distributed across 186 countries (Willer *et al*., 2020). In addition, it is essential to consider a substantial number of farmers, especially those from peasant and traditional communities in developing countries, engaged in agroecological, traditional, and transitional production systems on a broader scale.

When analyzing the production and consumption of organic products worldwide, a recent study conducted by Lima *et al.* (2020) found significant growth. The average annual increase in retail sales of organic products worldwide exceeded 11% between 2000 and 2017. Taking into account the Brazilian context, the production and consumption of organic products have also increased, albeit at a slower pace. Demand has been driven not only by the international market but also by the domestic one. On this subject, institutional purchases for school meals and food services provided by some government bodies have proven to be significant to the valorization of organic production, particularly within family farming (Lima *et al.*, 2020).

The regulation of organic production and marketing in Brazil coincided with several other countries in the early 2000s through the enactment of the Organic Production Law 10831/03, decrees, and normative[1] instructions. What sets this regulation apart is its pioneering recognition of the participatory certification process for production, with coverage extending to national commercialization (Leite, 2013). Thus, with the implementation of the National Registry of Organic Producers, there has been a continuous increase in organic farmers, reaching 20,677 certified establishments for organic production in December 2019. It is worth noting that this instrument only covers some ecological-based organizations and farmers across the national territory, as many ecological farmers and those transitioning to agroecology do not have access to or interest in joining the CNPO for various reasons.

Nevertheless, given the growing importance of organic and agroecological agriculture in the development agenda, productive experiences vary significantly, reflecting the diverse regional characteristics across our nation in environmental, economic, social, and cultural dimensions. This diversity is evident in production systems, social organization, certification mechanisms, marketing channels, and more, underscoring the significance of a regional approach to the development of organic and agroecological production.

1 Currently in effect is Regulation 52, dated March 15, 2021, which outlines the technical guidelines for organic production systems and the lists of substances and practices approved for use within these systems. This regulation has been amended by Regulation 404/2022 and is available at: https://www.gov.br/agricultura/pt-br/assuntos/sustentabilidade/organicos/legislacao-organicos

In a previous study, Bernardes & Amaral (2018) conducted a survey and mapping of organic production, allowing for the visualization and identification of differences in configurations among various Brazilian macroregions. They also detailed the case of Santa Catarina, using CNPO/MAPA data from March 2017 to March 2018. Furthermore, the results characterized organic producers in Santa Catarina, primarily composed of family farmers, with a prevalence of the participatory guarantee system for organic compliance.

In a recent study, Vilela *et al.* (2019) performed an analysis of organic production development across the regions and states of Brazil using data from the National Register of Organic Producers (CNPO/MAPA), focusing on the periods of December 2014 and July 2017. This study included an overview and reflection on the overall landscape of organic production and the organic market in both Brazil and the global context.

This study aligns with this theme, aiming to analyze the development of organic production in the state of Rio de Janeiro (RJ). The objective was to map and characterize the territorial distribution of organic production units in RJ, identifying evolutionary processes, highlighting dynamics and trends among different regions, assessing the occurrence and significance of organic quality assurance mechanisms in the state, and establishing the connection between organic production units and access to the Declaration of Eligibility for Pronaf[2](DAP), a qualification instrument for public policies targeting family farming.

In the context of Rio de Janeiro, initial data from CNPO/MAPA in December 2019 reveals 819 accredited agricultural establishments for organic production, representing 3.96% of the total entries in the national registry. Various organizations and institutions are actively involved in organic quality assurance mechanisms, encompassing diverse regulatory approaches. Additionally, within Rio de Janeiro's territory, numerous institutions, organizations, and human resources play a significant role in the fields of organics and agroecology, fostering the formation of networks, forums, and initiatives for the social development and coordination of markets dedicated to organic and agroecological product distribution.

2 The Declaration of Aptitude for Pronaf (DAP), an instrument of the National Family Farming Policy initially established by Law 11,326/2003, was renamed the National Family Farming Registry (CAF) via Decree 9,064/2017. Despite this change, 'DAP' continued to be used as an active instrument. In this study, we opted to maintain the term 'DAP,' which represents the database in use during our research period.

Anticipated outcomes from these results include expanding knowledge about the existing organic production systems in the state of Rio de Janeiro. This should highlight their demands and potential while fostering dialogue with the various social stakeholders involved in their development, governmental bodies, as well as related institutions and organizations. Furthermore, it is expected that these findings will contribute to the reflection upon and enhancement of the processes involved in the coordination, management, and formulation of public policies aimed at strengthening organic and agroecological production in the state of Rio de Janeiro.

## METHODOLOGICAL PROCEDURES

This study is characterized by a qualitative-quantitative approach and serves as exploratory research. We used secondary data from the National Registry of Organic Producers (CNPO), managed by the Ministry of Agriculture, Livestock, and Supply (MAPA) for analysis regarding the government regions of the State of Rio de Janeiro.

To obtain data related to the National Registry of Organic Producers, we relied on a previously established collaboration with DPDAG/SFA-RJ, currently known as DDR/SFA-RJ. The obtained data allowed the construction of a historical series with annual segments focusing on the months of November or December and covering the period from 2013 to 2019. December 2013 data were considered solely in the national context, as they were available in the CNPO. It is worth noting that data prior to this mentioned period were not included in the analysis as CNPO was in its initial stages of development.

Regarding the proposed territorial scope, we chose to consider the territory of the state of RJ based on government regions (Law No. 1,227/87), which comprises the 92 municipalities within the state across eight macro-regions: Metropolitana, Noroeste Fluminense, Norte Fluminense, Baixadas Litorâneas, Serrana, Centro-Sul Fluminense, Médio Paraíba, and Costa Verde. For this study, we adopted the version prior to the alteration established by Complementary Law No. 184/2018 (after which the municipality of Petrópolis was reintegrated into the Metropolitana region), recognizing the importance of Petrópolis for understanding the evolutionary path of organic agriculture in the mountainous region. Consequently, the municipality of Petrópolis will be considered in the evolutionary history of the mountainous region.

To obtain data related to the Pronaf Eligibility Declaration - DAP, we conducted a direct online inquiry through the DAP System - Pronaf Eligibility Declaration/Special Secretariat for Family Farming and Rural Development. For the purposes of this analysis on eligibility, we considered the following categories: 'ACTIVE DAP' and 'EXPIRED DAP' under the 'WITH DAP' category, and 'CANCELED DAP' and 'NON-EXISTENT DAP' under the 'WITHOUT DAP' category.

The data analysis was conducted using Microsoft Excel and ArcGIS software, with the cartographic base provided by IBGE. The creation of illustrative maps was carried out with the support and partnership of Embrapa Clima Temperado.

This study was presented and discussed with the Organic Production Committee of the State of Rio de Janeiro (CPOrg/RJ) during the proposal and acceptance phases of the obtained results in April 2019 and March 2020, respectively. These pivotal moments were essential for validating and giving significance to the analysis.

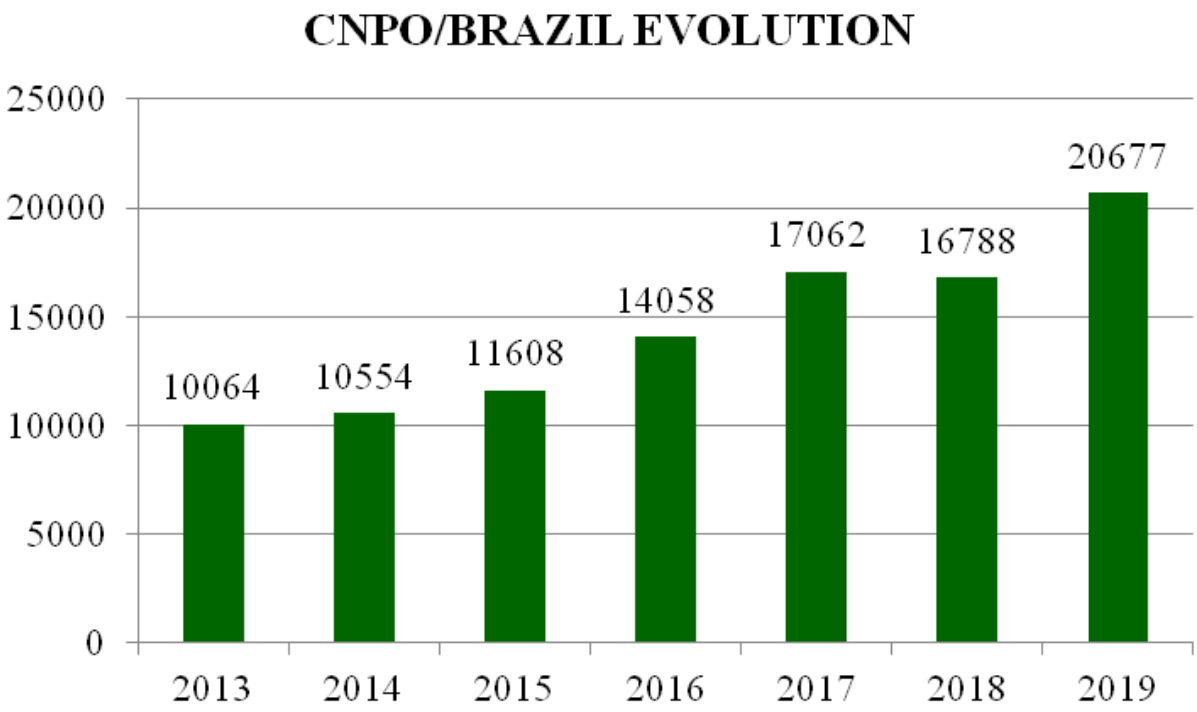
## THE STATE OF RIO DE JANEIRO IN THE NATIONAL ORGANIC PRODUCERS REGISTRY

In our initial data analysis using the National Organic Producer Registry (CNPO) historical dataset, we aimed to gain insights into the evolution of the national organic production landscape, trace the historical trajectory of organic agriculture in the state of Rio de Janeiro, and assess its relative significance in the broader context.

We observed a significant increase when examining the national context and the growth of organic production units recorded in the CNPO, as depicted in Figure 1. The data shows a rise from 10,064 organic production units in December 2013 to 20,677 in December 2019, a substantial 105% growth over six years. This positive trend aligns with prior studies, including Vilela *et al.* (2019), which reported similar growth when analyzing CNPO data from December 2014 to July 2017, with units increasing from 10,554 to 15,856.

It is important to emphasize that the consistent growth trend observed during this period reflects the structuring and consolidation of CNPO, SisOrg, and development of organic and agroecological production. Further research on the profile of farmers entering CNPO and SisOrg is needed to understand the factors influencing access to the system.

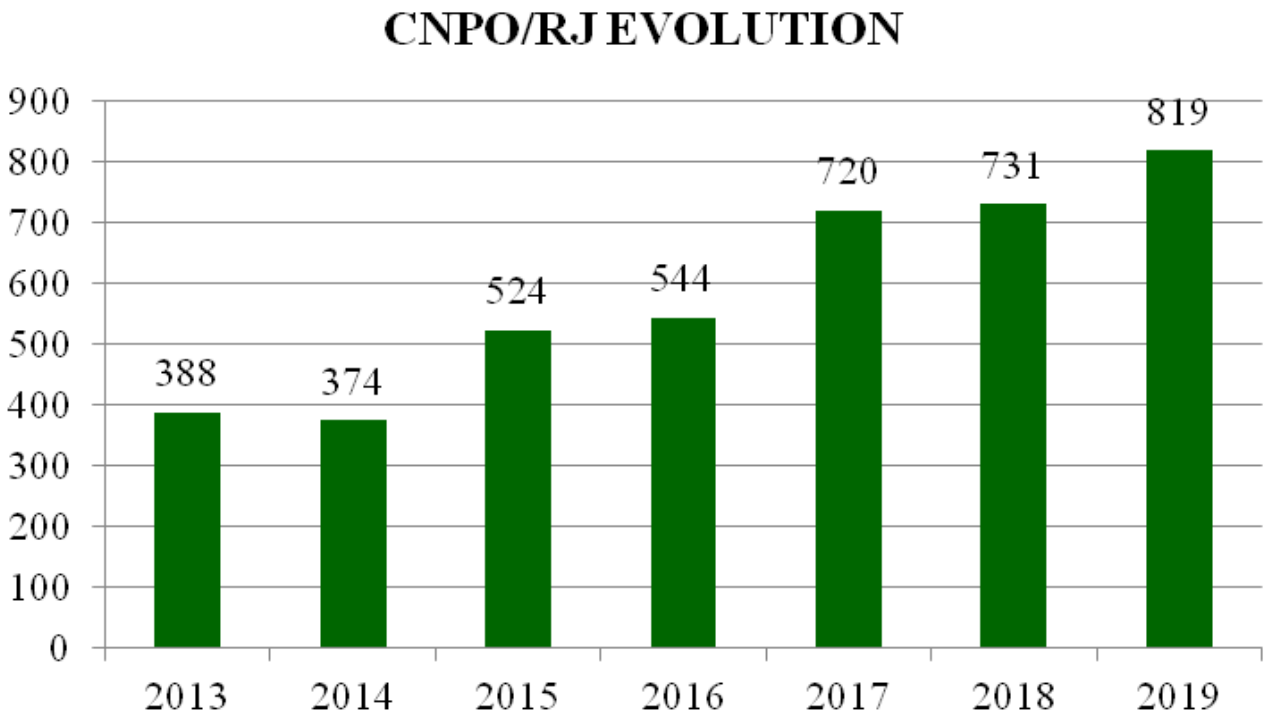
**Figure 1** | CNPO/Brazil Evolution – Number of Registered Organic Production Units, 2013 to 2019.




Source: compiled by the authors.

Regarding the state of Rio de Janeiro, the evolution of the number of registered organic production units during the period 2013-2019 (Figure 2) shows an increase from 388 organic production units in December 2013 to 819 in December 2019, corresponding to a growth of 111% over six years. Thus, it was observed that there was a similar growth trend for the period under consideration, as seen in the national context.

**Figure 2** | CNPO/RJ Evolution – Number of Registered Organic Production Units, 2013 to 2019.

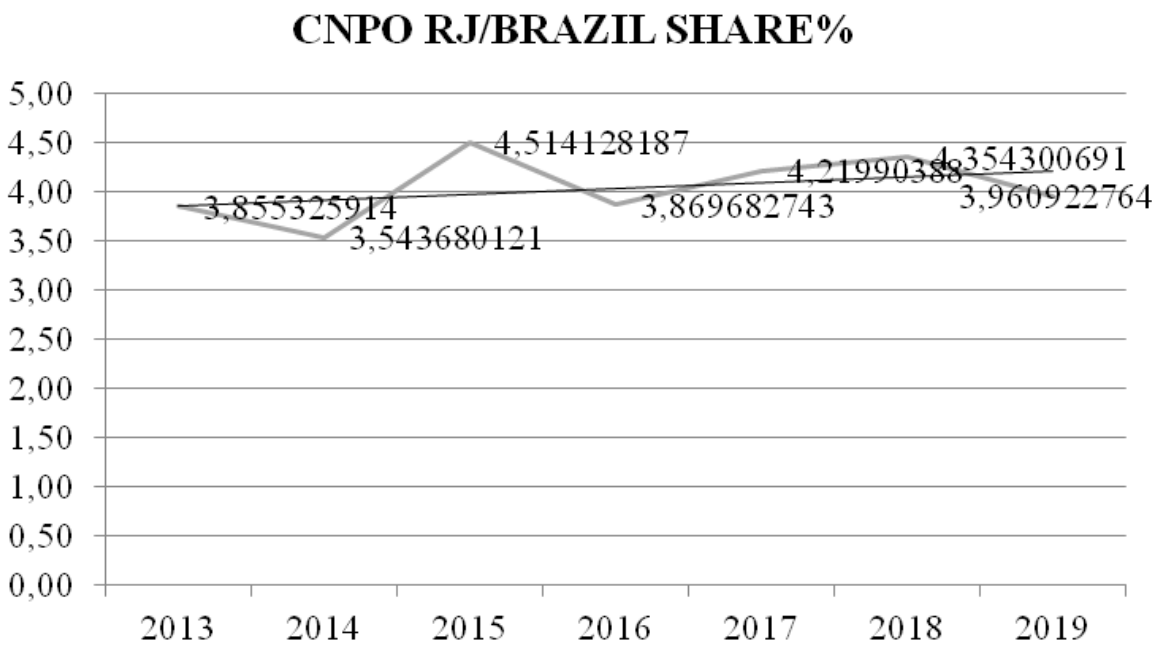



Source: compiled by the authors.

In terms of the relative contribution of the state of Rio de Janeiro to the total number of certified organic production units in the national context (Figure 3), the state's percentage varied between 3.54% (minimum) and 4.51% (maximum) during the period, averaging at 4.04%. In December 2019, the state represented 3.96% of the organic production units in CNPO, ranking 7$^{th}$ among all states in the national registry.

Vilela *et al.* (2019) identified the state of RJ ranking 11$^{th}$ in 2014 and 8$^{th}$ in 2017 in their analysis of Brazilian states' participation in CNPO. Thus, during the period under consideration, it becomes evident that the state, in its specificity, has kept pace with the national expansion in the number of organic production units.

**Figure 3** | Evolution of Relative Participation of the State of RJ / National Context, in Percentage, 2013 to 2019.




Source: compiled by the authors.

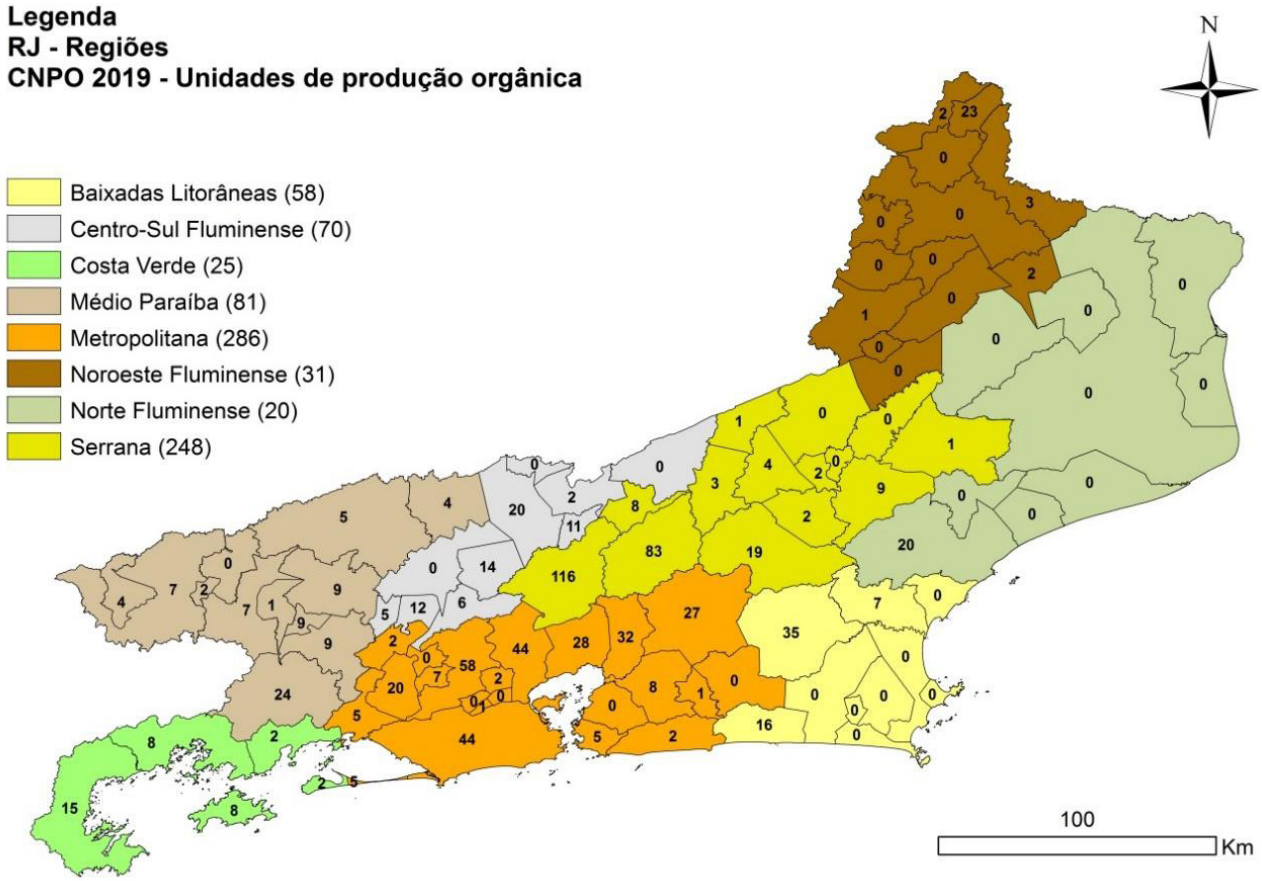
## SPATIAL DISTRIBUTION OF ORGANIC PRODUCTION UNITS IN THE TERRITORY OF RIO DE JANEIRO

This section is focused on analyzing the occurrence and distribution of organic production units within the Fluminense territorial space, identified based on CNPO/MAPA.

In the most recent period analyzed in this study, specifically in December 2019, 819 organic production units were within the Fluminense territory. These units were distributed as shown in Figure 4. At first glance, when considering the macro-regional breakdown, it becomes evident that the Metropolitana and Serrana regions held the most significance, followed by Médio Paraíba, Centro Sul Fluminense e Baixadas Litorâneas. In addition, there were fewer registered organic production units in the peripheral regions of the territory, with the Costa Verde region to the south and the Norte Fluminense and Noroeste Fluminense regions to the north. A closer look at the municipal level shows that several municipalities in the Serrana, Metropolitana, and nearby regions had a higher number of organic production units. In contrast, there were numerous municipalities without organic production units registered in the CNPO.

It is important to emphasize that, for this study and as explained in the methodology, we considered Petrópolis, the municipality with the highest number of UPOrgs at 116 units, to be integrated into the Serrana region. This decision aligns with the perception of its centrality, alongside Teresópolis, in understanding the evolution of this region in the context of organic production.

**Figure 4** | Macro-regional distribution of organic production units in the government regions and municipalities of the state of Rio de Janeiro, CNPO, December 2019.

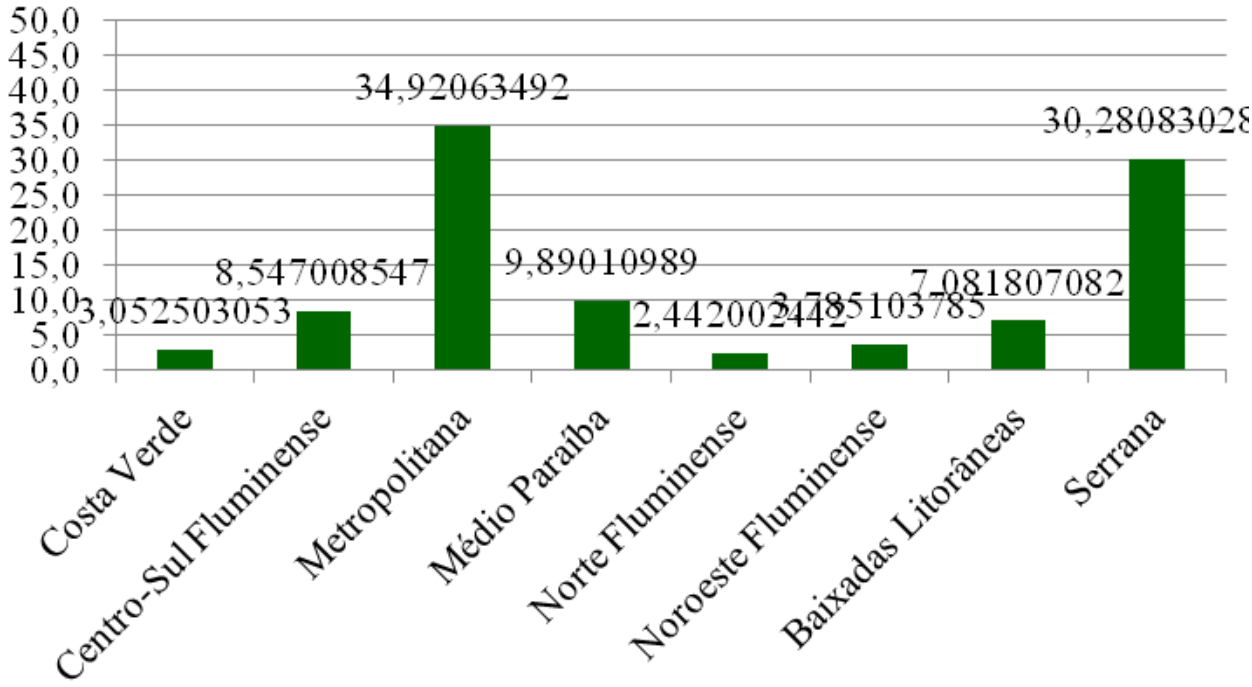



Source: compiled by the authors in collaboration with Embrapa Clima Temperado.

When examining the macro-regional distribution as of December 2019, two regions collectively accounted for 65.2% of the Organic Production Units (UPOrgs) in the state, with the Metropolitana region at 34.9% and the Serrana region at 30.3%. Médio Paraíba followed at 9.9%, Centro-Sul Fluminense at 8.5%, and Baixadas Litorâneas at 7.1%. Subsequently, Noroeste Fluminense accounted for 3.8%, Costa Verde for 3.1%, and Norte Fluminense for 2.4%.

In light of this, it becomes apparent that the regions with the highest concentration of Organic Production Units in the national registry are located close to urban centers, particularly within the metropolitan region and its neighboring areas, with significant emphasis on the Serrana region. Consequently, conducting a more in-depth investigation in a subsequent study would be worthwhile to explore the factors that may have influenced this specific territorial distribution.

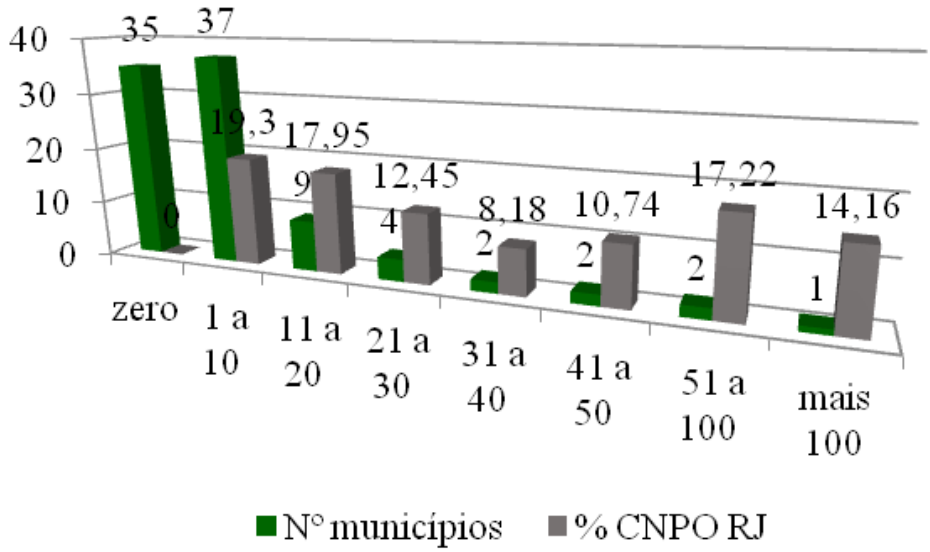
**Figure 5** | Macro-regional percentage distribution of organic production units in government regions, Dec/2019.




Source: compiled by the authors.

Concerning municipalities (Fig. 6), 35 had no registered Organic Production Units (UPorgs) in the CNPO database, and 37 had a limited number, ranging from 0 to 10 units. These two groups included 72 out of the 92 Fluminense municipalities. The remaining 20 municipalities registered 11 and 116 units, accounting for 80.7% of the state's UPorgs in the CNPO. These findings highlight the concentration of UPorgs in a few municipalities, while most Fluminense municipalities have few or none registered.

**Figure 6** | Municipal distribution of organic production units and percentage share, CNPO Dec/2019.

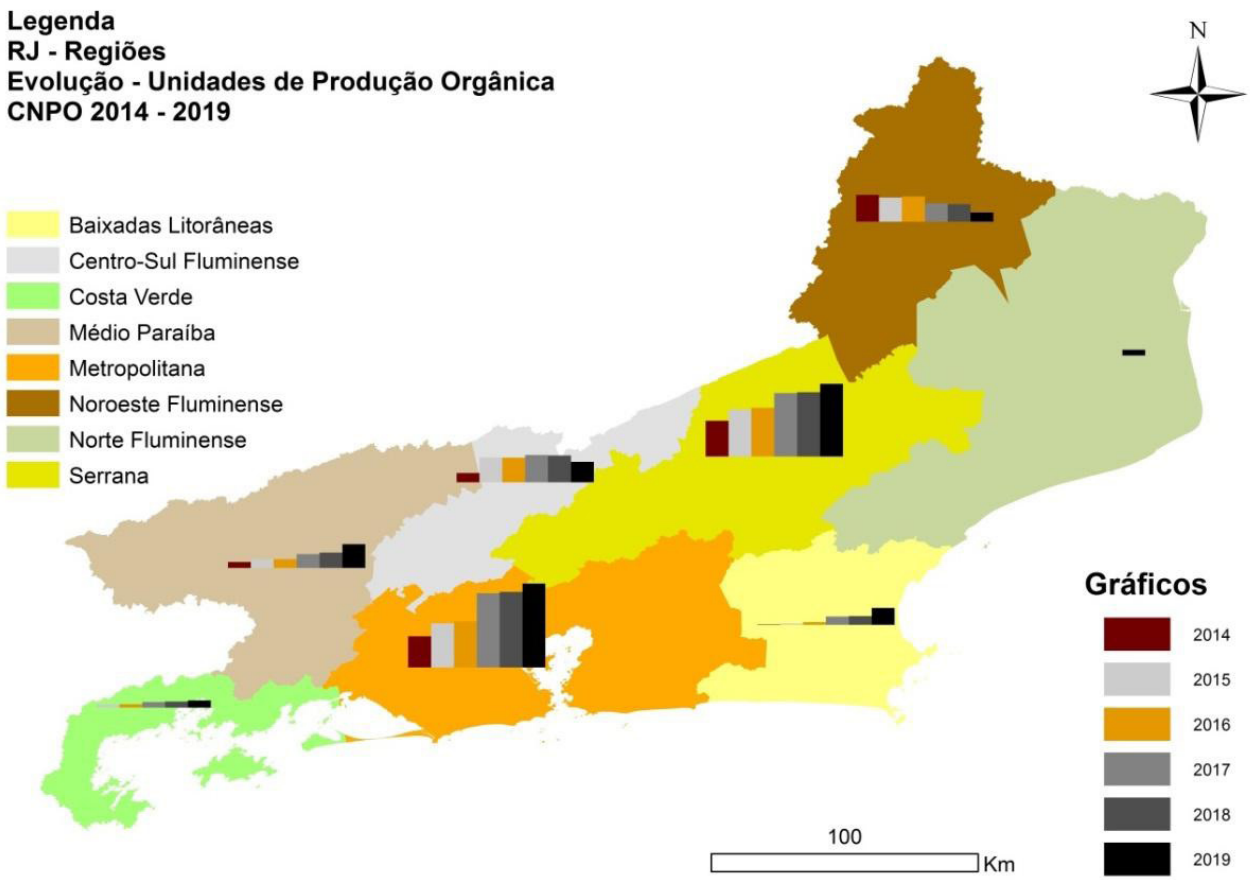



Source: compiled by the authors.

Examining the evolution trend from 2014 to 2019 (Fig. 7), we observe that the Metropolitana, Serrana, Médio Paraíba, Costa Verde, and Baixada Fluminense regions have consistently seen an increase in the number of Organic Production Units (UPOrgs). The Centro Sul Fluminense region has remained relatively stable, with a minor decline starting in 2018. Conversely, the Northwest Fluminense region has experienced a decreasing trend in UPOrgs. Notably, the North Fluminense region only began registering UPOrgs in the system from 2019 onwards.

In summary, the analysis of organic production unit distribution in the Fluminense territory from 2014 to 2019 revealed the macro-regional distribution and the importance of specific regions and municipalities in the national registry concerning the number of Organic Production Units (UPOrgs) registered in the national database. The macro-regional trends and disparities are evident in the data. Therefore, public policies that could support territorial distribution and the growth of organic production units across various regions in Rio de Janeiro are worth considering.

**Figure 7** | Evolution of the number of organic production units in the state of Rio de Janeiro by government region.




Source: compiled by the authors in collaboration with Embrapa Clima Temperado.

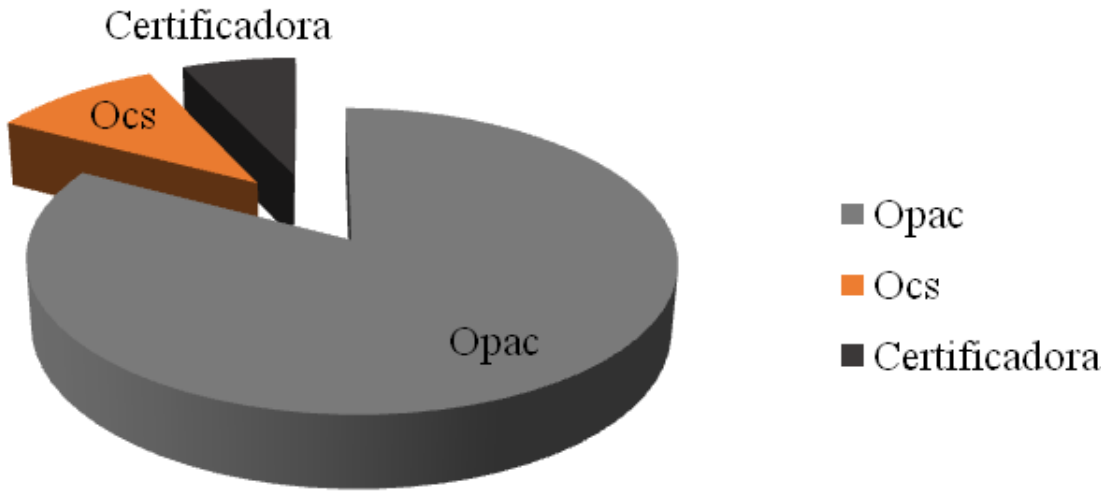
## RELEVANCE OF ORGANIC QUALITY ASSURANCE MECHANISMS IN THE STATE OF RIO DE JANEIRO

This section aimed to characterize and reflect on the relevance of the different organic quality assurance mechanisms established by legislation in the territorial context of the state of Rio de Janeiro. To this end, we examined the state and macro-regional context for December 2019, followed by an overview of the evolutionary trend.

Figure 8 presents the identification and occurrence of organic quality assurance mechanisms as of December 2019, based on CNPO data. Notably, all three mechanisms required by legislation are in place within the state, albeit in varying proportions. The predominant system in the state is Participatory Guarantee Systems, commonly known as participatory certification (OPAC), covering 679 organic production units,

accounting for 82.9% of the total registrations. The mechanism known as OCS (Organismo de Controle Social), established exclusively for family farming and direct sales, is linked to 84 organic production units, accounting for 10.3% of the total. In contrast, the certification mechanism referred to as the 'certifier,' appears less frequently, with 56 organic production units representing 6.8% of the total.

**Figure 8** | Relevance of organic quality assurance mechanisms in the state of Rio de Janeiro, CNPO Dec/2019.




Source: compiled by the authors.

Based on the presented data, participatory certification emerges as a pivotal element influencing the landscape of organic agriculture within the state. This holds even more significance when we take into account that there is only one accredited Participatory Guarantee System (OPAC) - the Association of Organic Farmers of the State of Rio de Janeiro (ABIO), which is associated with the certification of 679 production units through this mechanism. According to Hirata *et al.* (2020), in a publication dedicated to analyzing the origin and evolution of Participatory Guarantee Systems in the national territory, ABIO was established in the 1980s, predating the legal framework for organic agriculture. During the implementation of Brazilian regulations for organic production, ABIO, along with the ECOVIDA Agroecology Network and the Association of Natural Agriculture of Campinas and Region - ANC, became the first three accredited Participatory Guarantee Systems (SPGs) recognized by the Ministry of Agriculture, Livestock, and Supply.

Furthermore, it is essential to highlight the role of the construction and development of the Circuito Carioca de Feiras Orgânicas, which has actively contributed to the social construction of a consumer market associated with organic agriculture, establishing an alternative market for organic producers.

Established in 2012 (Municipal Decree No. 35,064/2012), the Circuito Carioca de Feiras Orgânicas has solidified an innovative management process involving organizations recognized for their work in organic and agroecological agriculture in the state of Rio de Janeiro. This initiative ensures the participation of civil society and has organized more than 20 markets throughout the city of Rio de Janeiro.

In relation to Social Control Organizations (OCS), five organizations were identified in the system as of December 2019: the Association of Agroecological Organic Producers of Paraty (AAPOP), OCS Quilombo Alto da Serra, Macaé Organic, Agroecological Farmers of Varre-Sai, and the Cooperative of Family Agriculture of Organic Products - Univerde. However, it is worth noting that from 2014 to 2019, several other Social Control Organizations emerged, reaching fifteen OCS in operation within the Fluminense territory by 2017. As these organizations are committed to enabling the recognition of organic production cultivated by family farmers who directly market their products, often at local markets, it is crucial to examine the factors contributing to the fluctuating sustainability of these entities. These challenges may be linked to difficulties in accessing public policies to promote and support production, among other issues.

It is important to emphasize the valuable efforts of the Organic Production Commission of the State of Rio de Janeiro (CPOrg/RJ), especially through establishing and operating the Working Group responsible for monitoring OCS. This group conducts regular visits to promote organic production and reinforce the mechanisms for ensuring organic quality.

Another significant action to foster and develop OCS in Rio de Janeiro involved collaborative technical assistance and rural extension efforts between SFA/MAPA and the Department of Agriculture and Livestock (SEAPPA RJ). Ministry technicians visited Paraty and Varre Sai, providing technical and managerial support to rural enterprises. These initiatives led to the establishing of AAPOP (Paraty) and the Association of Agroecological Farmers of Varre and Sai OCS. These actions were carried out under the Rio Rural[3]Program, coordinated by SEAPPA RJ, between 2016 and 2018.

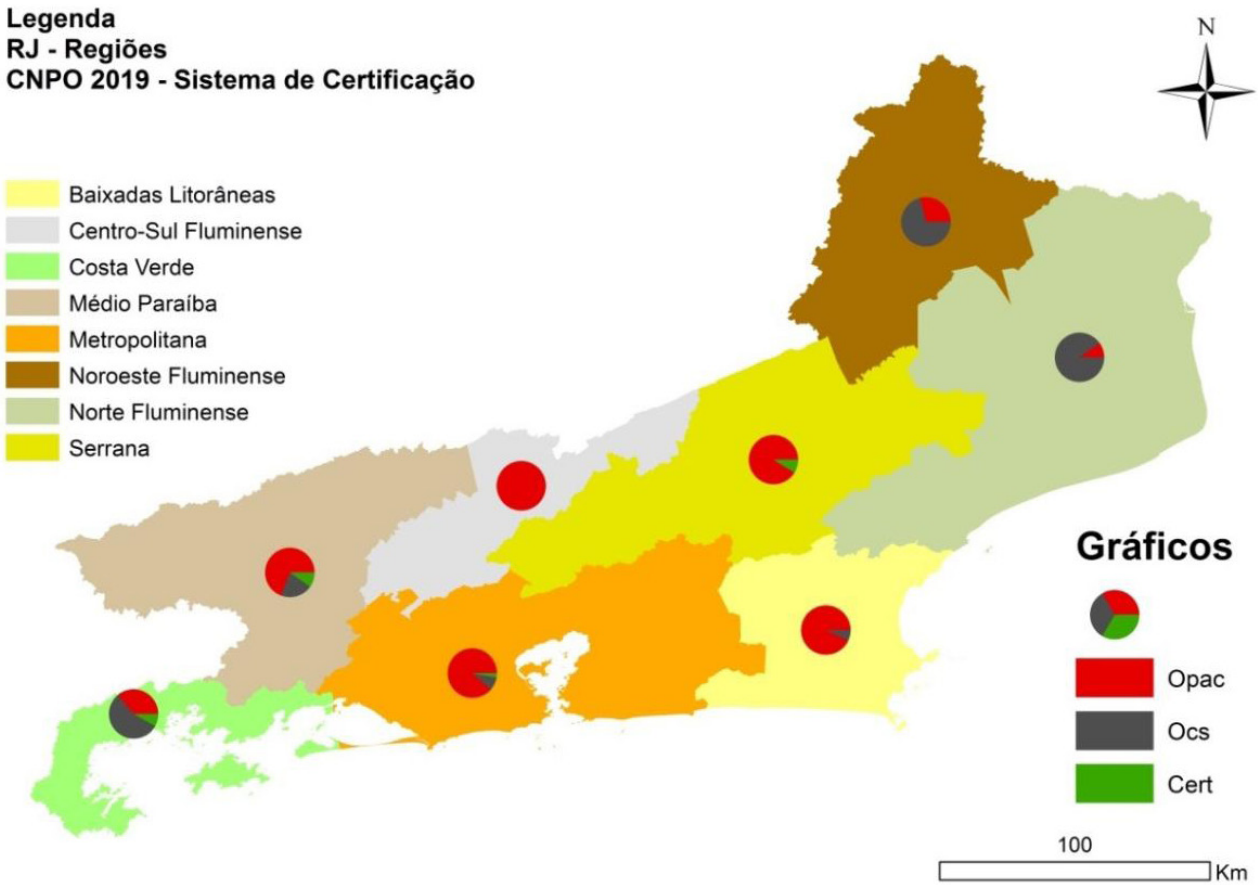
Certification through auditing, a method widely used nationwide, was conducted by four certifying bodies in the Fluminense territory in December 2019, as noted in a study by Vilela *et al.* (2019). This approach is particularly prominent in extraction, animal production, and processing categories. The

3 The State Program for Sustainable Rural Development in Hydrographic Microbasins – Rio Rural was implemented from 2010 to 2018 in the state of Rio de Janeiro. It supported the implementation of environmental and productive subprojects for family farmers, rural organizations, and community management of natural resources in 343 micro basins within the state. One of its components focused on training and supporting farmers interested in establishing organic production and agroecology groups.

relatively lower adoption of auditing-based certification in Rio de Janeiro's organic production units can be attributed to the prevalence of family-owned establishments and small-scale farms, which primarily serve local and regional markets.

When considering different mechanisms to ensure organic quality across macroregions (Fig. 9), it becomes evident that participatory certification prevails in most regions. An exception is found in the Costa Verde, Norte, and Noroeste Fluminense regions, where the social control mechanism for direct sales plays a more prominent role. These findings reaffirm the significance of the participatory system, particularly in regions with a higher number of organic production units near major urban centers. On the other hand, it highlights the importance of the social control mechanism for including family farmers residing in more isolated regions, either geographically or socially. These farmers engage in direct marketing through markets and institutional buyers, mutually benefiting by providing income and ensuring a local supply of organic products.

**Figure 9** | Relevance of organic quality assurance mechanisms by macro-region, CNPO Dec/2019.




Source: compiled by the authors in collaboration with Embrapa Clima Temperado.

A clear pattern emerged concerning the evolution trend of organic quality assurance systems in the Fluminense territory during the analyzed period (2014-2019). Participatory certification exhibited substantial growth, increasing from 243 organic production units (UPOrgs) in December 2014 to 679 in December 2019. Meanwhile, the social control mechanism (OCS) demonstrated relative stability with a slight decline over the same period, decreasing from 94 UPOrgs in December 2014 to 84 in December 2019. Audited certification also grew, rising from 37 UPOrgs in December 2014 to 56 in December 2019. In examining national organic production and certification systems, Vilela *et al.* (2019) concluded that the production distribution exhibited diversity and dynamism. The three systems have grown balanced and are distributed throughout the country in distinct ways.

## ON ORGANIC PRODUCTION UNITS AND ACCESS TO THE DECLARATION OF APTITUDE TO PRONAF - DAP

This section aimed to draw a connection between the importance of accessing the Pronaf Aptitude Statement (DAP) within the scope of organic production units listed in the CNPO for the state of RJ. To obtain these results, we conducted a query to establish individual links between the organic production units listed in the CNPO/MAPA and the Pronaf Aptitude Statement System, previously administered by the Special Secretariat for Family Farming and Rural Development (SEAD).

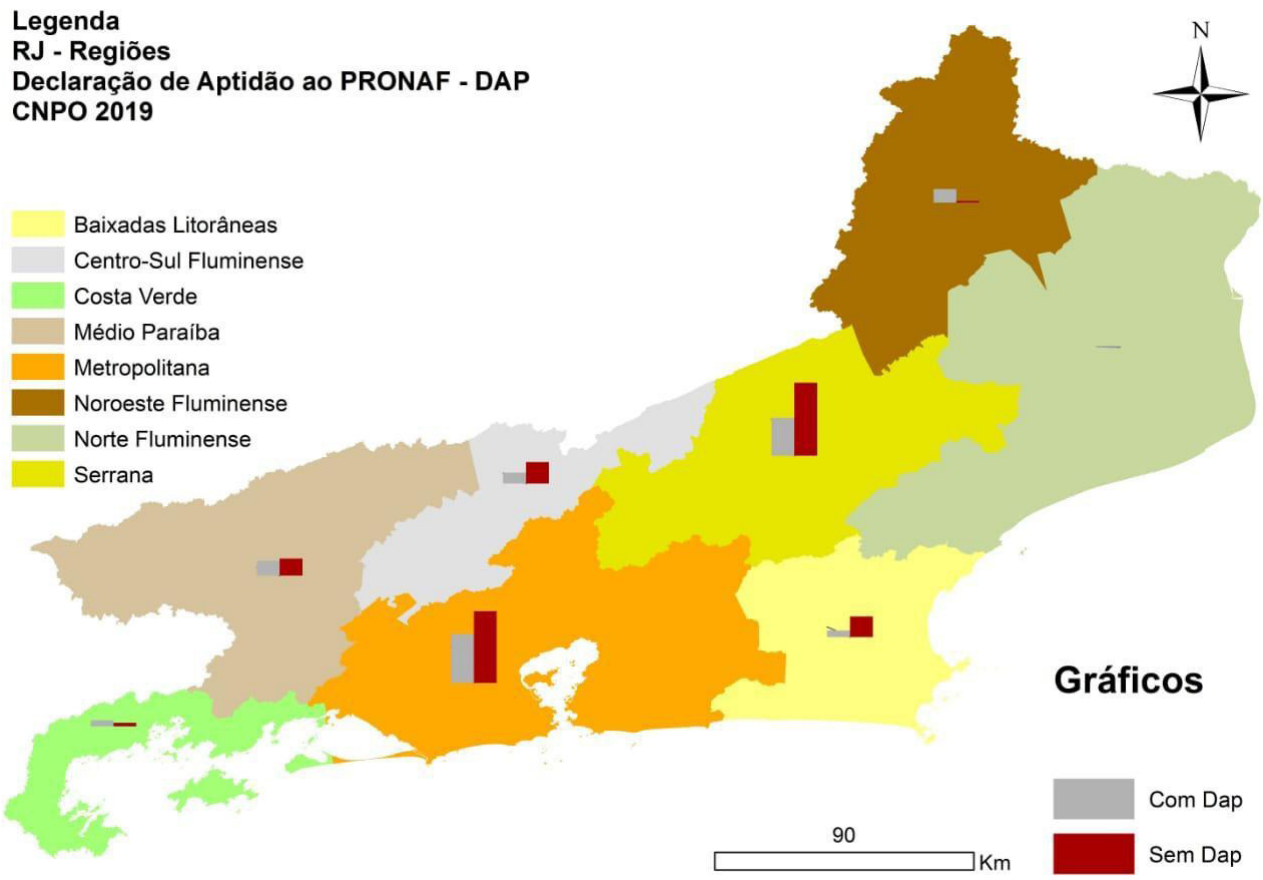
Among all the organic production units registered in the CNPO for the state of RJ as of July 2019, 40.1% had or previously held a Pronaf Aptitude Statement (DAP), falling into the active or expired categories. In contrast, 59.9% of the organic production units had no DAP, categorized as either nonexistent or canceled.

The Pronaf Aptitude Statement (DAP) is a tool used to identify and qualify Family Farming Units and their organized associative forms as legal entities. Consequently, it has been considered an instrument enabling this audience to access related programs and public policies. In this way, the results regarding DAP access highlight the potential of public policies for family farming, such as the Food Acquisition Program (PAA), the National School Food Program (PNAE), and the National Program for Strengthening Family Farming (PRONAF), in generating income and promoting the development of organic agriculture.

When considering this analysis in the macroregional distribution (Fig. 10), one can visually observe the relationship between organic production units and the significance of access to the DAP (Declaration of Aptitude to Pronaf) in various regions.

Previous studies, such as the one conducted by Aleixo (2018), had already examined and demonstrated the importance of the National School Food Program within the context of family agriculture in the state of Rio de Janeiro. They highlighted the program's potential for promoting organic agriculture. Hence, it would be valuable to explore, in future studies, the correlation between the significance of these and other public policies concerning the territorial distribution of organic production units.

**Figure 10** | Organic production units and the declaration of aptitude for PRONAF, CNPO 2019.




Source: compiled by the authors in collaboration with Embrapa Clima Temperado.

## FINAL CONSIDERATIONS

The completion of this study has enabled the establishment of a comprehensive database. This database, spanning from 2013 to 2019, facilitated an in-depth analysis of the territorial distribution and evolution of organic production units in the state of Rio de Janeiro. It reaffirmed the importance and evolution of the National Registry of Organic Producers as a pivotal management tool for the development of organic production.

The findings from our analysis reveal a consistent upward trend in the number of organic production units in the state of Rio de Janeiro over the studied period. This growth trend aligns with the broader national context. As for the geographical distribution of these units across the state's macroregions, it underscores the prominence of particular regions and municipalities, notably the Metropolitan and Serrana regions, in terms of the number of organic production units registered at the national level. Additionally, when examining the trajectory of this growth, most regions displayed positive trends throughout the analyzed period, although the specifics of these trends varied in both pace and proportion.

Concerning the mechanisms for ensuring organic quality established by legislation, all three mechanisms were identified as actively operating within the Fluminense territory. Participatory certification emerged as the predominant mechanism, considered fundamental for comprehending the development and evolution of organic production at both the state and regional levels, with particular significance in the Metropolitan and Serrana regions. Social control certification also underscored its importance as a mechanism for including family farmers, particularly those residing in remote regions far removed from major urban centers and who engage in direct marketing through fairs and institutional markets.

The correlation between the organic production units listed in the national registry and access to the Pronaf Aptitude Statement (DAP) revealed the significance and potential of public policies aimed at family farming audiences in the development of organic and agroecological-based production.

In conclusion, these results have expanded our understanding of organic production development in the state of Rio de Janeiro. They reaffirm the importance of adopting a territorial approach to comprehend development processes. The regional disparities observed emphasize that

development processes are intricately interwoven with regional dynamics and specificities. These observations underscore the significance of implementing a regional development agenda that takes into account social actors and local dynamics to promote comprehensive development.

**Acknowledgments:**

We would like to thank the researcher José Maria Filippini Alba from Embrapa Clima Temperado – CPACT for his invaluable technical support in creating the maps. We would also like to express our appreciation to the Comissão da Produção Orgânica do Estado do RJ – CPOrg/RJ.

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