

NORWEGIAN UNIVERSITY OF LIFE SCIENCES





**URBAN AGRICULTURE IN ISTANBUL:  
THE ROAD TO FOOD SECURITY AND SUSTAINABILITY**

A THESIS SUBMITTED  
IN PARTIAL FULFILLMENT OF THE REQUIREMENTS  
FOR  
THE DEGREE OF MASTER OF SCIENCE  
IN  
AGROECOLOGY

BY  
SELEN CAGLAYIK ELOGLU

**SUPERVISORS**

**GEIR LIEBLEIN  
SUZANNE MORSE  
CHARLES FRANCIS**

To all urban farmers.

## FOREWORD

I was born and raised in Istanbul and have been away from the virtues and wonders of the countryside most of my life. A few years ago I found a chance to step into the world of sustainable agriculture and decided that, it was that world which was calling me to take action. Starting the Master's program was part of that big step.

When the time came for working on a thesis project, I wanted to work for my birth city and wished to bring my knowledge and ideals to it. Istanbul was losing its agricultural heritage and it was time for me to raise my voice against this loss. Hence this present research was born.

This research would not have been completed without the help of all those people who supported and advised me along the way. Their contributions and ideas oriented my research and enlivened my enthusiasm for writing.

Of all people, I want to thank my husband Serkan Eoğlu who never ceased to believe in me and my studies, and who always supported me with all his interest. I am grateful also to my mother and dear other family members who showed their support at all levels of the Master's program and followed my steps with curiosity and care.

My friends from the program, Numa Courvoisier and Karly Burch deserve a special gratitude as they always helped me to solve questions regarding the writing of this thesis and the program in general. They were always there to lend a helping hand and share new ideas.

I also want to send my best wishes to my coworkers at the garden project; without them this study would never have started nor finished. Their interest and efforts created a wonderful garden and long-lasting friendships.

Finally, I thank here my professors Suzanne Morse, Charles Francis and Geir Lieblein who oriented my research towards the right ends and pathways, and who showed curiosity and interest in my study from the start while showing support. I also thank my student advisor Ingrid Bugge who was always ready to answer all my bureaucratic and administrative questions.

## **ABSTRACT**

As the world is facing urbanization at full speed and as food systems become more globally entangled leaving consumers at the mercy of markets and conventional products, urban agriculture attracts more attention and offers new opportunities to urban residents to handle their food systems. With its ability to secure food for populations, generate income, sustain urban ecosystems and create livable communities, urban agriculture is praised increasingly in different parts of the world, and urban residents more and more grasp their chance of obtaining their right to food.

The present research intends to reveal the potentials of urban agriculture for cities which are facing global and local challenges, and it aims to discover new opportunities for urban residents who desire to include urban agricultural activities in their urban lifestyles. In order to do that, the study looks at the case of Istanbul, more specifically a local urban agriculture initiative which is established with the aim of bringing food production and urban residents together. The research explores how it is possible to start, conduct and finalize an urban agriculture project within the confines of an urban apartment, and it intends to reveal the possibilities and hindrances faced during the process while formulating ideas for future examples.

Results indicate that urban agriculture within an apartment context is possible to bring aspects of urban agriculture to reality, and shows how people can find a way to install urban agriculture into their urban backgrounds. The research illustrates that cities can welcome urban agriculture with ease, but also indicates that much help, planning and effort is needed to implement projects and to receive beneficial outcomes.

## TABLE OF CONTENTS

DEDICATION.....	iii
FORWARD.....	iv
ABSTRACT.....	v
TABLE OF CONTENTS.....	vi
LIST OF FIGURES.....	viii
CHAPTER	
1. INTRODUCTION.....	1
1.1. Research Questions.....	2
2. METHODOLOGY	
2.1. Scope of the Research.....	4
2.2. Selection of the Case.....	4
2.3. Data Gathering: Methods and Tools.....	5
2.4. Group.....	8
2.5. Time Management.....	8
3. LITERATURE REVIEW, DEFINITIONS AND CONCEPTS	
3.1. Urban Agriculture.....	9
3.2. Importance of Urban Agriculture.....	10
3.2.1. Food Security.....	10

3.2.2. Economic Aspects.....	11
3.2.3. Sustainable Urban Ecosystems.....	11
3.2.4. Community Building.....	12
4. CONTEXT	
4.1. Turkey.....	14
4.2. Istanbul.....	14
4.3. Urban Agriculture in Istanbul.....	15
5. CASE STUDY: DESCRIPTION AND PROCESS	
5.1. Characteristics and Background Information.....	19
5.2. Implementation of the Project.....	20
5.3. Implementation of the Garden.....	23
6. CASE STUDY: RESULTS AND DISCUSSION	
6.1. Aftermath Evaluation: The Process and the Garden.....	30
6.2. Ideas and Points for Future Projects.....	34
6.3. Implications for UA in Istanbul and Other Cities.....	35
7. CONCLUSION.....	37
REFERENCES.....	38
APPENDIX I.....	42
FIGURES.....	43



## LIST OF FIGURES

Fig.1 Model of Action Research.....	6
Fig.2 The garden: view from the West end.....	44
Fig. 3 Experimental area with the compost box in the back.....	45
Fig. 4 Sketch Map drawn by team member Görkem Ergazi.....	46
Fig. 5 Seed Ball.....	47
Fig. 6 Trimmed branches and leaved used for mulch and hugelkultur.....	48
Fig. 7 Tree trunks used as the base of hugelkultur.....	49
Fig. 8 Twigs and branches used to cover the tree trunks.....	50
Fig. 9 Completed hugelkultur unit.....	51
Fig. 10 Heirloom seeds used in the garden.....	52
Fig. 11 Making of the medicinal and aromatic plants patch.....	53

## CHAPTER 1

### INTRODUCTION

As urbanization trends spread around the world and are being accepted widely, cities appear and grow with the loss of usable farm land and become areas where cement blocks, roads and parking lots dominate the landscape, and where pollution and increase in waste material cause dire concerns (Koc, MacRae, Mougeot and Welsh, 1999, p.3). With only limited spaces to appreciate and practice agriculture, urban residents find themselves more and more surrounded by a food system dependent on outside food sources that require the use of fossil fuels for production, transportation and money exchange. The distance to areas of food production also necessitate consumption of processed food causing urban residents to remain uninformed about where and how food in their plates is produced and processed (ibid). More importantly, the added threat of climate change, oil crises and economic imbalances render the availability of food vulnerable, making food security an immediate issue today (Metcalf and Widener, 2011, p.1243). The increasing population pressure and poverty in cities augmented by migration trends adds also to the intensity of food dependence of urban residents. There is urgent need to question the current status of cities in regard to available food systems, and it is necessary to search for new methods to alleviate the current conditions (Koc, MacRae, Mougeot and Welsh, 1999, p.3).

Amidst all these developments, urban agriculture (UA) comes to the front as it offers a holistic solution to issues experienced in cities. It gives residents the chance to grow their own food and therefore to grasp their right to food security, and it provides the means for creating a sustainable and greener cityscape. UA practices also help to re-establish people's connection to land, and help community development, and beyond that, assist people to make income from food production and maintain self-sufficiency. UA becomes therefore an indispensable agenda for cities that are in urgent need to adjust their dynamics in regard to global and local developments about food and agriculture.

Turkey had its share from the urbanization trends as well as it has seen a rise in the urbanization process in the last decades. While the urban population accounted to 38.5% of the total

population in 1970s, it reached 65% in 2005 indicating a massive change in population dynamics (Ozer, Vardar and Ozer, 2007, p.3). Istanbul, a megacity with a population reaching almost 14 million residents is facing this trend in urbanization at full speed, and seems to require adjustments to its food system in an immediate future similar in fashion to other megacities around the world. The city has been increasingly dependent on food coming from other cities of Turkey for the past decades. It also remains vulnerable against expected earthquakes and other natural disasters caused by changing climate patterns and restricting infrastructure. The poverty among migrants from rural areas is also on the rise, and complicates the socio-economic background. In regard to recent developments about UA around the world, it becomes crucial to ask whether UA practices can offer solution here and similarly in other big cities to reconnect people to land, help them to handle their food production, and also to offer solutions for other urban issues experienced. Istanbul is not new to UA, but has lost its agricultural traditions exceedingly, therefore it urges one to question the possibilities to re-introduce them or re-trace them for future changes. If UA is truly able to lend solutions, then intervention both at public and policy level will be central for the future of today's big cities.

### **1.1. Research Questions**

Inspired by the global possibilities of UA and its potential for cities prone to socio-ecological issues that threaten their sustainability and viability, this research aims to trace aspects and potential of UA in the urban settings. The main question of the research is:

How urban agricultural practices can help residents of cities to establish and maintain a local and resilient food system and a sustainable urban ecosystem along with an empowered community that would help reduce people's dependence on outside sources and decrease their vulnerability against natural or socio-economic threats?

The question was framed by the general definition and evaluation of the term *urban agriculture* as attested in various sources which will be further developed in Chapter 3.

To answer this question, the present study primarily tries to describe and evaluate the scope of UA in a city -here referring to Istanbul, and later to analyze how UA practices are being

implemented and maintained along with contributing and hindering factors they face during the process.

To do this, one UA project in Istanbul is selected as case study, and this is analyzed with the help of more specific questions which are:

- 1) What are the characteristics of this UA initiative?
- 2) How has been this project phases implemented and maintained?
- 3) How has been the actual garden implemented and maintained?
- 4) What can be learned from the project in terms of its implementation and execution?
- 5) What can be learned from this initiative for future development and progress?
- 6) What can be implied from this project about the potential of UA in Istanbul and other cities in general?

While the first three questions deal with describing the process of the project, the latter three are constructed to investigate and evaluate it. Chapter 5 and Chapter 6 are framed according to this division.

In regard to questions mentioned here, it is expected that the present study will bring forward the potential of UA in Istanbul and respectively in other megacities by offering answers and solutions, and will help to formulate improvements for the implementation of future projects in similar settings.

## CHAPTER 2

### METHODOLOGY

#### 2.1. Scope of the Research

At the beginning of the research, I primarily tried to sketch out the scope of UA in Istanbul, and I quickly became aware of several UA practices in the city, some practiced by people in their private home gardens, some executed by municipal authorities such as rentable gardening plots, and some implemented by project groups for people who did not have access to agriculture or gardening in the city. The final group intrigued me more as they offered the potential to create UA in areas where farming land is scarce and where people had limited agricultural practice. In addition, it was easier to reach project initiatives as they had an established network and communicated through Internet-based email groups. With private home gardens and rentable gardening plots, one would need to reach participants on an individual basis which was out of the limits of this present study. Therefore, at the final resolution, I decided to focus on project initiatives that would allow me to conduct case studies.

#### 2.2. Selection of the Case

Although there were a few project initiatives of UA in Istanbul, one of them attracted my attention with its continuity and popularity among urban residents. I decided to focus on this project group, and intended to evaluate it for its benefits and potential. The initiative had started in 2011 as part of a community urban agriculture movement, was developed by and for urban residents, and aimed to establish roots of urban agriculture in Istanbul in different districts.

The particular case I chose involved the creation of an apartment garden in a highly urbanized neighborhood of Istanbul by urban residents who volunteered for the project. The apartment garden here served here as a system where agricultural (including socio-economic aspects of agriculture) and ecological factors were observed, evaluated and put to practice. The fact that the garden belonged to an apartment made the case distinctive as apartments are one of the major results of rapid urbanization and causes of loss of green land in Istanbul. The selection proved

beneficial as this project was trying to bring UA for groups who had lost contact with land (or maybe never had), and offered a better picture of community-led UA practices as it involved active participation of group members. It was central for me to study this particular example for understanding the potential of UA for urban residents, and for framing an improvement plan for future initiatives.

### **2.3. Data Gathering: Methods and Tools**

During the research, I was able to conduct a case study analysis, and I benefited from qualitative research methods to progress my analysis. A case study can be shortly defined as “the study of the particularity and complexity of a single case, coming to understand its activity within important circumstances” (Stake, 1995, p.xi). Focusing on a single case enabled me to cover the topic from a specific but detailed perspective, and in the end I was able to delve into the subject matter more profoundly.

The overarching method used for conducting the project was Participatory Action Research (PAR); the method was not chosen by the project team purposefully, but rather was followed within a more organic development process. My previous knowledge of action research helped me to frame certain parts of the project according to the ideas of PAR (such as helping to organize reflection sessions). In addition, by participating in the project myself I was able to observe and evaluate the process from the inside both as a researcher and an active participant.

PAR can be defined as “a collaborative process of research, education and action explicitly oriented towards social transformation” (Kindon, Pain, and Kesby, 2007, pg. 9). It involves the active participation of people to work on a specific action or a situation to make improvements in it (Wadsworth, cited in Kindon, Pain, and Kesby, 2007, pg. 1). PAR is based on an ongoing reflection and evaluation of the situations encountered during the action, and thus enables participants and researchers to make necessary changes along the way. O’Brien defines it as “learning by doing”, as a process where “a group of people identify a problem, do something to resolve it, see how successful their efforts were, and if not satisfied, try again” (O’Brien, 1998). The PAR consists then of a cyclical procedure in which participants study the situation on a

constant basis to make adjustments. The following figure summarizes the process of PAR that has been used during the project.

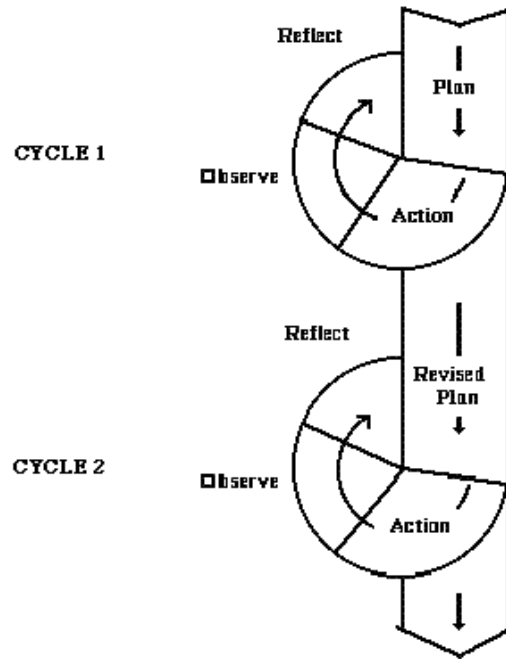


Fig 1. Model of Action Research (Kemmis & McTaggart, 1988)

The project described in this present study followed the above mentioned steps of PAR in which the process began primarily with the question of designing and creating a garden, and continued through the use of reflection and visioning sessions and practical experimentation phases to reveal how the garden can be implemented and put into reality, and how the actions could be improved. Later it was further analyzed, and limitations encountered were defined for future alterations.

Several techniques and tools served to conduct the PAR. These included group discussions/brainstorming, literature reviews, mapping, field trips, questionnaires and individual interviews.

Group Meetings/Brainstorming/Internet Communication: The project relied mainly on group meetings to generate ideas and discuss the ongoing process using brainstorming as the main technique. These meetings served to make collaborative reflection and visioning sessions that enabled participants to reflect upon what has been done so far and what would be done in the future. The meetings were held in a member's house, and in case of cancellations, video-conferencing or group email communication was used as the general communicative tool.

Literature Review: The design team used different tools and sources to continue the project. These include web pages, books about Permaculture (especially Introduction to Permaculture by Bill Mollison) and sustainable food production. They also benefited from the knowledge of experts in the field whom they contacted on a frequent basis. Knowledge gathered from different sources were collectively shared and discussed in meetings.

Field Trips: The team visited the garden several times before the actual gardening phase, and therefore was able to visualize and understand the area in detail. The trips also helped the team to draw a map of the area, and also to understand the apartment context.

Mapping: The project team benefited from a draft map of the apartment garden which served the team for making adjustments on the paper before advancing on the soil. The map was re-designed during the project several times and revealed the team's ideas in detail.

Questionnaires: I prepared a questionnaire to evaluate the aftermath of the project as the group was unable to meet for a final discussion. Gathering ideas of the group members proved very useful as it offered me a general picture of the project aftermath and evaluation. The questions aimed to let the group go back to the different phases of the project and to reflect upon them (See Appendix I).

Interviews: I also conducted interviews with people who provided valuable information for UA in Istanbul and the project. My primary interviews took place with two urban gardeners I met randomly while trying to trace aspects of UA in Istanbul. I talked to a street vendor who practiced UA extensively, and I later had a chance to talk to a woman who was gardening in her own. They gave detailed information about their practices. I also talked on a frequent basis to the



leader of the Permablitz Istanbul who often helped our project, and asked her a few questions about the group and the initiative in general. I also interviewed the apartment superintendant about the garden and about their gardening practices conducted there so far.

Participant Observation: While being part of the apartment garden project, I also benefited from the participant observation method which allowed me to be fully involved in the case and its process. Participant observation allows research “in the lives of the people under study with maintenance of a professional distance” (Fetterman, 1998, p. 35). I was an active member of this project, and was able to participate in all activities from the start until the end. I was able to observe how group sessions went and progressed, and how people developed ideas and later implemented them.

#### **2.4. Group**

The project involved the active participation of group members who had a chance to add their skills and abilities into the implementation of activities. There were 6 people in the design team who came from various backgrounds including architecture, teaching, permaculture, marketing and agroecology respectively. More people joined as volunteers for the actual practice day.

#### **2.5. Time Management**

The project started in late February 2012 and lasted through April 2012, a short period that only included the design and the implementation of the garden. At the time of the writing of this research project, the team did not harvest any food yet, however looked forward to continue to work on the garden in the following months. Meetings were held almost weekly, and in case the group could not meet, email communication continued frequently.

## CHAPTER 3

### LITERATURE REVIEW: DEFINITIONS AND CONCEPTS

#### 3.1. Urban Agriculture

Urban agriculture can be simply defined as an umbrella term encompassing agricultural activities conducted in or around a city. The scale and the characteristics of agricultural activities related to an urban center vary greatly, and make it a difficult task to define the term in all its complexity; however it has been possible to identify the term with its various components as “an industry located within (intra-urban) or on the fringe (periurban) of a town, a city or a metropolis, which grows and raises, processes and distributes a diversity of food and non-food products, (re-)using largely human and material resources, products and services found in and around that urban area, and in turn supplying human and material resources, products and services largely to that urban area” (Mougeot, 2000, p.10).

While Mougeot’s definition provides a thorough understanding of urban agriculture, it can be completed by the information provided by FAO where UA is identified as “agriculture practices within and around cities which compete for resources (land, water, energy, labor) that could also serve other purposes to satisfy the requirements of the urban population” (FAO, 1999). Such an understanding reflects cities’ meager resources open for competition and population realities that affect implementation of agricultural practices.

UA consists of different types of agricultural practices. It includes not only gardening and horticultural activities, but also refers to animal husbandry, food gathering or even hunting (Drescher, Jacobi, and Amend, 2000, p.1). The range of UA activities also differ according to the characteristics of available land, revealing UA in a multitude of locations in the city including “small ‘community gardens’, personally managed allotments, home gardens, portions of parks that were previously planted entirely with amenity species, fruits trees along roadside reserves, greenhouses, green roofs and green walls” (Pearson, 2010, p.3). The variation of these examples depends on the characteristics of the urban setting defined by geography and climate along with the abilities of the urban populations in terms of reaching and creating resources.

Today, it is expected that more than 800 million people are practicing some type of UA in or close to an urban setting providing food for themselves and their families (FAO, 1999). The rate is expected to rise as urban issues will continue to rise to threaten populations, restrain urban food security and endanger urban ecosystems.

### **3.2. Importance of Urban Agriculture**

As mentioned in the definitions above, UA has the ability *to supply and feed an urban population*. While this argument refers to the ability of providing actual food for populations and establishing a food secure community, it can also be extended to encompass a variety of functions that complement lives of urban residents. In addition to giving urban residents the chance to grow their own food, urban agricultural activities can also help reduce poverty by generating income through the selling of food products, it can provide a sustainable urban environment through maintenance of urban ecosystems, and finally it can enhance cultural and social ties within a community and create food aware communities and also residents who can claim right to participate in the development of urban spaces.

#### **3.2.1. Food Security**

Food security has become a major issue today as more and more people are unable to access land, and produce or obtain adequate food. “Food security exists when all people, at all times, have physical, social and economic access to sufficient, safe and nutritious food that meets their dietary needs and food preferences for an active and healthy life” (FAO, 2009, p.8). However, the reality in the world today is strikingly different than the definition as a large number of people face food security, malnutrition and hunger in various geographies.

Research evidence shows that urban poor remain more disadvantaged in terms of food security as they face the challenge of being less accommodated inside urban food systems (Mougeot, 2000, p.3), and face increasing unemployment rates (FAO, 2009, p.10). Migrants to the city remain even more disadvantaged as they have less contact with rural areas where they could easily access food resources, and as the urban-rural distance is heightened. This is intensified by policy

measures by authorities and import restrictions that limit the working of urban food systems (ibid).

Urban agriculture is deemed to be able to challenge this situation by providing people with adequate food and opening the way for food security among urban households. With fresh fruits, vegetables and animal products that can be grown in or around urban centers, people have the chance to maintain self-sufficiency and become more food-secure and less vulnerable (Armar-Klimesu, 2000, pp.104-105). With proper methods and arrangements, UA activities can serve as the main supporters of food security in the cities. Examples of such practices come from different parts of the world. The most known example is attested in Cuba. Havana's example of UA practices which have been triggered by national food and agricultural input shortages showed how urban agriculture is able to maintain a secure level of food in the city, and how people would be able to sustain themselves with food coming near their urban houses or collective urban gardens (Altieri, et al., 1999, p.132). There, because of the ongoing shortages along with political adjustment programs reflected as decrease of food ratios, urban gardens remained as important elements of the urban landscape as people continued to grow their own food (Buchmann, 2009, pp.705–721).

### **3.2.2. Economic Aspects**

A second major aspect of UA is its ability to generate income and create means for people to earn money from their food production. By growing their own food, people can become less dependent on markets and retain their savings, and by trying to sell these products they can add more to their general income (Mougeot, 2005, p.9). It is a means of “self-employment” for those suffering from unemployment and low income jobs in and around the city (Avila and van Veenhuizen, 2002, p.7). People's income from urban agriculture depends on a multitude of factors including the type of production and crops grown, use of inputs, time management and market opportunities (ibid). Such factors determine the income level of the people involved in UA, and orient future possibilities to extend these activities.

### **3.2.3. Sustainable Urban Ecosystems**

UA is also important in creating resilient and sustainable cities that are challenged by many issues today caused by faltering economies, changing climate, increasing population and threatening natural disasters, and also loss of green areas due to increasing construction and urbanization trends.

One of the major issues faced in cities today is increasing waste and pollution levels to which UA is able to offer solutions (Madaleno, 2000, p.76). Waste can be eliminated with proper handling of urban garbage. For example, house wastes can be transformed into compost material for gardens and urban fields therefore creating a beneficial recycling activity (Nugent, 1999, p.97). Used water from houses can be also transported for watering gardens (ibid).

Trees added to the urban landscape as part of UA can add both to the aesthetic value of cities, and also help reduce hot temperatures while their roots can help eliminating soil erosion (Mougeot, 2005, p.13). They can help to regain arable land in cities where soil resources remain meager due to urbanization trends.

UA also helps reduce food miles and dependence on fossil fuels and electricity for food processing as it requires less transportation and less packaging due to proximity to the urban markets.

#### **3.2.4. Community Building**

UA activities are also renowned for their ability to create livable and enjoyable urban spaces and urban communities. Residents' participation into the creation of urban space is crucial and is a right, and this is possible through "both social and ecological relations and processes" (Shillington, p.4). UA activities provide these relations and processes, and help to establish human-human and human-nature connections in depth. By establishing and molding their own urban spaces people are administered their right to use the city at full measure (ibid, p.6).

UA practices also bring communities together by focusing on collaboration and collective work. Evidence from Latino gardens in New York City showed that "gardens are seen as cultural and

social neighborhood centers, where people go to meet with friends, family, neighbors, newcomers, and visitors” (Saldivar-Tanaka and Krasny, 2004, p.404). Here people use gardens as a place to meet, relax and socialize within their communities, and also profit from these areas for special occasions that render the community closer.

## **CHAPTER 4**

### **CONTEXT**

#### **4.1. Turkey**

Turkey is located between Europe and Asia, and has a surface area of 814,578 km<sup>2</sup>. The country holds a strategic position with its Bosphorus and Dardanelles Straits that connect Black Sea, Aegean Sea and Mediterranean Sea which surround the country on three sides making it form a peninsula. The population is 74.724.269 according to data from 31 January 2011 (Turkish Statistical Institute).

The climate in Turkey varies according to the region, ranging from mild Mediterranean climate on coastal areas to continental climate in the interior cut back from the coasts with mountain ranges which presents cold winters and hot summers (Sensoy, et al., 2008). Turkey is notorious for its high density of flora amounting to 10.000 species of which approximately 30% is endemic to the country (CBD Turkey). The intersection of different topographies and climate types create valuable conditions for a rich biodiversity.

#### **4.2. Istanbul**

Istanbul is the largest city of Turkey by population with a growing and increasing urbanization. It covers an area of 5313 km<sup>2</sup>. The population count of the 2010 census resulted as 13.255.685 of which 98.98 % lives in urban setting (Istanbul Metropolitan Municipality, 2008). The city is located around the Bosphorus Strait which connects Black Sea to the Marmara Sea around which the city sprawls. The strait divides Istanbul into two sections which are named the Anatolian Side (located to the east of the strait) and the European Side (located to the west of the strait) consequently. 8.571.374 people live on the European side and 4.684.311 people reside in the Anatolian side (ibid). The population of the city has been on a constant rise especially in the last 20 years resulting from migration from rural areas.

The climate of Istanbul varies within the city due to its large territory and varied features defined by topography and coasts. It is possible to observe traces of Mediterranean climate on the southern shores and oceanic climate on the northern coasts (Istanbul Metropolitan Municipality, 2008). The warmest season is the summer season with high heat and humidity levels while the winter season reveals the lowest temperatures. July is the warmest month with an average of 24.5 and January is the coldest month with an average of 6.6 (General Directorate of Meteorology, 1998).<sup>1</sup> The highest temperature for summer months ever detected was 40.6 and the lowest temperature for winter months was -8.0 (ibid).<sup>2</sup>

The flora in Istanbul also reveals different features characterized by forests, Mediterranean maquis shrub land and coastal plants. While the coasts by the Black Sea reflect varieties adapted to humid temperature, those to the southern parts of the city reflects plants adapted to a drier environment (Istanbul Directorate of Food, Agriculture and Animal Husbandry).

#### **4.3. Urban Agriculture in Istanbul**

Agricultural activities have existed in Istanbul for centuries and yet began to decline especially starting from the second half of the 20<sup>th</sup> century. They are today facing extinction due to rapid urbanization based on intense construction of apartments, roads and other infrastructure works (Kaldjian, 2004, p.285).

Istanbul has always been a highly populated urban setting and thus needed a constant supply of fresh produce which was mainly provided by agricultural fields located within or near the city and special market gardens (*bostans*). These, especially the latter examples, have been an organic feature of Istanbul for centuries, and helped urban residents to access freshly grown products on a daily basis (Kaldjian, 2004, p.284).

*Bostans* were set up irregularly inside the city, or even grew on their own on unused plots of lands, and were handled by skillful gardeners (who usually did not own these lands and rather

---

<sup>1</sup> Data from 1975-2010.

<sup>2</sup> Ibid.



practiced a form of squatting, meaning occupying an empty plot of land), usually consisting of families and close relatives. As Kaldjian stated, these gardeners “*were viewed as experts, organized in guilds, and held in high esteem*” (2004, p.285) and “*the vegetables were sold in wholesale and retail markets, and production was integrated into the city’s food and commercial networks*” (ibid). *Bostans* were spread out in different parts of the city, therefore a variety of neighborhoods were easily served through the available networking. Different neighborhoods were famous for specific crops and specialized in the production of these.

While almost 1200 vegetable gardens existed around the year 1900, only a few *bostans* today remain due to increasing population and massive construction (Kaldjian, 2004, p. 291). With increasing need for land for new apartments, parking lots to accommodate augmenting number of cars and similar urban spaces, former market gardens are easily abandoned and lost. These gardens have been also facing extinction due to changing patterns of food system that is being more and more dependent on products coming from outside Istanbul. As Kaldjian states, “*gardeners are increasingly pressured by urban development, the high costs of inputs, competition from distant sources, struggles with authorities, shrinking plots, and uncertainty over tenure*” (2004, p.294).

In addition to *bostans*, the city has a potential of peri-urban agriculture. Today, one fourth of Istanbul is still used as agricultural land which is mainly devoted to the production of wheat and sunflowers (Istanbul Directorate of Food, Agriculture and Animal Husbandry). Animal husbandry is confined to northern parts of the city where urbanization remains relatively low (ibid). However, these fields are now found mainly in sites where urbanization trends are fast sprawling.

Apart from these fast diminishing market gardens and fields, there are other examples of UA in Istanbul. Main category includes home gardens of people, especially in squatter neighborhoods. These *gecekondus*, literally “built overnight” usually have back yards where they practice horticulture or even floriculture (Karpat, 1976). In addition, residential villas and other private houses have also home gardens where residents may practice some gardening. Other examples include apartment balconies, back yards of apartment buildings and commercial production units

such as urban greenhouses (Kaldjian, 1997). It should not be forgotten that fruit harvesting can also be considered an urban agricultural activity and that Istanbul boasts several fruits trees in its streets and avenues. As Kaldjian states the extent of this activity is unknown but personal observation in the city is able to reveal examples (ibid).

During the present research, it has been possible to trace the remnants of these agricultural activities to some extent. A master gardener who has been selling fruits and vegetables on a stall near a busy road explained how he practiced UA. He has migrated to the city in 1970s and has been since involved in UA in various parts of the city, yet while he did squatting in the past; he was finding it now difficult to continue as there was less free land available now due to urbanization. When asked about how he provides the inputs, he explained that he was against chemical fertilizers and pesticides, and insisted that he and his family depended on animal manure (mainly gathered from sheep which lived in peri-urban sites) and non-synthetic control methods in their gardens. He was saving seeds from previous harvests and using them in the following years, thus not being dependent on seed companies. Besides using all products for his own consumption, he was making a considerable amount of income from the selling of these products, yet with new regulations and restrictions, he and other street vendors were facing difficulties. The municipality was not allowing vendors near busy roads for aesthetic and other reasons, and the future of urban farmers and vendors like him was in danger. When asked about the social aspects of UA, he explained that he was helping others to build gardens in their house back yards and promote UA; however he complained that his children were not interested in gardening, and that the family business would soon come to an end. In another occasion, I met a housewife whose garden near a small apartment building attracted my attention. I learned from her that the apartment belonged to different members of the same family who had migrated to Istanbul in the past, and that they collectively practiced UA here providing themselves various fruits and vegetables. Again they did not rely on chemical inputs, but rather benefited from traditional techniques they had practiced while living in their village. The garden helped the family to retain a part of their past, and also helped them to reduce the money spent on food, while also keeping the family together as it offered a chance to work collectively.

Such examples helped me to frame UA in Istanbul, and I realized that research on the subject is important and crucial for re-tracing traditional techniques and history available in the city. While I decided to focus on a different side of UA, I also became intrigued by the potential for further research. Istanbul is home to various examples of UA which bound the city together and which define it from a different perspective unseen from outside. There seems to be many people involved in UA, and heritage of these people is open for research and conservation. All data implies that Istanbul is in dire need to re-establish urban agricultural activities, and increase and expand those which are still maintained by residents considering the massive urbanization trends, ongoing and increasing dependence on food from sources outside the city and future threats of climate change and earthquakes. It is important to benefit from the knowledge of people, to benefit from free plots of land such as back yards and gardens of houses for increasing UA, and also to implement policies to use accessible and unused lands that are projected for construction works to save and increase the potential.

## CHAPTER 5

### CASE STUDY: DESCRIPTION AND PROCESS

#### 5.1. Characteristics and Background Information

The case study consisted of a project that was part of the Permablitz initiative which was formed in Istanbul in 2011, and aimed to create urban gardens for urban residents using the principles of Permaculture. Permaculture comes from the combination of the words *permanent* and *agriculture* and/or *culture*, and refers to an understanding based on the creation of “sustainable and ecological systems” that induce “self-sufficiency” and waste reduction (Mollison, B. 2011, p.ix). Permaculture involves using a variety of sustainable methods that are carefully designed to mimic natural systems to induce food production and other needs of humans and other livings.

The name Permablitz is formed by combining the words “permaculture” and “blitz (lightning in German)”, and refers to short, compact activities that intend to create edible spaces for a community in a short period of time. According to Permablitz.net, the term means “*An informal gathering involving a day on which a group of at least two people come together to create or add to edible gardens where someone lives, to share skills related to permaculture and sustainable living, to build community networks and to have fun*” (Permablitz, 2011) In this sense, Permablitz is inspired by the potential of Permaculture methods and applies them to people’s residences.

The Istanbul Permablitz initiative sought to teach and expand these ideas within interested people, and it was formed with the participation of a few volunteers who gathered following announcements made online. The founder of the group explained that the overall aim was to transform green spaces that already exist in the city to include edible gardens. Two locations were selected for Permablitz work for the first year. These areas, namely house back yards or gardens, belonged to some of the volunteers who offered their land freely for the group’s access. Groups worked together and tried to design edible gardens, and implement sustainable food production in these chosen locations. This year in 2012, gardens of three people who practiced in previous year’s gardens were announced for Permablitz work. Previous involvement of these

people with Permablitz was crucial for the selection of their gardens for this year's projects as this would create longevity and durability, and create a solid knowledge background for initial activities.

The case study described here refers to one of these three Permablitz examples. The garden belonged to an apartment which was located in the Anatolian side of Istanbul, in the Erenköy neighborhood. The construction of the building had started in 1987, and the apartment did not have a garden at that time. By 1990 with initiative from the construction company, a garden area at the back yard along with a parking lot was constructed, and later a well was dug up to provide water for the green spaces. The garden was a quadrilateral shaped patch of land (33 X 13 X 31 X 16 meters on four sides) surrounded by walls on three sides and a parking lot on the remaining side. It already consisted of several trees such as laurel, walnut, loquat, pine, and prune, and was mainly covered with grass and flowers used as ornamentals. These were planted there over the years by the apartment residents (Figure 2). The garden also had a seating area which was much frequented by residents in summer months as a picnic/buffet meeting area.

## **5.2. Implementation of the Project**

The case was peculiar as it was the first apartment garden selected so far for the Permablitz group, and therefore required a more comprehensive planning as there would be more people involved. In previous examples, only gardens of single households were designed, but this time, the apartment building consisted of around 40 households which would be directly affected by the changes in the garden. It was important to generate a design different than those applied to single residences.

The garden was proposed to the Permablitz group by the *apartment building manager*<sup>3</sup> who was involved in the Permablitz in the preceding year. The existence of such a personality was central to initiate the project as the person involved was able to make decisions for the entire apartment.

---

<sup>3</sup> An apartment building manager is a yearly elected volunteer in an apartment responsible for managing the apartment budget and other activities concerning the apartment and its residents.

After obtaining feedback from building residents about a possible edible garden, he had contacted the PermaBlitz group and proposed that the PermaBlitz initiative start a garden there.

An initial group of interested volunteer people decided to work on this particular garden after an announcement made in the email group. The motives of the volunteers were evolving around the idea of gaining practice, and establishing an edible garden within city limits. The design team had heard about UA from various sources, yet did not have land of their own, therefore wanted to use this opportunity as a practice for future. They also all believed in the functionality and effectiveness of UA, and did not hesitate to spend time and effort into this project voluntarily.

The project was performed in different steps following the basic structure of PAR which are described as follow:

1. Visiting the apartment garden and meeting the members: In the first meeting, members of the design team had a chance to meet for the first time, and discuss their interests for the project. The garden is visited and measurements are taken so that a sketch map would be drawn. The apartment building manager had already started a compost area and an experimental patch, and he explained that he had asked apartment residents to use it often (Figure 3).

2. Initial planning session with group members and seed ball preparations: Members discussed how the garden could be re-arranged to contain areas of food production and a livelier community area. It was decided that the changes in the current garden would involve both an edible patch of land and also a working community area based on the education of children and communication of adults living there. For the latter, the established seating section would be ameliorated. During the meeting, a sketch map provided by the architect was used to oversee the process (Figure 4). Possible ideas were offered and each member of the team was assigned to prepare a presentation for the next meeting where he/she would present an idea for the garden. These included a vegetable patch, a hugelkultur section, a medicinal and aromatic herbs patch, mulching and composting. During this meeting, members also crafted seed balls which would be used to prepare the garden soil in advance.

3. Presentations and further planning: Each member prepared a presentation over video-conferencing, and these were discussed for further possibilities. A final map was drawn after this meeting. At this time, a stakeholders list was deemed worthy to define who would be affected by the project, who would assist and who would offer financial or material aid to advance the project, and therefore I amassed the information to gather a list. Although no stakeholder analysis was made in the aftermath, the list still proved helpful to frame the boundaries of the process.

The stakeholders list included:

Design Team	6 people including the apartment building manager, one permaculture practitioner, an agroecologist and an architect.	
Practice Team	Volunteers who are interested in gardening phase of the project.	It was decided that the group will form after the design is over through an online announcement.
Experts	People who have knowledge on various aspects of gardening methods.	In case of lack of information, the design team was able to reach experts on issues related to gardening.
Interest Groups	People or groups who would provide necessary tools and materials such as NGOs.	They were contacted for information and obtaining materials.
Urban Authorities	The Greater Istanbul Municipality and branch municipalities	They were asked about materials but there was no true communication afterwards.
Volunteers	People who show an interest in the garden in general.	These were informed through the email group, and in case of further interest were invited for future activities of the Permablitz group.
Permablitz Members	People who take part in other Permablitz projects in Istanbul.	They were also informed over the Internet.
Apartment Residents	Apartment dwellers who will be affected by the changes in the garden.	They were informed by the apartment building manager, and were invited for an information session before the practice day.

4. Visiting the garden for final planning: Design team observed where to create the sections as discussed previously over the map and measured how much land would be required for these and how much seedlings would be needed respectively.

5. Obtaining materials: Members of the team began contacting institutions and other groups for gathering seeds, seedlings, mulching and composting material. They began to plant seeds in their homes, and prepare seedlings in case it was not possible to buy seedlings elsewhere.

6. Reflexive and informative session with building residents and envisioning with them: While the team began looking for materials and getting prepared for the practice day, an informative session with apartment residents was needed to disseminate ideas. A note was sent to all apartment residents, and a brainstorming meeting was held with a few interested people. Their ideas about an edible garden were discussed, and their visions for the garden including their proposals were considered in detail before the final purchases were done. However, only a few people came to the meeting leaving the aims of the session unfulfilled.

7. Final preparations: The group communicated once more for the final details and purchases over the email. Changes that were proposed by the apartment residents were taken into consideration and new purchases were made. A note was sent out to email groups and apartment residents, and finally interested volunteers were invited for the practice day.

8. Practice day: Around 20 people came, and spent an entire day gardening and implementing the project as it was planned and envisioned during the design phase.

9. Feedback Gathering: Communication via email continued for evaluating the aftermath of the project. A questionnaire sent out to the design team to explain their ideas and thoughts about the process.

### **5.3. Implementation of the Garden**



The garden served as a model system, and therefore provided a background to practice sustainable methods of production, ecology and soil maintenance. These methods referred also to ideas of Permaculture which the initiative sought to follow in essence.

The project was possible due to the limited budget of the apartment; therefore all activities required the personal aid and availabilities of the team members.

Soil Management: The garden soil has not been used for production and was only home to a few trees, thus did not need an intensive management. To regenerate the soil before the gardening activities started, we crafted seed balls and threw them over the garden (Figure 5). Seed balls are balls made of clay and soil that include seeds inside which are thrown away on the soil to generate seedlings that will restore the soil and diversity to the field (Flores, 2006, p.111) We managed to gather a few varieties of plants (namely parsley, mung beans, fennel flower and flaxseed). We mainly used seed balls as a starter for the gardening project and as an excuse to touch soil before the actual gardening began. Seed selection was based on the availability however it was considered that the inclusion of mung beans would provide Nitrogen for the soil in the future.

During the practice day, some hoeing was done in order to aerate the soil; however the team did not execute an extensive work on soil rather preferring a natural soil management method relying on minimum effort and work. In order to protect the soil cover around where seedlings would be planted, it was decided that mulching would be an effective method. Mulch can be described as *“any naturally-formed, undisturbed soil covering; any material added to serve as soil cover; and to crop residues left in part on the surface as dead or dying materials”* (Allison, 1973, p.500). Mulching was crucial to keep the moisture in soil and decrease evaporation, and would help to keep weeds away from the desired plants (ibid). Also decomposing materials used as mulch would help increase the nutritious top cover and also amount of nutrients subsequently. The apartment had an ornamental front garden which had several bushes that were trimmed around the time of the project. The trimmed branches were covered with leaves that served as mulching materials which were carefully laid on the ground by volunteers during the practice day (Figure

6). In addition to these, one volunteer brought hay from a peri-urban farm which he also used as soil cover.

In order to supplement the topsoil and its resources, the group also benefited from the construction of a compost box. Compost is produced from decaying and decomposing organic materials, here referring to organic house wastes and plant remains (Cornell, 2005). It was already established in advance by the apartment building manager who had himself started composting in his house, and brought the waste from his house down to the garden compost area every other day. He had instructed apartment residents to follow his example, and he had put up a sign on how to arrange organic waste to supplement the compost box. The compost unit already contained a heap of compost material and this was used during the practice day over the top soil in order to supplement the plants planted. During the practice day, one of the practitioners also brought a vermicompost unit which was added carefully to the main compost unit.<sup>4</sup> This involved using red Californian earth worms (*Eisenia fetida*) that are known to be very fast and efficient decomposers and used often in Permaculture applications (City Farmer, 2012).

A part of the garden was decided for the installment of a technique called Hugelkultur (German for mound). Hugelkultur involved using dead branches and tree trunks as base material for a raised plot (Hemenway, 2009, p.84). Tree remains are placed on the soil and covered with twigs, grass and other support material, and later the whole unit is covered with soil, mulch and compost. Plants are planted on top of this raised structure, and the available tree remains inside provide long term nutrients and keep a stable temperature as they decompose reducing the amount of care and inputs needed to maintain the health of the plants. The team wanted to experiment with this hugelkultur unit to try and to see how it would function and be prepared. Tree trunks and branches from dead trees found in the garden were carefully laid down on the

---

<sup>4</sup> Vermicompost: Vermicompost comes from the combination of the words *vermes* (Latin for worms) and compost, and refers to a technique of making compost using worms as decomposers. The excreta of worms produced after decomposing (eating) of organic materials is used on top soil to increase micro-organisms, hormones and enzymes (such as phosphate and cellulose) in the soil that would provide a richer soil structure and chemistry (Desai and Pujari, 300,307,309). The technique is environmentally efficient as it helps soils to retain more water and air within that benefit plant and root growth, and as it does not cause any harm. Vermicompost also regulates pH levels of soil (ibid).

ground, and trimmed branches from the front garden which were stripped off their leaves were put on them along with several other materials such as weeds, twigs and grass (Figures 7, 8, 9). After the adding of soil cover, seedlings were planted with care.

Water: The apartment garden was served from water coming from a well which has been used for watering the grass and trees already found there. While there was no chance to test the water for any harmful substances due to economic constraints, it was decided that it could be used for watering the plants as it has been done for trees and flowers before.

Light Source and Location: The garden received direct sun light on a limited measure; therefore the team had to manage a design for planting the seedlings in proper locations.

The enclosure wall on the North area was selected for the expansion of the vegetable patch. The longitude of the wall ensured that certain vegetables such as zucchini would effectively sprawl, and those that prefer to rise up such as peas would take assistance from the wall. This area received enough sun light for the growth of plants. An experimental field put out by the apartment building manager in his previous visits which was located to the East was decided for the building of the hugelkultur area. The seating area to the West part of the garden was decided for alterations for a better community area, and since it was also well-lit, the team planned to install the medicinal plants patch to the side of it.

Seeds and Plants: The design team insisted on using heirloom and if possible organic seeds in order to create the garden, therefore had to take different measures to advance. The Turkish Seed Law (Law Number 5553) has been a lively debate ground in Turkey since it was amended in 2006. It abolishes the selling and purchasing of heirloom seeds that have been grown and developed by farmers, and consigns the right to only accepted seed companies who develop patented seeds of their own (Ministry of Justice). This law has caused much stir in terms of farmers' rights that many NGOs and public initiatives recently started free seed exchanges and seed barter meetings to promote the use and spread of seeds developed by and for farmers only. Our team managed to reach these NGOs and people interested in sharing their collection of seeds, and finally accumulated a large number of varieties for the garden use (Figure 10).

The team began planting seeds in their own homes in small containers, and communicated in the meantime for the handling of the seeds and upcoming seedlings. These were brought to the garden site on the practice day for planting.

Several plants were set up for the garden. These include green beans, tomatoes, peppers, maize, okra, zucchini, peas and melons, all summer fruits due to the implementation period of the project. Some were planted directly from seed and some were transported as seedlings from small pots. Spinach that was grown on the experimental section was transferred onto the hugelkultur unit which took place there, yet strawberries that were also planted there remained in what was left from this section. Peach and cherry trees that were bought after the feedback from apartment residents were also planted, and two grapevines that already existed there were transported to a better location. Mint, thyme, English and French lavender, sage, rosemary and basil were planted on the medicinal and aromatic plants patch (Figure 11).

Plant Protection: The team decided to entirely focus on cultural<sup>5</sup> and physical control<sup>6</sup> methods to implement in the garden due to availability and possibility. It was decided that no chemicals would be used to protect the plants, and measures of biological control<sup>7</sup> were out of reach at the time of the project both at the theory and practice levels. Therefore it was agreed that established methods of cultural control will be tested and experimented.

---

<sup>5</sup> Cultural control methods refer to management methods that render environmental conditions less attainable by pests and involve the controlling of pests by improving soil conditions, sanitation and crop practices (Hajek, 325).

<sup>6</sup> Physical control methods consist of inducing physical conditions that reduce or help to remove pests in an environment. They rely on mechanical impact forces used against pests (Panneton, Vincent and Fleurat-Lessard, 2001, p.11)

<sup>7</sup> Biological control relies on the use of natural predators of pests in their elimination, suppression or reduction. In this way, pests become less dangerous and less available for causing plant damages (Driesche and Bellows, 6).

The initial ideas (in addition to mulching as soil protective cover against weeds) evolved around making use of the concept of companion planting<sup>8</sup>, and mechanical control by hands. Existing weeds and snails were taken out by hand during the practice day.

Feedback from the apartment building manager and apartment residents showed that the garden was much frequented by cats which could cause nuisance in terms of soil maintenance and plant growth, therefore the team wanted to experiment with planting catnip (*Nepete cataria*)<sup>9</sup> to detract cats away from the plants.

Budget: From the beginning, the apartment building manager stated that part of the project could be financed from the apartment's own budget which is drawn from a money pool created by monthly payments from apartment residents. However, the apartment already had a lot of other requirements to be conducted in near future; therefore the garden budget was limited. Until the practice day, approximately 500 Turkish liras<sup>10</sup> were used to buy materials and seedlings.

Materials: Volunteers and apartment caretakers brought materials themselves. These included gardening gloves, hoes, gardening scissors, rakes and shovels. People also brought food to be shared during break times. Seeds and seedlings were also provided collectively.

Human Dimension: The inclusion of people into the project was important from the beginning as the main idea behind the project was to re-establish human-nature relations in the urban setting. The primary intention was to create a garden that would include as many people as possible who would benefit from an edible patch of land and who would enjoy collaborative work and green space. Another important decision was to create space for children who would experience there the concept of food production and sustainability awareness.

---

<sup>8</sup> « Companion planting is best described as the practice of planting two or more plants together to enhance the growth and quality of nearby plants” (Mayer, D., 2010, p.9).

<sup>9</sup> *Nepeta cataria* plant is known to attract cats to it and induce different behavioral responses such as licking and sniffing (Tucker and Tucker, 1988, p.215).

<sup>10</sup> In May 2012, 1 US Dollar is equivalent to 1,75 Turkish Liras.

From the beginning, the garden project attracted many people who were included in the project in various degrees. The apartment had a caretaker family who has been living in the apartment since it was constructed and who handled various daily chores related to the apartment, residents and the garden. They had migrated to the city from a rural part of Turkey, and had brought their agricultural skills with them which they kept and continuously practiced in the apartment garden for their own consumption. Once they heard about the start of the Permaculture initiative, they offered their skills and assistance and helped the team extensively. They explained that they have been growing several crops including tomatoes, peppers, parsley and eggplants, and they also showed the team which part of the garden was more feasible and efficient for production. They really appreciated that the garden would be open to everyone as being more than an ornamental garden with this project. Before it was only used by them and only on a small scale, and beyond that the garden was mainly devoted to ornamental trees and grass, but with this project the whole apartment would benefit from it for food production. They also had knowledge on seed saving which I believe will be useful in the near future once the harvest season opens.

Several apartment residents also showed interest in the project and wanted to take part actively during the practice day. They also took part in an informative session arranged two weeks before the practice day and were taught about the garden and the project in general. They brought their own skills and also knowledge, and oriented the team with their proposals.

There were also those who visited the garden because they saw an activity while looking from the window and their inclusion was crucial for passing and spreading the project idea to public. Two families brought their children, and they worked and played with the practice team all day learning about planting and hoeing while having a nice time. They especially took part in transferring seedlings into the soil and worked extensively on the medicinal and aromatic plants sections that helped them to learn the names and characteristics of different plants.

## CHAPTER 6

### CASE STUDY: RESULTS AND DISCUSSION

The aftermath of project revealed certain important points that helped the project team to evaluate and analyze the whole process in detail. These points also helped me to reflect upon the main research question of this present study, and to formulate a plan for future projects and initiatives. The analysis revealed both positive and unfavorable aspects of the project along with an improvement plan for future trials. These are summarized in this chapter along with personal comments.

#### **6.1. Aftermath Evaluation: The Process and the Garden**

The overall impression of the team and public was positive and encouraging for the public. The garden was completed in the expected time, and was designed and put into reality with the help of many interested people who deeply appreciated such an initiative. The aftermath of the project received generally positive feedback from public, but also revealed a negative incident caused by the discontent of some apartment residents about the hugelkultur element of the garden. Other than that, people appreciated that many plants were planted for the sake of the apartment community, and that such an initiative happened within their living quarters.

For the implementation of the project, the design team expressed that the process has been quite useful with collaborative effort and other aid tools such as discussions and meetings. The reflection sessions were also appreciated. The team members stated that the information session with the apartment residents could have been longer and more detailed, and possibly include more people who would be informed about what would be done in the garden to avoid later misunderstandings and discontent.

For the practice phase of the project, the team was again generally positive. The team members thought that most of the initial ideas were put to reality. One member stated her interest in a more effective work distribution as this was not properly done during the practice day due to rushing and large number of people involved, and told that people did not really know what to do

at certain times of the day. Another member told that the lack of certain materials (such as hand tools, gardening gloves, etc.) caused trouble as this was not overseen beforehand. In addition to these, the low number of available seedlings also caused insufficient planting during the practice day, leaving the team to plant seeds instead directly into the soil.

At the writing of this present study, the garden was still at its beginning and did not yield any products; therefore it is still early to comment on the food production quality of the garden. However, if the ideas work as expected, the garden will provide a large amount of vegetables and fruits that will serve the residents in summer months. Although it is not possible to say that the garden will serve as basis for food security as the apartment residents do not face such a challenge in their lives, it is still important to consider the ability to provide food from the garden and to realize the potential for self-sufficiency. With products coming from the garden, the residents will have fresh fruits and vegetables and therefore will depend less on food transported from elsewhere, and will also find new varieties that they cannot reach in the city. The fact that the seeds were obtained from farmers as heirloom seeds makes them more important and intensifies their importance for the consumers. Varieties planted are different than those found in markets and supermarkets, and therefore the apartment residents will find a chance to taste and eat new food.

Again the garden also revealed that it will not truly help income generation as it remains more similar to a hobby garden. However the garden can eventually help people to reduce their allowance for food shopping. Rather than going and spending money in urban markets, they will be able to go down to the garden area, and harvest some food that they need and save some money for other things.

In terms of sustainability, the team was successful in maintaining their initial ideas. The garden truly served the ecosystem, and it is in this particular aspect of UA that the team understood the potential of UA for cities. The establishment of compost helped the apartment residents to manage their own house wastes and provide nutrients for the garden. There was now a regular group of people bringing their garbage there on certain days of the week. The later addition of the vermicompost unit strengthened the decomposition of materials used in the compost area



which was regularly checked by the apartment building manager. In a comment made aftermath the practice day, he stated that the worms were working at full speed in decomposing the materials that the apartment residents and he himself was adding. Such a waste recycling unit proved important in showing that urban residents could indeed get rid of their household wastes in a productive way that would both benefit them and the urban ecosystem. The apartment was now producing less waste, and the soil was being nurtured with a natural method. The team also helped waste recycling by re-using leftover branches from the ornamental front garden for mulching the vegetable patch and creating the hugelkultur. In normal conditions, the apartment caretaker would get rid of these branches and tree remains as garbage after trimming the trees. With the project, it was possible to reuse these materials. The leaves were taken off the branches and set on the ground as mulch, and the remaining branches were incorporated into the hugelkultur unit.

The team's practices in the garden also helped the maintenance and protection of biodiversity and added to agrobiodiversity found inside an urban setting. Several heirloom seeds were gathered from different groups of people and institutions, and put to use in this particular garden. In addition, two fruit trees were planted bringing diversity to the garden area. Again, different medicinal and aromatic plants were planted creating variety. It was decided that more fruit trees could be brought in near future to embellish and enhance the garden, and with more seedlings coming to life, it is expected that the garden will flow with new species. The addition of worms already added to the diversity of animals and a bird pool is expected to be installed nearby in close future. The team also expects to save seeds from the upcoming harvest season, and therefore will help protect the heirloom heritage passed to them by others. Being able to use seeds from the garden in the next planting seasons will create a cyclical system independent of seed companies.

During the design phase, the team had decided to work on companion planting, however due to communication problems among group members; this was not implemented during the practice day. Seeds and seedlings were planted randomly and the team did not have a chance to follow the principles of companion planting because of rushing and crowd. Consequences of this situation are unknown at the moment of the writing of this thesis. The practice day also revealed

that the garden was home to a large number of snails which proved to be a major nuisance for plants. The team tried to take them off by hand, but this was not sufficient as the apartment building manager later commented after seeing that many returned back. Snails ate a few of the plants so far especially in the medicinal and aromatic plants patch, and may threaten other plants in near future. Measures are to be taken according to talks via email communication; however there has not been a development towards this issue so far.

In terms of community building, the project fulfilled its purpose to a great extent as many people found the chance to socialize and work collectively while forming a close community. Volunteers of the design and practice teams did not know each other before this project, but formed close relations during this time period, creating a close-knit group. Several extra meetings were held outside the garden activities, and people began to communicate and work on other projects in the meantime. The project also fulfilled the aim of reaching children living in the apartment as some of them were fully integrated into the practice day. They learned how to work on a garden, and also realized how food on their plate is grown, a fact they missed in the urban life style. Their parents along with other apartment residents also had a chance to gather for the collective practice day, and along with a shared meal arrangement, found a chance to meet each other and work for the envisioning of their garden. The medicinal and aromatic plants patch added a second touch as it is expected to supply residents who will come to the seating area in summer months for casual tea gatherings. Residents all delighted about the fact that they would be now able to add some herbs inside their tea pot while enjoying the garden and socializing with other neighbors.

The main social challenge faced aftermath the project was people's reaction to the hugelkultur unit. This was not expected by the design or the practice team and yet caused great stir. The hugelkultur unit looked very similar to a freshly cut grave that would be found in a typical Turkish cemetery after it was completed. Some apartment residents noticed this and notified the team during the practice day, but at that time this only resembled a minor and amusing situation. The team did not think that this would be a major issue. However, an email from the apartment building manager later explained that more apartment residents reacted in the similar fashion, and thought that the hugelkultur looked like a grave and was aesthetically unacceptable in the

garden. They asked the team to change it immediately, and otherwise threatened to follow a legal procedure. This situation caused disappointment with some of the members of the design team, yet it was decided that a quick fix would be possible. In the end, the apartment building manager had to work on the garden a week later, and transform the hugelkultur into two raised beds which looked rather pleasant.

## **6.2. Ideas and Points for Future Projects**

The team members all stated that the project has been very useful both for their own practice and for future trials. In terms of project implementation, the project showed that detailed planning is extremely important when the case involves a large number of people, and that detailed information and visioning sessions with people involved and affected are a necessity to execute smooth and less problematic projects. Establishing a common understanding and a collective goal is a must and should be communicated to everyone involved. The specific reaction to the hugelkultur unit, albeit it was a culturally induced issue, showed that local cultures and understandings are important during such collective initiatives especially in cities where a diverse cultural background is found. This experience showed us that good communication and information management is crucial for implementing such projects involving a large group of people. If the team notified the apartment residents more in detail about the hugelkultur, this would not happen or at least would have been solved smoothly. However, the team was glad that the situation was finally fixed for everyone's benefit, and decided firmly that the approval of people especially in such large-scale activities should not be overestimated in the future, and should be considered even before the start of the design phase.

A better emphasis on communication among group members was also expressed, as lack of information hindered some pre-planned ideas to be implemented during the practice day such as companion planting. The group did not have time to plan and discuss this specific detail, and therefore was unable to install it into the garden in the end leaving the plant protection phase of the project questionable at the writing of this thesis. Lack of communication was also visible for the obtaining of materials. A detailed meeting dealing with realistic issues such as these is understood to be very important immediately before the actual practice day, yet it was not held

due to the members' busy schedule resulting only in a short Internet communication. The aftermath showed that an up-to-date and face-to-face meeting is a more efficient solution for future trials. A lack of communication was also observed between the design team and volunteers of the practice day and the practice team did not truly understand how the garden was projected as there was no information session for them before the practice began. This was due to rushing and general disorganization, it was important to notify the volunteers who came there for the first time about what has been done and projected so far. A half an hour meeting with practice team should not be forgotten in the future trials.

While the budget did not trigger any grave limitations during this particular initiative, the process showed that budget management is also an important activity in carrying out such a voluntary processes. The project did not conduct a water or soil quality test due to budget allowance, but in terms of public health, such measures are important and should be incorporated into the design and practice phases in future projects. This would necessitate a larger sum of money and more detailed planning.

Permablitz projects will continue in the following years as new garden proposals reach the email group once the ongoing ones are accomplished, and it is therefore important to gather feedback from previous projects for future examples, and to pass knowledge to next season's followers. It is important to report over an internet page or a blog (that can be prepared alongside the project) about the importance of careful planning and detailed communication, and it is crucial to state that at which parts of the project the team faced complexity and hindrances. This would give a clear idea to other volunteers about what to expect and how to manage their own projects.

### **6.3. Implications for UA in Istanbul and Other Cities**

The apartment garden initiative conducted in a heavily urbanized neighborhood of Istanbul proved indeed very beneficial for Istanbul and cities in general. Primarily, the use of an apartment which is the basic unit of settlement in cities was crucial in conducting a project that is both locally and globally effective. The project showed in detail how an apartment as a unit can be immersed in an UA activity, and how its resources can be used and re-used for gardening. The establishment of the communal compost unit was a successful example for showing how

apartment residents can get rid of their waste more sustainably. This example can be developed for further use in apartments around the world and can help decrease the impact of house garbage on urban environment. Similarly, the inclusion of a medicinal and aromatic plants patch within the apartment garden revealed how a small agricultural unit can provide both a community corner and plants for human use. Installing such a patch alongside a seating area can give urban residents a chance to grow better relations and conversations, and also a chance to get away from the stress and crowd of the cities.

Apartment gardens can also help to increase biodiversity in cities as shown in this particular example. People around the world can help the dissemination and expansion of heirloom seeds by planting them in available green spaces as exemplified in this garden, and induce a diverse plant and animal population within their urban setting. This can easily intensify the potential of green space in cities; however it should not be forgotten that local conditions should be considered along with the possibility of invasive species that can harm the pre-existing ecosystems.

Above all, apartment gardens can help urban residents to directly manage the urban food system that they are involved in, and to be active participants who are responsible and conscious. Gardens can decrease their dependence on conventional food coming from elsewhere and through the use of fossil fuels, and people can now find a chance to reduce their impact on ecosystems. Less dependence on urban markets would mean less transportation, and this would help reduce both air pollution and traffic levels which are some of the major problems of megacities today.

Urban gardens can also help raising conscious and healthy children and youth as exemplified here. Children and youth can learn about the methods of food production and the workings of ecosystems through such projects, and become the forerunners of sustainability in their cities' future. Urban agriculture can benefit people of all age, sex, ethnic background and culture, and also help to construct better community relations in today's globalizing cityscapes.

## **CHAPTER 7**

### **CONCLUSION**

The case study presented and evaluated in this research revealed that urban agriculture is indeed a creative and fulfilling activity for cities today, and it offers great prospects to alter the current conditions in cities and move them towards sustainable futures. It can be implemented in various plots in the city such as in an apartment context as exemplified in this study, and can teach urban residents how to grasp their right to food security and sustainable ecosystems.

The potential of UA for the world today is yet to be discovered in its entirety, however there is a large amount of studies and projects now and people are ready to transform urban settings for better living (and eating) conditions. However, public initiatives such as the garden described here remain meager, and are far from fulfilling their overall goals of reaching a large audience and an established sustainability as they depend on the availability and resources of their practitioners. As shown here, the garden presented in this research was only able to address the residents of a single apartment. Despite the growing number of similar examples around the world, if an increase in urban agriculture is expected and desired, then a move from public to policy level is envisioned and is expected. Large-scale projects involving the interest and financial aid of authorities (such as municipalities) should be sought and encouraged in close future to bring UA to a feasible and visible reality.

## REFERENCES

- Allison, F. E., 1973. *Soil Organic Matter and Its Role in Crop Production*. Amsterdam: Elsevier Scientific Publishing Company.
- Altieri, Miguel., et al., 1999. The Greening of the “barrios”: Urban agriculture for food security in Cuba. *Agriculture and Human Values*, 16, pp.131-140.
- Armstrong-Klimesu, 2000. Urban Agriculture and Food Security, Nutrition and Health In: Bakker et al., eds. *Growing Cities, Growing Food, Urban Agriculture on the Policy Agenda*. Faldafing: DSE, pp. 99-117.
- Avila, C. J. and R. van Veenhuizen, 2002. Editorial: The Economics of Urban Agriculture. *UA Magazine*, 7, pp.1-4.
- Buchmann, Christine. 2009. Cuban Home Gardens and Their Role in Social–Ecological Resilience. *Human Ecology*, 37, pp. 705–721.
- CBD. *Biodiversity, General Information on Biological Diversity in Turkey*. [online]. Available at: <<http://www.cbd.gov.tr/biodiversity/biodiversity.php>> [Accessed on 10 April 2012].
- City Farmer, 2012. *Urban Agriculture Notes. Composting with Reg Wiggler Worms*. Available at: <<http://www.cityfarmer.org/wormcomp61.html>> [Accessed on 23 April 2012].
- Cornell Waste Management Institute, 2005. *Home Composting*. [online] Available at: <http://cwmi.css.cornell.edu/compostbrochure.pdf> [Accessed on 23 April 2012].
- Desai, B.K. and B.T. Pujari., 2007. *Sustainable Agriculture, a Vision for Future*. New Delhi: New India Publishing Agency.
- Drescher, A.W., Jacobi, P., and J. Amen. 2000. Urban Food Security, Urban Agriculture: A Response to Crisis? *UA Magazine*, 1(1), p. 8-11.
- FAO, 1999. *Spotlight: Issues in Urban Agriculture*. [online] Available at: <<http://www.fao.org/ag/magazine /9901sp2.htm>> [Accessed on 02 March 2012].
- FAO, 2009. *The State of Food Insecurity in the World*. [pdf] Rome: Electronic Publishing Policy and Support Branch. Available at: <http://www.fao.org/docrep/013/i1683e/ i1683e.pdf> [Accessed on 21 March 2012].
- Fetterman, David., 1998. *Ethnography*. California: Sage Publications.
- Flores, H.C., 2006. *Food not Lawns*. Vermont: Chelsea Green Publishing Company.

General Directorate of Meteorology, 1998. *Istanbul Meteorology Statistics*. [online] Available at: <http://www.mgm.gov.tr/veridegerlendirme/il-ve-ilceler-istatistik.aspx?m=ISTANBUL#sfB>. [Accessed on 16 March 2012].

Hajek, Ann., 2004. *Natural Enemies, an Introduction to Biological Control*. Cambridge: Cambridge University Press.

Hemenway, Toby., 2009. *Gaia's Garden, A Guide to Home-Scale Permaculture*. 2<sup>nd</sup> Edition. Vermont: Chelsea Green Publishing Company.

Istanbul Metropolitan Municipality. *Geographic Location and Strategic Importance*. 2008. [online] Available at: < <http://www.ibb.gov.tr/sites/ks/en-US/0-Exploring-The-City/Location/Pages/GeographicalandStrategicPosition.aspx>> [Accessed on 16 March 2012].

Istanbul Directorate of Food, Agriculture and Animal Husbandry. Istanbul Agriculture Statistics. [online] Available at: < [http://www.istanbultarim.gov.tr/index.php?option=com\\_content&view=article&id=840&Itemid=474](http://www.istanbultarim.gov.tr/index.php?option=com_content&view=article&id=840&Itemid=474)> [Accessed on 16 March 2012].

Kaldjian, Paul. 1997. Istanbul: Opportunities in urban agriculture. *Arid Lands Newsletter*. Urban Agriculture in Drylands. 42. Available at: < <http://ag.arizona.edu/oals/ALN/aln42/kaldjian.html>> [Accessed on 16 March 2012].

Kaldjian, Paul. 2004. Istanbul's Bostans. *The Geographical Review* 94 (3), pp. 284-304.

Karpat, Kemal., 1976. *The Gecekondu, Rural Migration and Urbanization*. London: Cambridge University Press.

Kemmis, S. and R. McTaggart, 1988. *The Action Research Reader*. Third edition. Victoria: Deakin University Press.

Kindon, Sara., Pain, Rachel., and Mike Kesby. Origins, approaches and methods. In: Sara Kindon, Rachel Pain, and Mike Kesby, eds. 2007. *Participatory Action Research Approaches and Methods: Connecting people, participation and place*. Oxon: Routledge.

Koc, Mustafa., MacRae, Rod., Mougeot, Luc J.A. and Jennifer Welsh. Introduction: Food Security is a Global Concern. In: Mustafa Koc, Rod MacRae, Luc J.A. Mougeot and Jennifer Welsh, eds. 1999. *For Hunger-Proof Cities*. Ottawa: International Development Research Center, pp.1-11.

Madaleno, Isabel. 2000. Research Note: Urban agriculture in Belem, Brazil. *Cities*, 17 (1), pp. 73-77.

Mayer, Dale., 2010. *The Complete Guide to Companion Planting*. Ocala: Atlantic Publishing Group.



Metcalf, Sara S. and Michael J. Widener, 2011. Growing Buffalo's capacity for local food: A systems framework for sustainable agriculture. *Applied Geography*, 31, pp.1242-1251.

Ministry of Justice. Seed Law. [online] Available at < <http://www.mevzuat.adalet.gov.tr/html/27240.html>> [Accessed on 28 March 2012]

Mollison, Bill. 2011. *Introduction to Permaculture*. Translated from English by Egemen Özkan. İstanbul: Sinek Sekiz Yayinevi.

Mougeot, L. J. A., 2000. Urban agriculture: Definition, presence, potentials and risks. In: Bakker et al., eds. *Growing Cities, Growing Food. Urban Agriculture on the Policy Agenda*. 2000, pp.1-42. Feldafing: DSE.

Mougeot, L. J. A., 2005. Urban agriculture as a tool for sustainable urbanization In: Mougeot, L.J. A., ed. *Agropolis. The Social, Political and Environmental Dimensions of Urban Agriculture*. London : Earthscan.

Nugent, Rachel. 1999. Measuring the Sustainability of Urban Agriculture. In: Mustafa Koc, Rod MacRae, Luc J.A. Mougeot and Jennifer Welsh, eds. 1999. *For Hunger-Proof Cities*. Ottawa: International Development Research Center, pp.95-10.

O'Brien, Rory. 1998. *An Overview of the Methodological Approach of Action Research*. [online] Available at: <<http://www.web.ca/robrien/papers/arfinal.html>> [Accessed on 03 April 2012].

Ozer,G., Vardar,E., and N.Ozer, 2007. *Unplanned Settlements within the context of Urbanization Process of Turkey*. FIG Commission 3 Workshop, Athens, Greece.

Panneton, B., Vincent, Charles. and Francis Fleurat-Lessar, 2001. Plant Protection and Physical Control Methods, The Need to Protect Crop Plants. In: Panneton, B., Vincent, Charles. and Francis Fleurat-Lessard, eds. 2001. *Physical Control Methods in Plant Protection*. Heidelberg: Springer-Verlag.

Pearson, Craig. 2010. Guest editorial: Challenging multidimensional agriculture in cities. *International Journal of Agricultural Sustainability*. 8 (1&2), p. 3-4.

Permablitz, 2012. What is Permablitz? [online] Available at: <<http://www.permablitz.net/what-is-a-permablitz>> [Accessed on 04 April 2012].

Saldivar-Tanaka, Laura and Marianne E. Krasny. 2004. Culturing community development, neighborhood open space, and civic agriculture: The case of Latino community gardens in New York City. *Agriculture and Human Values* 21, pp. 399–412.

Sensoy, Serhat., Demircan, Mesut., Ulupinar, Yusuf. and İzzet Balta. 2008. *Climate of Turkey*. [online] Available at: <http://www.mgm.gov.tr/files/en-US/climateofturkey.pdf> [Accessed on 16 March 2012].

Shillington, Laura J., (in press). Right to food, right to the city: Household urban agriculture, and socio-natural metabolism in Managua, Nicaragua. *Geoforum*.

Stake, Robert E., 1995. *The Art of Case Study Research*. California: Sage Publications Inc.

Tucker, Anthony and Sharon Tucker, 1988. Catnip and Catnip Response. *Economic Botany*, 42(2), pp. 214-231.

Turkish Statistical Institute. 2011 Population Data. [online] Available at: [http://www.tuik.gov.tr/PreTablo.do?tb\\_id=39&ust\\_id=11](http://www.tuik.gov.tr/PreTablo.do?tb_id=39&ust_id=11) [Accessed on 16 April 2012].

Van Driesche, Roy G. and Thomas S. Bellows Jr., 1996. *Biological Control*. Massachusetts: Kluwer Academic Publishers.

## APPENDIX

### Questionnaire Sent to the Garden Team

- Why did you join Permablitz?
- Why did you join Permablitz Erenkoy?
- Are you content about the general processing of the garden project? Were there any points for future improvements?
- Have you faced any issues during the design phase?
- Do you have any advice for the improvement of the design phase?
- Have you faced any issues during the practice day?
- Do you have any advice for the improvement of the practical phase?
- What were the distinctive characteristics of this particular Permablitz initiative?
- What were the contributing factors for this garden project?
- What were the hindering factors for this garden project?
- Which sources of information and material have been useful to you during the project?
- Do you think this project has been beneficial for you? If yes, what were these benefits?
- What kind of implications this project can have for future Permablitz and urban gardening initiatives?
- What kind of implications this project can have for cities in general?

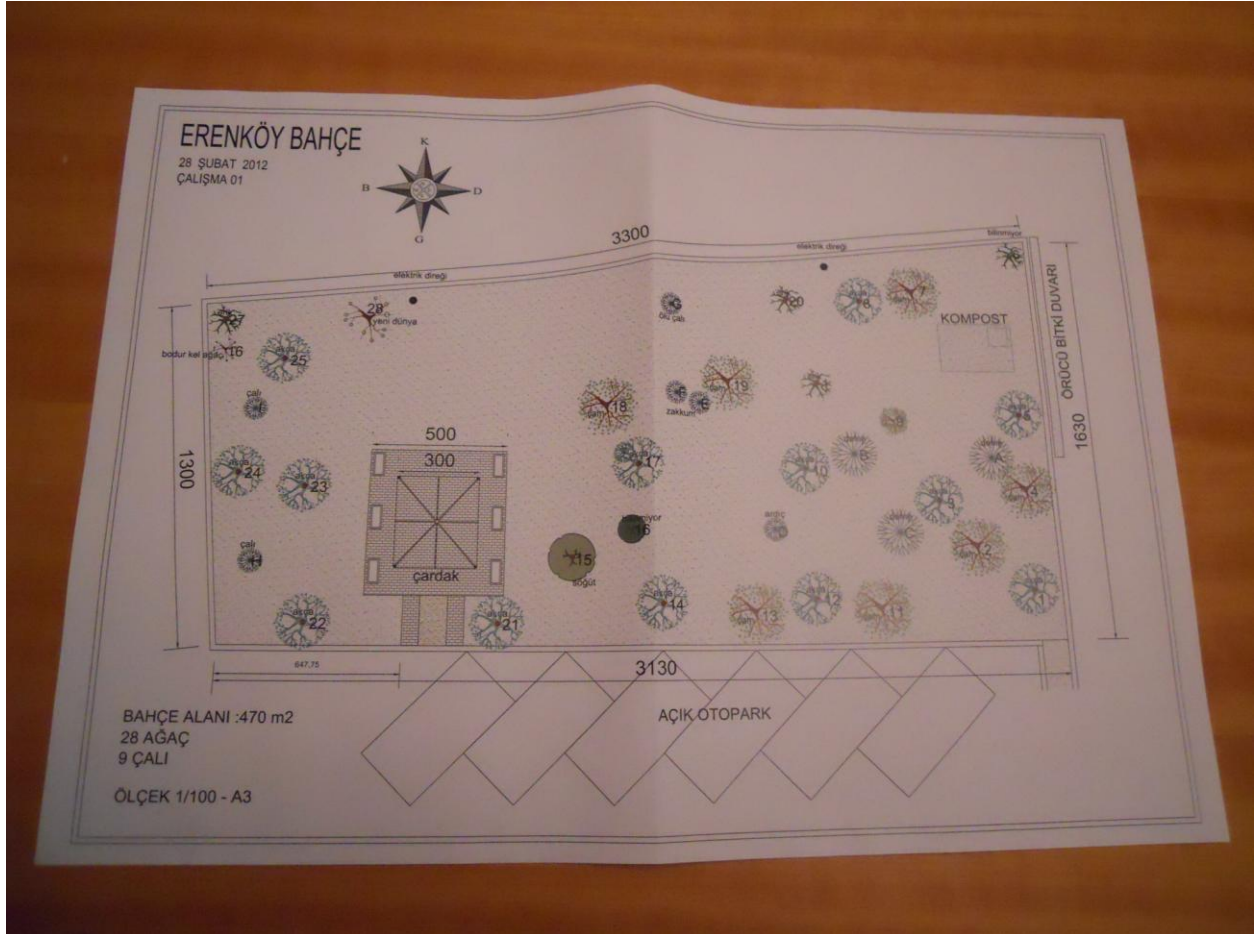
## FIGURES



**Fig. 2** The garden: view from the West end



**Fig. 3** Experimental area with the compost box in the back



**Fig. 4** Sketch Map drawn by team member Görkem Ergazi



**Fig. 5** Seed Ball





**Fig. 6** Trimmed braches and leaves used for mulch and hugelkultur



**Fig. 7** Tree trunks used as the base of hugelkultur



**Fig. 8** Twigs and branches used to cover tree trunks



**Fig. 9** Completed Hugelkultur unit





**Fig. 11** Making of the medicinal and aromatic plants patch