

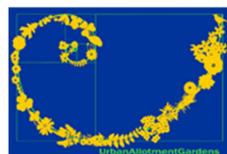


Jeanne Pourias

## Urban allotment gardens in the city in crisis. Insights from Sevilla (Spain)

Short Report of the Short Term Scientific Mission

Sevilla, Spain, 7th April– 3rd June 2015



**URBAN  
ALLOTMENT  
GARDENS**

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COST Action Urban Allotment Gardens

Short Term Scientific Mission

Sevilla, Andalucía, Spain, 7th April– 3rd June 2015

## Host institution

Universidad Pablo de Olavide, Sevilla, Spain

## Home Institution

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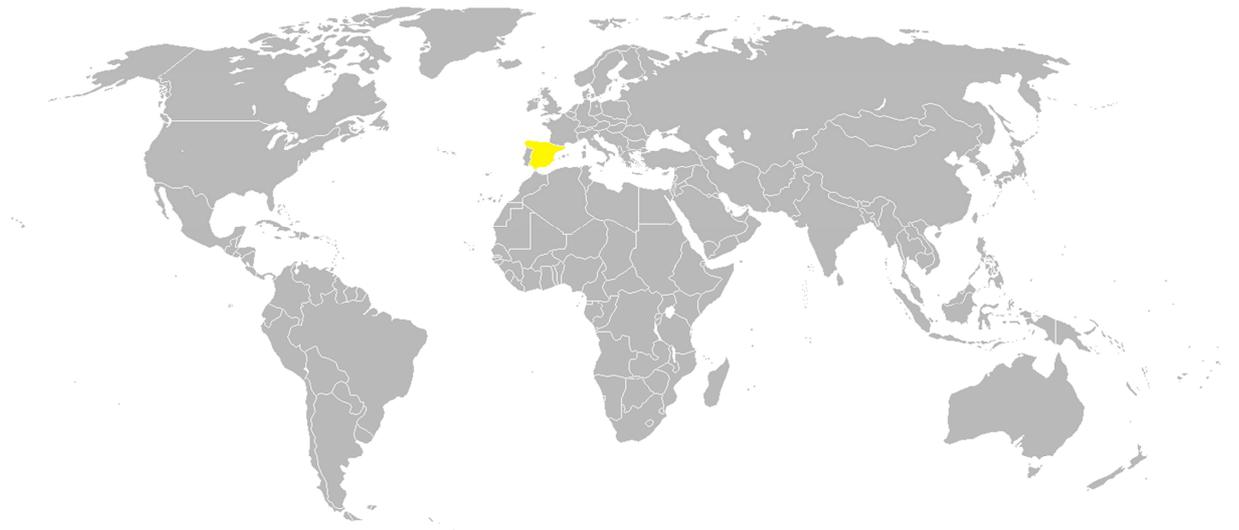
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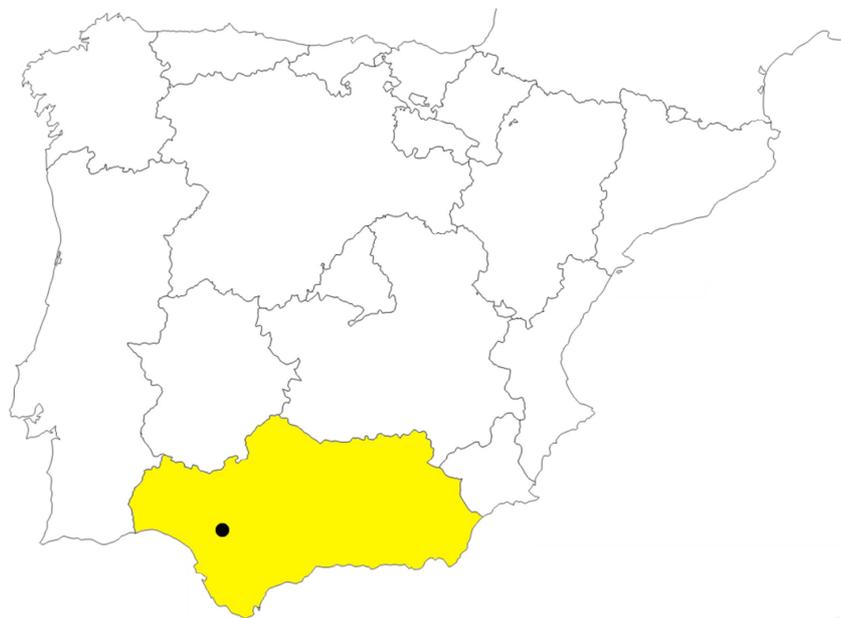
Spain / World

## 1. Foreword

This short report reflects upon a Short-Term Scientific Mission (STSM) conducted as part of the COST action TU1201 “Urban Allotment Gardens in European Cities - Future, Challenges and Lessons Learned” at the University Pablo de Olavide in Sevilla, Spain, between April 7 and June 3, 2015.

I am grateful to the COST action TU1201 which financially supported this project to make it possible. I also wish to thank warmly Raul Puente for the shared knowledge on Andalusian gardens, as well as for his advices and support during the mission and Christine Aubry for her constant support.

The report presents the first findings of the STSM. It focuses on the research question that motivated the mission: how did the economic crisis that occurred in 2008 impact urban gardens in Sevilla? However, aside the methodology set up to investigate this research question (which is presented in the present report), I participated during this STSM to other activities, that are more related to the understanding of the general context of urban agriculture in Andalusia and the initiatives related to alternative food systems. The agenda of activities to which I attended is presented in Appendix 1.



Sevilla and Andalucía / Spain

## 2. Introduction

The 13th of October 2008, the Time Magazine ran a headline “The New Hard Times”, showing on its cover a picture of a depression-era soup kitchen, as the global market experienced what is considered by some as the « worst financial crisis since the Great Depression of the 1930s », reminding America of bad reminiscence of the 1929 banking crisis (Ferguson, 2008; Lopez Bernal et al., 2013). The crisis of the banking sector soon became a global economic and social crisis that led most western countries to recession and contributed to the European sovereign-debt crisis. However, not all national economies experienced the crisis in a similar way and the southern part of Europe has suffered the consequence of this economic crisis more intensely. In Spain, the crisis hit the country in the peak of economic prosperity in terms of GDP growth and employment creation, driven mainly by the construction sector and related industries and services (Guardiola and Guillen-Royo, 2013).

Among the various consequences of this crisis on the Spanish economy, one can highlight the abrupt slowdown of the construction industry, leaving many construction works unfinished and vacant buildings. The rate of unemployment rose suddenly from 11,2% of the workforce in the 3<sup>Rd</sup> quarter of 2008 to 17,2% at the beginning of 2009. In 2013, it reached 26,9% of the total workforce.

With regards to Spanish citizens, the effects of the economic crisis on individuals are diverse. They affect both the material conditions of living and immaterial aspects including well-being, health or maintenance of traditional habits (Guardiola and Guillen-Royo, 2013). In Spain, the frequency of mental health disorders and alcohol abuse among primary care attendees has significantly increased since the beginning of the recession, as well as suicides, especially among men and those of working age (Lopez Bernal et al., 2013).

The loss of financial means at the scale of a household can also directly result in physical health disorders. In the first place, a secure access to food can rapidly be endangered: in fact, income is the first determinant of diet (Godfray et al., 2010). This is especially true for fresh products, which can rapidly become a lower-priority in household budget and turn inaccessible to the most vulnerable (Bricas and Seck, 2004).

In Spain, no research was conducted to assess how the financial crisis may have affected food access or diets of households. However, in other countries from southern Europe such as France, Greece and Italy, there are converging signs of an alteration of access to quality food and food patterns of households as an indirect consequence of the economic crisis (Grigoriou, 2013; Kirby, 2013; Prudhomme, 2013).

In this context, noting the increasing number of initiatives promoting urban gardening and people involved in such initiatives, many advocates of urban agriculture in southern Europe have made the connection between this growing interest for urban gardening and the direct and indirect effects of the crisis, presenting urban gardens as an “anti-crisis remedy” (Angeles, 2012; A.S.O, 2013; Astier, 2015; Bonneau, 2013; Cueto, 2014; Grigoriou, 2013; Mitralias, 2013).

However, very little research has been conducted to assess the potential benefits derived from urban gardens that could contribute to alleviate the effects of the economic crisis that has been affecting European countries since 2008. Furthermore, how the dynamics of creation of urban gardens is related to the economic crisis remains to be investigated.

Through the case study of Sevilla, I propose i) to contribute to the understanding of the dynamics that led to the growing phenomenon of urban gardens in Sevilla and how the economic crisis affects or not this dynamics; (ii) to describe how urban gardens contribute to food security in the context of the economic crisis.

This report is organized in four parts.

- The first part is a literature review: I give a brief overview on how the development of urban gardens in the occidental world has often coincided with times of economic or political crisis and I introduce my theoretical framework.
- In the second part, I present my methodological framework, which comprises various investigative techniques.
- In the third part, I describe and discuss the main results and findings of this study.
- The last part is a conclusion based on these preliminary results. I suggest tracks for future investigation, with a long-term objective of collaboration between my host and home institutions on these topics.

### **3. Literature review: gardens, crisis and food security**

#### **Gardens grow in times of crisis: evidence from the past and today**

The contemporary history gives many examples of how urban gardening has been associated with times of crisis. I hereby provide a brief overview on the development and role of urban gardening in occidental cities in times of political or economic crisis, through a series of case studies which have been investigated in recent literature.

#### **The origin of urban gardening: industrial urbanism and massive urban exodus at the end of 19th century**

In Europe, the first contemporary urban gardens appeared with the industrial revolution, when masses of countrymen moved to the cities in search of a job in the factories of cities. The very first “workers’ gardens” appeared in the industrial landscape of Northern Europe at the end of the 19<sup>th</sup> century. They were promoted by local religious or laic organizations and encouraged by local manufacturers. In accordance with the paternalistic ideology, small plots of lands were given to people newly arrived in the city: these plots, dedicated to food production for family self-consumption, “*contributed to the reproduction at lower cost of the labor force newly freed from its land*” (Boulianne, 2001; Dubost, 1997).

Besides providing additional resource to households, they represented a healthy way to spend leisure time and a structuring element for families of workers in the straight line of terrianiste doctrine ("the small property ensured to everyone"), initiated by Dr Lancry and Abbot Lemire, in the North of France.

## **War gardens during the first half of the XXth century**

During WWI, western European countries suffered important food shortages. Firstly, the mobilization of men for war removed a great part of the labor force from the fields. Secondly, the war strongly disrupted commercial routes, especially shipping lanes that were cut due to the Battle of the Atlantic. Great Britain, in particular, quickly found itself isolated from its supply connections to outside food sources (Barthel et al., 2014; Fdez Casadevante and Moran, 2015). In response to this situation, the government launched the *Every Man a Gardener* campaign, permitting local authorities to transform unoccupied urban lots into allotment gardens. As reported by Fdez Casadevante and Moran (2015), following this campaign the number of allotment gardens increased all over the country: at the end of the war, there were one million and a half gardens in Great Britain, which produced 2 000 tons of vegetables and involved 1.300.000 persons.

When USA entered the war in 1917, the Allies looked to America to supplement their food supplies. To meet this demand, the strategy suggested by the U.S. Department of Agriculture involved two aspects: increasing agricultural production and reducing the domestic demand for agricultural products (Lawson, 2005). One key element to the latter was the *War garden campaign*, launched by the US government and which benefited of an active promotion largely relying on patriotic feelings, as well as coordinated efforts to provide land, equipment and instructions to citizens.

The campaign included home gardens as well as community gardens and children's gardens set on vacant lands. At the end of the war, the estimated value of war garden crops in American cities given by the National War Garden Commission was considerable: it ranged from 100 000\$ in Atlanta, Georgia to 2 500 000\$ in Denver, Colorado (Lawson, 2005).

During WWII, the number of urban gardens also increased dramatically across the Western world. Victory gardens flourished in USA and Great Britain. Initiated by the federal government or by charity organizations, these gardens were associated with the war effort and served to alleviate the effects of food rationing. However, as mentioned by Lawson (2014), the *Victory garden* campaign in the USA was not only about increasing household food production, but also “*a broad-based effort that envisioned gardening as an expression of patriotism and as a resource for recreation and restoration during a stressful time*” (Lawson, 2014). In the occupied France, “workers’ gardens” allowed to alleviate the rigor of food rationing, as garden harvests were the only food commodities to escape to confiscation by German occupying forces (Bonnavaud, pers. comm., 2015). In 1945, there was about 900 000 plots cultivated throughout France.

In Spain, during the civil war, urban agriculture was implemented to produce food to sustain urban dwellers affected by the war, but also as a way to experiment new forms of social organization for the “post-revolution” society.

Fdez Casadevante and Moran (2015) describe the various projects that were implemented by the republican syndicates and political organizations during the siege of Madrid from 1936 to 1938. Facing the increasing scarcity of food, Madrid’s inhabitants were imposed rationing rather quickly after the beginning of the conflict, and various measures were taken to try to supply the city with food. “Agrarian communities” and “emergency gardens”, implemented during this time, insured a modest supply to a network of “popular kitchens”, and allowed to provide fresh food to those who needed it the most.

This effort remained too weak compared to the extent of the situation and Madrid largely suffer from hunger during the civil war; however, these initiatives remain as very innovative ways to consider urban agriculture

within the urban food systems, as well as organizing logistical and social networks to insure city food security (Fdez Casadevante and Moran, 2015).

### **The 30's and the Great Depression**

When the Great Depression hit USA, looking back at the success of the *War Garden campaign* during WWI, “*many [saw gardening] as a logical and immediately tangible means to counteract local manifestations of the economic downturn*” (Lawson, 2005). City agencies, charitable organizations, corporations and civic clubs initiated projects or reactivated the gardens of the *War Garden campaign*.

Two types of gardens co-existed during the time of the economic depression: "subsistence gardens", dedicated to self-consumption, and "work relief gardens", gardened collectively by unemployed people for wages. As described by Lawson (2005), in the latter, “*the harvested produce belonged to the overseeing agency and was typically distributed as food relief to the needy or to institutions*”. In both cases, the gardens were first conceived as remedies to inactivity, together with a contribution to the household budgets.

### **Post-industrial cities and urban agriculture initiatives**

More recently, urban gardens have found their way to the vacant lots of post-industrial cities. With respect to the long history of rise of urban agriculture in time of economic or political crisis, for McClintock (2010), the current renewed interest in urban agriculture “should come as no surprise”. He writes: “*As we find ourselves once again in the throes of a crisis of capitalism, the popularity of urban agriculture in the Global North has surged and the discourse surrounding it has shifted from one of recreation and leisure to one of urban sustainability and economic resilience.*”

Indeed, striking examples such as the case of Detroit (Michigan), have shown that urban agriculture in these post-industrial contexts embrace several issues, from working to restore food security in “food deserts” to providing meaningful jobs to people left unemployed after industries left the city.

### **Urban gardens: two levels of contribution to community food security**

The recent surge of urban gardens in cities going through important social and economic crisis has led Smith & Harrington (2014) to associate urban gardens to other forms of "community food production", which are key elements of community food security. Community food security is defined as “*a condition in which all community residents obtain a safe, culturally acceptable, nutritionally adequate diet through a sustainable food system that maximizes community self-reliance, social justice, and democratic decision-making*” (Smith and Harrington, 2014). They note that the development of associative gardens is often thought by their promoters as a direct response to inappropriate or unstable access to food but gardening programs do not always reach their target audience, namely, people in situation of food insecurity.

According to Evers and Hodgson (2011), the contribution of urban gardens to food security should be understood in two different ways: gardens provide both direct and indirect contribution to addressing food security issues, and associate both individual and collective resources. The “direct” contribution to food insecurity, which consists in growing one’s own food, takes place at an individual level, and can contribute to address food insecurity at the scale of a family. However, to achieve food security of a city, cultural and social networks must also be created. These networks can be sources of information and training to the wider

community, and can eventually gained sufficient power to influence public policies (Evers and Hodgson, 2011).

Barthel et al. (2014) make a similar statement and emphasize the importance of gardens in maintaining and transmitting the knowledge on how to produce food: according to these authors, gardens allow the creation and maintenance of networks of knowledge and know-how, which eventually contribute to preserve the “socio-ecological memory”, which is defined as the “*knowledge, experience and practice about how to manage a local ecosystem that are retain in a community and modified, revived and transmitted through time*” (Barthel et al., 2014). According to these authors, urban gardens, by the social practice they imply and the various settings they provide can be considered as “pockets of socio-ecological memory” in the city (Barthel et al., 2014).

## **Implication for our research**

### **Functions of urban gardening**

In the various experiences of large-scale campaigns of urban gardening that have been documented<sup>1</sup> in the literature, one can notice that the promotion of urban gardening has always been associated with a political project, and the functions assigned to urban gardens by their promoters aside food production are various: relieving stress in difficult times, keeping unemployed people busy, preserving “social peace” in times of confusion or covering up revolutionary aspirations, experimenting new way of organizing food systems in a revolutionary societal project...

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<sup>1</sup> At this point, we can object that history always record more easily formal and documented experiences: most certainly, there is a parallel, informal history of urban gardening, made by people cultivating small plots as an individual, informal response to their needs. However, very few evidence remain in the history about these informal gardens.

In many cases, such as during the wars and during economic depression, governmental initiatives promoting urban gardening strongly relied on local organizations, which insured the actual implementation of garden projects.

In this work, I will describe the types of projects that emerged during the crisis and their conditions of emergence. In particular, I will investigate the objectives and levels of implication of the various actors involved in the creation of urban gardens in Sevilla (public institutions, organizations promoting urban gardening, gardeners themselves...).

### **Contribution of urban gardens to food security**

The historical examples described above show that the typology of urban gardens that emerged during times of crisis varied from one experience to another, from support to individual gardening dedicated to self-consumption to large-scale, organized projects.

Regarding the topic of community food security and the destination of products grown in the gardens, from the case studies described above we can distinguish between two types:

- individual/family plots orientated towards self-consumption,
- collective plots with organized production process whose products are not intended for gardeners but for a specific audience through food banks or other type of organizations dedicated to food supply.

Most of the time, the quantity of food produced in the gardens was the only evidence of the actual impact of these gardening programs on food security, letting aside considerations on who actually benefited from this food, how the products were used, which impact they had on gardener's or beneficiaries' diet and budget, etc.

In my search for indicators to assess the impact of urban gardens on food security, I will rely on the proposition of Evers and Hodgson (2011) and Barthel et al. (2014), who state that urban gardens provide both a direct, individual response to food security through food production, and an indirect, collective response through the creation of social networks and maintenance of knowledge and know-how. In this research, I will pay attention to these networks of knowledge and try to qualify them.

## 4. Research method

The STSM gathered researchers with different perspectives on the same thematic: Raul Puente is a professor in Geography at the University Pablo de Olavide, while Jeanne Pourias and Christine Aubry are agronomists at INRA-AgroParisTech.

While we shared the will to work on the place and role of urban gardens in times of crisis, our commitment in these different fields of study involved working at various levels. On one hand, the geographical inscription of gardens, as well as their conditions of development with respects to local urban context had to be considered; in the other hand, considering the internal organization of the gardens and the individual motivations of gardeners was also necessary.

Therefore, I considered two different levels: the City of Sevilla, to understand the dynamics of creation of gardens, the stakeholders involved into the creation of gardens, etc. and the gardens themselves, in order to provide insights on the motivations that led gardeners to enroll in a gardening activity, the cropping practices of gardeners, the outputs of the garden, and so on.

The method used is a multi-support survey. I realized on-field observations, interviews and archive exploration. The different steps of this survey are detailed below.

### **Bibliography: urban gardens of Sevilla**

Very few publications exist on urban agriculture or urban gardens in Andalucía. For information on the general context of Andalucía and history of urban gardens in Sevilla, I relied on the book published in 2012 by R. Puente: “*Huertos urbanos de Andalucía*”. I also consulted grey literature, such as web-information, blog articles, etc.

## Data collection

### Visits to the gardens and on-field observations

The first step of the survey has been the visit to several urban gardens in Sevilla (Table 1).

**TABLE 1 DATE OF VISITS TO THE GARDENS**

Date (2015)	Garden
5 <sup>th</sup> may	Parque Miraflores
-	San Jeronimo
17 <sup>th</sup> april	El Huerto Del Rey Moro
5 <sup>th</sup> may	Parque del Tamarguillo
2 <sup>nd</sup> june	Torreblanca
5 <sup>th</sup> may	Pino Montano
5 <sup>th</sup> may	San Antonio
-	Bellavista
16 <sup>th</sup> april	Poligono Sur
16 <sup>th</sup> april	Verdes del Sur project
23 <sup>rd</sup> april	Parque del Alamillo
5 <sup>th</sup> may	Huertos de Helgar
1 <sup>st</sup> june	Isla de Tercia

In most gardens, the visit was accompanied by a reference person of the garden, either a member of the association managing the garden or a gardener. General information about the garden, its history, its status and its organization were collected. These data are available in Appendix 2.

In other gardens I went on my own or with Raul Puente, himself being a reference person on the thematic of urban gardening in Sevilla and Andalucía. In both cases, the visits gave the occasion of informal discussions with gardeners present in the garden. After or during the visit, I realized on-field observations on several topics including the general layout of garden sites (presence of collective equipment and leisure areas, number and types of plots...) and the cropping practices of gardeners

(percentage of the plot dedicated to food production, type of crops, irrigation systems, presence/absence of compost bins...)

## Interviews

Two types of interviews were conducted:

- 7 interviews with local stakeholders aimed at understanding the general context of urban gardening in Sevilla and the role and position of institutions and organizations involved in the creation and management of urban gardens (Table 2).

Interviews were semi-structured and private, with an interview guide tailored for each stakeholder.

**TABLE 2 INTERVIEWS WITH LOCAL STAKEHOLDERS**

<b>Interviewee</b>	<b>Date</b>
President of the association <i>Pro-parque educativo Miraflores</i>	5 <sup>th</sup> of May
President of the association <i>Huertos del Sur</i>	16 <sup>th</sup> of April
Member of the organization of gardeners in the <i>Parque del Alamillo</i> garden	23 <sup>rd</sup> of April
Responsible for the <i>Parque del Alamillo</i> garden in the <i>Participación y Estrategia</i> committee, Agencia de Vivienda y Rehabilitación de Andalucía (AVRA)	19 <sup>th</sup> of May
Expert in the participatory democracy cell at the City of Sevilla from 2003 to 2011	27 <sup>th</sup> of May
Director of the civic center of Torreblanca; head of the group that led the implementation of the Torreblanca garden in 2010	2 <sup>nd</sup> of June
Member of the Isla de Tercia project	1 <sup>st</sup> of June

- 11 interviews were conducted with gardeners in the *Parque Miraflores* and in the *Parque del Alamillo*.

These two sites of study were selected for several reasons: they were created at two different dates, one being the first experience of urban garden in Sevilla, and the second one being opened in 2013, 5 years after the beginning of the crisis. Furthermore, these two gardens were born in very different contexts: the *Parque Miraflores* was born from a neighborhood initiative and gained progressively support from local authorities, while the *Parque del Alamillo* garden was created by the Junta de Andalusia in a public park.

Interviews were semi-structured and private. The gardeners interviewed were the ones present at the gardens during our visits. These visits took place at various times of the day (morning/evening) and various days in the week (working days/week-end days), in order to diversify the people we met. The working hypothesis behind this choice is that people who are employed have more chance to come to the garden in the evening or during weekends, while retired people or unemployed people would also come during working days.

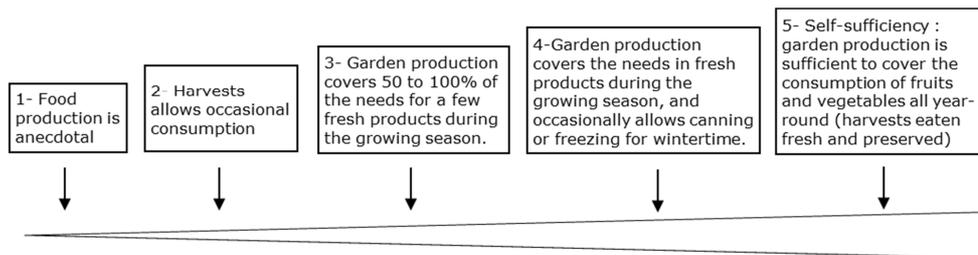
The interviews consisted in 29 questions on (1) the gardener (general information such as name, age, family and job situation...), (2) his/her motivations to come to the garden and his/her objective, (3) his/her point of view on the food function of his/her plot (type of products, use and destination of the products, etc.) and (4) his/her knowledge and cropping practices.

The guide used for the interviews is available in Appendix 3.

During the interviews, gardeners were asked to select one in a series of statements that best matched their appreciation of the food supply function of their garden.

This series of statement defines five situations that cover the various ways the garden can contribute to the gardeners' diet by providing fresh fruit and vegetables, from anecdotal food production to complete self-sufficiency (Figure 1).

In a previous study on urban allotment gardens of Paris and Montreal, we showed that gardeners' evaluation of the contribution of their garden to their diet was highly consistent with the quantities of fruit and vegetables that they actually harvested (Pourias et al., 2015b).



**FIGURE 1 GRADIENT OF URBAN GARDEN'S CONTRIBUTION TO THE GARDENER'S FOOD SUPPLY (RETRIEVED FROM POURIAS, 2015)**

## Archive exploration

In May 2015, I was given the opportunity to work on the archives of the *Agencia de Vivienda y Rehabilitación de Andalucía* (AVRA), service of the Region of Andalusia in charge of managing public lands, and which was at the origin of the creation of the *Parque del Alamillo* garden.

Among these archives, I was more precisely interested by the application files sent by each gardener willing to obtain a plot at the opening of the garden in 2013, and which included a document explaining the motivations of gardeners. This document ranged from a hand written letter to a file of several pages with pictures and plans of the future plot.

From the 91 application files of the AVRA archives I could access, I collected the following information: (i) applicant type: group of individuals or associations; if the applicant was a group of individuals: (ii) description of the motivations, (iii) composition of the group (men, women, age), (iv) job situation of each member of the group, (v) when mentioned: highest degree completed by each member of the group.

## Data analysis

### Interviews

Interviews with local stakeholders were audio-taped and transcribed partially verbatim.

Interviews with gardeners were not recorded: gardeners' answers to our questions were written down during the interviews, and relevant information was sorted according to its thematic.

The citations used to illustrate the results were chosen amongst those that provided the best illustrations. Gardeners' citations were translated from Spanish to English by the author.

### Archive exploration

The motivations mentioned by groups of applicants in the application files were grouped together by keyword, and then sorted into broad themes of motivations. The number of applicants who mentioned each motivation was quantified in order to situate the weight of each function or sub-function within the set of motivations described.

## 5. Findings

### Gardens in the city in crisis: dynamics and conditions of emergence in Sevilla (1990-2015)

Since 2008, the number of urban gardens in Andalucía has increased suddenly and there are now more than 200 urban gardens in the region. In Sevilla, the first urban allotment garden was created in 1987 as a social demand from inhabitants of the northern district of Sevilla. This first garden was a basic experience which served as a model for the other gardens created later. Since this first experience, 10 other gardens have been created<sup>2</sup> (Figure 2).



FIGURE 2 HISTORY OF CREATION OF URBAN GARDENS IN SEVILLA

The 10 gardens are distributed in all parts of the city (Figure 3). 9 of them are situated on public lands: 6 on municipal land, 2 on a land belonging to the Region of Andalucía and 1 on a land belonging to the Province of Sevilla. 1 is situated on a private land.

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<sup>2</sup> In the present work, we deal only with "formal" gardens, that is to say, supervised by organizations and / or recognized by a public institution. Due to the lack of time and resources, we could not take an inventory of informal gardens that may exist; however, first observations on this subject shows that they do exist and it would be very valuable, in order to complement this research, to reference them and understand what motivates their gardeners.

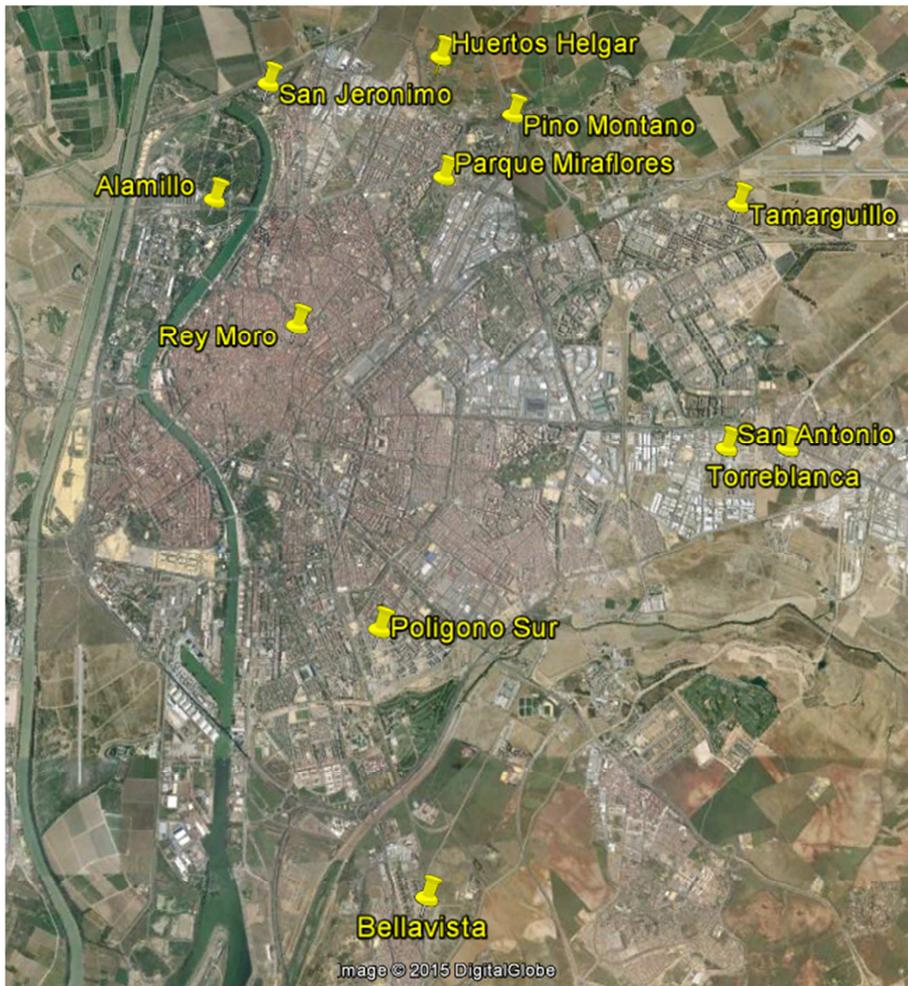


FIGURE 3 LOCALIZATION OF URBAN GARDENS OF SEVILLA

These gardens are the result of sometimes lengthy processes that involve at the same time citizens' requests brought by associations, usually rooted in a wider dynamic centered on a neighborhood, and more or less proactive intervention of local authorities.

We identify three different processes directly or indirectly related to the economic crisis, and which impact the dynamics of creation and functioning of urban gardens in Sevilla:

- The varying implication of public institutions,
- An evolution in gardener's profile and motivations,
- A change in the objectives assigned to the projects of urban gardening, which leads to a diversification of the types of initiatives.

## **Institutional support and initiatives**

Two public institutions have been involved in supporting and promoting urban gardening for the past 10 years in Sevilla: the *Ayuntamiento de Sevilla* (the City Council) and the *Junta de Andalucía* (Andalucía government).

The City Council was actively involved from 2004 to 2011, through the implementation of participative budgets. These budgets came from a political will, when the left wing won the municipal elections and established a coalition between the socialist party (*PSOE*) and the radical left party *Izquierda Unida*. The latest got the political direction of the Public Participation Commission and implemented the participative budgets. This program aimed at decentralizing the attribution of municipal budget and at increasing participatory democracy. Among other initiatives, the discussions around participative budgets allocation brought to the foreground local demands to create two new urban gardens (*Torreblanca* and *Bellavista*), and gave support to other existing gardens. The participative budgets ceased in 2011, after the election of the right-wing party (*PP*) at the City Council. Afterwards, the financial support to urban gardens was largely reduced, even though one of the gardens (*Miraflores*) still benefited from municipal budgets for their pedagogic activities.

In 2013, *Izquierda Unida* made a proposition to restore participative budgets. While, initially, the political arguments that supported participative budgets focused on increasing citizen involvement and participation, in 2013 a new argument appeared, related to the crisis:

*“Furthermore, within the actual framework of economic crisis, which forces to adapt and establish a hierarchy of priorities, the participative budget process is an opportunity to support social organization and sectors more affected by the crisis”.* (Extract from the document summarizing the proposition made by *Izquierda Unida* to re-establish participative budgets, 16<sup>th</sup> of December 2013).

Therefore, the crisis became a political argument for the implementation of these budgets. However, the demand of *Izquierda Unida* hasn't been taken into account and the participative budgets have remained closed until this date.

The implication of the Andalucía government in the creation of urban gardens arrives more lately, through the *Agencia de Vivienda y Rehabilitación de Andalucía* (AVRA). AVRA is a public agency of the Andalucía government which owns public land, and which is controlled by *Izquierda Unida* since the constitution of a coalition government in 2012.

During the years of the real-estate “boom” (2000-2008), AVRA mostly acted as a real-estate developer. The crisis led to the collapse of the land prices and the slowdown of the construction industry: many construction projects stopped and a lot of land remained vacant. For a few years, AVRA has been investigating new ways to use these vacant lots, which forced it to change its basic mission.

One of the options to use the vacant land owned by AVRA has been the creation of urban gardens. Four gardens were created across Andalucía, including one in Sevilla (*Parque del Alamillo* garden).

### **In short...**

The interest of public authorities for the topic of urban gardens came first from a political will; however, this political will has coincided with determinants directly (vacant lands) and indirectly (necessity to prioritize the attribution of municipal budgets) related to the crisis.

### **Evolution of gardeners' profile and motivations**

Interviews with local stakeholders and people involved for a long time in organizations managing urban gardens in Sevilla show that there is an evolution in the profile of gardeners. While urban gardeners were previously mostly retired people gardening for leisure and social contacts,

more and more young and unemployed people appeared on the lists to access a garden.

The fact that the motivations had changed due to the crisis was also mentioned, as it seems that the food function of the garden takes more space since the beginning of the crisis.

We describe below our findings on the case study of the *Parque del Alamillo* garden.

*Gardeners' profile and motivation: focus on the Parque del Alamillo garden*

On the 91 application files of AVRA archives I could access, 71 were sent by groups of individuals, 19 were sent by pre-existing organizations willing to get a plot to develop their activities and 1 was sent by a municipality of the outskirts of Sevilla.

On the 19 organizations, 4 were dedicated to promote sustainable food systems (permaculture experimentation, promotion of short supply chains, ...), 4 to education of young people and children, 3 to environmental education and protection, 2 were sport clubs, 2 were dedicated to strengthen people in difficulty (diseases, exclusion...), 2 dealt with sustainable urban development and preservation of urban heritage and 2 were social clubs.

Other applications were sent by 72 groups of 3 to 10 adults – 3 adults being the minimal number of people required by AVRA to apply for a plot at the *Parque del Alamillo* garden. This is explained by the fact that AVRA wanted to prevent future gardeners from developing a feeling of property, which was, in the opinion of AVRA, a higher risk if families applied. Setting the minimal number to 3 therefore prevented – in theory - couples to apply on their own.

In total, 393 people were concerned by the 72 applications sent by groups of individuals. 87 of these 393 persons were employed, 80 were

unemployed, 20 were students or minors, 21 were retired people, and for 185 the working situation was not mentioned.

We must underline here that the figures that appear in the application files are not necessarily representative of the situation of the overall 393 persons. Despite that unemployment was not a criteria mentioned by AVRA in the call for application, the fact that members of the groups were unemployed was frequently mentioned by applicants, in the intention to catch the attention of the jury responsible for attributing the plots.

On the 72 groups, 22 indicated the links between the members of the group: 16 were comprised of people of the same family or of two families, 6 were friends and colleagues.

The sex ratio of applicants was balanced, even though there was slightly more women to apply than men (approximately 60% of women for 40% of men). However, during our visits to the garden, we could observe that there were much more men taking care of the plots than women.

The average age of applicants was 41, and over 65% of the applicants were between 25 to 45 years old (Figure 4).

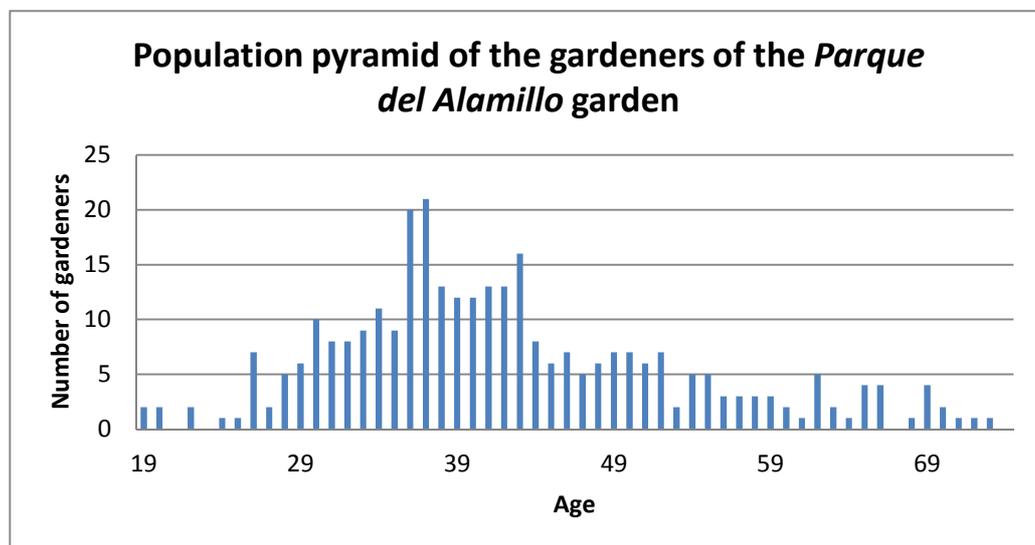


FIGURE 4 AGE OF GARDENERS OF THE *PARQUE DEL ALAMILLO* GARDEN

145 applicants gave information about the highest degree they got, or the job they have or used to have if they were unemployed: 45% had an

academic degree or worked as executive, engineer, or other management positions; 35% had a technical degree or worked as technicians or employees; 8% had no diploma or had unskilled jobs; 12% were students.

A possible explanation of why most applicants had completed an academic degree or occupy jobs that imply having completed a certain degree lies in the application process itself. The application consisted in downloading and completing minimally 5 pages of personal data and to provide corresponding documents such as ID, etc. A “cover letter” was also requested, as we mentioned above. All these requirements imply having access to minimal office equipment, even though the application file, once printed, could also be filled by hand (3 application file were hand written), and to be aware of how to fill an application file. Therefore, we point out that the selection process has probably let aside a part of the population.

However, informal agreements may still exist, and one of the gardeners we interviewed in the *Parque del Alamillo* garden explained how he first came to the garden:

*“I didn’t want to participate in the application process, go on internet, etc. I didn’t want to wait on a waiting list neither. But afterwards my neighbour told me that this lady was too old and couldn’t take care of her plot... So I met her, and now I do the work, and we share the harvests”.* (Gardener at the *Parque del Alamillo* garden, translated from Spanish by the author)

We classified the motivations described by gardeners in 8 thematic types and 32 sub-types (Table 3).

TABLE 3 MOTIVATIONS DESCRIBED BY THE APPLICANTS TO THE *PARQUE DEL ALAMILLO* GARDEN

Motivations	Number of gardeners
<b>Food production</b>	96
Quality of the products (taste, freshness, sanitary...)	33
<i>Economic value of the products/saving money</i>	18
Improve one's diet	13
Food sovereignty, reaching self-sufficiency	13
Diversity of the products	2
<b>Learn and teach</b>	90
Acquire new know-how	33
Educate, teach, transmit	32
<i>Traditional values, heritage of previous generations</i>	12
<i>Moral value of gardening</i>	10
Experiment	3
<b>Social place</b>	47
Build a community, work in team	20
Meet people	10
<i>Strengthen family</i>	9
Give and receive	8
<b>Impact on the city and the urban environment</b>	29
<i>Social transformation - change one's lifestyle</i>	13
Act in favor of urban environment (pollution, heath island effect...)	6
Promote ecological agriculture and sustainable food systems	5
Claim the right to the city, give a use to vacant spaces	3
<b>Health</b>	27
Look for feelings of accomplishment	9
Relax	5
Sport and physical activity	5
<b>Contact with nature</b>	25
Breath, air, be outdoor	6
Playful activity, 5 senses	4
Countryside	1
<b>Emancipate from urban life</b>	12
Invest in a new space	6
Escape urban life and daily concerns	2
Garden as a space of freedom	1
<b>Occupation</b>	11
<i>Unemployment</i>	8
Retirement	2

Some of the motivations mentioned by applicants were described in relation to the crisis (functions in italics in Table 3).

Some of them, like the will to grow food in order to save money, are directly related to the effect of the crisis on individuals.

Others have a more indirect link with the crisis: they relate to the social transformation the economic crisis has induced.

With respect to this last point, we identify two trends that may seem contradictory, but rather join in the garden:

- Many gardeners describe the garden as a mean to strengthen the family and to transmit traditional values to the youngest, referring in many cases to an idealized vision of the past life in the countryside. In some cases, gardening is described as having inherent moral value.

These various aspects can be interpreted as a quest for “safe haven” values, and tend to reflect a withdrawal into the family unit, with aspirations to be more independent of the stir of the society. Therefore, the garden appears as a “healthy place” for family life, enabling to produce its own food in a search for self-sufficiency.

- Another set of motivations, which partly overlap the ones described above, relates to a will to experiment new models of social organization, in response to a social and economic model considered as “rotten”. Gardeners describe a will to build a new society, the garden being seen as a “small world”, where to put in practice this new organization. This implies sharing knowledge, working in group, building a local community centred on the garden, in an explicit attempt to show that “alternative ways” to agro-food systems or to the capitalist economy are viable.

### **Diversification of the types of gardens**

Aside the creations of urban gardens, since the beginning of 2010's four entrepreneurial projects have emerged in Seville. These projects are led by associations that previously had direct or indirect experiences in

creation and management of urban gardens. They differ significantly from existing urban gardens regarding several aspects, the most important being their objectives: while motivations that bring gardeners to urban gardens are sometimes related to saving money and producing food (see above), in these projects, the aim is not so much to produce food but to offer jobs and wages.

One of these projects (*Centro de Educación Ambiental Pino Montano*) has integrated an urban allotment garden into a broader "Environmental education center", which includes activities such as agroecology and nutrition workshops, educational farm and horse-riding. They eventually aim at creating an "ecotourism" complex based on sustainable food production and consumption with an accommodation capacity.

The three other projects (*La Huerta de Julian y Mari*, *Isla de Tercia* and *Milagro de los Peces*) are urban agricultural projects.

*La Huerta de Julian y Mari* is a market-farm located in the outskirts of Sevilla, which supply groups of consumers, according to the principles of Community Supported Agriculture. It is cultivated jointly by the owner of the plot, which has been a market-gardener for 20 years, and members of a non-profit organization which is dedicated to the promotion of short supply chains, *El Enjambre sin Reina*. Members of this organization are also involved in the *Huerto del Rey Moro* garden.

The *Isla de Tercia* is a 5ha urban market-garden that gathers 20 people from all backgrounds around a project of community-supported agriculture. The project was launched at the beginning of the 2010's by *Ecologistas en Accion*, a non-profit organization that also runs since 1995 the *San Jeronimo* urban allotment garden. A condition to enter the group of farmers is to be unemployed, as a major objective of the project is to create self-employment.



FIGURE 5 VIEW OF ONE PLOT OF THE ISLA DE TERCIA PROJECT (PICTURE J. POURIAS, 2015)

The *Milagro de los Peces* project aims at experimenting an aquaponics production system (food production system that combines conventional aquaculture with hydroponics), with a dual objective of producing food for a very disadvantaged neighborhood of Sevilla (*las 3000 viviendas*), while encouraging local development and the creation of jobs.



FIGURE 6 AQUAPONICS SYSTEM OF THE MILAGRO DE LOS PECES PROJECT (PICTURE J. POURIAS, 2015)

All these projects share the will to create meaningful jobs in a context of crisis that let many unemployed and that calls more broadly for a re-assessment of the current economic system. The *Isla de Tercia*, *la Huerta de Julian y Mari* and the *Milagro de los Peces* projects, in particular, envision local food production as a mean to experiment alternative ways of development that beneficiate to disadvantaged population and neighborhoods.

## Contribution to community food security

On the basis of my observations and interviews with gardeners, I distinguish four different ways through which urban gardens contribute to maintain community food security:

- Food production in the gardens,
- Maintenance and transmission of knowledge and know-how on how to grow food,
- Maintenance of open space and agricultural soil in the city,
- Creation of links with the agricultural periphery.

### Food production in the gardens

The surface area available for food production differs from one garden to another. Individual plots range from 25m<sup>2</sup> in the *Poligono Sur* garden to 175m<sup>2</sup> in *Miraflores* garden. One garden, *El Huerto Del Rey Moro*, offer one collective plot.

**TABLE 4 TYPE AND SIZE OF THE PLOTS IN URBAN ALLOTMENT GARDENS OF SEVILLA**

Name of the garden	Type and size of the plots
<i>Parque Miraflores</i> garden	160 individual plots of 175m <sup>2</sup> & collective plots for local organizations
<i>San Jeronimo</i> garden	60 plots of 80 to 120 m <sup>2</sup>
<i>El Huerto Del Rey Moro</i>	One collective plot (~700m <sup>2</sup> )
<i>Parque del Tamarguillo</i> garden	75m <sup>2</sup>
<i>Torreblanca</i> garden	23 individual plots (50m <sup>2</sup> )
<i>Pino Montano</i>	205 plots of 100m <sup>2</sup> & 20 plots for organizations
<i>San Antonio</i> garden	~80 plots of 80m <sup>2</sup>
<i>Bellavista</i> garden	60 plots of 60m <sup>2</sup>
<i>Poligono Sur</i> garden	12 plots of 25m <sup>2</sup>
<i>Parque del Alamillo</i> garden	23 plots of 70m <sup>2</sup> for associations and groups, 114 plots of 35m <sup>2</sup> for individual and families and 4 collective plots of 140m <sup>2</sup> dedicated to Education centers.

Some gardeners use various techniques to increase their productive area.

Some use mixed cropping technique, which consists in growing two or more crops simultaneously on the same piece of land (Figure 7), others design raised cultivation systems to take profit of the vertical dimension (Figure 8), and others take profit of vacant spaces around the garden. One of the gardeners interviewed, for example, had started cultivating a hidden part of the border of the garden: he grows there crops that “take too much space” in his plot (squashes for example), or that are less valuable than vegetables but still useful to the garden (nettle to make manure for example).



**FIGURE 7** EXAMPLE OF MIXED CROPS: CARROTS GROWING BENEATH TOMATO PLANTS (PICTURE J. POURIAS, 2015)



**FIGURE 8** RAISED BED IN A PLOT OF THE *PARQUE DEL ALAMILLO* GARDEN: LETTUCE ARE GROWN ABOVE, STRAWBERRIES BELOW (PICTURE J. POURIAS, 2015)

Most gardeners produce all year round, but the months of summer are particularly hot in Sevilla. Therefore, many gardeners slow down their gardening activity during these months; others take profit of August, the hottest month of the year, to let the soil rest before the fall plantations that start in September.

We couldn't assess directly the amount of food produced in the gardens. However, we asked gardeners to estimate to what extent their garden contributed to their diet by providing fresh fruits and vegetables. 6 out of the 10 gardeners interviewed estimates that their "garden production covers 50 to 100 % of their needs for a few fresh products during the growing season" and 3 estimates that "garden production covers their needs in fresh products during the growing season and occasionally allows canning or freezing for wintertime." One was in his first growing season and therefore could not provide yet this estimation.

Regarding economic aspects, as I already witnessed in gardens of Paris and Montreal (Pourias et al., 2015a), debate surrounds gardeners' estimations of the economic benefits of the fruit and vegetables they produce.

Some gardeners consider that the most important aspect of garden products is their quality, as the garden allows them to produce fresh and diversified vegetables.

Gardeners who consider that their garden allows them to save money on food evoke various strategies regarding the produce they choose to grow in their garden. Some gardeners choose to produce "a little bit of everything", while others rather choose to produce in the garden the most expensive crops and to buy the rest. For example, one gardener states that zucchinis are cheap in shops: therefore, he prefers saving the space of his plot to produce other vegetables, more expensive, such as tomatoes.

Regarding the destination of the harvests, most gardeners interviewed explain that a part of their harvest is given to friends, family members or to other gardeners. Furthermore, in the *Parque del Alamillo* garden, one collective plot has been dedicated to producing vegetables for a food bank. The plot is cultivated by gardeners who, in majority, also have an individual plot for their own needs. The harvest is given to a social canteen managed by a convent in the center of Sevilla.

### **Knowledge and know-how on how to grow food**

Gardeners refer to three distinct learning sources: rural and agricultural background, exchanges with other gardeners and internet. The rural and agricultural background described by gardeners comes either (a) from a personal experience of farming, in the childhood or as a previous work before moving to the city, or (b) from a family connection to agriculture.

(a) *“I grew up in the countryside; my father was a farmer... He grew wheat, sunflowers, olive trees... We had a garden to, for the house. I used to help him with, that’s where I learnt. I moved to Sevilla a long time ago, but I still had in my head, since I was a child, it stayed in my head”*. (Gardener at the *Parque del Alamillo* garden, translated from Spanish by the author)

(b) *“Personally, I have not link to agriculture... I have always been living in the city. But my wife’s family has an agricultural background: her uncle and father know a lot of things, her brothers and cousins have all worked in the fields... They gave us a lot of advices”*. (Gardener at the *Parque del Alamillo* garden, translated from Spanish by the author)

For gardeners who do not refer to an agricultural background, internet and interactions with other gardeners (c) are the two options to learn gardening techniques.

(c) “*We learnt mostly from our mistakes... And we looked on internet... And also, imitating the other gardeners. For now, we try to rely on our acquaintances...*” (Gardener at the *Parque del Alamillo* garden, translated from Spanish by the author)

Again, the garden seems to be the place that allows different sources of knowledge to coexist, mix and interact: “traditional” knowledge, which comes from rural and agricultural backgrounds, mostly called up by people who have personal or family reference to this background and transmitted through oral exchanges, and knowledge from “new Media”, i.e internet, mostly called up by people who have no reference to agriculture.

These first observations seems to support Barthel *et al.* ’s hypothesis that states that gardens are “pockets of socio-ecological memory” , as they play a role in the maintenance, revival and transmission of knowledge and know-how (Barthel et al., 2014).

### **Maintenance of open space and agricultural soil in the city**

Contrary to many cities of northern Europe or America, the history of Sevilla has not involved many industrial activities: therefore, many vacant lands are directly inherited from past agricultural uses, even though urbanization has progressively surrounded them. This gives to the vacant spaces of Sevilla a very special value, both in agronomical and cultural terms.

This is understood and addressed by gardening associations. Some of them have made of this heritage a central aspect of their claims and a justification of the existence of their garden.

For example, volunteers of the *Comité pro-parque Miraflores* have made an important work of investigation to reveal the archaeological remains of the site where the garden is located. Thanks to these investigations, they have uncovered an important ancient hydraulic system including a Noria (ancient water wheel, Figure 9), several ancient agricultural buildings and an olive mill.

One of the buildings has been converted into a “house for gardeners”, where events take place, and which includes is a library, exhibition of old tools, etc. The olive mill has been restored and the project is to transform it into an “eco-museum” explaining traditional farming in Andalusia, the cultivation of olive trees, etc.



**FIGURE 9 THE ANCIENT “NORIA”, PIECE OF THE HYDRAULIC SYSTEM BUILT IN THE 16<sup>TH</sup> AND 17<sup>TH</sup> CENTURY (PICTURE J. POURIAS, 2015)**

Similarly, the land of the *Parque del Tamarguillo* garden had an agricultural use that progressively turned into an unauthorized dump during the 20<sup>th</sup> century. The association which put the garden in place also worked on uncovering the agricultural past of the land and promoting the ancient farm building located on it (Figure 10).



**FIGURE 10 ANCIENT FARM BUILDING IN THE *PARQUE DEL TAMARGUILLO* (PICTURE J. POURIAS, 2015)**

The soil of the *Huerto del Rey Moro*, has been dedicated since the 15<sup>th</sup> century to the growing of vegetables for the mansion located next to it.

The *Parque del Alamillo* garden and the *San Antonio* garden are located in the middle of former orange orchards and the *Parque del Alamillo* garden is still surrounded by orange trees (Figure 11).



**FIGURE 11 ORANGE ORCHARD SURROUNDING THE *PARQUE DEL ALAMILLO* GARDEN (PICTURE J. POURIAS, 2015)**

In this context, urban gardens in Sevilla have a function, not only to maintain open spaces in the city, but also to preserve soils with important cultural and agronomical values.

## Link to the agricultural periphery

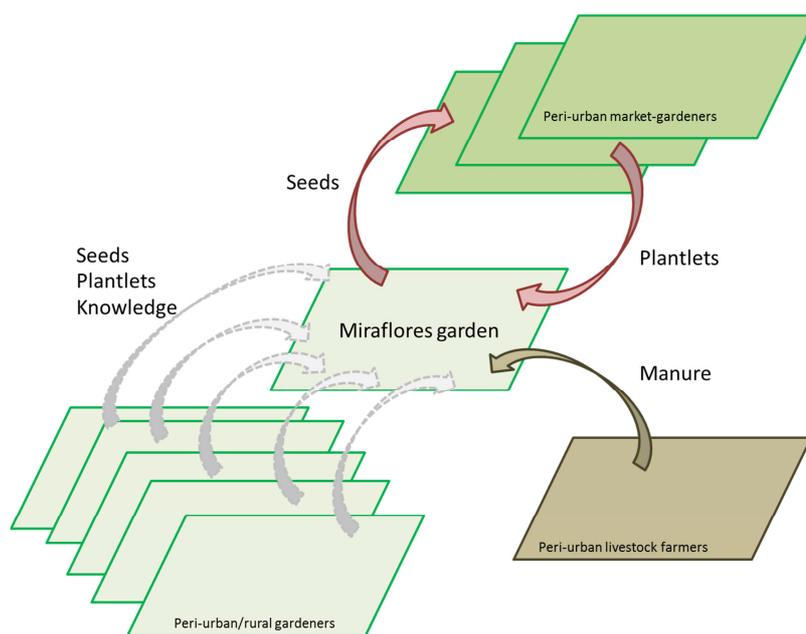
Throughout interviews with gardeners and observations of the organization and functioning of urban gardens, I noticed that there was material and immaterial links between urban gardens of Sevilla and the immediate agricultural periphery of the city.

I already described the exchanges of knowledge between urban gardeners and inhabitants of the rural or peri-urban periphery of Sevilla.

In this part, I want to focus on the material links, in line with the notion of “urban metabolism” described as “*the sum total of the technical and socio-economic processes that occur in cities, resulting in growth, production of energy, and elimination of waste*” by Kennedy et al. (2011). The notion of urban metabolism was used by numerous authors to describe and assess urban food systems, as it gives a metaphorical framework to study the interactions of natural and human systems in specific region through the analysis of the flows of the materials and energy within cities (Billen et al., 2011, 2009; Forkes, 2007).

I underline here the potential contribution of urban gardens to make city’s metabolism more circular, by recycling nutrients, and to the long term food security of the city by maintaining concrete interconnections with peri-urban areas.

Figure 12 show the material exchanges between the *Parque de Miraflores* garden and peri-urban gardens and farms.



**FIGURE 12 FLOWS OF MATERIALS BETWEEN MIRAFLORES GARDEN AND PERI-URBAN GARDENS AND FARMS (LEGEND: IN PALE GREEN, INDIVIDUAL INITIATIVES; IN DARK GREEN, COLLECTIVE ORGANIZATION)**

Three types of materials are exchanged with peripheral areas:

- Manure (collective purchase): the provision of manure is organized collectively in the Miraflores garden. The *Comité pro-parque Miraflores* is organized in several “working committees”. One of them is in charge of organizing a common purchase of fertilizer every year. Manure is purchased to a farmer of the outskirts of Sevilla: it is a very rich and balanced mix of horse and goat manure, as the farmer raise both goats and horses. When delivered to the garden, the manure is already half composted: it is stocked in a corner of the garden during the end of its maturation process.
- Seeds and plantlets (collective greenhouse): young plants are produced by the “seedling committee” in a collective greenhouse. Every year, gardeners have the option to pay 10€ to get a mix of young plants for the whole season. For some species like tomatoes, from one year to another the responsible of the “seedling committee” retrieves seeds from his plot and asks to market-gardeners of the outskirts of Sevilla to produce the young

plants in order to avoid cross-pollination and keep the varieties stable from one year to another.



**FIGURE 13 THE COLLECTIVE GREENHOUSE OF THE MIRAFLORES GARDEN, EMPTY AFTER ALL THE PLANTLETS HAVE BEEN DISTRIBUTED TO GARDENERS FOR SPRING PLANTATIONS (PICTURE J. POURIAS, 2015)**

- Seeds, plantlets ... (individual initiatives): beside exchanging knowledge, urban gardeners frequently get plants from friends or family members who have either a garden or a farm in rural or periurban areas. For example, several gardeners have explained that the perennial aromatics they grow in their plot come from the mountainous area in the North of Sevilla. I also met during a visit at the garden a gardener who came every week to visit urban gardeners: he considered himself privileged in comparison with urban gardeners as he owns his own field in the countryside. Therefore, he came with plantlets produced in his garden to distribute to his friends in the garden.

## 6. Conclusion

Thanks to a mixed methodology, which included on-field observations, interviews with local stakeholders and gardeners and archive exploration, I investigated the link between the creation of urban allotment gardens in Sevilla and the context of economic crisis and described the various ways urban gardens can contribute directly or indirectly to food security.

We can retain from this first investigation that the crisis does have an influence on the creation of gardens; however, everything is not due to the crisis: before 2008 it already existed in Sevilla a strong dynamic of creation of gardens. The crisis has changed some parameters, like the cost of the lands which has engaged public authorities to look for alternative ways to use vacant lots. However, politic context has also played a very important role in the creation of gardens since the beginning of the year 2000's.

The municipal subventions received from the City of Sevilla and the participative budget program initiated in 2004 contributed strongly to the creation of new gardens and the development of pre-existing ones. These subventions and programs stopped almost completely in 2011 with the arrival of the right party at the government, due to budgetary restrictions caused by the crisis, but before all due to a lack of interest from the new municipal government for the topic of urban gardens. However, no garden has closed due to this removal of municipal budgets, which show also that gardens are before all managed and kept alive by the gardeners themselves and the organizations that run the gardens, even though the lack of financial means impacted the activities proposed in the gardens (for example visits for schools, etc.), changing a little the functions of the gardens and their opening on the city.

With respect to the profile and motivations of urban gardeners, the crisis also had an effect: however, the motivations of gardeners have not turned abruptly towards producing food and saving money, as this is sometimes recounted in press articles.

In urban gardens, the most visible impacts of the economic crisis are linked to its underlying effects, like causing a lack of confidence in the capacity of the actual society and economical model to provide good living conditions. In that sense, urban gardens are seen both as a “shelter” where to develop its own self-sufficiency capacity, and a good place to experiment new social organizational models. Furthermore, we noted in the case of the *Parque del Alamillo* garden, that the selection process acted like a “filter”, probably preventing the neediest persons to access a plot.

We have also seen that new entrepreneurial projects have emerged in Sevilla for the past 5 years, directly correlated to the need to create jobs. These entrepreneurial projects, if they succeed in creating a sustainable economic activity, respond more directly and adequately to the needs of people impacted by the crisis, that we could summarize as “in times of economic crisis, producing food can help, but less than producing meaningful jobs”.

I identified four ways urban allotment gardens can contribute on the short and long-term to city food security: production of food *per se*, maintenance and propagation of knowledge and know-how on how to produce food, maintenance of open spaces and soils with interesting agronomical properties and creation of a link to the agricultural periphery of the city.

These aspects would be interesting research topics for future investigations. More precisely, I identify four possible topics for future research projects:

- to quantify and qualify the actual production of fruits and vegetables in the gardens of Sevilla, and to compare the yields with similar measures taken in gardens of Montreal and Paris, most of the time in gardens set on

urban soils. This would contribute to assess the importance of pedo-climatic conditions in the yields achieved in urban gardens, with respect to other determinants related to the cropping practices of gardeners for example.

- To investigate more deeply the transmission of knowledge in the gardens: how efficient is the oral transmission of “traditional” knowledge for people who are used to use internet or other media as a major learning source? Is there permeability between these two ways of learning? That is to say, do people who have agricultural knowledge also refer to internet? ...
- To assess the actual agronomical profile and possible contaminations of the soils of the gardens of Sevilla, through historical investigations and soil analysis.
- To identify and quantify material flows in and out of the gardens (nutrients, plant materials...) in order to evaluate the contribution of urban gardens to the more global metabolism of the city and analyze “metabolic interactions” (Barles, 2007) between urban gardens and market-gardening peri-urban areas.

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## Appendix 1 Side activities during the STSM

<b>Date</b>	<b>Place</b>	<b>Event</b>	<b>Theme</b>
2015-04-09	Universidad Pablo de Olavide, Sevilla	Charla Taller – Red de Semilla Andalusia	Workshop on traditional varieties and seed preservation
2015-04-10	Universidad Pablo de Olavide, Sevilla	Curso Agroecologia Americana	Workshop on influence of American species on Andalusian agricultural landscape + inauguration of the university garden
2015-04-11	Facultad de Ciencias, Universidad de Malaga, Malaga	Jornadas de Agricultura Urbana Y Periurbana: Una Perspectiva Agroecológica Global y Local	Conference on urban agriculture from the perspective of agroecology. Visit of 2 urban gardens of Malaga
2015-04-29	Cortijo del Parque del Alamillo, Sevilla	Seminario “Espacios en espera”	Conference on sustainable use of urban spaces, presentation of several projects of urban agriculture and urban gardens in Sevilla
2015-05-15	La Noria, espacio socio-cultural, Malaga	Jornadas de Huertas Urbanas	Conferences on urban gardens in Spain, forum for the creation of a network of urban gardens in Malaga. Visit of 2 gardens and 1 project of urban agriculture in Malaga
2015-05-27	Jardin del Alcazar, Sevilla	Dialogo en el jardin	Conference – debate on the place of garden in the city and history of urban agriculture in Sevilla

## Appendix 2 Notes on urban gardens of Sevilla (retrieved from personal investigation and from Puente Asuero, 2012)

<b>Garden identity</b>	
Name	Huertos del Parque Miraflores
Size	4,7 ha
Managing organization	<i>Comité Pro-Parque educativo Miraflores</i>
<b>Situation</b>	
Environment	In an urban park
Land status	Public (City of Sevilla)
<b>History</b>	
Origin of the project	In the 1980's, the suburbs of Sevilla and particularly the northern part experienced a rapid urbanization that converted suddenly the traditional agricultural landscape to a residential, urbanized one. The <i>Comité Pro-Parque Miraflores</i> was created upon an initiative of inhabitants of the northern neighborhood of Sevilla in 1983, to suggest new options for land use planning and city design, more respectful of the historical heritage of this part of the city. At the beginning of the 1990's, the garden was created on squatted land: private plots that were formerly dedicated to agriculture and then abandoned were cleaned up from trashes and converted into an urban park for one part, and into an urban garden for another. In 1994, the signature of a convention and the acquisition of the lands by the City of Sevilla made the park and the garden legal. Today, the garden is one of the central activities of the <i>Comité</i> , which is also dedicated to youth education and to increase public awareness about cultural and historical heritage. The garden, which has since its creation served as a reference for other projects of urban gardens in Sevilla and across Spain.
Previous use of the land	The land where the garden is settled is a former agricultural land; the excavations led by the association actually showed that the land had had an agricultural vocation since the Antiquity. The agricultural use was abandoned during the second half of the XXth century and the site progressively turn into an unauthorized dump, except on a small piece of land where the garden is located, which was gardened by a family until a few years before the creation of the garden.
<b>Organization</b>	
Number and type of plots	160 plots of 175m <sup>2</sup> for individuals, and collective plots for local organizations
Orientation of the garden, activities	<ul style="list-style-type: none"> <li>- The activities of the <i>Comité Pro-Parque Miraflores</i> are much related to preserving and transmitting the heritage of traditional knowledge and landscape that existed before the urbanization. The claim for the garden also went with the re-discovery of a small river, tributary of the Guadalquivir named the Tagarete, which had been deviated into another major river of Sevilla at the beginning of the XXth century.</li> <li>- The association manages two types of gardens: “huertos de ocio” (leisure gardens), that are meant for individuals and families and “huertos escolares”, meant for schools and children</li> </ul>
Collective equipment	Next to the site of the garden are several ancient agricultural buildings, including a Noria (ancient water wheel) and an olive mill. One of the buildings has been converted into a “house for gardeners”, where events take place, there is a library, exhibition of old tools, etc. The olive mill has been restored and the project is to transform it into an “eco-museum” explaining traditional farming in Andalusia, the cultivation of olive, etc.

	A collective greenhouse is also maintained by the “seedling committee” of the garden.	
Rules and regulation	<ul style="list-style-type: none"> <li>- There is an obligation to have ecological farming practices,</li> <li>- it is forbidden to sell products (so as not to compete with local grocery stores: that was a strategy of the association to implant itself closely in the neighborhood so as to have more power against the municipality),</li> <li>- One must care and cultivate its plot.</li> </ul>	
<b>Agronomic aspects (at collective level)</b>		
Fertilization and irrigation	<p>The association propose to gardener a common purchase of fertilizer every year: it is purchased to a farmer of the outskirts of Sevilla, and is a mix of horse and goat manure (the farmer first use the straw in horse boxes, then for goats): this gives very rich and balanced manure. When it is delivered to the garden, the manure is already half composted: it is stocked in a corner of the garden during the end of its maturation process.</p> <p>Some plots are equipped with drip irrigation system</p>	
Seeds	<p>Young plants are produced by the “seedling committee” in the collective greenhouse. Every year, gardeners can pay 10€ to get a mix of young plants for the whole season. For some species like tomatoes, the responsible of the “seedling committee” keeps the seeds from one year to another and asks to market-gardeners of the outskirts of Sevilla to produce the young plants in order to avoid cross-pollination and keep the varieties stable from one year to another.</p>	
Recommended cropping practices?	Ecological practices in the regulation of the garden	
<b>Pictures</b>		
General view of the garden, with housing buildings of Miraflores neighborhood in the back		
Activities for school children		
Ancient buildings and hydraulic system: historical legacy that give evidence of the long agricultural tradition of the site		

<b>Garden identity</b>	
Name	Huertos del parque de San Jeronimo
Size	0,87 ha
Managing organization	<i>Ecologistas en Acción</i>
<b>Situation</b>	
Environment	In an urban park
Land status	Public (City of Sevilla)
<b>History</b>	
Origin of the project	The San Jeronimo park was created in 1995 on the lands that had served as a nursery for the plants of the 1992 universal exposition. The garden was initiated by an ecologist organization, <i>Ecologistas en Acción</i> . Its creation responded to a will of the organization to support ecologist claims and to promote environmental awareness, while putting in practice alternative, more sustainable practices. <i>Ecologistas en Acción</i> reached quickly to an agreement with the City of Sevilla, and the rest of the area was converted into an urban park.
Previous use of the land	No data
<b>Organization</b>	
Number and type of plots	The garden comprises 42 plots of 75 to 150m <sup>2</sup> and 6 plots for school gardens
Orientation of the garden, activities	Besides individual gardening, the garden is the medium of various pedagogic activities for children and adults. Furthermore, the association has also started in 2013 the breeding of a small goat herd, primarily to insure natural maintenance of the surroundings of the garden.
Collective equipment	Chalet, table and chairs
Rules and regulation	- There is an obligation to have ecological farming practices, - It is forbidden to sell products

<b>Garden identity</b>	
Name	El Huerto Del Rey Moro
Size	Total size of the garden: 5000m <sup>2</sup> ; size of the vegetable patch: ??
Managing organization	Asociación de Amigos de la Huerta del Rey Moro “La Noria”
<b>Situation</b>	
Environment	The garden is located in the dense historical center of Sevilla, next to a 15 <sup>th</sup> century building, of mudejar style ( <i>La casa del rey moro</i> ), used as the headquarters of the <i>Fundación Blas Infante</i> . The land where the garden is set historically belonged to that building.
Land status	The lot, as well as the historical building set next to it, belongs to the Junta de Andalucía. In 1987, the Plan General de Ordenación Urbana (PGOU), designed by the City of Sevilla, had planned the building of housings on half of the lot. However, the work got late, and in 2001 the lot obtained from the Junta de Andalucía a classification as Bien de Interés Cultural, which theoretically protects it from being urbanized. However, even though some progress towards recognition of the garden as a legal use of the lot had been made during the previous mayor mandate, building plans are still on the agenda of the actual mayor. Today, the association keeps asking for the garden to be officially recognized as a green space, in a neighbourhood that offers very few parks or public gardens, and the existence of the garden on the long-term remains uncertain. Gardeners consider their garden a “ <i>Huerto okupado</i> ”, a squatted garden, referring to its uncertain existence in legal frameworks and urban plans.
<b>History</b>	
Origin of the project	In 2004, inhabitants of the neighborhood and various organizations with diverse interests (ecology, claiming the right to the city, experimenting self-governance, AMPAs) decided to set up a garden on what was then a vacant lot. Part of the project came from the will of neighbors to protect this historical area from being built and restore it. From 2005 to 2011, the association got municipal funding through the participative grants program of the City of Sevilla (20000€).
Previous use of the land	Since the 15 <sup>th</sup> century, when the <i>Casa del rey moro</i> was built, the soil has been dedicated to the growing of vegetables and has remained unbuilt until today.
<b>Organization</b>	
Number and type of plots	The lot is divided into two sections: a “leisure area” which play the function of a public park, maintained by inhabitants, and the garden, which comprise one big plot cultivated communally (and, in several parts, people having their own plantations, but no delimited plots) At the beginning, individual plots, “huertos educativos”
Orientation of the garden, activities	Political project, occupation of the land Education (at the beginning of the garden), collective work and organization, self-governance Various activities are organized in the garden: cultural events, meetings, art exhibition (photography), open-air cinema, educational activities, cooking workshops (the association has built a bread oven in order to produce their own bread)... The association is organized in working groups: “El bancal” gathers people willing to cultivate the kitchen gardens, “Huertos escalores” are dedicated to children from primary schools Members of the association and users of the garden are not only gardeners: some come to the garden as they would come to a park, as the garden offers many attractions, especially for children. Actual gardeners that cultivate the vegetable patch are a mix of people from the neighborhood and people involved in one of the various associations linked to the project.
Collective equipment	Chair and table

	Site divided in several parts: a playground for children, tables and chairs to seat down, and the garden Compost
Rules and regulation	Today, most of the garden is gardened collectively but still some individual plots
<b>Agronomic aspects (at collective level)</b>	
Fertilization and irrigation	Initially the vegetable patch has been set up on added soil, so as not to disrupt archeological vestiges.
Seeds	
Recommended cropping practices?	The gardeners refer to permaculture. Lots of flowers and pollinators Production of herbs +++
<b>Pictures</b>	
Multifunctional space: one part of the garden dedicated to children games, tables and chairs, another to the kitchen garden	 
Kitchen garden : lots of herbs and flowers, straw, ecological practices	 

<b>Garden identity</b>	
Name	Huertos del Parque del Tamarguillo
Size	1,2 ha + 1,92 ha
Managing organization	Previously the non-profit organization <i>Movida Pro-parque Tamarguillo</i> Now the Association of gardeners of the park Tamarguillo
<b>Situation</b>	
Environment	In the middle of an urban park
Land status	Public (City of Sevilla)
<b>History</b>	
Origin of the project	The garden was set up by an association called <i>Movida Pro-parque Tamarguillo</i> in 2005. This association, which was very similar in its functioning and goals to the <i>Comité Pro-parque Miraflores</i> , was founded in 1996, and claimed for the conversion of a vacant lot located close to the <i>Parque Alcosa</i> neighbourhood into a public park. They succeeded in doing so, but after a series of conflicts between the <i>Movida Pro-parque Tamarguillo</i> and the municipality, mostly due to a conflicting view on the construction of a road in the middle of the park, the association was evicted in 2012, and the municipality took charge of the management of the garden. Since then, a new association has been created, which only includes gardeners and not former members of the <i>Movida</i> .
Previous use of the land	Agricultural use then vacant lot that progressively turned into an unauthorized dump
<b>Organization</b>	
Number and type of plots	The first site, where the garden was initially created counts 120 plots. A second site opened later, counts 168 plots.
Orientation of the garden, activities	Individual gardening The association organizes visits for school children.
Collective equipment	-
Rules and regulation	No data
<b>Pictures</b>	
General view of the garden The blue plastic can serve as water tanks	
The old farm building witnessed the historical agricultural use of the land	

<b>Garden identity</b>	
Name	Huertos de Torreblanca
Size	1,19 ha
Managing organization	<i>Asociación Huertos de Torreblanca de los Caños</i>
<b>Situation</b>	
Environement	In a sports complex
Land status	Public (City of Sevilla)
<b>History</b>	
Origin of the project	The garden was created within the framework of the “participative budget” implemented by the City of Sevilla. From the consultation meetings led for the participative budget appeared the idea to create a urban garden. A budget was attributed to Torreblanca to realize the works: however, no site had been identified, no association was constituted and the local organizations had no experience in creating an urban garden. Therefore, a working group was creating with members from local organizations and members of other urban gardens of Sevilla, to discuss the creation, management and design of the future garden. After a while, it was decided to create the garden within the sport complex. The garden opened in 2007.
<b>Organization</b>	
Number and type of plots	23 individual plots
Orientation of the garden, activities	Individual gardening
Collective equipment	Benches and tool boxes
<b>Agronomic aspects (collective aspects)</b>	
Fertilization and irrigation	All plots are equipped with drip irrigations system
<b>Pictures</b>	
General view of the garden	
Drip irrigation system	

<b>Garden identity</b>	
Name	Huertos de Pino Montano
Size	3,9 ha
Managing organization	<i>Comunidad General de Propietarios y Residentes de Pino Montano</i>
<b>Situation</b>	
Environment	
Land status	The garden is located on the former land of a psychiatric hospital. It is a public land, which belongs to the Province of Sevilla
<b>History</b>	
Origin of the project	In 2010
Previous use of the land	Psychiatric hospital: green space
<b>Organization</b>	
Number and type of plots	
Orientation of the garden, activities	The plots are rented to gardeners by the managing organization, which also aims at developing other economic activities related to ecotourism and farm-house holidays. They already have accommodation facilities and a demonstration farm where they raise farm animals (porks...) and horses.

<b>Garden identity</b>	
Name	Huertos de San Antonio
Size	0,58 ha
Managing organization	<i>Asociación Huertos de Torreblanca de los Caños</i>
<b>Situation</b>	
Environment	In a public park
Land status	Public
<b>History</b>	
Origin of the project	The San Antonio garden was opened upon the demand of the association of gardeners of Torreblanca, as the 23 plots of the Torreblanca garden didn't cover all the demands of neighbors willing to cultivate. They are located on a former agricultural land which was part of a hacienda. Part of the plot, where are located the buildings of the ancient hacienda, is still private. It comprises 58 individual plots.
Previous use of the land	Agricultural (orange tree orchard)
<b>Organization</b>	
Number and type of plots	58 plots
Orientation of the garden, activities	Individual gardening
Collective equipment	Powered well
<b>Agronomic aspects</b>	
Fertilization and irrigation	The water comes from a well.
Recommended cropping practices?	Ecological practices
<b>Pictures</b>	
General view of the garden (on the right: the surroundings: public park with old plantations of orange trees)	
Water tanks and powered well	

<b>Garden identity</b>	
Name	Huertos de Bellavista
Size	0,5 ha
Managing organization	<i>Asociación Huertos Bellavista</i>
<b>Situation</b>	
Land status	Public
<b>History</b>	
Origin of the project	The Association was founded in 2010 following a proposal of the participatory budget of the City of Sevilla.
<b>Organization</b>	
Orientation of the garden, activities	The organization shows the following objectives: to promote social participation through the practice of organic farming, to promote environmental education, to promote the recovery of traditional forms of cultivation and to encourage conviviality and mutual acquaintance.

Garden identity	
Name	Huertos del Poligono Sur
Size	5000m <sup>2</sup>
Managing organization	Verdes del Sur
Situation	
Environment	The garden is located in front of an educational center for adults. The soil seems to be anthropogenic: compacted with a lot of stones and rubbles.
Land status	Land of the CEPER Poligono Sur (Adult Education Center), which belongs to the Junta de Andalucia
History	
Origin of the project	The “Garden of Poligono Sur” has been created by <i>Verdes del Sur</i> , an association gathering inhabitants of the 3000 viviendas neighbourhood, very deprived and enclave neighborhood of southern Sevilla..
Organization	
Number and type of plots	12 plots of 25m <sup>2</sup>
Orientation of the garden, activities	The association conceives this garden as a “pilot garden”, aiming at providing an initial training to inhabitants of the neighborhood and giving proof of the good management of the garden to the municipality, as the association has been asking for 4 years to open a garden in the Guadaira park located next to the <i>3000 viviendas</i> but separated from it by a major road.
Collective equipment	Compost bins
Rules and regulation	Individual plots but temporary use: the objective is that the gardeners are trained in this garden and then take a plot in the Parque Guadaira
Agronomic aspects	
Fertilization and irrigation	100% compost produced on the garden Irrigation with drinkable water from the Education Center
Recommended cropping practices?	Ecological practices
Pictures	
General view of the garden	
(left) Individual plots but no barriers or fences between plots (right) Olive trees given by the university, in waiting of being planted in the future Guadaira park	

<b>Garden identity</b>	
Name	<i>Parque del Alamillo</i> garden
Size	In the <i>Parque del Alamillo</i>
Managing organization	<i>Parque del Alamillo, Junta de Andalusia</i>
<b>Situation</b>	
Environment	<p>The gardens are located on the border of the <i>Parque del Alamillo</i>, a park located a few km away from the historical center of Sevilla, opened in 1993, as a consequence of the reorganization and rehabilitation of the Cartuja island after the Universal Exposition of 1992. It's a metropolitan park, run by the <i>Junta de Andalusia</i> (region of Andalusia).</p> <p>The ring road passes almost above the gardens.</p> <p>The immediate environment of the garden is semi-natural. The soil is a former agricultural soil (orchard), set on the sediments of the Guadalquivir.</p>
Land status	Public ( <i>Junta de Andalusia</i> )
<b>History</b>	
Origin of the project	<p>The gardens were born from a political will: in 2013, the coalition government of the Junta de Andalucia was composed of two left political parties (Izquierda unida and PSOE). Izquierda unida supported strongly the creation and development of urban gardens and decided to set up a garden in the <i>Parque del Alamillo</i>: due to its geographical position (it's visible from the ring road that surrounds Sevilla and it's close to the city center), the garden has a strong function of demonstration. Furthermore, for the Junta de Andalucia, this new mission of creating urban gardens allowed to give a function to the numerous vacant lots it owned, due to low land prices and slowdown of construction industry after the crisis of 2008. The work began in September 2013. Meanwhile, a "social forum" took place with associations of gardeners from existing gardens, local authorities etc., in order to define the plans and activities of the future garden. In September 2013, a call for interest was published by the Junta de Andalucia, inviting people and associations interested in getting a plot to send an application file. The garden opened in November 2013.</p>
Previous use of the land	<p>The whole area used to be agricultural land. An ancient agricultural building is still visible in the middle of the park and now hosts the offices of the park services. Then, part of this land was transformed to host the Park and the plant nursery of the Park.</p> <p>The garden itself is set in the middle of a 40 hectares orchard of orange trees adjacent to the park. The harvest of the oranges is opened to harvest to anyone.</p>
<b>Organization</b>	
Number and type of plots	<p>At the opening of the garden in 2013, there were 133 plots: 23 plots of 70m<sup>2</sup> for associations and groups, 114 plots of 35m<sup>2</sup> for individual and families and 4 collective plots of 140m<sup>2</sup> dedicated to Education centers.</p> <p>In summer 2015, 41 new plots shall open shortly (24 plots of 98m<sup>2</sup> and 16 plots of 90m<sup>2</sup>)</p>
Orientation of the garden, activities	<p>As one gardener of the garden says: the garden is not a neighborhood garden but a city garden. It is not located in a neighborhood where people live but in a park, surrounded by a scientific and business park. It attracts people from all over the city, even if the criteria of admission give the preference to people living at the nearest distance of the park.</p> <p>The collective plot is cultivated by a group of 12 people: the harvest is shared between these 12 people and a "comedor social", a community kitchen in a convent (<i>calle San Luis</i>) that serves 400 meals per day to people in need.</p>
Collective equipment	<p>Each plot is equipped with a water inlet.</p> <p>There are shed to put the tools, fertilizers and other equipment. The tools are owned individually by gardeners.</p>

	<p>Table and chairs are available on one side of the garden.</p> <p>Orange trees planted on the plot next to the garden are available to anyone (gardeners and non-gardeners).</p> <p>There are ongoing discussions for collective purchase of seeds.</p>
Rules and regulation	<p>The garden is under the management of the <i>Junta de Andalucía</i>, and more precisely the <i>Agencia de Vivienda y Rehabilitación de Andalucía (AVRA)</i>.</p> <p>The plots are allocated to gardeners by the services of the park that manage the garden. There is a waiting list, so the priority is decided on various criteria such as the number of people of the family (understood as the number of people that will benefit from the plot), the distance between the home of the gardener and the garden, and the motivation (a little letter of motivation is asked in the application file). No criteria on incomes or working situation.</p> <p>The plots are allocated for 3 years, renewable if the plot is “well-tended”.</p> <p>So far there is no formal association of gardeners, but there are projects to create one that would share the management of the garden with the park services.</p> <p>A document listing the regulations is given to gardeners at their arrival in the garden. It mentions obligations, such as: it is not allowed to divide the plot or put fences around it; no fruit trees can be planted; the cropping practices have to be ecological...</p>
<b>Agronomic aspects</b>	
Fertilization	No collective organization
Irrigation	<p>The water is provided by the park: it is non potable water from the Guadalquivir (the same water used to irrigate the park)</p> <p>There is no individual water meter (however, according to the gardener interviewed, people are very aware of water scarcity issues, as there has been regular shortages of water in the past years)</p> <p>Almost all plots are equipped with drip irrigation, only a few plots are watered with hoses</p>
Recommended cropping practices?	Ecological
<b>Pictures</b>	
General view of the garden (right picture in the back: bridge of the ring road)	
(left) Collective equipment: tool shed, table and benches (right) Drip irrigation system in one plot	

Garden identity	
Name	Huertos de Helgar
Size	
Managing organization	Owner of the plot
Situation	
Environment	In the middle of a traditional market-gardening area in the outskirts of Sevilla
Land status	Private
History	
Origin of the project	Conversion of an agricultural plot into a garden. The plots are rent to gardeners from 20€ per month for a 30m <sup>2</sup> -plot to 50€ per month for a 100m <sup>2</sup> -p
Previous use of the land	Agricultural
Organization	
Number and type of plots	
Orientation of the garden, activities	Individual gardening
Pictures	
Capture of the website promoting the garden	
General view of the garden	
Surroundings: market-gardening area	

## Appendix 3 Questionnaire for gardeners

**Generalidades** *(a lo largo de la entrevista)*

Hombre o mujer:

Nombre y Contacto (email, teléfono) (opcional)

¿Cuál es su edad?

¿Cuál es su situación laboral?

¿Cuántas personas viven con usted? ¿Cuántas personas trabajan en su parcela?  
(familia...)

¿A que frecuencia viene al huerto?

¿Desde cuándo cuida este huerto?

¿Cuál es la superficie de su huerto?

### 1. Motivaciones

1.1 ¿Por qué quería usted tener un huerto? ¿Qué le aporta el hecho de tener un jardín?

1.4 ¿Piensa usted que el huerto le proporciona mejor calidad de vida?

### 2. Alimentación

2.1 ¿Qué produce en su huerto?

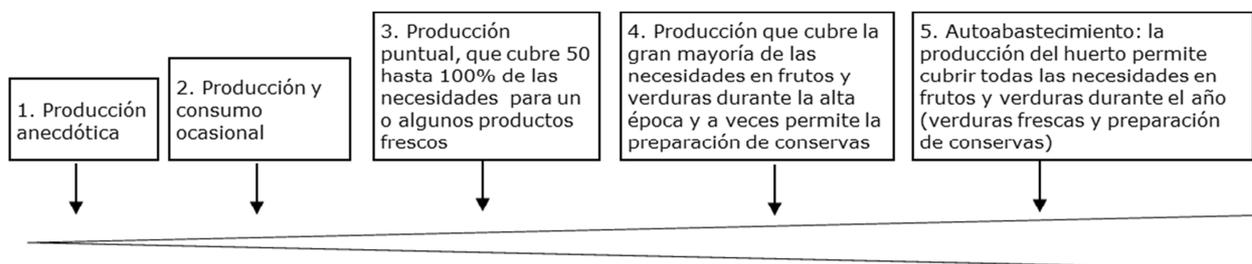
2.3 ¿Cuál es la proporción de su huerto dedicada a la producción de frutas, verduras o aromáticas? ¿Qué hace usted sobre la parte no cultivada en estas producciones?

2.4 ¿El huerto tiene un impacto positivo en su economía familiar? ¿Genera un beneficio económico?

2.6 ¿Hay productos del huerto que usted no compraría porque son demasiado caros o porque son difíciles de encontrar en los comercios?

2.7 ¿Piensa usted que su huerto permite una alimentación más sana o diversa?

2.8 ¿Sobre los frutos y verduras que come su familia cada año, cuál es la proporción que viene de su huerto? *(En esta imagen, aparecen 5 situaciones que describen como los productos del huerto contribuyen a su alimentación; elige una)*



2.9 ¿Hace usted conservas?

### 3. Conocimientos

3.1 ¿Cuándo usted llegó al huerto, tenía conocimientos en el cultivo de un huerto?

3.2 Si sabía, ¿Dónde lo había aprendido?

Si sí: ¿Han evolucionado sus prácticas y conocimientos desde que llegó al huerto?

Si no: ¿Cómo aprendió?

5.4 ¿Cuál es su edad?

5.5 ¿Cuál es su situación laboral?

5.6 ¿Cuántas personas viven con usted?



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