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Papers

Family farming in the Metropolitan Region of Fortaleza (RMF), Ceará

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Abstract
This article aims to deepen the discussion about agricultural activity in metropolitan cities. Our analysis focuses specifically on the Fortaleza Metropolitan Area (FMA), State of Ceará, Brazil, and allows us to further understand family farming in that area. For this purpose, we reviewed a set of primary and secondary data regarding the profile of the producers and agricultural and food processing establishments in the metropolitan area under analysis. This multifaceted approach helped us identify key issues related to production and food systems in the FMA, and showed the importance of a research agenda focused on evaluating the potential of family farming in this specific context. This study presents the production strategies adopted, the challenges faced and the opportunities identified by family farmers. Discussing agriculture in metropolitan areas help us connect socio-spatial and socio-environmental problems, in addition to enabling us to suggest the development of cross-sectoral public policies. By offering a comprehensive overview, this study aims to contribute to effective policy making, promoting the sustainability and resilience of family farming in metropolitan contexts. We hope that the reflection on agriculture developed in such areas and its characteristics in local and metropolitan scenarios will be helpful to researchers, managers and those responsible for the implementation and execution of public policies, as well as other agents and entities interested in family (and urban) agriculture.

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INTRODUCTION

The need for ever more detailed information on agricultural activity in metropolitan regions around the world has been the subject of constant attention in various areas of debate. The existing data still has many gaps, which results in several challenges for its use in studies and research and, consequently, for the development of public policies. In the case of agricultural production related to family farming and/or urban agriculture (family or non-family) and agroecology, the obstacles to data collection and presentation are even greater.

Accelerated urban expansion and high demand for food have created a multifaceted production, marketing and supply system that also generates a large number of jobs and income. The supply and consumption of food in metropolitan areas, and especially in cities, can have a significant impact on economic viability, environmental sustainability, public health and quality of life of communities (Wiskerke, 2015). This complex food system gives life to productive spatial circuits (Santos, 1996) by moving food from increasingly distant places based on the interests and benefits that food business conglomerates derive from these transactions. The metropolises are the destination for much of the food produced in other regions or countries. They are certainly major consumer hubs, but what is new is that, especially in recent decades, they have played an important role in organizing the ways in which food is marketed and produced. Smit *et al.* (1996) estimated at the end of the 20th century that between 15 and 20 percent of global food production was already being grown in cities and their peri-urban areas.

The research and public policy agendas for urban food systems and local agriculture are expanding. In addition to a concern focused solely on the type of production and the quantity of food produced, new approaches recognize that, despite their relevance, other interactions in the system directly affect the feeding of metropolitan populations and cause various socioenvironmental impacts (FAO, 2018). Thus, understanding what food is produced, how and where it is produced, how it reaches the consumer and, above all, what the specific relationship is between the populations living in metropolitan regions and especially in their urban spaces, and their food and agriculture becomes a priority.

The purpose of this article is to characterize family farming in the Metropolitan Region of Fortaleza (RMF), in Ceará, with emphasis on the challenges related to food production in this space. To achieve this goal, we used a theoretical-methodological approach that involved collecting primary data through interviews with agricultural producers in the municipalities of the RMF, with representatives of all Municipal Agriculture Secretariats, as well as of the Empresa de Assistência Técnica e Extensão Rural (EMATER), among other actors relevant to the issue under discussion. The EMATER is an institution present in various Brazilian states that aims to provide technical assistance and rural extension to family farmers and small rural producers.

We also analyzed a set of secondary data obtained from the Agricultural Census of the Instituto Brasileiro de Geografia e Estatística (IBGE), which included the profile of producers, characteristics of agricultural establishments and information on food production in the metropolitan region under study. This secondary data provided us with additional information to understand the context of family farming in the RMF. The IBGE is a Brazilian federal institution responsible for the production and analysis of official statistics for the country.The combination of primary and secondary data allowed us to analyze some of the challenges faced by food producers in the metropolitan region. This multifaceted approach helped us to identify key issues related to food production and food systems in the RMF, as well as showing the importance of a research agenda that seeks to assess the potential of family farming in this specific context.

Among many questions, we believe that one was central to this study: To what extent could family farming developed in large urban agglomerations or on their perimeters subsidize the food supply of their populations? Reflections on the case of RMF will be the focus of this article, which is divided into two parts, in addition to this introduction and the final considerations. In the first part, we briefly discuss agricultural activity in the metropolitan context and in the second part we characterize family farming in the Metropolitan Region of Fortaleza.

Agricultural activity in municipalities around a metropolis

Discussing the issue of agriculture in metropolitan areas is particularly complex. Even more so when the issue involves its various forms of agriculture, especially family

farming. It is undoubtedly a multifaceted reality in which we need to be aware of the fact that although agriculture is not only related to rural areas, they still represent a big part of it.

In addressing the issue of rural space within metropolises, Travassos and Portes (2018) highlight several elements that add complexity to this analysis. The authors invite us to discuss the phenomenon of peri-urbanity. It is primarily the result of the variety of land use modes and their changeability over time, which often leads to a fragmented morphological characterization. This characterization incorporates attributes that evoke the rural essence of this space while also revealing elements that highlight its urban features.

The challenge of describing this space becomes evident both due to the high complexity of the land use patterns and the constant transience that characterizes these uses. This dynamic is the reason for the term "peri-urban". In addition, the duality of the policies associated with these areas, which seek to balance both environmental protection and the promotion of urban uses, cannot be underestimated, as highlighted by Pereira (2013).

Nowadays, the challenge is to understand the extent to which agriculture developed in areas close to large urban agglomerations can supply them sustainably. What are the main challenges for food production and food flows in metropolitan areas? What is the profile of metropolitan agricultural producers and establishments? Is the production of metropolitan family farming an underestimated potential? Has it been made invisible in regional economic analyses? As for the producers, do they produce for sale, for their own consumption or are they just rural dwellers? How have large cities fed their populations, especially with fresh food? Some of these questions are presented in this material only as a research agenda and therefore as an invitation for researchers to collaborate with this initial effort and a specific section.

Understanding food production in metropolitan areas is essential for assessing the sustainability of the food system. This involves considering the economic viability of the agriculture developed in this space, including the eminently urban one, as well as access to land and other elements such as financing sustainable agriculture. On the other hand, it is important to give visibility to the demands of rural areas in public policies and metropolitan management.

Management in metropolitan regions has focused primarily on the urban environment. However, it is essential to balance the emphasis on the demands and needs of rural areas. Cintra and Bazzotti (2014, p. 106) emphasize the importance of recognizing and valuing the presence of agriculture in the Metropolitan Region (MR) as a fundamental part of the debate on the economic, environmental and social development of this territory.

The authors stress the need to consider agriculture and its specificities in the process of metropolitan planning and governance. Recognizing the diversity of agriculture present in the MR, as well as its particularities and possible typologies, is a fundamental step in this direction. It is necessary to understand the contribution of these agricultural activities to the sustainability and socioeconomic dynamics of the region. In this context, it is pertinent to begin the discussion by addressing one of these typologies in the Brazilian context, in order to explore and understand its specific characteristics and contributions to the development of metropolitan agriculture.

When we talk about urban family farming in Brazil, it is not ruled by its own legislation, but by a set of different laws that can provide guidelines and incentives for the development of this practice. In order to understand the main pieces of legislation that support urban family farming in the country, we need to organize them almost like a mosaic, because, sometimes, they relate specifically to the dynamics of the space officially recognized as urban, and, sometimes, to rural areas.

It is important to note that some legislation and policies related to family farming may vary between states and municipalities, as some issues fall under local jurisdiction. Therefore, it is advisable to consult the specific legislation of the place where family farming takes place, and more specifically urban family farming.

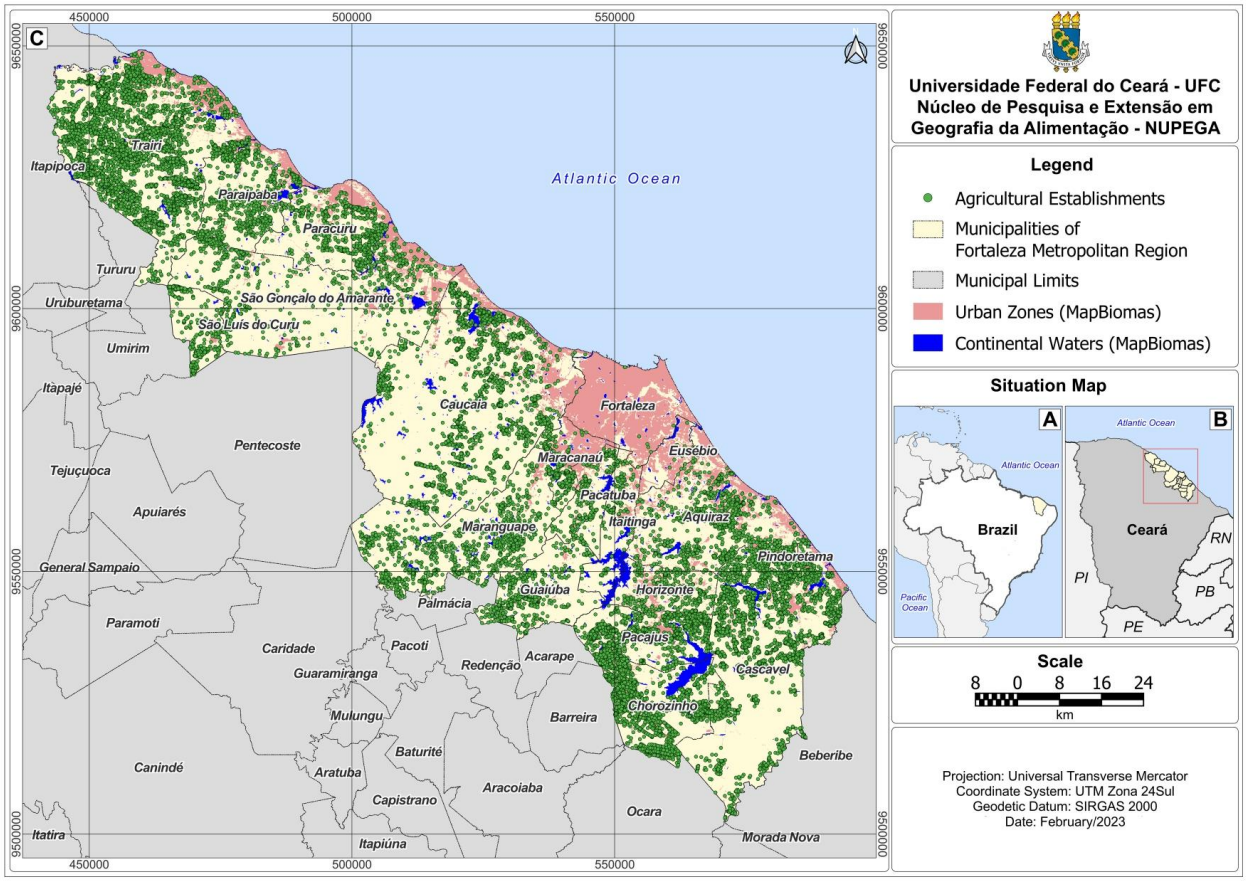
All this complexity leads us to raise other relevant questions. For example, how can we assess the potential of family farming for the sustainability of the urban food system? Can family farming in metropolitan areas contribute to food and nutrition security in cities? Has there been an increase in food production in metropolitan areas over the last two decades? At the moment, our initial focus is on the Metropolitan Region of Fortaleza, in the state of Ceará.

Family Farming in the Metropolitan Region of Fortaleza

The Metropolitan Region of Fortaleza has some characteristics similar to other Brazilian metropolitan regions, such as the expansion of the metropolis; the transformation of the industrial production base and the significant increase in outsourcing; the formation of areas aimed at housing the headquarters of transnational companies, real estate developments and national and foreign investors.

As can be seen in Figure 1 below, the Metropolitan Region of Fortaleza has few urbanized nuclei, practically restricted to the districts where the municipalities are located, and presents a vast territory with predominantly rural characteristics. Even the capital, Fortaleza, which has been the protagonist of the metropolis' urbanization process, still has non-urbanized areas within its perimeter, such as the eastern region of the city and the far south.

Figure 1 - Agricultural establishments in the Metropolitan Region of Fortaleza, Ceará, 2017.



Source: MapBiomas (2021), IPECE (2021) and IBGE (2017).

In their research on the spread of agribusiness in the Metropolitan Region of Fortaleza (RMF) and its economic, social and territorial impacts (Elias, 2020; Leitão, 2021; Elias *et al.*, 2022), Elias *et al.* (2022, p. 32) present evidence that confirms one of their main hypotheses, which was "that farming is a major activity in the economy and in the production of space in the RMF". The authors go on to say the following:

> The RMF is an extremely heterogeneous region, marked by considerable differences between the municipalities that make it up, including different levels of urbanization. In addition to the diversity between the municipalities, as it is a metropolitan region, the RMF has quite unique specificities, such as the strong presence of the rural sector and agricultural activities, which predominantly characterize the use and occupation of the territory of some municipalities (Elias *et al.*, 2022, p.40).

As part of this discussion, we would like to start by saying that the legal issue of categorizing land as urban or rural has been a

real obstacle to the recognition of agricultural practices in the RMF. In the case of Fortaleza, previous studies investigating agricultural activities in the urban space, such as the one carried out by Cearah Periferia (1997), pointed out that the transformation of rural areas into urban areas has directly influenced the loss of agricultural spaces in this city, since, with the increase in taxation, agricultural activities are considered unprofitable for landowners.

In this case, it is notable that the non-urbanized areas coincide with very precarious and vulnerable regions from a socioeconomic point of view (Pequeno, 2009). So, it is understood that promoting peri-urban agriculture in these areas has the value of boosting socially and economically precarious areas. On the other hand, real estate speculation deserves special attention when discussing this issue.

It is also important to point out that the permanence of agricultural practices in the city, even with the advance of urbanization, is a striking historical feature of the metropolis. From a cultural point of view, therefore, it can be said that agriculture is an activity with potential in the RMF, among other reasons due to the familiarity that the population has with these practices, as many families maintain them in their homes, backyards or on vacant lots, in an informal and spontaneous way.

When we collected the first information and quantitative data on agriculture in the RMF, what struck us at first glance was the importance of family farming. In reality, this extends to the state as a whole. Of all the agricultural establishments in Ceará, 75.5% are family farms and, of this number, the RMF has 6.8% of the total number of family farming establishments in Ceará. If we consider the municipalities as a whole, we can say that practically all of them have more than half of their agricultural establishments belonging to this typology, as shown in Table 1.

Table 1 - Number of Total and Family Farming Establishments in Ceará and the Fortaleza Metropolitan Region, 2017.

Territorial level	Agricultural Establishments – Total	Agricultural Establishments - Family Farming	Percentage of Family Farming Establishments (%)
Ceará	394.330	297.862	75,5
Aquiraz	4.325	2.045	47,3
Cascavel	2.550	2.095	82,2
Caucaia	2.699	1.654	61,3
Chorozinho	1.383	1.237	89,4
Eusébio	187	119	63,6
Fortaleza	244	197	80,7
Guaiúba	1.167	827	70,9
Horizonte	754	590	78,2
Itaitinga	637	365	57,3
Maracanaú	194	122	62,8
Maranguape	3.047	1.627	53,4
Pacajus	1.239	987	79,7
Pacatuba	774	486	62,8
Paracuru	591	476	80,5
Paraipaba	1.776	1.288	72,5
Pindoretama	1.490	921	61,8
São Gonçalo do Amarante	1.192	856	71,8
São Luís do Curu	497	179	36,0
Trairi	3.367	2.329	69,2
Total RMF		20.290	-

Source: IBGE (2017). Elaborated by the author (2023).

Based on more specific data, which can be seen in Table 2 below, it is possible to identify the percentage change in the total number of agricultural establishments, both family and non-family farms, between 2006 and 2017. During this period, there was a reduction of more than twenty percent in the number of family farming establishments in the Metropolitan Region of Fortaleza (RMF), while establishments that do not fall into this category showed an increase of almost one hundred and fifty percent.

Table 2 - Number of Total and Family Farming Establishments in Ceará and RMF, 2006-1017.

Municipality	2006				2017			
	Family Farming	Non-Family Farming	Total	% Family Farming	Family Farming	Non-Family Farming	Total	% Family Farming
Aquiraz	1913	243	2156	88,7	2045	2280	4325	47,3
Cascavel	2172	219	2391	90,8	2095	455	2550	82,1
Caucaia	2651	913	3564	74,3	1654	1045	2699	61,2
Chorozinho	624	113	737	84,6	1237	146	1383	89,4
Eusébio	567	89	656	86,4	119	68	187	63,6
Fortaleza	355	116	471	75,5	197	47	244	80,7
Guaiúba	720	214	934	77,1	827	340	1167	70,8
Horizonte	194	64	263	73,7	590	164	754	78,2
Itaitinga	64	30	94	68,1	365	272	637	57,3
Maracanaú	151	29	180	83,8	122	72	194	62,8
Maranguape	2589	452	3041	85,1	1627	1420	3047	53,4
Pacajus	366	82	448	81,6	987	252	1239	79,7
Pacatuba	939	170	1109	84,6	486	288	774	62,7
Paracuru	654	177	831	78,7	476	115	591	80,5
Paraipaba	1531	178	1709	89,5	1288	488	1776	72,5
Pindoretama	682	68	750	90,9	921	569	1490	61,8
São Gonçalo Do Amarante	2097	267	2364	88,7	856	336	1192	71,8
São Luís Do Curu	312	54	366	85,2	179	318	497	36,0
Trairi	2261	262	2523	89,6	2329	1038	3367	69,2
Total	20842	3478	24587	84,7	16071	8675	28113	57,16

Source: IBGE (2006; 2017). Elaborated by the author (2023).

When we consider how representative Family Farming establishments are of the total number of agricultural establishments, we can say that the vast majority of municipalities have seen their percentage decrease. Only Chorozinho, Fortaleza, Horizonte and Paracuru increased this number between 2006 and 2017. As for the value of the metropolitan region as a whole, in 2006, we had 84.7% of Family Farming Establishments, compared to the Total Number of Farming Establishments, and a decrease in this percentage to just 57.16% in 2017. This means that there was a significant decrease in Family Farming establishments in the Metropolitan Region of Fortaleza, when considering the value of Total Agricultural Establishments.

The municipality of São Gonçalo do Amarante recorded the greatest loss of family farming establishments. In turn, Itaitinga had the largest increase in the total number of establishments. In the case of São Gonçalo do Amarante, it is believed that the installation of the Pecém Port Complex was a contributing factor to the decrease in the number of agricultural establishments. In Itaitinga, on the other hand, the expansion of the rural area of the city, which previously represented only around 1% of the total area, to 53% after the approval of a new rural zoning by the City Council, benefited some producer communities, such as Caracanga, Carapió, Gereraú, Barrocão and Riachão (data from Itaitinga City Hall).

However, in addition to information on the number of establishments, it is necessary to assess the value of their production. The total value of the production of agricultural establishments in the Metropolitan Region of Fortaleza in 2017 reached more than one and a half million reais (exactly R$1,623,889.00). Of this value, family farming (FA) accounted for only 11.1%, while non-family farming (ANF) accounted for 88.9%.

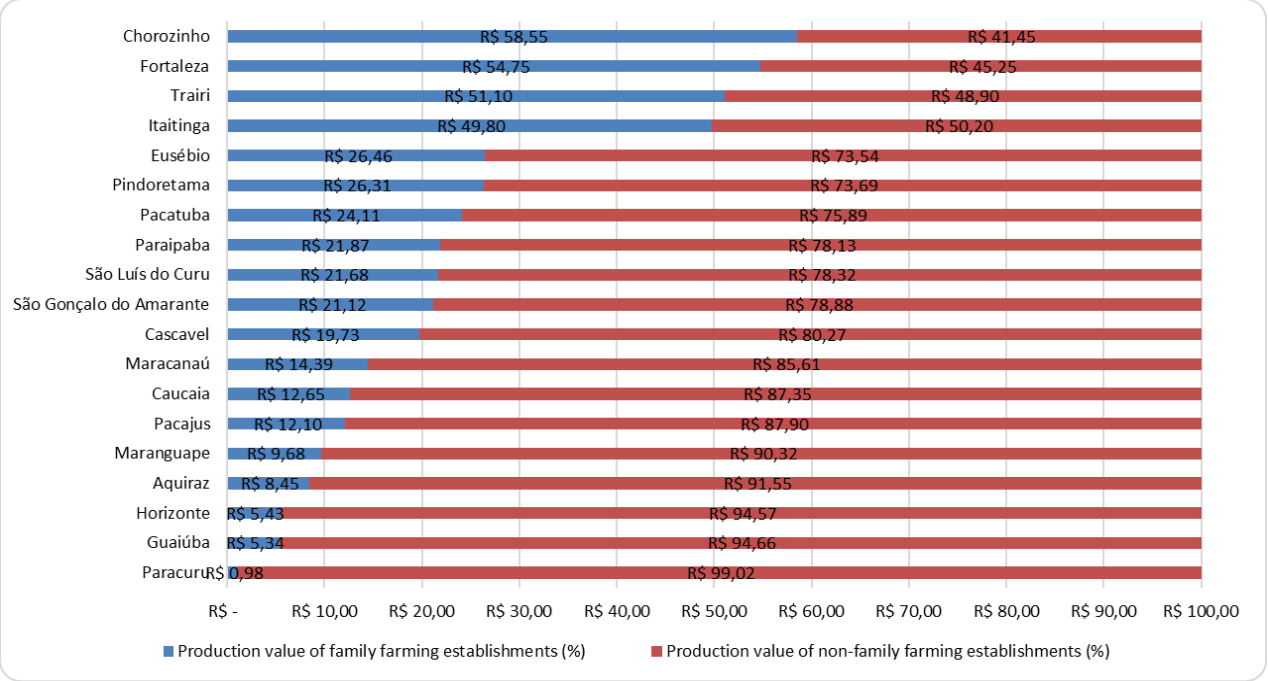
Table 3 - Number of agricultural establishments with production and Value of production of agricultural establishments in Family and Non-family Agriculture, 2017.

Brazil, State and Municipalities	Total	Number of agricultural establishments with non-family farming production	Number of agricultural establishments with family farming production	Total	Production value of non-family farming establishments	Production value of family farming establishments
Brazil	4751193	1062975	3688218	R$ 462.361.551,00	R$ 355.889.076,00	R$ 106.472.475,00
Ceará	388802	94461	294431	R$ 5.548.702,00	R$ 3.347.852,00	R$ 2.200.849,00
Aquiraz	3947	2047	1900	R$ 251.357,00	R$ 230.123,00	R$ 21.234,00
Cascavel	2500	435	2065	R$ 85.985,00	R$ 69.020,00	R$ 16.965,00
Caucaia	2670	1025	1645	R$ 117.964,00	R$ 103.043,00	R$ 14.922,00
Chorozinho	1364	142	1222	R$ 14.667,00	R$ 6.080,00	R$ 8.587,00
Eusébio	169	59	110	R$ 8.729,00	R$ 6.419,00	R$ 2.310,00
Fortaleza	235	47	188	R$ 19.495,00	R$ 8.822,00	R$ 10.673,00
Guaiúba	1109	314	795	R$ 79.271,00	R$ 75.034,00	R$ 4.237,00
Horizonte	748	162	586	R$ 160.616,00	R$ 151.892,00	R$ 8.724,00
Itaitinga	634	270	364	R$ 7.826,00	R$ 3.929,00	R$ 3.897,00
Maracanaú	190	70	120	R$ 14.980,00	R$ 12.824,00	R$ 2.156,00
Maranguape	2996	1390	1606	R$ 115.071,00	R$ 103.927,00	R$ 11.144,00
Pacajus	1224	247	977	R$ 99.331,00	R$ 87.307,00	R$ 12.024,00
Pacatuba	702	267	435	R$ 18.767,00	R$ 14.242,00	R$ 4.525,00
Paracuru	586	113	473	R$ 458.722,00	R$ 454.217,00	R$ 4.506,00
Paraipaba	1729	473	1256	R$ 49.300,00	R$ 38.518,00	R$ 10.782,00
Pindoretama	1465	555	910	R$ 39.153,00	R$ 28.852,00	R$ 10.301,00
São Gonçalo do Amarante	1181	327	854	R$ 29.255,00	R$ 23.076,00	R$ 6.179,00
São Luís do Curu	495	317	178	R$ 3.649,00	R$ 2.858,00	R$ 791,00
Trairi	3356	1035	2321	R$ 49.751,00	R$ 24.326,00	R$ 25.424,00
Total RMF	27300	9295	18005	R$ 1.623.889,00	R$ 1.444.509,00	R$ 179.381,00

Source: IBGE (2017). Elaborated by the author (2023).

Based on the total production value of the RMF's agricultural establishments (production value), it can be seen that in only 4 municipalities there is a predominance (more than 50% of the production value) of Family Farming, and that the other 15 have a greater share of Non-Family Farming. Figure 2 below shows a breakdown of these data. We can see the contribution of family farming and non-family farming to each municipality in terms of the gross value of agricultural production and how they rank in each of the most representative groups.

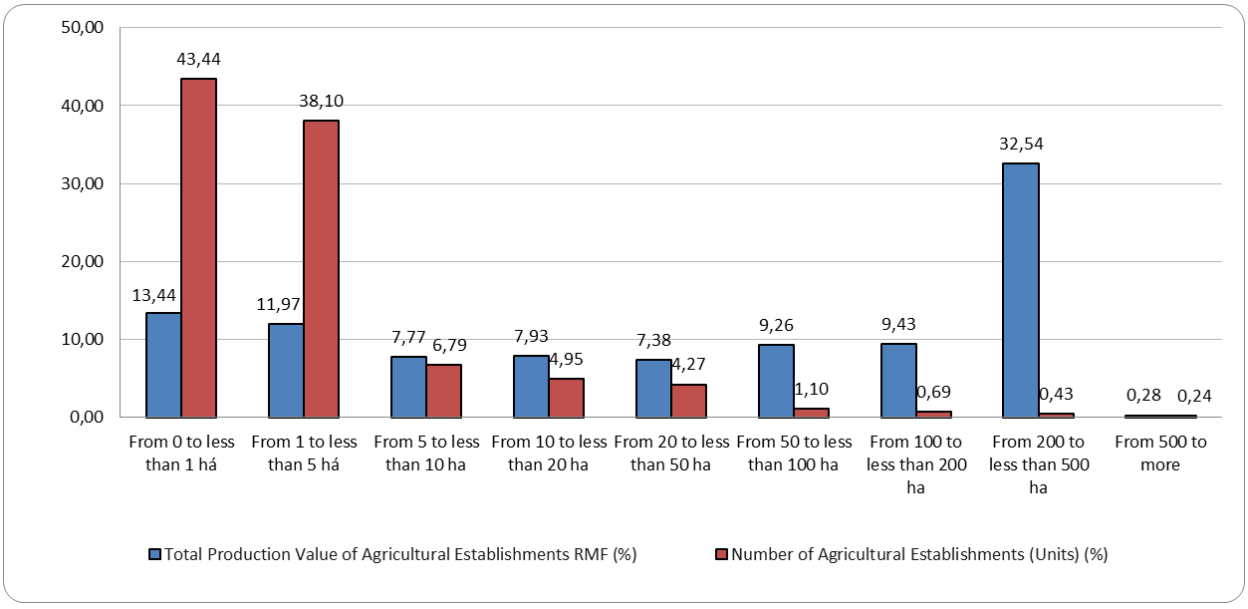
Figure 2 - Production value of Family Farming and Non-Family Farming establishments in the Fortaleza Metropolitan Region, 2017.



Source: IBGE (2006; 2017).

Below are the data that specifically show the distribution of agricultural establishments and production value by only strata and production value classes. Of a total of 27,300 agricultural establishments in the Metropolitan Region of Fortaleza in 2017, 97.5% had less than 50 hectares and accounted for 48.5% of the total value of agricultural production. Agricultural establishments with more than 50 hectares accounted for 2.5% of establishments and 51.5% of the declared value of agricultural production, indicating a significant concentration of production value in establishments with more than 50 hectares, especially those with more than 200 hectares, which, despite representing only 0.7% of all establishments, accounted for 32.8% of everything produced in 2017.

Figure 3 – Production value of agricultural establishments by Area Groups in the RMF, 2017.



Source: IBGE (2006; 2017).

It is important to note that the diversity of agriculture in metropolitan areas leads us to believe that the values mentioned above do not disqualify the importance of family and urban agriculture, especially when it comes to the issue of food security for the producing families. Likewise, a surplus of this production should also be considered, which deserves attention in terms of promoting income for these families, as well as the possibility of offering fresh food produced at shorter distances from consumers.

These agricultural activities encompass a diverse range of activities varying from livestock farming, extractivism, fishing, the processing of various products, etc. We should not, therefore, overlook the specificities of metropolitan municipalities, with the diversity of agricultural practices in these territories and the role of local production for local and regional supply (Almeida *et al*, 2022).

Table 4 - Quantity produced (tons) of the main products associated with family farming in Ceará and RMF, 2017.

Economic Activities	Production	Ceará	Ceará (%)	The Metropolitan Region of Fortaleza	The Metropolitan Region of Fortaleza (%)	The Metropolitan Region of Fortaleza in relation to Ceará (%)
Temporary crops	Sugarcane	43.285	11,3	15.076	39,0	34,8
	Black-eyed peas	53.887	14,0	1.624	4,2	3,0
	Cassava	100.456	26,2	17.741	45,8	17,7
	Corn kernels	180.802	47,1	3.087	8,0	1,7
	Pumpkin	5.700	1,5	1.167	3,0	20,5
Total	-	384.130	100	38.695	100	10,1
Horticulture	Lettuce	14.827	24,3	475	3,5	3,2
	Sweet potatoes	8.462	13,9	505	3,7	6,0
	Chives	14.921	24,7	6.093	45,0	40,8
	Coriander	18.133	29,7	6.162	45,5	34,0
	Green corn (cob)	4.751	7,8	306	2,3	6,4
Total	-	61.094	100	13.541	100	22,2
Permanent crops	Banana	75.110	51,7	2.071	6,1	2,8
	Cashew nuts	20.453	14,1	5.504	16,3	26,9
	Cashew (fruit)	7.529	5,2	680	2,0	9,0
	Bay coconut	39.705	27,3	24.545	72,7	61,8
	Mango	2.559	1,8	970	2,9	37,8
Total	-	145.356	100	33.770	100	23,2

Source: IBGE (2006; 2017).

With regard to agricultural production in the municipalities that make up the Metropolitan Region of Fortaleza (RMF), some studies carried out since the late 1990s have highlighted the production of short-cycle and easy-to-grow vegetable species, such as coriander, spring onions and lettuce (Cearah Periferia, 1997; Gomes, 2018; Rodrigues, 2012; Santandreu; Lovo, 2007). These crops are known for their rapid maturation and require less time and space for production, which makes them viable for family and urban farmers. In addition, these vegetables are widely consumed in the region and are in constant demand, which encourages their local production.

These vegetables are commonly found in the productive backyards of households in Ceará. According to the latest IBGE Agricultural Census, municipalities such as Aquiraz, Cascavel, Fortaleza, Maranguape, Pindoretama and Caucaia showed significant numbers in the production of these vegetables. It is worth noting that these municipalities stand out not only in the production of these vegetables, but also in other species such as sweet potatoes, cassava, yucca, green corn, among others. This data demonstrates the importance of these crops for family and urban agriculture in the Metropolitan Region of Fortaleza (IBGE, 2017).

Based on the analysis of the data in Table 3, we can see the proportions of production carried out in the Metropolitan Region of Fortaleza (RMF) in relation to the state of Ceará. For family farming, the share of the RMF in relation to the state is 10% for temporary crops, 22% for horticulture and 23% for permanent crops.

Table 5 - Area (hectares) of agricultural establishments in Ceará and RMF, in relation to the total area of the municipalities

Territorial level	Total area of municipalities (ha)	Area of Agricultural Establishments - Family Farming (N)	Area of Agricultural Establishments - Family Farming (%)
Aquiraz	48.024	2.210,5	4,6
Cascavel	**83.812**	**14.150,3**	**16,9**
Caucaia	122.325	4.221,4	3,5
Chorozinho	**29.643**	**10.972,7**	**37,0**
Eusébio	7.882	111,9	1,4
Fortaleza	31.235	103,2	0,3
Guaiúba	25.605	3.530,2	13,8
Horizonte	**16.056**	**2.936,6**	**18,4**
Itaitinga	15.369	611,2	4,0
Maracanaú	10.507	335,9	3,2
Maranguape	58.351	4.726,8	8,1
Pacajus	25.030	3.588,7	14,3
Pacatuba	13.324	837,3	6,3
Paracuru	30.473	1.693,8	5,6
Paraipaba	**28.923**	**4.550,4**	**15,7**
Pindoretama	7.403	816	11,0
São Gonçalo do Amarante	84.264	7.183,1	8,5
São Luís do Curu	12.287	972,6	7,9
Trairi	**92.873**	**21.287,5**	**22,9**
Total	668.386	84.850,1	-

Source IBGE (2017).

In terms of total production in the RMF, the proportions for each type of production are as follows: 45% for temporary crops, 39.3% for permanent crops and 15.7% for horticulture. Temporary crop production is the most significant in the RMF, and is characterized by short-lived crops that require replanting after harvest. Among temporary crops, cassava production stands out, accounting for 45.8% of the production analyzed.

Permanent crops occupy the second position in terms of breadth of production in the RMF. They are characterized by the fixed use of land to grow certain foodstuffs. Of particular note is the production of coconut, which is linked to spatial production circuits that include export when processed. Family production in the RMF is responsible for more than 60% of the state's total coconut production, and Ceará is the country's leading exporter of coconut water, according to a study carried out by FIEC (2018).

Horticultural production is one of the most characteristic economic activities of family farming, especially in municipalities where family farming establishments have smaller areas in relation to the total area of the municipalities, such as Fortaleza and Eusébio.

The main foods produced in this type of production are: chives (45%) and coriander (45.5%), the combination of which forms an established product known locally as cheiro-verde. Despite being very traditional, the presence of horticulture in the intra-urban space, in this analysis, has become indicative of a lower productive potential, which may be associated with factors such as: high concentration of urban areas, purpose of production more focused on self-consumption, income associated with forms other than the sale of production etc. (Marques, 2020). An example of this is the municipality of Fortaleza, which stands out in this area.

With regard to the total area of agricultural establishments, family farming represents around 40% of the area occupied in the RMF and, at the state level, only 2.54% of the representative area of family farming establishments, which may indicate compliance with Law 11.326 of July 24, 2006, which states that a family farming rural property must measure up to 4 fiscal modules, therefore generally presenting establishments with a smaller territorial extension.

With regard to the profile of the producers, the above-mentioned studies from the end of the 1990s (Cearah Periferia, 1997), together with the data collected more recently, reinforce the thesis that these are usually self-employed single-family groups, with low incomes, low levels of education and a highly informal character, many of them with a strong connection to the rural environment and practices. According to the IBGE, there is an illiteracy rate of 36.20% among producers of agricultural establishments in the RMF. Few records of community or multi-family experiences have been identified, most of which are understood to be one-off government initiatives or those promoted by civil society organizations.

Data from the IBGE Agricultural Census (2017) revealed additional information about the profile of agricultural production in the Metropolitan Region of Fortaleza (RMF), as did the results of interviews with family farmers and municipal institutions.

According to the Agricultural Census, more than 95% of agricultural establishments in the RMF have employees who are related to the producer. This supports our assertion that agricultural activity in the region is predominantly family-based. However, when it comes to the staff employed in the E.A. without family ties to the producer, only 50.93% of them in the RMF are permanent employees. This indicates a considerable degree of informality in employment relationships. It's important to note that this proportion can vary significantly from one municipality to another. For example, in Fortaleza, around 95% of the employees in the E.A. are permanent workers, while in Chorozinho this figure is only 10%.

This data highlights the importance of family labor in family farming in the RMF and indicates the presence of informal workers in the region's agricultural establishments. The variation in the number of permanent employees between municipalities reflects the different socioeconomic realities and agricultural structures present in the RMF.

IBGE (2017) data reinforces the family and subsistence nature of agricultural production in the Metropolitan Region of Fortaleza (RMF). According to this data, in 77.83% of the establishments in the RMF, the main producer lives on the same land where production takes place. This indicates a close link between residence and productive activity, highlighting the family nature of agriculture in the region.

In addition, more than half of the agricultural establishments in the RMF (64.03%) have self-consumption as their main purpose. This means that agricultural production plays a fundamental role in ensuring the food and nutritional security of producer families, contributing to subsistence and food self-sufficiency.

However, it is important to note that there are significant differences between the municipalities of the RMF. In Fortaleza, for example, the main purpose of agricultural production is marketing, accounting for more than 90% of establishments. In this case, productive activity plays an essential role as a source of income for producing families.

This information corroborates the institutional data and the results of the interviews, reinforcing the importance of self-consumption and marketing in family farming in the RMF. This data indicates the importance of local agricultural production both for the subsistence of producing families and for generating income through the sale of agricultural products.

The Agricultural Census (IBGE, 2017) also shows that all the municipalities in the RMF have a very low rate of FTEs receiving technical assistance, with an average of just 6.20%. This data corroborates the information gathered in the field.

The number of establishments whose producers have the Cadastro Nacional da Agricultura Familiar (CAF - National Family Farming Register), a substitute for the Declaração de Aptidão ao Pronaf (DAP - Declaration of Aptitude to Pronaf), which allows them to enter family production support programs, is also low. In the RMF, only 31.88% of FAs are linked to the CAF, and in more urbanized municipalities, this rate is even lower, such as Fortaleza, which has a figure of 5%. There are also very few AEs linked to cooperatives or trade associations. In the RMF as a whole, there are only 23.40% of self-employed workers, a figure that is close to 0% in more urbanized municipalities such as Aquiraz, Eusébio, and Fortaleza (IBGE, 2017).

Certainly, some of this data is a reflection of the institutional incompatibility between agricultural and urban uses, which makes it impossible to provide technical and financial support and, consequently, hinders the ability of producers to produce, market, and continue their activities.

It is essential to highlight the fact that we believe that some of the production data, especially associated with family farming, is underestimated. This means that the production potential may be much greater than what is officially presented, and what we have seen in our field immersions in the RMF is the fact that public policies do not reach small producers who could produce much more if they had better access to land, technical assistance, institutional recognition and, above all, support for market outlets. We often hear from small producers that programs such as the Programa de Aquisição de Alimentos (PAA - Food Acquisition Program is a Brazilian government initiative that integrates policies for food security, sustainable rural development, and support for family agriculture) and the Programa Nacional de Alimentação Escolar (PNAE - National School Feeding Program, Braziliam program that establishes guidelines for providing food in public schools) fail to reach everyone. The population of our cities could have access to much healthier and fresher food if this were possible.

With regard to the legal status of the land, the majority of establishments in the RMF (76%) are on their own land. In Fortaleza, once again, this data is specific (the number of farms on their own land is only 57%), with a considerable number of farms on land leased from third parties, which shows that access to land is a major problem in the capital. At this point, it is important to revisit the problem of the high value of urban land and speculation on it, which makes it difficult for producers to access it.

Thus, the IBGE data confirms a family profile with low incomes and low levels of schooling for producers whose production takes place on an informal basis, with little or no external support.

FINAL CONSIDERATIONS

Discussing the various forms of agriculture in metropolitan areas can articulate various socio-spatial and socio-environmental struggles, as well as suggest the development of intersectoral public policies. The expressions, terms, concepts, and ideas that accompany this debate are necessary and thought-provoking, as they make it possible to address dichotomies such as city-countryside, industry-agriculture, urban-environment, as well as issues related to Brazilian public administration. There is a surprising lack of adequate political and development tools to deal with the new paradigms that define these peri-urban, rural and urban areas and their intersections (Travassos; Portes, 2018). The peri-urban, present in Brazilian metropolises, is not visibly considered in rural or urban policies, and is generally seen only as a reserve of land for urbanization or environmental protection. Understanding all this leads us to reflect on the need to broaden our gaze beyond urban agriculture initiatives, but still peri-urban, including family farming and other agricultural

practices that are part of the effort to understand the relationship between urban and rural in metropolitan regions.

Likewise, it is important to reflect on the inclusion of urban areas in discussions about the new configurations of agri-food systems, with the aim of developing a "democratic governance of food" and a "new food geography" based on the "reterritorialization of food systems", as Petersen and Monteiro (2020) state. The provision of new models of food production and consumption in large urban centers can be indispensable in times of contingency, as we are experiencing the current health crisis (triggered by the COVID-19 pandemic) and climate crisis, and to avoid similar situations in the future.

To carry out this research, we started with a few assumptions: the first is the fact that agricultural production in urban and peri-urban spaces is not a new activity, but needs to be constantly rethought. In addition, it is important to discuss family farming, as well as urban and peri-urban farming, which feeds a large number of people in urban spaces, especially in metropolitan areas. It is also worth remembering that all these discussions converge on practices and concepts such as agroecology, peri-urbanization, food and nutritional security, sustainable and resilient food systems, and short marketing circuits, which are distinct themes with different levels of maturity.

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