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**A tale of two big cities struggling for their agriculture
Conflict and oppositions around land farming in the Greater *São Paulo* and *Paris*
regions**

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Abstract

The objective of this paper is to discuss the emergence of land use conflicts in the maintenance or support of agricultural lands near large urban agglomerations. These conflicts are potentially the greatest limiting factors for food production under the influence of urban centres. For this, we take the example of the Metropolitan Region of São Paulo (RMSP) and the Greater Paris Region (Île-de-France), which despite being the largest urban areas in their countries, are territories that reflect on the importance of farmland preservation both in their peri-urban spaces, focused on contributing to local food security, and in their more densely urbanized spaces where other dynamics such as social relations around food issues are more prominent. Initially, we briefly go over the issues and concepts related to peri-urban agriculture, to then address the notions of land use conflicts and their implications on agricultural production spaces. Afterwards, we report on the methodology used, based on interviews with experts, analysis of the regional daily press, and the presence of blogs and websites about the local realities for each of these regions. Subsequently, we discuss and compare the results obtained for each locality, its relations with local actors, public policies, agrarian issues, and other forms of occupation of space. We conclude with some ideas about the maintenance of these peri-urban agricultures in these territories, despite the existing conflicts.

Key words: land use, peri-urban agriculture, urban sprawl, opposition, conflict

Introduction

For a long time, agriculture developed alongside cities, which were built in areas of high soil fertility (Bryant & Johnston, 1992; Lohrberg, 2001). Farming or supply centers helped to feed the latter, as did rural areas located in their hinterland, by bringing to city dwellers various agricultural products sold in the central markets. Nevertheless, a double movement has driven agriculture away from the urban agglomerations. A first evolution was linked to globalization: the search for increasing returns on large surfaces allowing economies of scale and lower prices, the lengthening of distribution circuits and the reduction of transport and delivery costs of products have made distant agricultural production very competitive (Gollin, 2010). The second is due to the incessant movement of urban sprawl (Gilham, 2002). It leads to a rapid consumption of soils located near urban agglomerations, and in particular agricultural land,

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which cannot resist real estate speculation and the need for construction and infrastructure for the city (Castillo et al. 2013). These developments, associated with the weak support for the maintenance of agricultural activities, contributed—during the 20th Century, to the disappearance of a significant part of the farms located near the main agglomerations (Livanis et al., 2016).

After a period of remoteness of agriculture from urban agglomerations, the issue of agriculture in and around cities has taken on renewed importance in recent years, in response to the growing demands of populations for healthy and local food (Smit & Nasr, 1992; Hamilton et al., 2014). Consumers and especially urban dwellers ask for more local products, and become aware of transportations costs and the environmental impact of food miles. Environmental concerns have also increased the willingness to consume seasonal products, corresponding to the climatic and soil conditions of the region. Covid-19 pandemic has increased this tendency (Chenarides et al., 2020): more people are looking for the origin and the traceability of local food, its quality and also its geographical origins (MAPA, 2020; Bakalis et al., 2020). At the same time the issue of supply and food security in large urban centers becomes crucial, linked to the growth of the world population (UN, 2019) and its increasingly urban character (FAO, 2009). Local, urban or peri-urban agriculture can provide a part of this supply, especially in big centers and poor areas (De Zeeuw et al., 2000; FAO, 2007; Dubbeling et al., 2010). Although farming activity is often relatively residual in urban agglomeration, it sometimes shows significant dynamism (Opitz et al. 2016). And it is connected with the growing demands of the new inhabitants of the suburban areas, which are looking for open spaces, that they increasingly assimilate to agricultural activities (Van Veenhuizen & Danso, 2007). Then, interest in urban farming appears twofold. Both historic, as the survival of an old alliance between cities and their farm belts, and also very contemporary in the face of the new behaviors of urban consumers (Zasada, 2011).

But despite its benefits to the population and the urban landscape (Madaleno, 2002), agriculture maintenance appears always as a challenge. The implementation and the development of public policies of financial and technical support to urban and peri-urban farmers remain difficult and the inscription of the farming activities on the agenda of urban governance has always been laborious (Ackerman et al., 2014; van Veenhuizen, 2006). But, most of all, regarding the permanent growth of urban households and infrastructures, which is a source of strong land pressure, farming is under the threats of the urban expansion. Agricultural activity tends to disappear from cities, and even from their suburbs, and to move further and further away from urban agglomerations. And this gradual erasure is accompanied by an ever-greater difficulty of maintaining an agricultural activity in the city or around, especially related to the increasing pressures on land (Cavailhes & Wavresky, 2003), which causes oppositions and conflict between supporters and opponents to urban farming. It is well documented in the literature that this competition between various users of soils (farmers, promoters, entrepreneurs, public services...) is one of the major limits of food production in urban and peri-urban areas (FAO, 2011), and that it gives birth to several land use conflicts (Darly & Torre, 2013; Torre et al., 2013).

This article focuses on the difficulties of the existence and the maintaining of an urban or peri-urban farming activity, and most specifically on the questions and the problems raised by the presence of agriculture on the fringes or inside large urban agglomerations. The research is focused on the importance of territorial conflicts related to the permanence of food production near big cities, and of their analysis. Our study is based on the example of agriculture in the

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suburbs and the hinterland of the regions of the Greater São Paulo (Brazil) and Paris (France). Both cities have undermined several actions to encourage territorial agricultural development. The Sustainable Paris Food Plan 2015-2020 (Mairie de Paris, 2015) and the municipal law No. 16.140 / 15 of the City of São Paulo (CONSEA, 2015) are some examples of the commitment of these cities to their food systems. And both were signatories to the Milan Pact on Urban Food Policy in 2015. This agreement discusses the real engagement of local authorities in the setting of public agricultural policies for urban environment and food security, aiming at articulations between different society actors, allowing guaranteed access to land, adequate school meals and stimulating short production and consumption circuits (MUFPP, 2020). But despite these initiatives, urban expansion puts pressure on these food areas and brings out different types of conflicts that will develop differently according to the local natural and organizational realities.

Our goal is to explore the questions posed by the maintenance and development of peri-urban agriculture in a situation of strong urban sprawl, and to analyze the strategies followed by local stakeholders responsible of opposed land use intentions. In particular, we analyze the types of conflicts between these local actors, and the actions of public bodies in favor of the persistence or the rise of peri-urban agriculture. The novelty factor of our analysis is to highlight and compare the challenges from these two big cities to face land use conflicts for agricultural activities which suffer pressure from urban expansion and infrastructures, despite their differences about historical, natural, climate and social conditions.

I. Methodology and presentation of the case studies

We base our study on the comparison of two cases of peri-urban agriculture under changes in proximity of large metropolises. The metropolitan region of São Paulo in Brazil and the Ile-de-France region (or greater Paris) in France, are emblematic both of the problems of maintaining or developing agriculture in urban areas and of the difficulties and oppositions related to the levels of wealth and development. In fact, these are two major agglomerations, the largest in their country, which have not only a highly concentrated urban center, but also a diffuse urbanization on the scale of an entire region. They are the main economic national center, coupled with an intense and historical agricultural and an important remaining agro-food activity. The problems of maintaining local agriculture are therefore similar, especially with the pressure on agricultural soils. However, there are significant differences, with more informal urbanization, as well as major poverty and much more important criminal issues in the Brazilian metropolis, while the Parisian Region is characterized above all by a very high price of building land because of its very strong economic attractiveness in the European Union.

The case of São Paulo Metropolitan Region

The São Paulo Metropolitan Region (SPMR) is the largest urban agglomeration in South America, with more than 21.5 million inhabitants (EMPLASA, 2019a), and 47.6% of the population of the State of São Paulo. Its Gross Domestic Product (GDP) corresponded in 2017 to R\$ 1.14 billion, which corresponds to 17% of the Brazilian one (SEADE, 2019). SPMR is the largest industrial complex and the main financial center in the country, with a highly qualified workforce and large communications infrastructure and services. Farming sector counts for 2.04 % of the State GDP and 0.13% of the metropolitan GDP (SEADE, 2019). But the City of São Paulo has a very rural dimension, with a third of its territory classified as rural areas, competing with other land uses.

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We find different types of Agricultural production in the SPMR (see Figure 1), like horticulture, fruits, eggs and poultry farming, beef cattle, pig farming productions, etc. In the near east and north sides, one find fresh vegetables but also fruits and poultry productions. The southern zone is the more active one, with an increase of organic, agro ecological or transition systems, most of them based in horticulture products. The southwest axis is characterized by a traditional subsistence agriculture (potatoes, onions...), whereas pasture and beef cattle productions are mainly located in the northwest metropolitan sector. The northeast peri-urban area, which produces vegetables, is under environmental protection laws. The center-west area is the most urbanized part of the city, with only a few remnants of agricultural production, most of them located in parks, public squares and community gardens.

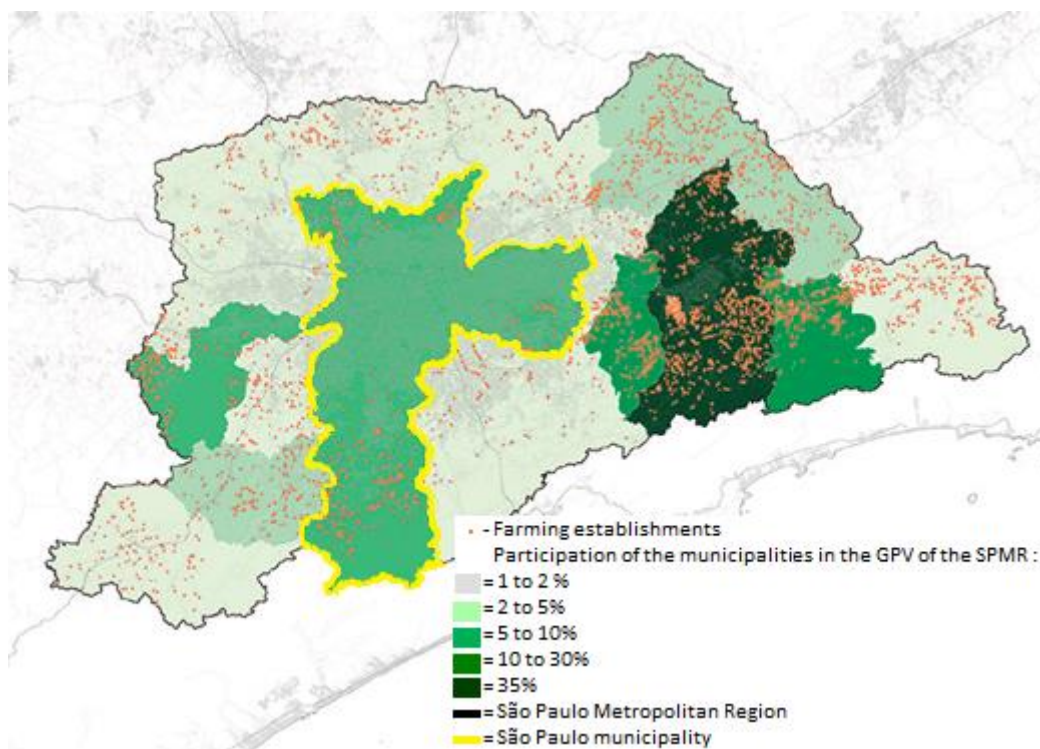


Figure 1 – Locations of agriculture, poultry and eggs farms and participation of municipalities in the Gross Production Value (GPV) of the São Paulo Metropolitan Region (IBGE, 2017), adapted from Instituto Escolhas e Urbem, 2020.

The case of the Greater Paris Region

The Ile-de-France or Greater Paris Region (GPR) is the first French economic region and the most populated region of France with nearly 12.2 million inhabitants (about 18% of the French population (INSEE, 2020) and 2% of the European population). Its GDP represents 29% of the national one. The workforce is highly skilled, with 37% of French managers and 40% of the national workforce employed in R&D activities. But although the first urban region in France, the GPR is also a large agricultural and rural region (Figure 2). The regional territory is made up of nearly 80% of rural areas, with 48% of agricultural areas (about 569,000 hectares) and 24% of wooded areas. However, despite the measures put in place to try to control urban sprawl and the anarchic consumption of soils, agricultural land continues to decline at a high rate of about 1,200 ha per year (annual average 2000 - 2010).

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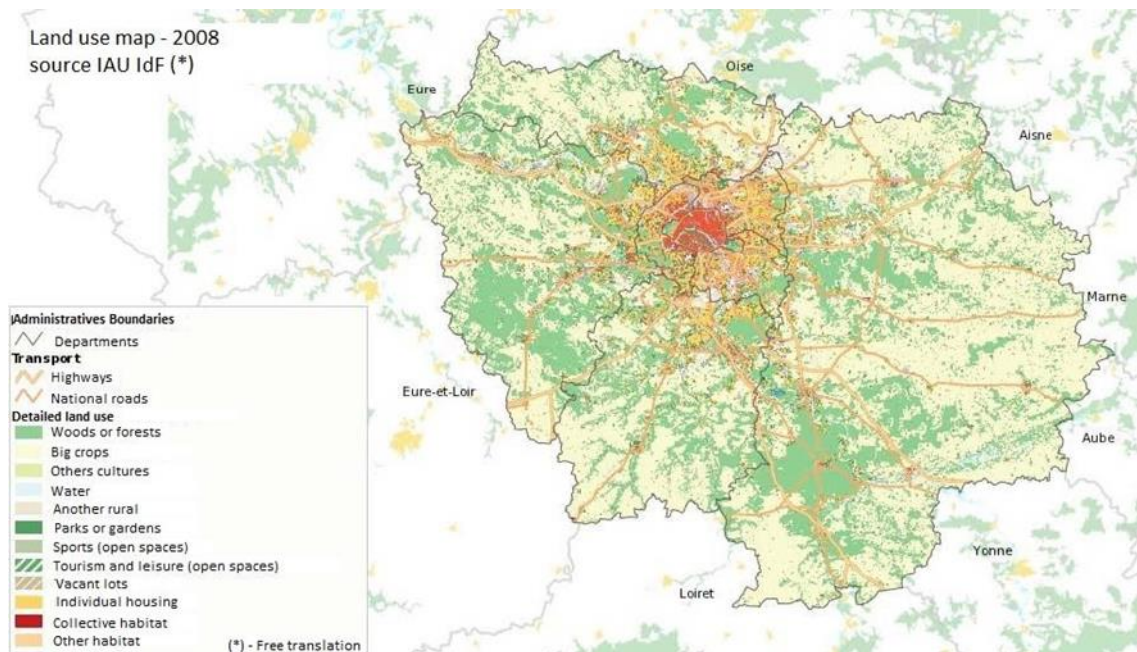


Figure 2 - Land Occupation in Greater Paris Region in 2008 (IAU)

Even if agriculture seems to occupy a reduced economic role in GPR, agricultural lands still take around half of its territory and provide many types of services and products. The region has a high soil fertility for agriculture production. In small agricultural areas close to urban agglomerations it is possible to find vegetables and fruits productions for the consumption of urban dwellers. Moving away from the urban areas, it becomes increasingly normal to find larger farms, with large crops productions such as cereals and with high profitability. Animal production is quite rare, with exceptions to some dairy products areas. But the urbanization sprawl and the urbanization pressures (housing policies, urban infrastructures) are strong on agriculture soils in almost the entire region.

The Method of analysis

The analysis of the oppositions and the conflicts reported in the two regions is based on different sources. We follow the methodology defined by Torre et al. (2014) for identifying and categorizing conflicts and their links with territorial governance processes. Concerning the case of São Paulo and the absence of reliable legal data, we apply to this issue the extended method used for the cases of developing countries by Magsi et al. (2017). We integrate social networks and medias analysis to compensate for this lack of information.

More precisely, we made the following types of investigations on the two areas.

- Expert surveys conducted, at the local level, among resource persons from different professional groups and public bodies like officials, farmers, representatives of local institutions, environmental and nature users, chambers of commerce, trade and industry, water agency representatives, etc. (Annex 1).
- Analysis of the interactions between the protagonists involved in the conflict (Thomson, 2012). It allows us, by studying the similar or opposite speeches obtained through interviews with local actors and groups of actors, to analyze the hierarchy and power relations, and to identify the

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origins of the discourses of disagreements and tensions on both agricultural production and land uses in order to understand the governance relations;

- Analysis of the articles published in the daily regional press of the two regions. We identified, selected and reviewed the main key words related to opposition and conflict about agriculture in two Newspapers: *o Estado de São Paulo* in Brazil (2014 – 2021) and *Le Parisien* in France (2017 – 2021).

II. Agricultural conflict in the case of São Paulo Metropolitan Region

Historically, agriculture has been increasingly distancing itself from urban centres and leaving space for different land uses associated with urban development, such as housing, road infrastructure, industrial centres, garbage dumps, etc. In the municipality of São Paulo, this dynamic was no different. However, some initiatives were present since the beginning of the last century, such as regional food supply centres and cooperatives of farmers of various crops. From the 1940s on, the city became more populated and presented an expressive growth in its suburbs (Taschner & Bogus, 2001). With this population growth and the concern to feed this growing population, a food supply department and a community garden program were created in the 1980s, present both in municipal schools and in available spaces such as under power lines (Biazoti, 2020). The initiative to integrate agriculture within urban planning strategies in the municipality began its consolidation with the inauguration of an urban and peri urban agriculture program (PROAURP) in 2004, along with the deliberation of horticulture courses, elaboration of a school-greenhouse educational project in municipal schools, and the establishment of decentralized ecological agriculture houses in more rural areas (Valdiones, 2013). As of the 2010s, agriculture has gained visibility through the formation of cooperatives, farmers' associations, and the emergence of activism through the organization of community gardens (Biazoti, 2020).

A very active peri-urban agriculture...

The observations coming from the reports of most of the experts interviewed and in particular from a dossier of a São Paulo City Councilman¹ confirm that the rhythm of urbanization around the City of São Paulo is rapidly progressing, and that most of these new occupations of the soils are done at the expense of traditional agricultural spots. At the same time, farmers who were far from the city became near, and started to participate to the urban supply chains and to the local food provision (Silva, 2013). Nowadays, SPMR is characterized by the co-existence of different types of agriculture. On the one hand, from regional daily press 'O Estadão' and based on statements from the interviews conducted locally, traditional areas are declining in front of the rapid urban sprawl, and environmentally friendly Southern neighborhoods, which are adapted to the development of agricultural practices, suffer a lot from clandestine invasions controlled by criminal organizations. On the other hand, new forms of agricultural practices are rapidly developing, within the city or in the outskirts, like community gardens, rooftop farming, community supported agriculture (CSA), or solidarity local agricultural stores. A major movement also appears in the east side, where the electricity distribution networks are

¹ Gilberto Natalini : <https://natalini.com.br/dossie-2a-edicao/> or: https://natalini.com.br/idev/wp-content/uploads/2020/04/FINAL_Dossie2_VersaoFinal.pdf

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installed: in these places, the land owners allow the installation of urban gardens under the lines, which contribute to urban food production.

The metropolitan governance of agricultural land is lacking in the region, at all territorial levels. Municipal state and federal administrations do not converge regarding their approach of agriculture and even their conception of territorial development. The few PROAURP (the Urban and Peri-Urban Agriculture Programs of the municipality of São Paulo), school vegetable garden projects or even social vegetable gardens, are only punctual with no guarantee of continuous funding by the various authorities. The policies devoted to the development of local agriculture, its production, commercialization and development are quite erratic and changing, and mainly non-coordinated between the different institutions of territorial levels. The implementation of the PDUi (Plano de Desenvolvimento Urbano Integrado, or Integrated Urban Development Plan) elaborated in 2018 was an opportunity to centralize the management and outline a governance of the SPMR agricultural areas. However, in 2019 the institution responsible for São Paulo's metropolitan planning, the Empresa Paulista de Planejamento Metropolitano (EMPLASA), was dismantled, as were several other councils and institutions, in particular the National Council for Food and Nutrition Security (CONSEA), with the premise of reducing national public spending.

Every new government staff which arrives with local elections (every 4 years) dismantles projects and laws from the previous one. The Urban and Peri-Urban Agriculture Programs (PROAURP) of the municipality of São Paulo, which were created in 2004, have only received intermittent subsidies. Projects like the creation of a house of agriculture or a program to finance agricultural materials among municipal farmers, greatly suffered from discontinuities in terms of management and financing. The greenhouse school program, also created and funded by the São Paulo municipal government in 2008 had its activities halted in mid-2016 due to lack of resource allocation: its support to education, food security and vocational training in various areas have been stopped until 2021. As a results, and given the absence of government leadership for the metropolitan agricultural issue, several territorial actors, with emphasis on real estate speculation, take advantage to advance their urban expansion fronts, generating competition with various functions of the soil, but mainly agriculture.

...but several land use conflicts...

The urban sprawl of the greater São Paulo agglomeration creates new housing and urban spaces in areas previously considered rural. The price of agricultural land is quite low compared to other urban land uses (about 1 to 5 €/m² in the most distant rural south zone vs 1,110 €/m² in urban areas of Parelheiros (Estadão, 2020), which makes it very attractive for further urban land use occupations and real estate occupations. At the same time, irregular occupations and invasions by local people or new upcomers have increased, taking advantage of the weakening of state and municipal public inspection and low respect of laws. In addition, the fact that many public urban lands still lack land tenure regularization further contributes to real estate speculation. Our researches reveal that all these parallel and contradictory dynamics provoke major urban oppositions and conflicts in the main areas of the SPMR.

Figure 3 and Table 1 reveal the main types of existing conflicts over agricultural areas in the municipality of São Paulo.

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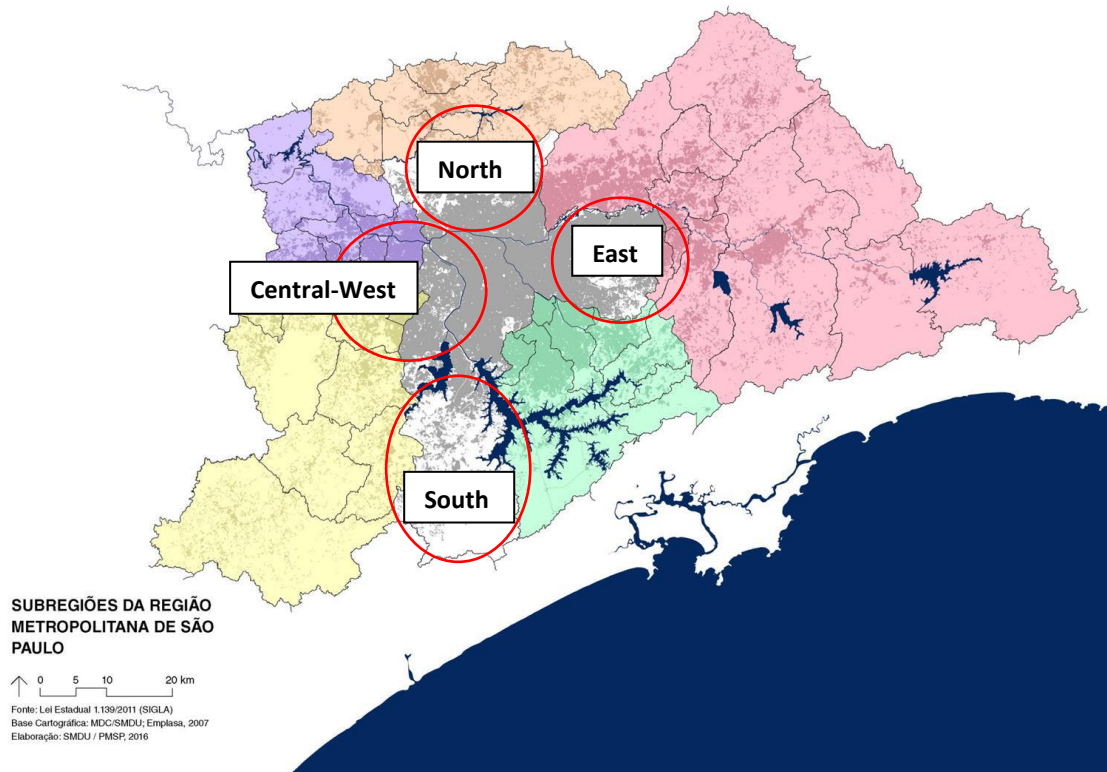


Figure 3 – Conflicts’ zones located inside the city of São Paulo and in surrounding sub-regions of the São Paulo Metropolitan Region (PMSP, 2016).

Main types of conflicts over agricultural lands	South	North	Central-West	East
Urban market	X	X	X	X
Infrastructure ring road	X	X		
Infrastructure logistic center	X			
Urban violence due socio-economic contrasts			X	
Ecotourism pole	X			
Environmental conservation areas (water and forests),	X	X		
Indigenous villages	X	X		
Irregular land occupations	X			
Urban violence (drug traffic and others)	X		X	X
Unstable land use contracts				X

Table 1 - Main types of conflicts in the areas of São Paulo's municipality (source; the authors)

Several conflicts are located in the south zone of the agglomeration, especially related to urban infrastructures projects, such as the *Parelheiros* airport, the creation of a local logistics center and part of the *Rodoanel* Ring Road. In this area, major conflict are linked with the expansion of the real estate market, the irregular land occupations of environmental conservation areas due to water resources and the setting of local ecotourism pole. The opposition also raised around

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the *Tupi-Guarani* ethnic villages, with the installation of urban infrastructure, or the expansion of the urban fabric in these environmental protected areas.

In the northern part, the presence of the mountainous areas of *Serra da Cantareira* limits the pressure of urban expansion. But a big conflict is linked with the project of an urban road infrastructure on the northern stretch of the Ring Road. This project could impact the Environmental Conservation Units and the local agricultural production, but also penetrate into the areas of demarcation and territorial protection of indigenous villages.

In the eastern zone, mainly urban, the conflicts are closely linked to the rapid urban sprawl. Except the production under the electric energy distribution lines, the remaining areas of agricultural use are scarce. Moreover, this place is quite exposed to urban violence, with theft and robbery. The smaller central-west area is also characterized by a high population density, and a continuous urban spread, and most of the conflicts are linked with the extensive urbanization. This area presents huge contrasts between the presence of important universities and high standard business centers, a great economic dynamism, a hub of cultural activities, and luxury housing condominiums on the one hand, and the existence of countless favelas where poverty coupled with the lack of basic infrastructure and adequate power assistance on the other hand. These major differences give birth to many problems of urban violence and conflict.

...mainly on agricultural lands

Our research reveal that the conflicts related to peri-urban agriculture are increasing in the SMPR, especially the regarding the oppositions about different land use or intentions of uses. This is particularly true in areas of agricultural production, under the threat of metropolitan development. Another major problem is the development of violence, theft and drug trafficking, which impose some limits to the local agriculture practices. We have ranked the various cases of disputes related to the agricultural function of the soil in terms of their geographical areas. The main sources of conflict are arranged in table 1 below. The were found through the analysis of the regional daily press, interviews with local experts, and monitoring of social networks and blogs about conflicts linked to the presence of local agriculture.

Main sources of conflict in the SMPR
Urban sprawl and real estate speculation
Installation of urban infrastructure - roads, airports, logistics centers
Urban violence due to socio-economic contrasts, theft and drug trafficking
Lack of comprehensive management of metropolitan agricultural production areas + lack of supportive public policies
Presence of criminal organizations that, together with local elected officials, allow illegal land occupations
Lack of taxation on agricultural and environmental areas

Table 1 - Main sources of conflict in the SMPR (the authors)

Due to the fact that most of the farmers are concentrated in the south zone, great oppositions in terms of land use appear in this area, linked with the urban developments. Farmers appear to be under the pressure of both classic urban expansion and criminal urbanization: a part of the land is occupied illegally, which generates deforestation, harms areas of water production for urban supply and expels local agriculture. The development of urban infrastructure projects

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such as the *Rodoanel*, Parelheiros airport and a logistics center, are also major threat for local agricultural production areas. Farmers and environmental activists mobilize in order to prevent the progress of these works and manifest their opposition. Another major concern is the impact of urban expansion and infrastructure projects on the presence of indigenous villages. The subsistence agriculture is really crucial for the daily lives of the local inhabitant and for the maintenance of the villages. Indigenous peoples and organizations in defense of indigenous rights mobilized against public power and the development of infrastructures for the city.

In the northwest sector, despite its vocation for environmental preservation and its forest resources, various projects cause different types of conflict, due to their urban character and their consumption of agricultural land, like the construction of middle or upper-middle class residential condominiums with an attractive quality of life with close quick access routes. The activity of production of beef cattle is under the threat of this rapid extension of the real estate market and the urban sprawl.

As reported above the center-west area, with his strong urbanization, has few remnants of agricultural production, mainly in parks and public squares. Here, the conflicts are related to urban housing pressure and urban violence. In the western peri-urban area, the urban sprawl of small local towns and the development of urban road infrastructure in the São Paulo-Sorocaba axis are responsible from the progressive disappearance of agricultural activities. The expansion of the urban area gains more and more space in this disputed territory. And despite the activity of farmers associations to maintain local agriculture, the proposals for financial gain from the sale of agricultural land contribute to the decrease of this activity.

In the eastern zone the biggest conflicts are related to the expansion of the real estate market, and to the vulnerability of the fragile urban agriculture found under the power distribution lines, which is governed by precarious lending contracts between local farmers and private energy companies. Agricultural activities are mainly threatened by the expansion of the urban network, related to the geographical proximity to the municipalities, and the development of transport infrastructures, more particularly rail and road networks build in order to develop relations on the São Paulo-Rio de Janeiro axis. A series of unsuccessful experiences of organizing farming actors in associations and cooperatives also characterizes this area.

III. *Agricultural conflicts in the case of the Greater Paris Region*

There is a rising concern for farming and food security in the City of Paris and in the GPR Region, mainly raised by urban populations. As a consequence, the search for new relationships to preserve and consolidate agriculture in Ile-de-France leads to the creation of several local initiatives. As the most populated French region, Ile-de-France presents a huge consumer market, and with it, many types and organizations of agriculture are emerging, such as organic products markets, short local supply chains, CSA's, organic food for school canteens, etc. New policies brought by Greater Paris Project are promoting local agriculture, food production and landscape infrastructures as important levers on its local governance.

Agriculture: an unexpected importance in the greatest European agglomeration...

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For a long time linked to the supply of fresh products to Paris, marketed via the Central food offices, GPR agriculture is now largely decoupled from the consumption of urban food products (Bruegel, 2009). Nevertheless, it remains an extremely strong force at the regional level, with substantial cereal production and short value chains in full revitalization, but above all a dominant land-holding and quite decisive for the future development of the capital. According to recent censuses, the vast majority of agricultural areas are cereals (63,3%), including wheat (4,5% of national production), beet and protein oil and, to a lesser extent, market gardening and specialized crops (horticulture and arboriculture) (Agreste, 2019). Overall, the productions are distributed in two large circles, also called small and large crowns. Market gardening and specialized crops occupy the residues of agricultural areas of the small crown, whereas the dominant holdings of field crops extend instead in a large crown opening onto quasi-rural areas. The economic and political domination of field crops results in a preponderance of large farms and open fields. These landscapes are partially interspersed, in the valleys, by livestock systems (Agreste 2011) and a few groups specialized in market gardening or fruit production.

Agriculture in GPR is never far from the city, and the vast majority of farms can be classified as peri-urban or urban. One in six farmers declare that they have their farm headquarters in an urban center and more than a thousand urban dwellers declare that they have a professional agricultural activity in or outside the city. It is difficult to envisage a growth or even a sustainability of agricultural activity on the border of the central urban area, due to the pressures on land and the anticipation of an increase in the price of land, that it concerns farmers or the many owners of agricultural land. Land pressure on farms closest to urban centers, insufficient land available in urban areas, the uncertainties that weigh on the planning thus penalize the farmers in their investment decisions and result in a low possibility of redeployment of agricultural land.

This rapid decline in the surface of agricultural land must not be interpreted as a planned disappearance of agricultural activity, and even less of an orderly retreat on homogeneous concentric fronts. In addition to increased annual consumption of farmland, the increasingly complex interpenetration of urban and agricultural functional spaces is at the origin of a permanent reconfiguration of agricultural parcels and a multiplication of places of contact between city and agriculture, especially in the green belt. The urbanization generally follows major extended transportation and connection axes to the main city, which builds a mosaic of differentiated land uses on the scale of the metropolitan area. Contacts between different land uses (agricultural, natural, industrial, residential, in terms of infrastructure, etc.), as well as between different categories of land users or owners (farmers, individuals, public authorities, etc.), sometimes with different interests and visions of spatial planning, promote the confrontation of points of view, oppositions, and hence tensions and conflicts.

... but with a low share of conflicts...

Conflicts have multiplied over the past thirty years in different places, generally located on the interface between the Paris agglomeration and the natural and agricultural areas (Darly & Torre, 2013). The peri-urban municipalities concerned, with a fairly high rate of urbanization, are expected to become urban. The oppositions about the use of space are above all the question of agricultural land and its usages. Considered as reserves of land, located on the outskirts of the metropolis in extension, they are at the center of all the lusts and anticipations, from

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agriculture to the residential zone, passing by the industrial productions, service and nature activities, or especially infrastructure serving the city (roads, highways, railways, waste treatment facilities, energy production plants).

Through the crossing of information obtained by the proposed methodology with interviews with local experts, analysis of the regional daily press, and bibliographic research, it was possible to identify more precisely the main origins of conflict in the region (see table 2).

Main sources of conflict in GPR
Urban sprawl and real estate speculation (despite construction in "hollow spaces" x prejudice of inhabitants, eco-neighbourhoods, developers)
Installation of urban infrastructures (large consumers of land) - roads, airports, logistic platforms, railroads, subways...
Neighbourhood with urban dwellers who complain about nuisances and lack of knowledge about agricultural practices
Lack of regional management of agricultural production areas and of relative importance in public policies to support local agriculture.

Table 2 - Sources of conflict in GPR (the authors)

The expansion of the central city is not easy, because infrastructure projects or housing estates face organized opposition from local residents, who wish to preserve the environment or their living area and mobilize for the preservation of open spaces, in the first place agricultural spaces, close to their place of residence. The spatial constraint is huge, be there the need for infrastructure or the required land for construction areas in the peri-urban municipalities. The possibilities for the continuation of land artificialization are small and tending to shrink, hence the exacerbation of tensions over land use.

The conflicts oppose two major groups with opposite interests: the defenders of the quality of the living environment and the quality of life, and the individuals or legal persons interested in the development or urban occupation of the land not built. Objections to the disappearance of agricultural land represent 49% of the total litigation in the region. But a contrary movement is developing in parallel, which characterizes the resistance against the regulatory protection of agricultural land, through the local documents like PLU. Challenges to the protection of farmland accounted for 34% of the region's litigation. One must avoid the idea that non-farmers are pushing for the consumption of agricultural land, while farmers are defending their land. The latter are often interested in selling their land, due to higher land prices or expectations of gains and regularly protest against the classification of farmland in planning documents (the price of agricultural land is around 0.9 € /m² in unbuilt rural areas (SAFER, 2018) and reaches approximately 2,800 € / m² in Meaux, the first urban pole of Seine-et-Marne department, for urban housing uses) (Le Parisien, 2019).

There is no zoning directly related to peculiar categories of conflicts; they are present in several municipalities, located almost entirely in the Departments, most distant from the capital Paris, belonging to the second circular crown of this region. Firstly, there is the presence of a small belt, closer to the urban centre of Paris, with few conflicts. Secondly, a large zone in the *Département* of the *Yvelines*, 30 to 40km to the west of Paris, in a more "peri-urban" area, seems to be wedged in a stranglehold between the limits of the Regional Nature Park of the High Valley of the *Chevreuse* and the town of *Mantes-la-Jolie* (limit of the Nature Park of *Vexin*). The rest is

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located in areas considered to belong to the rural green belt of the Region. The layout of these conflicts on the territory can be visualized in Figure 4.

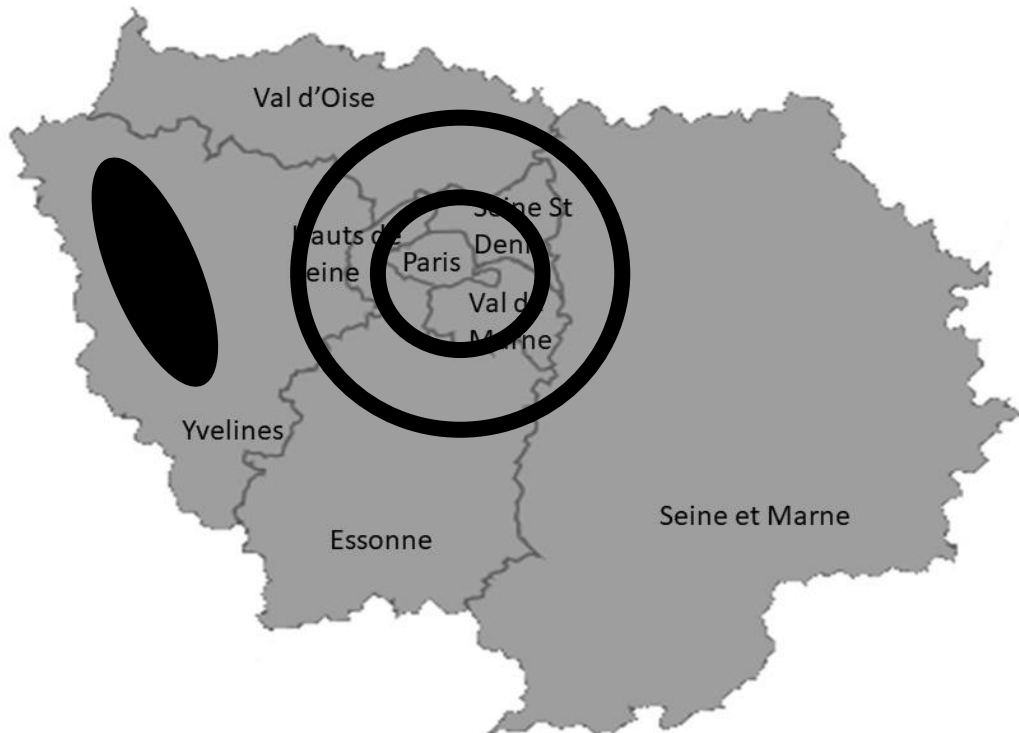


Figure 4 – Conflict zones in the Paris Region (the authors)

...mainly related to the maintaining of peri-urban agriculture

The inventory of conflicts shows that agricultural activity is rarely an object of conflict in itself in the GPR. The actors of the agricultural sectors are little involved in the oppositions, and conflicts between farmers and residents represent only about 10% of the whole range of conflicts in the region (Torre & Darly, 2014). Overall, challenges related to agricultural activity remain low, and are triggered by local residents who act to ensure that the farming practices applied in the grain fields around them are more respectful of their living environment and the environment (field burning, GMO planting, drilling for irrigation) or to prevent the establishment or extension of agricultural (stable, shed) or industrial buildings related to the development of storage or logistics capacities of storage holdings (commercial elevators, beet transport). Concerns are also sometimes expressed about land groupings and their possible consequences in terms of biodiversity (loss of hedgerows and groves) and natural resources (water). Finally, farmers themselves are sometimes at the origin of appeals, especially against the activities carried out by rural or neo-rural, in the first rank of which hunting companies, which flourish on the outskirts of the agglomeration.

One case has become now particularly emblematic: the question of agricultural land in the *Plateau de Saclay* in the south of the region, for the construction of a large center for teaching, research and technological production, mainly organized around the creation of the Paris-Saclay University (the biggest French university, now ranked 13th in the Shanghai ranking). The

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construction of this peri-urban cluster, and the development of transport, housing and services infrastructures necessary for its functioning, demand huge transformations in the use of the local fertile agricultural lands. Compensation measures are adopted, like the creation of a natural agricultural and forest protection zone (ZPNAF) as a way of preserving agricultural land. Partnerships between rural and urban and system of direct sales and short food circuits are encouraged. However, impacts on the drainage system of agricultural lands and the increase in traffic jams remain high. The opposition of local residents and farmers in favor of the preservation of farming areas seem doomed to fail, but the creation of local associations of land users opens the way to negotiation and mitigation between infrastructures and farming areas.

In the North of the GPR the *Europacity* project, aimed to install a large commercial, cultural and leisure complex close to the *Charles de Gaulle* airport, on very fertile agricultural areas. Following multiple disputes between municipalities, public and private actors, farmers and civil society, the project was recently abandoned by the central Government. Among the main challenges were the fight against the artificialization of agricultural land and the urban expansion, and the failure to consider local environmental impacts. An agricultural development zone is supposed to be created there, but the future of this peri-urban territory remains quite uncertain. Despite the definitive validation of the agricultural use of that territory, supporters of the project say they are returning to mobilize against this decision and claim about the expected numbers of jobs creation. Stopping this project, however, does not mean in any sense that urbanization processes have ended in the region.

Conclusions and discussion

The objective of this article was to take stock of the oppositions met by peri-urban agriculture in the proximity of big urban areas and the conflicts it can generate, taking the example of two large agglomerations, placed in different situations but confronted with the same type of urban sprawl and consumption of agricultural land: the Greater Paris Region and the Metropolitan Region of São Paulo.

Our research suffers from several limitations, like the peculiarities of the examples chosen and the lack of official statistical data about conflictuality. But it made possible to verify that the main conflicts in those metropolitan regions are based on divergent land uses, in neighborhood pressures with environmental protection zones and with housing market. Considering these scenarios, the most important and opponent actors involved in these disputes are public authorities, housing market, farmers, public demand, and organized crime and energy companies (in São Paulo).

However, we noted important differences between the two situations. In São Paulo the conflicts related to the maintenance of urban agriculture are mainly due to the consumption of agricultural land by the urban sprawl process and the opposition of farmers who see their activity thus threatened. In Ile-de-France, conflicts also come from two other origins: residents who advocate the maintenance of agricultural activity to defend their interests in terms of quality of life (although in some cases these inhabitants may complain about the various types of nuisances caused by the presence of agricultural activities in the territory), and farmers who

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are denied the passage of their land into a building zone and are deprived of the possibility of making a significant increase in value by selling it.

Mainly, the results reveal that, although the contribution of agriculture in the two case studies is of little importance in the local economies, the permanence of agricultural activities is increasingly supported by the actions of civil society organizations that create projects, associations, and initiatives, often with a vanguard character, to respond to various economic, food, social, and environmental needs. Not only traditional agriculture, but more modern agricultural initiatives such as rooftop gardens and greenhouses on or inside buildings have also presented advantages that go beyond agricultural production per se, such as education and awareness-raising for users of these spaces, as portrayed in Berlin (Specht et al., 2016). The public power comes next, often because of the inertia of the public machine or by waiting for these issues to be really important to be addressed and incorporated into public agendas.

In the case of SPMR, enforcement measures could be improved to prevent the advance of the urban network and the deforestation of natural areas, especially in the southern rural area of the city. However, according to the statements of some specialists, the presence of public power in the territory is not effective. In addition, the relations of local councilmen who illegally negotiate with organized crime organizations for the sale of areas located in forest spaces undermine the actions of the local government. In GPR, the structural complexity of the different levels of decision-making on farmland governance leads to the conclusion that the political actions tend to be more effective on existing conflicts the closer they are to the territory (such as the municipal or intercommunal scales). The departmental level tends to be less responsible for creating policies that go towards the protection of agricultural land (probably because it has few financial resources to support its policies). However, while respecting the legal principle of free administration of local authorities, it is up to the smallest administrative levels to elaborate and apply their policies for the management of existing conflicts.

These results lead us to define some public policy recommendations:

- It is crucial to promote the development of agriculture in the cities and their peripheries because this activity has several virtues: it can help to feed part of the population and supply them with fresh products, especially in developing countries, as seen in the case of food production under power distribution lines in São Paulo; it promotes employment, social reintegration and the activity of many inhabitants; it is a factor of example and environmental, food and agricultural education for the young generations; it contributes to the maintenance of green spaces and thus to the fight against global warming and to the maintenance of a certain level of biodiversity; eventually it contributes to the well-being of local populations through their reconnection of the relations between man and nature, reported in the Paris case,;
- Policies in favor of the establishment and maintenance of agriculture must be developed, as a result of the understanding and appreciation of the benefits obtained by agricultural activities in the territory, in particular the preservation of land, the guarantee of well-established property rights or rents, to support access to land, to settle and accompany generational renewal, as well as broadly working towards better rural retirement. Even so, promote local products, sell them on the markets and enhance their visibility to the population. It seems necessary to ensure permanent budgetary envelopes to agriculture in order to make the commitment to local agriculture official in theoretical and practical ways. Thus, agriculture must be integrated into

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urban planning plans, and it is important to give voice to the local populations, initiatives and therefore also to the opponents, especially during their development phases;

- It becomes necessary to promote the control of authorized and illegal urban expansions in agricultural areas and the advance of large urban structures or territorial projects that are not essential to the local population. We recommend the legal protection or “sanctuarization” of certain agricultural areas in danger of extinction, through urban planning and the permanent supervision of the public power and civil society.

- Overall, the role and place of agriculture in and around cities needs to be revalued. This type of policy, rather than at the federal or national level, must be carried out mainly at the level of cities and regions, which are the main instigators of this territorial governance because of their knowledge of the field and their sensitivity to the demands and the claims of local populations. With this type of proximity governance, unnecessary conflicts can be avoided, such as those that can occur when instances of a larger territorial scale (of the national or macro-regional/state type) take generalized decisions that do not correspond to the particularities of the territory. For example, in Paris, the various agricultural areas in the crowns around the agglomeration demand different solutions regarding the ways of conserving farming activities and the challenges with other land users and land uses. In São Paulo, the morphologies dictate different perspectives for resolving local conflicts, and the presence of other striking characteristics of certain areas, such as environmental and water preservation, makes it paramount to consider natural vulnerabilities when making decisions about the agricultural management.

Urban and Peri-Urban Agriculture

We consider that urban and peri-urban agriculture corresponds to the activities that can be located within or on the bangs of the city, with the character of providing products mainly for the urban centre, and where there is a strong competition between agricultural and non-agricultural land use (Moustier & Fall, 2004). Both are presenting convergences, competitions and tensions with other land uses under urban influence such as housing, sanitation complex, industrial centres, transportation works, natural resources preservation spaces, leisure centres, among others.

Definitions and related questions

According to RUAF², the definition of urban and periurban agriculture comes through the cultivation of food, trees and other agricultural products such as pot plants, herbs, fodder and extractive plants for fuel production, animal husbandry, fish farming within the urban built environment or on the peripheral edges of cities. Production systems like horticulture, animal productions, aquaculture, timber productions, but also marketing of raw materials, processing and procurement systems are present in these agricultural activities. This agriculture, also called metropolitan (Heimlich 1989), or peripheral urban (Bryant 1997), benefits from the proximity of urban activities, such as market and cultural infrastructures.

Land use issues

Agricultural land use in peri-urban areas is subject to strong disputes in relation to other uses, such as housing and urban infrastructure, and to land pricing. The pressures for advancing

² Resource center on Urban Agriculture and Food security, which aims to provide assistance, technical support and policy recommendations in this field to local and national authorities, and other local governments. <http://www.ruaf.org/>

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urbanization and the artificialization of land, as well as the tensions, disputes, and conflicts stem from the weak valuation of agricultural land vis-à-vis other land uses. This fragility creates real conditions for the transformation of this land use in the face of advancing urbanization and the disappearance of agriculture on the bangs of cities. For farmers, whether or not they own the land, whether or not they have precarious short-term contracts (Munton, 2009), agricultural use comes under pressure from the real estate market with a consequent increase in land prices (). These conditions deteriorate the possibilities of financing and long-term permanence of agriculture in these peripheral territories (Péron & Geoffriau, 2007; Piorr et al., 2011).

The need for strategic land use action plans is reported by experts in agricultural, urban planning, and governmental management issues (Mok et al., 2014). Although the perspective of urban planners has commonly considered agricultural activities as rural occupation (Pothukuchi & Kaufman, 1999; De Zeeuw et al., 2000) the new urban planning documents, mainly at municipal and inter-municipal scales, are integrating agriculture as a territorial activity.

In France, several urban documents are governing the land use planning: SDRIF (Regional Planning Plan), SRCE (Ecological Coherence Plans), SCOT (Territorial Coherence Plans), PLUs (Local Urban Planning Plans) that consider agriculture as a real land use, moving from the vision of land reserve to the purpose of the territory. In Brazil, it is the Strategic Master Plans (PDE), or in the Integrated Urban Development Plans (PDUi) the recognition and reservation of their territories for agricultural activities. The debates about the position of these areas and the purpose of the land use that allow to investigate the potential vulnerabilities and opportunities for the development of agricultural activities, are disputed both in hearings closed to experts and increasingly in a participatory manner, open to civil society.

Local authorities are increasingly using tools such as land maps and mapping of land use and land sharing as a result of the awareness of these issues. Agro-urban projects, aimed at promoting these agricultural activities and curbing urban sprawl, are being driven by the local inhabitants, civil society and local associations. An example is provided by the European PURPLE network³, which seeks to encourage concerted governance of agricultural areas and productions in peri-urban environments.

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³ The Peri-Urban Regions Platform Europe who is representing the interests of peri-urban European regions was set up in 2004. It is striving for greater recognition of these regions in European policy and regulation, and to ensure their long-term sustainability.

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ANNEXES

- 1) Table 1 Number of actors interviewed according to the type of institution for each study region

Type of stakeholder	São Paulo	Paris
Public sector	6	14
Associative organizations	6	13
Territorial organizations	9	15
Total number of experts interviewed	21	45

Donner des infos sur qui ils sont – OK :

The actors interviewed were:

From São Paulo Region:

Master student committed and recognized in urban agriculture movements in São Paulo
Director of the Division of Biodiversity Conservation Units of the Municipal Secretariat of Green and Environment and President of the Council of the Green Belt Biosphere Reserve of the City of São Paulo (RBCVSP)

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Agronomist, environmental and agro-ecology project specialist at the Secretariat of Agriculture and Supply of the State of São Paulo
Geographer, member of the "Kairós Institute" and supporter of the municipal project of agricultural development "Ligue os Pontos/Connect the Dots" of the São Paulo City Council
Journalist, urban farmer, committed and recognized in AU movements of São Paulo and Co-deputy in the Legislative Assembly of the State of São Paulo
Environment Officer in the Secretariat of Infrastructure and Environment of the State of São Paulo
Sociologist, in charge of supporting the project "Ligue os Pontos/Connect the Dots"
General Director of the Organization "Cidades sem Fome/Cities without Hunger"
Coordinator of the Atlantic Forest Biosphere Reserve
Agronomist, responsible for the creation of an environmental and agricultural reserve area in the south of São Paulo, doctoral student in territorial planning
Geologist and data coordinator of the project "Ligue os Pontos/Connect the Dots" of the São Paulo City Council
Member of the "Kairós Institute" and support to the Association of Farmers of the East Zone - AAZL
President of the Farmers' Union of Suzano (city of greater São Paulo)
President of the RBCVSP
Forestry engineer and former coordinator of the RBCVSP
Farmer and former treasurer of the farmers' cooperative of the South zone of São Paulo, COOPERAPAS
Urban farmer involved in shared gardens and tree planting in the city
Physician and organizer of a shared garden in the Faculty of Medicine of the University of São Paulo
Economist, former president of the RBCVSP
Agronomist engaged in the metropolitan planning of agricultural areas

From Paris Region:

Head of the Urban Planning Department of the CC 2 Morin
President of the Collectif Pour le Triangle de Gonesse (CPTG) and the Val d'Oise Environnement
DDT 91 Head of the Agricultural Economy Department
Referent for Urban Agriculture and Shared Gardens. General Council of Food, Agriculture and Rural Areas - CGAAER of the Ministry of Agriculture, Food - MAA.
Director - Coordinator of the Environment Pole of the Urban and Rural Environment Department of the Paris Region Institute (Former IAU)
Delegated President in charge of rurality, agriculture and food of the Essonne Departmental Council + Head of the Agriculture Sector at the Department of Territorial Animation, Attractiveness and Contracts.
Deputy General Manager of the Sustainable Territory and Mobilities of the Coeur d'Essonne Agglomeration Community
President of the Chamber of Agriculture of Seine-et-Marne from 2013-2019, union experience and Mayor of La Chapelle Moutils
Head of the Agricultural Economy Unit at the DDT of Val'Oise
Doctoral student at the AEV (Agence des Espaces Verts)
In charge of the Agriculture and short circuits mission of the PNR du Gâtinais Français

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In charge of the land and installation mission of Terre de liens Île-de-France
Head of the regional service of agricultural economy. SREA / DRIAAF
President of the CARMA Association
Head of the Agriculture Mission of the Technical Expertise Department of the Ile-de-France Regional Green Spaces Agency. (AEV)
In charge of supporting local communities within Terre de Liens
Head of the Agriculture and Rural Development Department of the DDT of Seine et Marne - 77
Regional attaché at the Direction Prospective et Aménagement Territorial of the SAFER IDF
President of the Land and Development Commission of the Chamber of Agriculture of Seine et Marne - 77 between 2013-2019. Today she is the General Secretary of the Territory Commission of the Regional Chamber of Agriculture of IdF. Advisor at CESE - Conseil Economique Social et Environnemental
In charge of soft mobility and agriculture at the Communauté d'Agglomération Paris-Saclay and Mayor of Marcoussis, Former President of the Agence des Espaces Verts
In charge of the Sustainable Agriculture Mission within the PNR de la Haute Vallée de Chevreuse
Responsible for the Agriculture and Forestry Mission within the Oise Pays de France Regional Park
Agri-Urban Territory Coordinator for the Roissy Pays de France Urban Community.
General Coordinator of Terre et Cité - Plateau de Saclay
Administrator of the network of AMAP's of Île de France - President of ABIOSOL for 3 years.
Lecturer at the University of Paris 1, member of Ladyss - Governance and open spaces, Governance Plateau de Saclay.
ML - Responsible for planning and landscapes; DF - Responsible for agriculture in the PNR du Vexin Français - (95 and 78)
Director of the CAUE of Val d'Oise (95)
Responsible for Ecological Transition Projects in the Biodiversity - Agriculture Expertise of the Etablissement Public Foncier
Teacher - Researcher and Lecturer in Rural Geography and Agriculture at the University of Paris 8
President of the GAB Francilien and market gardener at Vergers de Cossigny (77)
Landscape designer, video maker at the CAUE des Yvelines (78)
Lecturer in Geography at the University of Paris-Nanterre
Co-founder of the AFAUP - French Association of Professional Urban Agriculture
In charge of Agriculture and Forestry for France Nature Environnement - FNE in Île de France
In charge of the Urban Agriculture study at the DRIAAF and for the City of Paris
Food Policy Officer at the Regional Food Service - SRAL at the DRIAAF
Project manager for methods and prospective in urban agriculture and building greening at the Direction des Espaces Verts et de l'Environnement of the Mairie de Paris
Head of the Resource Protection and Biodiversity Department of the Water Resources and Production Department of Eau de Paris
Head of the Land, SAFER and Structure Control Department of the Regional Agricultural Economy Service - SREA of the DRIAAF IdF

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Deputy Director, responsible for Environmental Assessment, the Greater Paris Express and agricultural issues at the DRIEAT - Direction Régionale et Interdépartementale de l'Environnement, de l'Aménagement et des Transports (former DRIEE).
Head of Ecological Transition and Territories at CEREMA (Center for studies and expertise on risks, environment, mobility and development) in IdF
Assistant to the head of the forest, biomass and territory department, in charge of the Territorial Planning Division at the DRIAAF IdF
In charge of the Tertiary pole and relations with the communities of the collective Les Champs des Possibles - Incubator and agricultural cooperative of agricultural and food activities.
Trainee from Sciences Po Paris within Les Champs des Possibles

- 2) List of the main websites, Facebook, social network pages, and blogs consulted for São Paulo Metropolitan Region

Websites: Jornal Estadão; Jornal Folha de São Paulo; IBGE Cidades; Instituto de Economia Agrícola; Secretaria da Agricultura e do Abastecimento do Estado de São Paulo.

Facebook pages: ADE SAMPA; Armazém do Campo; Associação dos Agricultores da Zona Leste – AAZL; CEAGESP - Companhia de Entrepósitos e Armazéns Gerais de São Paulo; Cidades Comestíveis; Cooperapas; DIEESE; Frente Alimentar; GEAU – Grupo de Estudos em Agricultura Urbana; Horta CCSP; Horta da FMUSP; Horta das Corujas; Horta das Flores; Horta do Ciclista; IBGE - Instituto Brasileiro de Geografia e Estatística; Instituto Bauru; Instituto Chão; Instituto Escolhas; Instituto Feira Livre; Instituto Kairós; Mandata Ativista; MetrÓpole Estadão; Organização Cidades Sem Fome – Cities Without Hunger; Projeto Ligue os Pontos – Prefeitura Municipal de São Paulo; Reserva de Biosfera do Cinturão Verde de São Paulo – RBCV – UNESCO; Secretaria de Desenvolvimento Regional do Estado de SP; Secretaria Municipal de Urbanismo e Licenciamento; Secretaria Municipal do Verde e do Meio Ambiente SP; União de Hortas Comunitárias de São Paulo.

Blogs: <https://www.claudiavisoni.com.br/blog/>;
<https://marianabelmont.blogosfera.uol.com.br>

- 3) List of the main websites, Facebook, social network pages, and blogs consulted for Paris Greater Region

Websites: Le Parisien; Le Monde; INSEE; Agreste; Ministère de l'Agriculture et de la Souveraineté Alimentaire ; DRIAAF Ile de France Agriculture.

Facebook pages: Réseau AMAP Ile-de-France, GAB IdF - Groupement des Agriculteurs Biologiques en Ile de France, Bienvenue à la Ferme Ile de France, Cœur d'Essonne Agglomération, La Ferme de l'Envol, Base aérienne 217 Brétigny-sur-Orge, La Base 217, Région Ile-de-France, Préfecture de la région d'Île-de-France, Paris-Saclay, préfecture de Paris Chambre d'agriculture de Région Ile-de-France, Ministère de l'Agriculture et de la Souveraineté alimentaire, INRAE, Jeunes Agriculteurs d'Ile de France, Terre et Cité_Plateau de Saclay, Triangle vert, Abiosol, Les Champs des Possibles, Terre de liens Île-de-France, Val Béton, Grignon 2026, Ville de Paris, AFAUP Association Française d'Agriculture Urbaine Professionnelle, La Cité Maraîchère de Romainville, CARMA, Reporterre, le quotidien de

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l'écologie, Veni Verdi, Agence des espaces verts d'Île-de-France, Eau de Paris, Non à Europa City, Oui aux terres de Gonesse, France Nature Environnement Ile-de-France.