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## **CHARACTERIZATION OF TWO URBAN FARMS IN THE CUAUHEMOC BOROUGH OF MEXICO CITY**

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### **ABSTRACT**

Agricultural practices in cities have evolved to what is commonly described today as urban agriculture (UA). The term is often used ambiguously and can encompass a wide variety of agricultural practices that are carried out within the city, which can generate confusion and doubts about the real scope of UA. The claimed benefits sometimes portray UA as a sort of urban activity that is capable of providing a long list of benefits. However, cases have been made that critique some of the claims and numbers reported on UA. Also, as interests in AU grows, a better understanding of how UA cases operate would allow better design, planning an operation of urban farms. For these reasons, a more methodical, in depth characterization of cases should be considered. This paper proposes a methodical characterization based on the multiple functions and dimensions of UA based on the results of two case studies.

## 1. INTRODUCTION

Agricultural practices in cities have evolved to what is commonly described today as urban agriculture (UA). The term is often used ambiguously and can encompass a wide variety of agricultural practices that are carried out within the city, which can generate confusion and doubts about the real scope of UA. The claimed benefits sometimes portray UA as a sort of urban activity that is capable of providing a long list of benefits such as improving food security, social integration and biodiversity; reducing soil erosion and air pollution; providing environmental education, urban beautification and community building; among others (Duchemin, Wegmuller, and Legault 2009; Viljoen 2005; Viljoen and Bohn 2014; L. J. Mougeot 2006; Haberman et al. 2014). Notwithstanding and as it has been identified by various researchers, some of the information generated about UA is unreliable and often of unclear definitions and methodologies (Zezza and Tasciotti 2010; Badami and Ramankutty 2015; Ellis, Sumberg, and Anglia 1998; Martellozzo, Federico; Landry, J; Plouffe, D; Rowhani, P; Ramankutty 2014). For example, many articles on UA, cite 1996 UNDP documents, claim that close to 800 million people worldwide practice some sort of UA and about 150 million generate income from it. However, according to that same document, the information is based on experiences, observations and extrapolations that are not often explained in many AU research documents that cite this data. Another issue is that many documents fail to differentiate between urban and periurban agriculture which can have very different forms of operation, motives and results (Badami and Ramankutty 2015; Zezza and Tasciotti 2010). An so, UA requires more in-depth and methodical research at a local level in order to better grasp its scope, benefits and challenges. For this reason, and as the number of cases of urban agriculture increases worldwide, researchers, advocates and experts on the topic should make an effort to classify and characterize cases in a way that will result in better and more reliable information. The present article presents a proposal for the characterization of two urban farms in the Cuauhtemoc borough: Huerto Tlatelolco and Huerto de las Niñas y los Niños.

## 2. METHODOLOGY

From 2017 to 2018 various cases of urban agriculture in Mexico City were characterized through social science based research methods that made use of interviews, documented conversations and participatory observation that are founded in social sciences. The activities of the urban farmers were documented and analyzed in order to describe the specific ideas and visions of what cities should be according to their experiences. In addition to this analysis, a more pragmatic characterization of each farm's dimensions and functions was accomplished based on the presumption that urban agriculture is a multidimensional and multifunctional urban phenomenon that, according to case studies around the world, can be used as a multi-dimensional tool for social development (L. J. A. Mougeot 2005, 2000; L. J. Mougeot 2006; Viljoen and Bohn 2014; Pourias, Aubry, and Duchemin 2016; Duchemin, Wegmuller, and Legault 2009). Based on the previous ideas, each of the urban farms was evaluated in terms of the following functions: 1) educative, 2) social integration, 3) environmental, 4) food security, 5) health, 6) leisure, 7) economic and 8) urban planning. And also, each urban farm was described in terms of the following dimensions: 1) activities, 2) location, 3) spatial characteristics, 4) products and 5) target audience. This was done by designing and using a series of templates and scales for evaluating the different types of urban agriculture through field studies. Each farms dimensions were described qualitatively and their functions were evaluated in terms of the types of activities, their intention and periodicity as it will be discussed further in the results section of this article.

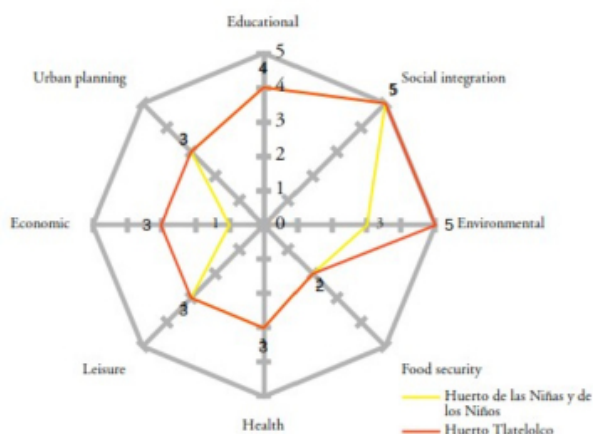
## 3. RESULTS

### 3.1. Multi-Functional Characterization

The following graph shows a comparison of the functions provided in each of the characterized cases. Their functionalities were evaluated on a scale from 1 – 5 that is explained in Figure 1. Functions were evaluated in terms of the the amount of activities that contributed to each function, the intentions behind each activity and the periodicity of each activity. For example, a farm that engages in organic waste composting is an example of an activity that contributes to the *environmental* function. If the activity is well planned and periodic, it would receive a valuation of 5 points on the scale used. However, if the same activity, composting, was sporadic it would receive a score of 4 points. The evaluation scale and results are explained further in the following figure.

As shown in the graphic, there are minor differences in the functions that each of the urban farms provides. In particular, Huerto Tlatelolco has a better economic function due to the fact that it does not depend directly on government funding. However, it still has a low rating of three because it depends on other NGO activities that are not directly related to the activities of the farm. The environmental function is also greater in the Huerto Tlatelolco because there are more activities and periodicity in this category. For instance, Huerto Tlatelolco has a much more structured and periodic operation of their composting sites and they have a rainwater capture system, while Huerto de las Niñas y los Niños does not. It is worth noting that the intention of this characterization is not to consider differences as strengths or weaknesses; the intention is to contemplate functionality when designing, planning or operating urban farms. For example, an educative farm located inside an elementary school will probably have a rating

of 0 for economic functions. This does not mean it is a weakness; it is a cue for the farm operators to take this into consideration when designing and planning their farm. Additionally, different functions will likely require different



Scale Evaluation

1	There are little or no activities that contribute to this function.
2	There are some circumstantial activities that contribute to this function.
3	There are sporadic planned activities that contribute to this function.
4	There are periodic planned activities that contribute to this function.
5	There are planned activities fundamental to the urban farm that contribute to this function.

	Huerto de las Niñas y de los Niños	Huerto Tlatelolco
Educational	4	4
Urban planning	3	3
Economic	1	3
Leisure	3	3
Health	3	3
Food security	2	2
Environmental	3	5
Social integration	5	5

policies as well. Non-profit and for-profit farms will probably also have different ratings and hence should be taken into consideration when writing and applying public policies.

[Figure 1] Functional Evaluation of the urban farms

### 3.2. Multi-Dimensional Characterization

The following table shows a comparison of the results of the dimensional characterization between Huerto Tlatelolco and Huerto de las Niñas y los Niños.

[Table 1] Dimensional Characterization comparison

	Huerto de las Niñas y de los Niños	Huerto Tlatelolco
<b>Economic activities</b>	No substantial economic activities support the garden. The garden does not require much but it depends on the local government to operate. Note: 2019 the garden will be required to finance itself.	Produce and local products are marketed in the garden itself and in other local produce markets in the city. Produce is also sold directly to different restaurants. They offer courses, gastronomic events and training sessions. Rely heavily on volunteerism and donations.
<b>Funding</b>	Community and governmental collaboration on public land	Privately operated by an NGO on public land
<b>Organization</b>	Insurgentes Norte 694, San Simón Tlalnahuac neighborhood, Cuauhtemoc borough	Paseo de La Reforma Norte 742, Tlatelolco neighborhood, Cuauhtemoc borough
<b>Location</b>	Previously unused median strip on Insurgentes Avenue. It is below a pedestrian bridge at a public transportation station. It can only be accessed through the pedestrian bridge.	It is located on the footprint of the Oaxaca Tower, which was demolished due to damage during the 1985 earthquake. It is easily accessible and visible from Reforma Avenue and public transportation.
<b>Urbanization level</b>	Very high	Very high
<b>Area description</b>	4500 m <sup>2</sup> divided into 3 productive areas, with 22 cultivation beds, 3 multiple use spaces, 1 greenhouse, 4 water tanks, an improvised warehouse, 2 composting area and a shed for tool storage.	1500 m <sup>2</sup> with 180 m <sup>2</sup> of cultivation beds, 500 m <sup>2</sup> of fruit trees, palapa for courses, greenhouse and an improvised area of offices and seed bank.
<b>Primary production</b>	Produces approximately 5 kg / m <sup>2</sup> per harvest. The variety of produce is high due to the "Adopt a plot" program. Volunteers decide what to produce on plots ranging from 1 to 5 m <sup>2</sup>	The cultivation beds have an annual production of approximately 1 ton and an "edible forest" of fruit trees produced 500 kg in 2017.
<b>Secondary production</b>	No secondary products are offered. Although among the users there is an exchange and sale of secondary products that they learn to produce in the urban farm.	No secondary products are offered. Although among the users there is an exchange and sale of secondary products that they learn to produce in the urban farm.
<b>Tertiary production</b>	There is a variety of courses and workshops. During the months of May to August 2018, approximately 700 sessions of urban agriculture, nutrition, and ecology workshops were offered, among other related topics.	More than 3800 people have had some sort of contact through courses, workshops, community events, school visits and volunteering. Courses range from \$700.00 to \$2,000.00 MXN. Events are usually free, some have costs ranging from \$80.00 to \$200.00 MXN
<b>Destination/Target</b>	Primary products are mainly for self-consumption although volunteers are asked to donate 10% of their production of vegetables and seeds. Courses and workshops are free and open to the general public.	The products are offered to the general public, they are also sold directly to restaurants. The courses, workshops and events are open to the general public and some have a cost that vary from \$ 150.00 to \$ 2,000.00
<b>Collaborations</b>	Continuous collaboration with researchers, activists and local governmental officials.	They collaborate directly with government officials, several local and international companies and universities.

As with the functional characterization, there are some minor dimensional differences between both urban farms. Although, the differences are minimal on paper, they can mean substantial differences in terms of their planning, design and policy application. For example, the destination, or final consumer for their products are different, since Huerto Tlatelolco engages local markets, while Huerto de las Niñas y los Niños does not. In operative terms, this is essential to planning because farms that sell their produce in local markets will differ in production and distribution strategies than those that only consume produce internally.

Another example that there are substantial differences that influence the operation of each farm is their location. Huerto Tlatelolco is located in very visible and accessible area while Huerto de las Niñas y los Niños is not.

This is crucial for design since a farm that is not as visible requires a design that compensates for this limitation.

### 3.3. Sustainable worldviews of the urban farmers

Urban farmers tend to re-evaluate the relationships between 1) the city and its inhabitants, 2) nature and 3) food production, distribution and consumption. For urban farmers, the relationship between rural/urban is challenged. Their perspectives are more in tune with ideals and objectives related to sustainability. This may seem minor, but another interesting result is that urban farmers also tend to be active in issues regarding the city. Urban farmers come from very diverse backgrounds, and tend to be vocal about their views of what the city should be. Participants range in age group and education levels, however, they all share a certain worldview that shares many points with more ecological and sustainable urban lifestyles and ideals. This is important since it leads to the idea that the urban farmer is a recent urban identity that is beginning to shape and influence urban configurations and policies. Which can be clearly seen in the politics and programs present in many cities worldwide. It is also important because the views of urban farmers challenge the idea of a modern city. The idea of producing food inside the limits of an urban settlement seems to be more congruent with postindustrial / postmodern visions of what a city is or should be. This is important from the urban design/planning perspective because, these views of the city are more often than not, incompatible with contemporary urban planning.

## 4. CONCLUSIONS

The Urban Farms Law of Mexico City only classifies UA projects in terms of public and private operations, however and as suggested in this research, there are other characteristics that should be taken into consideration when making policies and/or assigning budgets. Results from the characterization and interviews show that urban farms 1) exist for very different reasons, 2) have different dimensions, 3) operate under very different circumstances 4) have very different motivations and 5) provide different functions in an urban setting. Thus its dimensions and functions vary in Mexico City and its metropolitan area.

Each farm varies from city to city not only spatially and physically but socially, culturally and historically. The social, cultural and historical characteristics determine a great deal of how each urban farm is configured. For instance, many cases in southern Mexico City, such as the chinampas of Xochimilco, are still deeply influenced by prehispanic activities. This differs greatly with the urban farms mentioned in this article. Even both examples mentioned in this article are influenced by this. In spite of the fact that all urban farmers seem to share similar ideals and worldviews, their socioeconomic backgrounds, without a doubt influence each farm's design and operation.

Although the cases analyzed have very little impact on food security, both have the potential to serve other important functions. These contributions are directly related to sustainability in urban settings. Urban farms such as the cases analyzed can be planned, designed and used as tools for social development in public and private settings such as public parks, private rooftops and schools. Results suggest that well planned and designed, urban farms such as these can contribute to various of the different aspects to make cities more sustainable. Many of the functions of the farms align well with many international objectives and standards regarding sustainability such as the United Nation's 2030 Agenda and the World Bank's Performance Standards. Also, a lot can be learned and leveraged from urban farms such as Huerto Tlatelolco and Huerto de las Niñas y los Niños. The worldviews of urban farmers contain ideals and visions for more sustainable cities that urban planners and designers should pay closer attention to, because they can provide important insights as to how planning and design can somehow contribute to the sustainability of communities and cities.

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