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Swedish University of Agricultural Sciences

**Faculty of Landscape Architecture,
Horticulture and Crop Production Sciences**

# Challenges to Commercial Urban Agriculture

– A qualitative study with actors involved in the urban agriculture scene of Malmö, Sweden

Sandra Pettersson

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- A qualitative study with actors involved in the urban agriculture scene of Malmö, Sweden

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# Foreword

Malmö is a city with a growing interest in urban farming, which the author of this study has observed first hand, as well as been part of through an internship at Botildenborg and Stadsbruk. Stadsbruk is an incubator program offering interested people to rent land and plots in order for them to test their business models before venturing into a real farming commitment, making it easier for potential urban farmers to get started. This study has a unique opportunity to compare the challenges anticipated or discussed by existing literature, with the challenges experienced by the actors, such as practitioners and other stakeholders, of urban agriculture.

This study has ties to agroecology mainly due to addressing localized food system through social, economical, and practical farming issues, with a background context of environmental issues caused by agriculture. Urban farming can be seen as an alternative to the current agricultural system, and can provide more local food networks.

# Abstract

Climate change has led to a number of implications for humans. One of the main challenges for the future will revolve around the access to resources and food. In order to work towards food security we have to rethink our agricultural system and our practices. Agroecology is a concept that aims to create more sustainable food systems, and one occurring approach within agroecology is localized food systems. With the growing trend of urbanization, there is a need for better urban policies and strategies for urban agriculture. There are currently several challenges potentially standing in the way of further development of urban agriculture. This thesis identifies and investigates these challenges with the help of existing research on the subject, as well as a case study with people involved in the commercial urban agricultural scene of Malmö, Sweden. Furthermore, it will briefly investigate some solutions to these challenges.

This thesis has been carried out as a qualitative study, conducted through semi-structured interviews with an interview sampling within Botildenborg and Stadsbruk. The analysis has been carried out with the help of triangulation, participatory observations, SWOT-analysis, word clouds, and Interpretive Phenomenological Analysis (IPA). A literature study was carried out in order to build background information, and to compare the challenges mentioned in literature to the information received from the interviews.

In short, the results indicated that the largest perceived challenge for the commercial urban agriculture movement in Malmö is achieving profitability, mainly due to a low-price market for vegetables. Another major challenges for this movement was connected to policy and the inclusion and acknowledgement of urban agriculture practices. Furthermore, the incubator Stadsbruk was perceived as a useful too for urban farmers to access land, and to act as a bridge for communication between various stakeholders. A future desire for the Malmö movement would be better lobbying and awareness creation coupled with further education on the topic, in order for the urban agriculture movement to better spread in Sweden and elsewhere.

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# 1. Introduction

Climate change is a recognized threat towards society today, with a growing population demanding food and other resources. Many of the environmental changes such as extreme weather and temperatures, scarcity of resources, pollution , acidification or salinization of water bodies, and degradation of land biodiversity will affect the earth's population directly or indirectly (FAO, 2016). Therefore, it is fair to say that all of these changes will affect our food supplies. All environmental changes in nature have the probability to affect our abilities to farm and gather food (ibid., 2016). Food security and food policy is a highly important subject on a global level. Food is not only a human necessity, but food is linked to a number of topics that are relevant in society today, such as; human health, social justice, environmental wellbeing, and management of our planet's resources (Viljoen & Wiskerke, 2012). Climate change is one major threat to food security due to the effects of temperatures, rain patterns, and other abiotic factors necessary in food production. The twist here is that climate change has negatively impacted food production, at the same time as agriculture is considered one of the largest contributors to climate change (IPCC, 2019).

There are a number of aspects that trigger climate change today, and agriculture is a major one (Gliessman, 2015). The agricultural sector has been highly modernized throughout the years, and methods of mass production have become more popular as a response to a growing population. The green revolution in the 1950s and 60s was a response to the food insecurity following the second world war. In order to increase yields and efficiency of production the agricultural system was industrialized. We modernized nature with the invention of chemical fertilizers to increase plant efficiency, as well as chemicals that could kill threats to our food crops such as weeds or pests (ibid., 2015). New varieties of existing crops were developed, that are for example more resistant to threats, or that produce higher yields or added nutrition. Additionally we invented larger machines that could replace manual labor, and we found ways to irrigate water in larger quantities . These efforts combined resulted in boosted yields of production. Until today the system has been maintaining this mentality of maximizing the production, and also the profit (ibid., 2015).

This industrial monoculture, meaning focusing on a large scale production of a single crop, has achieved its purpose of feeding larger amounts of people. However it has additionally contributed to environmental harm (Gliessman, 2015). For example the IPCC (2019) states the following: “Agriculture, Forestry and other land use activities accounted for around 13% of $CO^2$, 44% of methane ($CH^4$), and 82% of nitrous oxide ($N^20$) emissions from human activities globally during 2007-2016, representing 23% of total net anthropogenic emissions of GHGs” (IPCC, 2019).

Table [1] below outlines and categorizes some of the negative impacts that modern agriculture has inflicted on the environment, as well as living organisms and humans, according to critical scholars.

*Table [1] Agricultural practices and its negative impacts on the environment, living organisms, and humans, according to critical scholars*

| *Type of agricultural practice:* | *The subject of impact:* | | | |
|---|---|---|---|---|
| | | Environment (Land, air, water), *Abiotic factors* | Living organisms/ Wildlife, *Biotic factors* | Humans, *Social factors* |
| | Monoculture | Industrialized livestock farming through a mono styled mass production has led to pollution of the environment in the forms of manure leaching and greenhouse gases (Gliessman, 2015, p.7).<br>Water and other natural resources have been utilized without considering the renewability rates (Gliessman, 2015, pp. 5-8). | Without rotations and diversity, there will be less interactions and linkages between the different components of the farm. The cycles are open rather than closed. Additionally, a lack of rotations and diversity can make crops more susceptible to pests and diseases (Altieri & Nicholls, 2005, p.15). | The whole agricultural sector has been adapted to monoculture production, making it difficult for farmers outside that system (Altieri & Nicholls, 2005, p.14). |
| | Mechanization | Heavy natural resource extraction has been needed for material and fuel (Gliessman, 2015, p.3). Additionally; agricultural activities are contributing to 23% of greenhouse gases caused by man (IPCC, 2019). | Large machines are used to till and cultivate the soil in between cycles, which often is harmful for the soil quality and the organisms living in the | With machines and technological assistance, farms got bigger and fewer, creating less job opportunities and less access to land for |

| | | | | |
|---|---|---|---|---|
| | | | soil (Gliessman, 2015, p.4). | small farmers (Altieri & Nicholls, 2005, p.14). . |
| | Agrichemicals | Pesticides are easily leached out into the environment, polluting water bodies or the atmosphere (Gliessman, 2015, p.6). | There are a negative impacts that comes with pesticides, such as termination of natural perpetrators and beneficial insects. Additionally there is always a risk of pests developing resistance, requiring more application of chemicals (Gliessman, 2015, p.5). | There is a term called "pesticide poisoning" (Gliessman, 2015, p.6). Additionally, links have been made between consumption of pesticides and cancer and developmental disorders (Altieri & Nicholls, 2005, p.18). |
| | Excessive fertilizers | Excessive fertilization can change the soil, making it acidic or salinated, as well as potentially changing the conditions for pests and weeds (Altieri & Nicholls, 2005, p.19). Fertilizers can be harmful for the ozone layer (Altieri & Nicholls, 2005, p.19). Nitrous oxide is considered a greenhouse gas that derives when chemical nitrogen fertilizers react with soil microbes (Gliessman, 2015, p.5). Excessive fertilization can cause excess nutrients to leach into other parts of nature, often water bodies (Altieri & Nicholls, 2005, p.18). | Excessively fertilized water bodies can lead to an increase of algae blooming, or, eutrophication, which will likely block the flow or sunlight and oxygen to organisms and animals (Altieri & Nicholls, 2005, p.18). | Drinking water that has been polluted with chemical fertilizers, containing for example nitrogen, is also considered a human health risk (Altieri & Nicholls, 2005, p.18). Furthermore, the use of chemical fertilizers instead of natural ones can create a dependency for farmers, which further is strongly affected by retail prices (Gliessman, 2015, p.5). |

When viewing these consequences from a social perspective, the issues within food production systems have led to inequalities in access and distribution of food. Instead of focusing on ensuring that the food produced will reach our population, large agribusinesses focus on profit maximization, monopolization and growth (Holt-Giménez & Altieri, 2013).

Agroecology is an approach which can be viewed as a response to the need for more sustainable agricultural practices. Fully defining the term can be challenging due to differing opinions amongst agroecologists, however the OECD (Organisation for Economic Co-operation and Development) uses the following definition: "the study of the relation of

of agricultural crops and environment" (Henkel, 2015). Agroecology can be considered an alternative to what scholars might call 'conventional' or 'industrial' agriculture, which is the status quo today post green revolution (Gliessman, 2015). Scholars and practitioners of agroecological principles understand and highlight the value of nature and ecosystems and how the entire chain or cycle of ecology is connected (Altieri & Nicholls, 2005; Gliessman, 2015; Pimbert, 2015; Wezel et al., 2009). From a practical farming perspective, this means using strategies and methods such as: organic production, several crop rotations, intercropping of various species, diversification, and integrated management for pest and weed control, and usage of green manure (Altieri et al., 2012; Gliessman, 2015). There are other components to agroecology besides the farming practices, such as economic and social activities that are acknowledged and integrated with the farming. Thus agroecology is highly multidisciplinary and interdisciplinary, and based on the principles of practice, science, and movement. Even within different countries or communities there are different approaches to agroecology, further highlighting the importance of diversity (Wezel et al., 2009). Moreover, agroecology is promoting people's right to having nutritious food as well as the right to farm, which can be linked to concepts like 'food security' and 'food sovereignty'. Small-scale, local, and often indigenous farmers should have the right to farm according to ethical, cultural, social, and environmental perspectives. Theses farmers possess much valued knowledge on farming together with nature in a way that is contrasting today's conventional farming. Furthermore, having a number of local farmers providing food for communities contributes to local food security (Pimbert, 2015). Alternative food networks (AFNs) have been developed as a response to industrial food systems. The idea is that the actors within a food chain can communicate and interact. Examples are: community supported agriculture (CSA), farm shops or farmers markets, or food box subscriptions (Viljoen & Wiskerke, 2012).

Another aspect that has contributed to shifts in food production is urbanization[1]. Urbanization is not necessarily a new phenomenon, however the scale of it has rapidly increased. There is a predicted increase in the number of megacities we will have within the near future. The mass migration that will come with these megacities will most likely

[1] Urbanization is referred to by the National Geographic (2019) as a process where people relocate from the rural areas into cities, thus increasing urban population and city expansion. It is often explained as a result of earlier industrialization which have led to job opportunities (National Geographic Society (2019).

contribute to socioeconomic divides, poverty and slums. In these areas access to food, especially healthy food, is considered challenging (Mougeot, 2006). The predictions made by the United Nations (UN) for 2030 is stating that 60 percent of global population will live in urban areas (United Nations, 2019).

Along urbanization grew the development of industrialized rural farming and mass production further, in order to sustain the cities with food. Thecity has changed from being a producer to being mainly a consumer. Food systems have additionally become highly globalized, creating further distance and steps between producers and end consumers, or as Viljoen & Wiskerke (2012) stated: “The local farmer is producing for the whole world market, the local supermarket is supplied by national distribution centres” (Viljoen & Wiskerke, 2012). Here are some examples on how the food system has been negatively affected by urbanization (Kulak et al., 2013; Viljoen & Wiskerke, 2012):

- Food has to be transported further distances in order to reach the final consumer, which also creates an increased need for food storage.
- Power has shifted in favor of the processors and retailers, which means increased price competition, resulting in less profit for the producer.
- The amount of agricultural labor is decreasing, leading to losses of knowledge and skills.
- Nutrient cycles are broken when nutrients are transported from rural areas to urban areas.
- More processed food require more packaging, leading to a greater need for natural resources.
- Food waste is more common in urban areas due to the great levels of availability.
- Food deserts are common, which are areas in cities where processed food are dominant, and fresh produce is hard to obtain. Thus negatively affects the health of the inhabitants.
- There is an existing distansation between food producers and food processors, creating a lack of acknowledgement for urban agriculture within urban planning and policy making.

Urban agriculture is a farming method with great potential concerning the security of food supply for the city, as well as tackling some of these issues within the food chain. However, the urban agriculture movement is not often developed, recognized or integrated into societies, especially in the global north (Mougeot, 2006; Schmutz, 2017; Viljoen & Wiskerke, 2012). Even if urban agriculture is practiced by millions of people globally it often remains an informal activity for subsistence use (FAO, n.d.).

The initial question that sparked this study is: *If urban agriculture is a useful approach to tackle urban food insecurity, inequality in the distribution of food, and negative climate impact within the agricultural sector, then why is it not more commonly used and integrated in society?* People may be growing vegetables or fruit in their backyards, but how often is urban production a business, selling directly to local stores, consumers or restaurants?

# 2. Context

The actual notion of Urban Agriculture might simply be described as a means to feed a growing urban population (Viljoen & Wiskerke, 2012). In order to dig deeper into the subject of urban agriculture, this chapter will explain the concept further. The chapter additionally describes the concept of Urban Agroecology, which incorporates agroecological principles into urban farming (Schmutz, 2017).

The author of this study has decided upon using the terms urban agriculture or urban farming as umbrella terms for the practices described in this case study.

## 2.1 Urban Agriculture

Urban agriculture is differentiated between the global north and the global south. One explanation could be the commodification around food that came with the northern industrialization and capitalism (McClintock, 2010). Environmental advocates in the global north have been mentioning the benefits of urban agriculture, however because of how the food system looks like today, as well as social norms, agriculture tend to be associated with rural areas. One can say that we have created a separation between the rural and the urban where certain stereotypes have been created. Some scholars would say that cities are losing connection with nature (ibid., 2010).

Urban agriculture is food production taking place in the city. Urban Agriculture

accommodates a number of different activities in both private and public spaces. Examples of urban agriculture in private spaces are window boxes, home gardens and roofs. Examples of urban agriculture in public spaces are public gardens and grounds, along roadsides or railways, and institutions like hospitals or schools. Urban agriculture is also performed as a commercial activity, where cultivation, for example, can take place on unutilized land, on rooftops, in empty warehouses, and in tanks or other water bodies. (Mougeot, 2006; Ellis & Sumberg, 1998). Commercial urban agriculture can also vary in size, from small-scale to industrial production (Schmutz, 2017). Van Tuijl et al. (2018) categorizes the activities of urban agriculture accordingly; community gardens, institutional gardens, guerrilla gardening, urban farming, vertical farming, plant factories with artificial lighting, zero-acreage farming, agro-parks, and agro-tourism (Van Tuijl et al., 2018).

## 2.2 Urban Agroecology

If urban agriculture can be any type of production within a city, even industrial or factory urban farming, then considering urban agriculture as a sustainable practice is not a given (Schmutz, 2017). . However scholars like Schmutz (2017), or Wibbelmann et al. (2013) have highlighted that urban agriculture often share values and aims with the agroecology. Urban agroecology could then be considered agroecological principles that are practiced in an urban context. Examples of important aspects to be considered within urban agroecology could be  the use and efficiency of city resources, sustainable production, consumption of food patterns, linking the consumers with producers, equality of food distribution, governance and politics, and the impact on the environment (Schmutz, 2017; Wibbelmann et al., 2013).

## 2.3 Benefits of Urban Agriculture

In order to summarize the positive aspects and benefits of pursuing urban agricultural activities, this section will organize some of these aspects found in existing research into four categories of benefits;  *environmental, social, production,* and *economic.*

### 2.3.1 *Environmental benefits*

Agriculture within cities can be beneficial for the environment. Green infrastructure can create opportunities to sink carbon, increase biodiversity, and cool city temperatures (Lin et al., 2015). Moreover, urban agriculture provides opportunities to shorten the distance between the food producers and the urban consumers. This can help to reduce the amount of waste due to long transportation (Ackerman et al., 2014; McClintock, 2010). There are also possibilities for cities to use organic waste as a resource for through composting (Van Veenhuizen & Danso, 2007). When it comes to urban production there are several crops that are short in cycle, which can provide good yields from a small space. The Food and Agriculture Organization of the United Nations (FAO) estimates these numbers: "Garden plots can be up to 15 times more productive than rural holdings. An area of just one square metre can provide 20 kg of food a year" (FAO, n.d.).

### 2.3.2 *Social benefits*

Farming in the city can contribute with benefits for society. There are opportunities for a city to utilize unused land or infrastructure, such as old industrial buildings, into a valuable resource for the city (Mougeot, 2006). Being located close to people can increase social interactions, leading to increased awareness about the food system (McClintock, 2010). This can also contribute with opportunities for connecting with customers and marketing (Stone, 2016). Furthermore, urban agriculture can create meaningful social activity such as nature rehabilitation and therapy, recreation, integration tools and community development. Additionally, it can enable activities like education, training, and job opportunities for society (Briz et al., 2017; McClintock, 2010). Even inclusion of disadvantaged groups in society, for example women, young unemployed, and people with disabilities (Van Veenhuizen & Danso, 2007).

### 2.3.3 *Benefits in growing the food*

As a commercial farmer there are some benefits to growing in an urban setting, especially in relation to the market and the consumer. It is easier to make connections, advertise one's business, and reach consumers when they have the ability to walk by the farm or growing area. Additionally, compared to rural larger scale farming, there is less need for large investments in infrastructure or machinery (Stone, 2016). Regarding growing conditions, urban farmer Curtis Stone (2016) expresses that he has noticed the potential in limiting the spreading of pest and weeds within a city if using good rotations, and if there is decent shelter from wind. He further mentions that the temperatures are often warmer within cities than outside, which can be beneficial when growing in colder climates (Stone, 2016). Maybe this could be researched and applied in Sweden.

### 2.3.4 *Economic benefits*

Urban agriculture as an emerging industry can enable new jobs and income generating activities, and eventually the development for new businesses, innovation, and product development. There is potential for new markets and economic growth for the city (Briz et al., 2017; Van Tuijl et al., 2018). Urban farmers creating alternative markets and sales channels within the city can result in an improved consumer/producer relationship (Ackerman et al., 2014).
Moreover, considering the social aspects of urban farming, and the occurrence and availability of open farms, this can potentially benefit the tourism sector of a city. Additionally, this could contribute to an added value to certain neighborhoods which can lead to more attractive areas and real estates (Briz et al., 2017; Van Tuijl et al., 2018).

## 2.4 Challenges to commercial Urban Agriculture

As mentioned in the previous section, there are many different types of urban agriculture, and to grow food for private consumption is a more common practice in comparison to

commercial urban agriculture. The assumption for this study is that there could be challenges that are hindering the development of commercial urban agriculture.

This section aims to highlight some examples, found in literature, of challenges that the commercial urban agriculture movement is facing. The challenges are in this study categorized into five main categories; *policy aspects, knowledge, resources, surrounding elements* and *societal aspects.*

### 2.4.1 *Policy aspects*

In Europe, the European Union (EU) govern the development of urban agriculture, and an especially important policy used is the Common Agricultural Policy (CAP). In 2015, Curry et. al. analyzed how these policies affect urban agriculture and sustainable food systems through a case study in Bristol, United Kingdom. The results showed that the policies were lacking the holistic element that comes with the urban agricultural movement, and therefore often hindered further development in the sector (Curry et al., 2015). They further claim that the CAP is formed in a way to favor rural agricultural development, and thus separating urban food production from the agricultural sector. This is happening through a number of factors, with a major one being the production itself. Urban agriculture often performed on a too small of a scale, it seldom requires the use of land, it is often more localized and does not engage in export or global markets, and most obviously it is not practiced in a rural area and thus not included within the scope of the CAP. Furthermore urban agriculture is not always focused on maximum production but also on social and cultural factors. This will exclude these urban production efforts from receiving support, funding, or even proper recognition (Curry et al., 2015). Curry et. al. even hints that failing to acknowledge and seize the opportunity to support urban agriculture could be unproductive in the development of aspects such as environmental sustainability, local food security, and urban innovation and development (ibid., 2015). Policy makers posses the ability to determine the need for urban planning and urban agriculture which is crucial for the development of proper policy measures. Disagreements, lack of collaboration and challenges with multidisciplinarity between decision makers can additionally hinder progress (Viljoen & Wiskerke, 2012). There are additionally more localized rules and regulations driven by municipalities or cities which can further be obstacles for the development of urban agricultural activities

(Ackerman et al., 2014). Having issues with rules and regulations, as well as constraints regarding certifications, might be an explanation to a hesitant approach when it comes to commercial urban farming. It is easier to focus on the social aspects of urban agriculture rather than attempt to get into a commercial market system (Van Tuijl et al., 2018).

### 2.4.2 *Knowledge*

There has been a decrease in interest for farming in general, which is leading to losses of valuable knowledge and skills in the agricultural sector (Viljoen & Wiskerke, 2012).

For people that are interested in becoming urban growers it can often be difficult to acquire the knowledge for it, therefore it is not uncommon that people seek to become planners or architects in order to work with urban development. Although, there is a lack of knowledge and understanding for the urban agricultural needs amongst the urban planners and policy makers (ibid., 2012).

Looking at the general awareness and knowledge about food, urban dwellers tend to have easy access to food, not always knowing how it was produced which can cause distance between producers and consumers. Food is also relatively cheap when considering externalities, which is not taken into account by the consumers (Viljoen & Wiskerke, 2012; Wiskerke, 2015).

### 2.4.3 *Resources*

Accessing land or growing space is an obvious challenge, especially considering that a growing city will have different actors competing over available land. Moreover, access to crucial resources like water could render challenge (Mougeot, 2006). Financial resources also play an important role. Rent for a growing space could be high, certain expensive tools or machinery might be need, or fees that come with the usage of resources like water (Viljoen & Wiskerke, 2012). Therefore, investment capital and operational costs might be challenging to manage (Van Tuijl et al., 2018).

In this category time also qualifies as a resource of significance. Time that is used whilst performing the labor, as well as having the time to research and maintain ones business (Viljoen & Wiskerke, 2012).

### 2.4.4 *Surrounding Elements*

The conditions of the surroundings can have be of importance for urban agriculture since the soil, or growing medium, needs to be of quality. Within an urban area there are risks of contamination or faulty garbage disposal that can influence the farming space. The same issues are valid when it comes to water. There might be none to difficult access to water, or it could be untreated or polluted. Additionally, the pipes or pumps might be in rough conditions (Altieri et al., 1999). Air pollution might also be a contributing factor, as well as the potential risk of occurring heavy metals in the produce (Van Tuijl et al., 2018).

There is also the risk of crime in the area, where farms get robbed or sabotaged (Altieri et al., 1999).

### 2.4.5 *Societal Aspects*

Although it was stated in the benefits of urban agriculture section that urban agriculture can contribute positively to the health of the population, there are also potential health risks connected to urban farming (Van Veenhuizen, 2014). Contaminated produce could be a carrier for diseases or heavy metals, and overuse of agrochemicals can lead to leakage into the local water supplies (ibid., 2014).

Another important aspect for commercial urban agriculture is the interest from the consumer. Without the consumers willingness to purchase the produce no market will exist. This could be related to the issue of poverty in large cities. People from poor neighborhoods that are especially in need of healthy fresh food might not have the means to purchase it (Mougeot, 2006; Viljoen & Wiskerke, 2012).

An additional potential challenge is related to the urban farmers inclusion in society, due to the often lacking amount of urban farming organizations. This can restrict their voices to be heard (Van Veenhuizen, 2014).

# 3. Aim of Study and Research Questions

The aim of this study is to investigate the challenges for commercial urban agriculture in Malmö.

*What are the challenges for actors in the commercial urban agriculture movement in Malmö? And have any solutions/relieving methods been tried?*

*Are the challenges found in existing research coinciding with the challenges experienced by these actors? Are some challenges perceived as more predominant or urgent?*

*What is the motivation for urban agriculture in Malmö?*

# 4. Research Method

This thesis is based on a qualitative case study carried out in Malmö, Sweden. The case revolve around the organization Botildenborg and its urban farming incubator project Stadsbruk.

The next section will contain background information to qualitative research, followed by a brief summary of the tools used for this research, whilst the later sections of this chapter will explain them in more depth.

## 4.1 Methodological Approach

Conducting qualitative research is a method that has mainly been associated with the field of social and behavioral science (Creswell & Poth, 2016). However, there are many different approaches to qualitative research and the main feature lies in the opportunities for interpretation and adaptation. The way to analyze qualitative material is often more circular and the opportunities to create assumptions, themes and perspectives can enrichen a report (ibid., 2016). In the field of agroecology, as stated in the introduction section of this thesis, multidisciplinarity is important due to its inclusion of science, practice and the movement.

Therefore, using a qualitative research method, which is common practice in social science, should be a legitimate choice.

## 4.2 Methodological Tools

Triangulation is a method which allows research to contain several methodological tools (Olsen, 2004). Olsen (2004), explains the method accordingly; "... triangulation is defined as the mixing of data or methods so that diverse viewpoints or standpoints cast light upon a topic." This method has also been referred as a mixed methods approach. This has been described as controversial due to the risk of overcomplicate a subject, however there is evidence that argues for the benefits of holistic results by of using such methods (ibid., 2004). In a study like this one, it could be beneficial to use several methodological tools in order to collect a diverse amount of data, especially when considering the multidisciplinary aspect of agroecology and the food system.

The tools used for this research are; collecting background information and facts from existing sources, semi-structured interviewing, SWOT analysis, word clouds, participatory observations, and interpretive phenomenological analysis (IPA). All the information extracted from participants of this study was analyzed anonymously at a group level.
The venue of this study is Malmö, and the organization Botildenborg.

### 4.2.1 *Collecting Background Information*

In order to provide the background information to this study a systematic approach was used for the literature reviewing. This means that the author has sought out the information needed to answer this study's hypotheses as well as it's assumptions. To ensure transparency and minimize bias it can be useful to provide detailed information about the literature reviewed with the help of the PRISMA Statement checklist (Preferred Reporting Items for Systematic reviews and Meta-Analyses) (Liberati et al., 2009). The way to use

such a checklist can vary depending on the study and the subject (Rethlefsen et al., 2021), and for this review of the collected background information both the checklist by Liberati et. al. (2009) and the renewed list by Rethlefsen et. al. (2021) have been considered.

Information and facts for this study were extracted from peer reviewed articles and books, or reports that were mainly found with the help of the search engine Google Scholar. Additionally, the SLU online library platform was used. The method of looking at references from interesting articles or studies provided useful in order to further find more information on a subject. Furthermore, the Google Scholar search engine has a citation tool which allows the reader to find other publication that has referenced the literature piece, this tool was also used for this study. Organizational or governmental websites have also been used for information, either specifically sought out or found through a relevant Google search. This was also the case for public documents and information from municipality websites. Biography-oriented books and similar publications were used regarding the case study, which have been for example been published by or in collaboration with stakeholders of this case study. This case study therefore uses literature in both English and Swedish in order to easier gather as much relevant information as possible.

This study was conducted during the late later part of 2019 and the early period of 2020. Although it will be published in 2021 largely due to complications surrounding Covid-19, as well as personal struggles. Therefore, there could be new relevant information that has been released after that period which have not been provided for this study.

### 4.2.2 *Semi-Structured Interviews*

Semi-structured interviewing was used as method since it leaves room for interpretation, as well as an opportunity to follow the interviewees narrative without steering the results too much (Galletta, 2013). Furthermore, it provides a ‘conversation-like’ dialog which is here to be preferred, especially with qualitative research. A script of twelve questions was drafted but not followed strictly. Additionally, every question was slightly modified to each specific interviewee. Occasionally extra questions were asked or probing phrases depending on each answer.

The interview guide and interview questions can be found in the Appendix, chapter 8.

#### 4.2.2.1 *Interview sampling*

Finding the informants of this research was done through personal networking. Nine interviews were conducted in a semi-structured fashion with the following selection of people;

- three people at the organization Botildenborg: the founder of the organization, one project facilitator, and the farm director at the educational farm.
- four participants of the incubator program Stadsbruk: one previous participant who already has successfully transferred to a longer term growing lot, two people who completed the program and will transfer to a longer term growing lot, and one person who after completing the program decided to not continue as a commercial urban farmer.
- one person who was an urban farmer through the incubator program but decided to buy a rural farm in southern Sweden.
- one person who was part of the urban agriculture movement before Stadsbruk started, who is now involved in agriculture at a rural location.

The reason for sampling people that are active within the organization Botildenborg is because they have initiated the incubator program in Malmö, which has enabled the development of urban agriculture in the city. It is additionally beneficial to include people that are currently participating in the Stadsbruk incubator program because they are new farmers that want to start an urban farm of their own and might have good insight into the obstacles they have to overcome in order to do so. The earlier participants might have ideas on what has happened after the incubator program, if they have faced other challenges now compared to being in the program. They might also have discovered other solutions to certain problems. In order to broaden the results as well as providing different perspectives it is important to include at least one interview with somebody that is not currently affiliated with Stadsbruk. The initial idea was to additionally interview an expert or researcher on the subject, however this was not done due to time constraints and other limitations.

The participants were orally informed about the purpose of this study, as well as an estimation of time duration for the interview. All participants were asked to consent audio recording. All the interviews were further transcribed to be used as data for the analysis. Having the interviews transcribed provided overview of data and useful for extracting information stepwise.

### 4.2.3 *SWOT analysis*

SWOT (strengths, weaknesses, opportunities, threats) is a strategy tool, or framework, commonly used by companies and organizations to develop their business strategies. The idea is to investigate the aspects and factors around the organization in order to plan and create an advantage on the market. The tools uses four categories, two internal and two external: strengths and weaknesses, opportunities and threats (Gürel & Tat, 2017). Even though the tool is most often used by organizations or companies, it can also be used to investigate a certain industry (Helms & Nixon, 2010), where in this context, the tool will be used to investigate the industry of urban agriculture. The internal strengths and weaknesses can highlight where urban farming has advantages and disadvantages compared to other types of growing. It can be in terms of efficiency, resource use, or skillset that can be utilized. The external opportunities and threats are factors outside the farming that can still affect the activity, such as regulations, social norms and trends, politics or climate change (Gürel & Tat, 2017; Helms & Nixon 2010).

There is some critique to using SWOT, mainly due to its simple nature. The few indicators and categories can make it hard to categorize certain aspects, and properly place them in the tool. Moreover, the tool is not a given method for organizations or companies to implement strategies. Brainstorming can be done and categorized, but this does not include follow up and future action (ibid., 2017; ibid., 2010). However, for this a SWOT was used as an analysis tool. The SWOT was used in the inquiry phase, where interviewees together with the author listed and categorized strengths, weaknesses, opportunities, and threats to urban agriculture. Reflecting over both negative and positive aspects, as well as internal and external factors can spark more ideas and further develop the results of this study. It can create stimulating reflection and discussion. Additionally, the thoughts of the interviewees regarding commercial urban agriculture in general can potentially be beneficial for the final analysis.

### 4.2.4 *Word Clouds*

The word clouds are collections of keywords that are displayed in different sizes depending on frequency. The motivation for using the tool is to in a graphic way show how many of the interviewees of this study mentioned the same challenge, solution, or SWOT attribute. This can provide an indication of which aspect are more relevant or important in this case study. The tool might seem informal, yet there are arguments stating that word clouds can be useful in research where data derived from a group needs to be comprehended (DePaolo & Wilkinson, 2014).

### 4.2.5 *Interpretative Phenomenological Analysis (IPA)*

IPA can be a useful tool for analysis due to its ability to offer insight to a phenomenon, in this case commercial urban agriculture in Malmö Sweden. Scholars tend to call this approach the “insider perspective”, due to its aims to understand and investigate the perspectives of the participants (Smith et al., 1999). Therefore, when analyzing the interviews and data derived from the interviews, the researcher hasfurther considered what people were actually saying. Not only their exact wording, but how they expressed themselves and the emotions they portrayed. A distinguish has been made between what was verbally outspoken and how the author has interpreted the way the words were delivered nad underlying messages. Taking notes and creating themes and categories are useful steps to take in order to make assumptions and conclusions (Smith et al., 1999; Smith, 2003). The method was used by listening to the audio and transcribing the interviews, then the transcript was stepwise read and categories were made, followed by themes and subthemes of information to be used for tables. Furthermore, keywords were found and counted in word clouds.

### 4.2.6 *Participatory Observations*

Participatory observations has been made, where the author has both been an outside observer and a participant in the form of an intern at the educational urban farm of

Botildenborg. The internship period started earlier than the observations and and interviews were conducted, which means that most of the observations have been summarized only at the end of the internship. The author attending this internship is what inspired the creation of this thesis. Therefore there are possibilities of missed opportunities in the observations due to the thesis plan not being finalized.
The author has spent two months of full-time internship at Botildenborg's market and educational garden, and has been active in the general urban farming scene in Malmö. The results of these observations will be presented in chapter 6.

## 4.3 Disclaimers

The potential pitfalls of conducting interviews in a semi-structured fashion is that the researcher could potentially have less control over the information received, for example when using a move conversation like interview style, the answers could be more vague than strict yes or no questions (Smith, 2003). Additionally, the results from a phenomenological analysis is more concerning the actually group of participants instead or the wider general perception (ibid., 2003). The motivation for still using this method of analysis is that viewing challenges from the participants perspective can create a larger understanding of the issues and the context around them (Smith et al., 1999).

This study is not immune to bias due to the values and the level of involvement of the author, however this should not have any effect on the outcome and motivation of this study, as well as the validity of results (Collier & Mahoney, 1996). Potential biases could involve the personal relationships gained during the internship and the study, as well as some level of sympathization with their movement. The study has been conducted in collaboration with Botildenborg and Stadsbruk, and the author has spent many personal hours at the organization. However, the aim is still to remain objective and unbiased.

There were no pilot testing prior to the first interview, which could potentially have led to the results vary in quality throughout the interviews (Creswell & Poth, 2016). However, this was not perceived to be the case during the analysis phase. The interviews took between 25 minutes and 90 minutes depending on how much the interviewees wanted to share. This does not affect the overall result of each interview.

There are many different words and definitions in the field of urban agriculture, but for the scope of this study the phrases used will be commercial urban agriculture or commercial urban farming, even though the methods used at Stadsbruk might resemble market gardening. This will additionally be the case for definitions of urban and peri-urban.

# 5. Case Background

Sweden is a Nordic country with over 10 million inhabitants (SCB, 2019). It was predicted in 2014 by the National Board of Housing, Building and Planning that urbanization will increase significantly by the year 2025. At the same time as this prediction was made, additionally a vision about the future sustainability for the country was drafted (Boverket, 2014). Sweden has been rumored to be one of the most sustainable countries in the world, moreover, RobecoSAM is a sustainable investment specialist that has ranked Sweden on top in their 'Country Sustainability Ranking', on more than one occasion (Schieler, 2018). Approximately 19 percent of arable land in Sweden is organic, although there has been an increase for over a decade, the increase has been slow. In addition to this, Sweden imports food related goods for almost the double amount of money that it exports for (SCB, 2018). The Swedish Board of Agriculture (SBA) is performing under EU and the CAP, which aims for increases in agricultural productivity, as well as better livelihood for farmers and consumers. Sweden has several different subsidies to offer farmers; for greening activities, for young farmers, cattle farming, milk production, organic production, and various sustainable practices. The previous subsidy based on production has been changed to be based on ha and not by productivity. Sweden also has a special agreement with the EU to offer certain subsidies that are adapted to the different climatic regions in Sweden (ibid., 2018).

Malmö is Sweden's third largest city with over 339.000 inhabitants, located in southern Sweden, in the country of Scania (Skåne). Malmö has been reported as the fastest growing city in Sweden, even faster than the capital. Being located at the very southern tip of Sweden, with just a bridge over to Copenhagen, Denmark, has contributed with the

inclusion in Scandinavia's largest metropolitan area ‘Greater Copenhagen’ (Malmö Stad, 2019). Scania has good conditions for agriculture and utilizes around 17 percent of the total arable land in Sweden. The largest use of arable land is for production of ley and fodder (SCB, 2018). Half of all the food produced in Sweden is produced in Scania, making it an important agricultural region (Region Skåne, 2018).

In 2009, Malmö Stad released their environmental program where they expressed a vision of Malmö being the most sustainable and a leading green city. They acknowledge the sustainability definition from the Brundtland report, as well as the three dimensions of development; ecological, economical and social sustainability. The city talks about goals regarding resource efficiency, cleaner and greener features for the city, as well as healthy and inspiring environments, additionally they value organic production, the importance of biodiversity and water management, as well as the ability for consumers to be sustainably aware (Malmö Stad, 2009).

## 5.1 Urban Agriculture in Sweden and Malmö

To qualify for the national registry of agriculture in Sweden, a farmer has to commercially grow on more than 2.0 ha of arable land, or pursue horticultural production on at least 2500 square meters, or 200 m2 of greenhouse production (SCB, 2018). One can therefore assume that it is a difficulty for urban farmers to get the recognition and help needed to pursue activities.

There is evidence that urban agriculture was a common practice in some cities in Sweden between the mid 17th century until the 19th century (Björklund, 2010). Often for subsistence use, however, there were cities that were self-sufficient in certain crops, indicating that there could have been a market for selling surplus. It was most likely the industrialization that contributed to the decline of urban production, when the prioritization of land shifted. New jobs, the need for food markets, and better transport enabled rural farming, and less need for urban farming (ibid., 2010).

Today different cities in Sweden have their own agenda, and according to their official website, the city of Malmö is considering urban agriculture to be part of their urban

planning, as well as their sustainability effort. Growing in the city is acknowledged for its ecosystem services, carbon binding, and social development. There are larger plots that could be leased by the city for commercial agriculture, and this has to go through one of the cities offices (Malmö Stad, 2018a). There is even a short list on their website with advice for people with a desire to grow in the city. To make sure they are not using a space or tools that can risk contamination (Malmö Stad, 2017). The Malmö Stad website lists of ongoing urban agricultural activities, most of them backed up by initiatives and organizations. Mostly they are used for social or environmental purposes, and subsistence growing, not commercial urban farming (Malmö Stad, 2018b). Stadsbruk, however, is one urban agricultural project that Malmö Stad is part of as a collaboration between private and public actors, which can assist people who want to become commercial urban growers.

## 5.2 Botildenborg and Stadsbruk

Stadsbruk as a project was initiated by Xenofilia, a Swedish social cooperative, or organization, devoted to social sustainability and integration under the lead of the organization Botildenborg in 2011. Botildenborg is an organization in Malmö that aims to be a sustainable hub, working with with social, environmental, and economical sustainability (Botildenborg, n.d.,; Stadsbruk, 2017).
The Stadsbruk project was initially financed by Vinnova, and had additionally several collaboration partners: Malmö Stad, Gothenburg city, Växjö municipality, LRF consulting, White architect bureau, and the Swedish University of Agricultural Sciences (SLU), amongst others (Stadsbruk, 2017). The project has now evolved into a concept and a brand, put together with the two Swedish words ‘stads’ (urban), and ‘bruk’ (usage); Stadsbruk. Malmö Stad has offered 16 hectares of land to the project, where Botildenborg can act as the facilitator and communicator (Sjöberg & Sjöland Kozlovic, 2019).

The idea behind the project is to act as an incubator and to help people who want to become urban farmers by offering them access to test beds and various resources, as well as assistance with business development. The project is heavy on the entrepreneurial side, and the aim is for these people to become *profitable, urban, organic, small-scale, sustainable*

*farmers*. So far the project has enabled the start of 45 new companies (Evers et al., 2016, Sjöberg & Sjöland Kozlovic, 2019). In Malmö, Stadsbruk is operating on three locations; Botildenborg where they have their market garden and educational farm, Västra Skrävlinge where the incubator test beds are located, and Vintrie, where a selected number of businesses can continue farming with a lease after the incubator. The project uses three different types of urban agriculture, or models for their activities:

- Stadsbruk Urban: growing on smaller areas such as indoor, on rooftops, or other living spaces in boxes, where no land is needed.
- Stadsbruk Soil: growing on land that has been made arable, often slightly larger areas than the Stadsbruk Urban model.
- Stadsbruk Countryside: could be seen as peri-urban production, at the urban-rural fringe

In Malmö, the Stadsbruk program mainly operates through the Stadsbruk Soil method (Sjöberg & Sjöland Kozlovic, 2019).

# 6. Results and Discussion

## 6.1 Observations from the case study

This section aims at further describing the urban agricultural scene in Malmö according to the author's observations.

There is land around the city of Malmö that has been dedicated to the project of Stadsbruk, and probably more land available for future projects, which makes Malmö a good city for this purpose. The participants of the Stadsbruk incubator are often people who had an ambition to make a change, either for personal reasons or to break out of the system. A number of participants have previously been involved in the restaurant industry. The amount of females attending the incubator program and becoming urban farmers in Malmö is perceived to be quite high, an estimation would be around fifty percent of the participants.

Economic sustainability and profitability are two aspects that reflects reality and are necessary attributes to this type of business.

The commonly used sales channels are; farm to restaurant, farm to companies, farm to cafés, farm to pop-ups, farm to private consumers via box schemes or the highly useful network of REKO-ring. The REKO concept is inspired by similar Finish initiatives and enables farmers and other food producers and processors to directly sell their products to private people via social media. The network is created on Facebook and members of the group can offer and order goods online, with a weekly exchange of goods at a parking lot in the city. Even with all these useful sales channels it can be difficult for farmers to sell their product for the right price, meaning the inputs for the farmer need to be financially matched and the customer must find the price motivating enough the make a purchase.  according to inputs. Therefore, the restaurant as a customer is often a commonly used and valuable channel.

When it comes to the urban farms in Malmö there are certain attributes that are common. Firstly, there are specific crops that are used for urban farming such as short cycle and regrowing crops like leafy greens. Some farmers also use indoor growing methods to produce microgreens which are even quicker in cycle, in order to provide a large amount of produce to the market. Secondly, there is a will and motivation amongst some farmers to incorporate social aspects, such as study visits, education, volunteering, internships, collaborations, rehabilitation, and integration.

For the delivery of produce there are several sales channels, as mentioned earlier, and different methods of delivery; by bike, by car or by electric car. Furthermore, the delivery shipping of produce, here specifically vegetables, requires containers. One method is using though plastic boxes, which are delivered to the customer containing the produce, to later be picked up empty during the next delivery. There are also single use containers used, or often at the REKO-ring customers are asked to bring their own containers.

From an agroecological perspective there are some aspects that are recognized in the urban agricultural scene and Malmö. Especially social aspects like the use of alternative food networks, the engagement with a local food movement, and the use of education and awareness raising. When it comes to science, there have been attempts to collaborate with universities, such aslike SLU. For the practical part; the production is considered toxic free

and follows many of the requirements of organic production, yet is not always certified as organic, and methods like crop rotation and intercropping are sometimes used.

### 6.1.1 *The motivation behind the urban agriculture movement in Malmö*

As also mentioned in chapter five; Malmö has a desire on a municipality level to be a more sustainable city with green, healthy, and inspiring environments, also for consumers. Urban agriculture is now part of their urban planning agenda. The interviews indicated that during the early phases of the urban agriculture movement, the municipality funded a project to investigate the possibilities. Shortly after enters Botildenborg and the incubator initiative Stadsbruk. Even though the desire has been present, the right investment in the development has been challenging. The process was slow, and the right knowledge and drive from the municipality was lacking.

On a society level, Malmö contained useful qualities for this urban agricultural movement. There was unutilized land within the city, and there were existing environmental, local, and organic food trends from the population as well as local restaurants. Another ideal condition common in Sweden that even its largest cities are relatively small, with less smog and space competition compared to global megacities.

As for the motivation of the participants, there were different answers. It ranged from being discontent with a previous job or wanting to try something different, to being discontent with the whole food system that we have. Many of them feel like they are providing to a better society and environment, as well as personally making a fulfilling decision in their life. Some participants randomly came across the urban farming movement, and some actively seeked it out. The previous experience amongst the participants also vary. Some have grown on allotment gardens or other small scale urban situations, whilst others were fully new to the subject and adopted more of a ‘learning by doing’ approach.

These following quotes from participants of this study highlight the variety of motivations to get involved with urban farming in Malmö. It contributes to the argument regarding urban agriculture and the benefit of multisectoral approaches.

*"We had an allotment garden before, we like to grow, and we felt like we wanted to take this further."*
*"I think it was due to environmental reasons[...], to utilize the city, and for green areas to have more purpose."*
*"I am a chef and I have learned that the vegetable is the star of the dish, so I wanted to try growing them instead."*
*"...I was looking for a new project. I basically came across urban farming randomly, and I realized that an urban farmer is an entrepreneur who happens to farm as a skill and activity. It created a bridge."*

## 6.2 Challenges for actors in the commercial urban agriculture movement in Malmö

The interviewees provided a number of challenges. The participants mentioned challenges that they imagine to be relevant, as well as challenges they themselves are suffering from. The challenges were coordinated into themes reflecting the categories used for the challenged provided in chapter 2, pages 10-17 of this study; *environmental*, *social*, *production*, and *economic*, as well as an extra category for *business aspects*. This is followed by subcategories for further categorization.

*Table [2] Categorized challenges to urban agriculture provided by the participants based on interviews.*

| Themes | Sub Themes | Challenges |
|---|---|---|
| *Policy* | System default | -Less established than rural farming<br>-Lower price market<br>-Policies<br>-Bureaucracy<br>-Rules & regulations<br>-Infrastructure permits<br>-Certifications |
| | Lack of knowledge | -Lack of acknowledgement<br>-Lack of political interest<br>-Lack of long-term possibilities |
| *Knowledge* | Municipality level | -Lacking municipality |

| | | |
|---|---|---|
| | | knowledge/engagement |
| | Customer level | -Lack of understanding from customers |
| *Resources* | Personal limitations | -Investment capital<br>-Time |
| | Infrastructure | -Land access<br>-Water<br>-Electricity |
| *Surrounding Environment* | Visible threats | -Rodents<br>-Theft |
| | Invisible threats | -Pollution |
| *Business aspects* | Movement | -Proof of concept |
| | Individual economy | -Profitability<br>-Pricing<br>-Invoicing<br>-Bookkeeping<br>-Managing economy |
| | Individual management | -Management<br>-Being organized<br>-Entrepreneurship<br>-Business framework<br>-Marketing<br>-Finding a niche<br>-Branding<br>-Attract customers<br>-Responsibility to deliver<br>-Urgency factor<br>-Efficiency<br>-Utilization of space |
| | Individual health | -Hard labor<br>-Managing personal and work life<br>-Taking care of health |

*Policy* was an important category, with challenges on a larger scale regarding the agriculture system being default, and due to lack of knowledge. **Lack of acknowledgement** and **establishment** can lead to a slow progress for the development of urban agriculture as a sector and industry, which could explain why **rules and regulations** are perceived as unfit for urban production. Another challenge mentioned is the **lower price market** which is most likely a result of the rural agricultural sector being default, pushing the prices down. Although, it can also be correlated with the **lack of understanding from customers**. Or as

one interview participant describes it: *"...you still need people to know that they are voting with their money at the grocery store."*

This leads us to the category of *knowledge.* Even if not many challenges were mentioned in this category, it can still be important for the development of urban agriculture. Challenges around policy can be considered root causes to many other challenges, however one can argue that the actual root cause lies in the lack of knowledge amongst policy makers. Here is a hypothetical example of a chain of reaction; **Lacking municipality knowledge** can lead to ill fitted **regulations** regarding urban agricultural infrastructure, which are potentially not allowing certain infrastructure to take place, which can create challenges with efficient **water infrastructure**, leading to more time required to water the crops, limiting time for other chores and creating stress around the **responsibility to deliver**, which can cause challenges to prioritize ones well being and **taking care of health**.

The category of *resources* is seemingly straight forward, where investment capital can be considered an initial challenge for an urban agricultural business. Land access is additionally an important one in order to actually being able to start activities.

Several of the challenges are presumably not unique for Malmö, however when specifying them closely they might stand out. Looking at the category of *resources*, where **investment capital** can be considered an initial challenge for an urban agricultural business, as well as **land access**, the situation in Malmö has been slightly mitigated thanks to Stadsbruk. The project has enabled opportunities for land access as well as lowered the dependency investment capital in the early phase of the participants business development.

When considering surrounding elements, there is the example of **rodents**, the city of Malmö contains a large amount of rabbits that attempt to eat the vegetables grown on some of the farms. Pollution is in this table sub-categorized as an invisible threat, meaning that the rabbits eating the produce is something that can be measured just by looking at the field. The impact of pollution on the fields of the interviewees has not been noticed, or further investigated in this study but could probably be measured with fitting time and resources.

The category of *business aspects* was not provided in chapter 2 (pp.10-17), which is added here. Some of these challenges are mentioned by the farmers that have participated in the incubator program, and some are brought up by the facilitators of Stadsbruk. When talking

about the struggles of a small business owner the facilitators often use the main term of **entrepreneurship** which technically could hold many of the other challenges, whereas the participants tend to be more specific in their individual challenges such as **pricing**, **invoicing**, or **branding**. The challenge regarding **viable proof of concept** is an issue on a global societal level and on a Malmö level, both for the farmers and the organization Botildenborg, they are after all actors that believes in their movement and would like it to be recognized. When examining more Malmö context specific aspects, **finding a niche** is an example of a challenge. The intensity of this challenge is depending on the amount and varieties of the business one has to compete with on the market. In Malmö the market gap for urban grown produce is not perceived to be filled yet, providing a good space for healthy competition. However, if all the urban farmers grow the same leafy greens, or try to sell to the same customers, this could be of issue. Otherwise the threat is often perceived to come from the outside market of conventional farming.

## 6.3 Ranking of Challenges

A word cloud was created with the challenges that participants mentioned during the interviews shows that many of the prominent challenges are related to business aspects or policy.


*Figure [1] Word Cloud of Challenges to Urban Agriculture, provided by participants*

The word ‘profitability’, or ‘profit’, was used by five out of nine interviewees when talking about their biggest challenges. Furthermore, one other participants mentioned a desire to be able to earn a decent salary, and a second talked about sizes of land related to profitability. Two other commonly referred to challenges were ‘time’, and ‘lower price market’.

*“...struggles with time to give to the project, we have not been able to make profit yet and therefore have been required to have other jobs on the side.”*

*“The whole [agricultural] sector is subsidized and that is not really right. People are dependent on it, and the food prices and value for food has dropped.”*

*“The value of food is too low. All larger food producers that keep the prices down are making it hard for us.”*

Looking at the aspect of the most urgent challenges to solve, many participants are mentioning the need for a systems change. That the agricultural sector and the food system has to change before many other challenges can be solved, and real development of urban agriculture can proceed.

“*We are a grassroot movement with some influence in the municipality, but it is not coming*

*from the top yet and I think that for that to happen we need dedicated spaces, dedicated people working with it and we cannot expect that the farmer can solve everything. It is a systematic problem and we need the system to change."*

## 6.4 The Challenges compared to existing Literature

In this section, the challenges provided by the interviewees will be analyzed according to the categories of challenges provided by existing literature in chapter 2.

*Policy*

Since Sweden is operating under CAP, this category is highly relevant (SCB, 2018). The general consensus amongst the participants of this study, is that the policies shaping the agricultural system are not applicable to an urban context. This has led to challenges with recognition, inclusion, and development of the industry in Malmö.

*"Now we are the last people to get the land that is leftover. We want to be included."*

Add funding. or support.

The engagement of policy makers are mentioned as an important factor for the development of the urban farming sector (Curry et al., 2015). This is something that was highlighted as well by some interviewees. Lacking political interest was highlighted as a challenge, and lack of political support was categorized as a threat within the SWOT. This might be a factor that is related to policies, however, as argued by the participants, the politicians that open up the question and making it visible for the rest of society.

*...we have not reached the level where politicians will have it part of an election to talk about local food programmes, we are not there yet. It is a systematic problem and we need the system to change."*

*"I have experienced that talking to official people i tell them my address and say I have a farm, they question the fact that I live in a city and not on a farm. It is not in the mind of the people, and this needs to change."*

When it comes to the municipality, Malmö is lucky enough to have efforts in place towards the inclusion of urban farming (Malmö Stad, 2018a). However, according to the

participants it has often been challenging to collaborate with them due to paperwork occasionally being unclear, or the motivation has been lacking and slow moving. The participants are estimating that this is due to the movement being young in Sweden, and the municipality does not have the information and knowledge needed. Without having a facilitator to the municipality like Botildenborg, the participants have also mentioned challenges with complicated bureaucracy and difficulties communicating with the right department or person within the municipality. *"I mean the reason we could not access land was because of the bureaucracy behind it. It was a whole jungle to try and find whom to talk to, who was responsible for what and which places."*

Another issue related to policy is regarding certifications (Van Tuijl et al., 2018), the ambitions and aim from both the municipality and the urban farmers in Malmö is to produce toxic free and sustainably. However, if this is not regulated and inspected the municipality cannot guarantee that the used land is free of toxins, and the solution would then be for the farmers to be certified. In Sweden the organic certification KRAV is used (Klintman & Boström, 2004). Amongst the participants there are strong feelings towards the KRAV certification. On the one hand there is consensus about why organic regulations are necessary, on the other hand they have slightly different situations. One farmer is KRAV certified and believes it is good for credibility and guidelines for customers, another cannot afford it because of the non funding possibilities from EU for urban farmers, and a third one is calling for an adaptation of regulations to fit the urban farming system. There are different opinions as to whether or not the system and regulations should change first, or if the farmers should first prove that their farming can be done without the help of any subsidies, and that this could provide a solid argument for the development of the industry.

*Knowledge*

Knowledge was mentioned by existing literature in the aspect of a decrease in farming knowledge in the agriculture sector in general (Viljoen & Wiskerke, 2012). The interviewees in this study labeled knowledge as both a strength and weakness in the SWOT analysis, indicating that there are many knowledgeable initiatives and individuals in the urban farming community, but that knowledge gaps are still existing. For the urban agricultural community in Malmö, a valuable technique has been trial and error, but also researching and studying options. For a country like Sweden, chances are that the majority

of the population has access to library books or online global sources of information. Several participants mentioned using information originating from North America, especially when it comes to market gardening.

*"...there is just a matter of me finding more knowledge through Youtube, books, and other people in my network, Facebook groups and such."*

When it comes to the urban farmers in Malmö, as stated previously in this chapter, many of the farmers do not have a background in agriculture. They are often educated or have a well positioned job relatively speaking, however the actual education about farming might be lacking. This leads to the question of that is of issue or not. Some participants argue that for the sake of sustainability it is better if people are educated, whilst others think that the first and largest challenge to tackle is the development of the industry.

*"...there is so much knowledge about agriculture because it is an old practice and people study it [...]. Maybe more education in market gardening is needed, it is good if some people are starting it on their own but to get more knowledge about the practice."*

Some of the participants argue that education is also needed at an entrepreneurial level, and that much of the lacking information is regarding how to be a commercial urban farmer and a business owner.

*"If you go to facebook groups for market gardening, everything there is about the actual growing part so people are suffering from a lack of support or mentorship regarding how to sell and market."*

Another argument is that there are plenty of Swedes with immigrant backgrounds that have knowledge about agriculture and small scale farming, however these people have not been very active in the movement yet, which could suggest a whole other topic of inclusiveness within the movement.

*"What we see in Sweden is typically a white educated person engaging. Although they might not have a farming background. I do not think this is a problem because everything has to start somewhere, but the hope is that it will expand"*

*"In the beginning phase of the project [Stadsbruk] I had a hypothesis that we could use it as a tool for immigrants with great knowledge about growing, and potential hardships of finding jobs and activities. But this has not been the outcome of the project."*

Knowledge and awareness by the public when it comes to knowing about how food is produced can be a challenge (Viljoen & Wiskerke, 2012; Wiskerke, 2015). For the

participants, this is an issue they addressed, but more so in regards to urban produced food rather than any type of produced food.

*"There is a lack of understanding of the real value of the vegetables by consumers."*

*"We also do not have a common knowledge in society about urban agriculture."*

*"A big word is lack of education, and a lack of in depth knowledge about the concept of local food production."*

*Resources*

Access to land is mentioned as an occuring challenge in chapter 2 (Mougeot, 2006), and also by the participants of this study. As Curry et. al, (2015) further stated, land is attractive within the city and policy that does not prioritize urban farming in the agenda can lead to further difficulties obtaining support, with for example acquiring land. In Malmö, the solution to the land access issue has been for an organization to facilitate between the municipality and the famers in order to access land (Sjöberg & Sjöland Kozlovic, 2019).

*"This project [Stadsbruk] was the only way I could find land to be an urban commercial farmer."*

Accessing resources like water was further mentioned in existing research (Mougeot, 2006), and a few interviewees listed water and electricity as challenges to urban agriculture, however not specifically as a challenge they themselves are experiencing, due to the present dialogue with the municipality.

Regarding investments and financial restrictions (Van Tuijl et al., 2018), there were some participants that mentioned this as a challenge. Again, regarding certifications being pricey, and further when it comes to investments in infrastructure and operational costs.

*"It is hard if you do not have any investments, capital or resources to start with, for infrastructure especially."*

*"The land I get to lease now is for a good price and with good infrastructure. If I had not then it would have been much harder and probably more expensive."*

Lack of time was mentioned as a challenge in chapter 2 (Viljoen & Wiskerke, 2012), and also several times during the interviews. Aspects mentioned were lack of time for labor, deliveries, projects, networking, as well as free time. A challenge at Botildenborg regarded the long time necessary to establish contact with the municipality, in order to, for example, get permits approved. Furthermore, the interviewees often agreed on the

importance of long-term thinking and time investments, as they are seen as necessary steps for the development of the urban farming industry.

*Surrounding Environment*

When it comes to the occurrence of pollution, contamination and heavy metals, the literature states this to be a present challenge in an urban context (Altieri et al., 1999; Van Tuijl et al., 2018). The majority of the participants in this case study mentioned these factors in one way or the other. Often associated with threats within the SWOT. No participant mentioned having any personal experience with the matter, however acknowledge that it could be of issue. "*One challenge to urban agriculture is issues with heavy metals, the more people within a city there will be more effect."*

*"Potential ground to cultivate in the city could be contaminated. Then one have to use raised beds for growing instead."*

Some participants further distance themselves from the issue by indicating that there are risks, yet it should not be a hinder for the development of urban agriculture. Especially in Malmö since the soil quality is perceived to be good.

*"People that like to complain about the pollution of vegetables grown in urban settings are missing the bigger picture and all the positive factors that it is contributed with. "*

*"Pathogens can also be a threat, it could spread [...] Pigeons could potentially carry these. But I feel like this could happen in rural areas too."*

*"Here in Malmö we are lucky to have such good soil in the city."*

Furthermore, one participant expressed the need for research on the subject accordingly: "*Key people are needed to make sure the rules and regulations are followed. That all the ground is tested to be suitable for growing. Then you can be transparent about the risks that comes."*

To conclude the subject regarding pollution and other contaminations, it seems like most of the interviewees acknowledge them as threats to urban farming, but do not make them personal threats. Perhaps this is due to the assumption mentioned regarding the general soil quality in Malmö, or due to perceiving other threats are more important and not seeing pollution ans contaminations as large threats.

Looking at robberies and sabotage like mentioned by previous literature (Altieri et al., 1999), there were a few participants that mentioned the issue of theft, however this did

not seem like a recurring problem, but rather exceptional events. This aspect could, however, be influenced by regulations and infrastructure that decides on the rules for fencing structure.

A challenge that was not mentioned in chapter 2, yet by participants was the occasional issue with rodents such as rabbits that eat the vegetables on the farms. However, these are assumably problems for rural farmers as well and not specifically urban issues.

*Societal aspects*

The challenges of contaminated areas and pollution, has largely already been discussed in the section regarding surrounding environment. However, looking at the potential health risks mentioned (Van Veenhuizen, 2014), this was not a common subject during the interviews. The subject was never mentioned as a challenge, but a few participants mentioned the subject. When it was mentioned there seem to be a general lack of knowledge around the topic.

*"Sometimes customers might have doubts about produce that is grown in the city, pollution wise, which can be hard to prove."*

*"Key people are needed to make sure the rules and regulations are followed. That all the ground is tested to be suitable for growing. Then you can be transparent about the risks that comes."*

The other factor mentioned in existing research is regarding the values of the people buying the product (Mougeot, 2006; Viljoen & Wiskerke, 2012). This was a highly important factor for the farmers in Malmö, they argue that it occasionally challenging for them to match the prices they have to charge with the competing prices of conventionally produced vegetables.

*"No matter how good of a grower you are, or your soil quality, or quality and quantity of produce to the market you can contribute with; you need support and people buying your product."*

*"You are proud of your veggies, but when you have to compete with the largest grossistes you have to have other skills to show why they should buy from you."*

It has been beneficial for the farmers in Malmö to have a market for their produce. There are private people, companies, restaurants, and cafés that are interested in this movement.

*"The demand for healthier food is there. Especially in Europe. This is a growing movement*

*for locally produced food as well."*

But at the same time, this is only a niche group of the market, there is still a perceived need for the system to change, and for the public to see the real value of food.

Looking at the challenge regarding urban farming organizations (Van Veenhuizen, 2014), a few of the participants mentioned this factor. It was not mentioned as a Challenge, although it was mentioned as a solution.

*"A strong organization among growers to be able to reach and push policy makers to get things developing. But also to create a debate about it, and show people what you are doing."*

*"Organizations can help speaking on the behalf of an urban farming community and try to get a seat at their [the municipality] table."*

A category that has not been mentioned in chapter 2, yet logically should be amongst the challenges for commercial urban agriculture is *business aspects*. Many of the participants' biggest challenges were related to this topic. One can argue that the challenges that they are experiencing are similar to any kind of small business ownership regardless of the industry, although it does not make it less relevant. During the researching phase of the challenges found in academia, this topic was lacking.

The challenges that were mentioned by participants that are categorized as *business aspects* are: profitability, the lower price market, pricing, marketing, branding, attracting customers, invoicing, bookkeeping, managing economy, finding a niche, management, being organized, efficiency, business frameworks, entrepreneurship, viable proof of concept, urgency, taking care of health, and managing personal and work life.

*"...there is always this urgency. If it is dry you have to water now, it is hard to go away and take a vacation. It can be quite rough."*

*"Even if being a commercial farmer is intense and the focus is on profitability, it is still a rewarding and fun activity for people."*

## 6.5 The Solutions to Challenges in Urban Agriculture

Apart from challenges, the interviews for this study additionally provided some suggested solutions.

*Table [2] Categorized solutions to the challenges of urban agriculture provided by participants based on interviews.*

| Themes | Sub Themes | Solutions |
|---|---|---|
| *Collaborations* | Internal | -Have organizations<br>-Communities<br>-Collaboration between actors of urban farming<br>-Lobbying group/union |
| | External | -Involve public sector<br>-Involve academia & research<br>-Involve politicians<br>-Write proposals to landowners |
| *Awareness* | Proof of concept | -Convince municipalities of success<br>-Set examples |
| | Education | -Education for urban farmers<br>-Educate customers/society<br>-Raise awareness |
| *Systems change* | Internal | -Have facilitators |
| | External | -Push policy-makers<br>-Create debate<br>-Value the farmer profession<br>-Funding possibilities for urban farmers<br>-Long-term thinking |
| *Business strategies* | Movement | -Agricultural business incubators<br>-Alternative sales channels |
| | Individual | -Niche<br>-Find target audience<br>-Entrepreneurial mindset<br>-Trials and experiments<br>-Finding inspiration online<br>-Finding inspiration abroad<br>-Community Shared Agriculture (CSA) |

When examining the *solutions* there are some that has been tried by participants, some that are planned, and some that are merely a wish for the future. When looking at what has been

tried in Malmö, a large step that has been critical for the development of the urban agriculture community in Malmö is the **incubator program**. It has enabled a possibility for anybody interested to try and see if being a commercial urban farmer, or market gardener, is a fitting path for them. The project has created a bridge between the municipality and the public, via the **network** of facilitators and an organization. Additionally there have been efforts to spark **entrepreneurial mindsets**, as well as **raised awareness** for the movement through social media, study visits, events and other social forms of marketing. The **involvement of academia and research** is an ongoing solution, one example could be this study, but also collaborations with the university. Another positive outcome of the movement is the **alternative sales channels that** are now present in Malmö. The various direct transactions, the customer relationships, and the emerge of REKO-ring, that are all challenging the conventional style of food production and consumption. An additional solution the urban farming community has been successful at is **nicheing**. There are farmers has developed a farm to café business, farm to pop-up lunches, and processing products. Some of the new growers for this season have ambitions to initiate rehabilitation opportunities for people at their farm, as well as a various food events and other social events to **involve the public**. The farmers have during several interviews mentioned the availability of farming **inspiration online**, often **inspiration from abroad**, which has helped them develop their practical skills.

Various other solutions mentioned are more considered to be wishes for the future, such as having better **organizations** or a **lobbying group** that can help to **push policy-makers**. Another solution that is considered crucial for changing the system is to be able to show **viable proof of concept**. A participant describes it accordingly; *"For the urban farming industry it is really to make a viable proof of concept, with this I mean to have many farms that are actively making money under good working conditions who are able to employ people and take holidays. Because this is the only way to show that this is a solution."*

## 6.6 Ranking of Solutions

A word cloud was again used to highlight the most mentioned aspects.


*Figure [2] Word cloud of solutions to challenges, provided by participants*

One of the most commonly mentioned solution was having **agricultural business incubators**. The participants speak well of the Stadsbruk incubator program, and also stress the need for other similar initiatives.

*"...there is a need for more business incubators and accelerators in the urban agriculture sector, much like other businesses where you can learn more about running that type of business."*

*"Initiatives like Stadsbruk that have been funded to help with advice and incubator possibilities for people to try out the work and their ideas is a good thing."*

*"We have gained a lot from being in the incubator program, but I think it is of course possible to do it on your own, but it is much easier when you get into the network like this."*

The second highly ranked aspect was **have organizations**. Indicating that there is a need from all the actors to combine forces and to have a better communication. Further looking at communication, there are four important solutions mentioned by the participants

that can arguably regard this topic; **network**, **raise awareness**, **involve public sector**, and **educate customers**. Networks are mentioned as a valuable asset by the participants, to reach the public, to find customers, to find information, and to communicate within the community. The other three solutions are more external to the community of farmers, however this does not exclude them from being used through collaborations.
"*I think that networks between growers is important, of course you are competing on the same market, but this can still be done in a friendly environment. People have different skills and are good at different things, and it is a big opportunity to just niche and communicate with the others is important."*

## 6.7 SWOT analysis

Four tables [3.4.5.6] below show the combined answers of the SWOT analysis, provided by all nine interviewees. One Table has been created for each attribute of the SWOT.

*Table [3] Results of the strengths from the SWOT, provided by participants*

| Themes | Sub Themes | Strengths |
|---|---|---|
| *Environment* | Alternative chains | -Skipping the middleman<br>-Less transport<br>-Less packaging |
| | Urban development | -Greener cities<br>-Utilizing land |
| *Social* | Attributes | -Engagement<br>-Ambitions<br>-Knowledge<br>-Experience<br>-Consciousness |
| | Activities | -Education<br>-Raising awareness about food production<br>-Customer contact<br>-Connect people<br>-Rehabilitation possibilities<br>-Integration possibilities<br>-Grassroot movement<br>-Food activism<br>-Meaningful activity |

| | | |
|---|---|---|
| | | -Building bridges between actors<br>-Restaurant relationships |
| | Society | -Tool for social change<br>-Alternative food channels<br>-Personality around food<br>-Social sustainability<br>-Health benefits |
| *Production* | Internal | -Centralized nutrient loops<br>-Good for organic production<br>-Small scale<br>-Intense ground use<br>-Flexibility<br>-Easy on the soil<br>-Utilizing vertical space |
| | External | -Local food<br>-Fresh food<br>-High yields |
| *Economic* | Local | -Contribute to local economy<br>-Contribute to urban development<br>-Contribute to business diversity<br>-Job creation<br>-Unique products<br>-Reuse the city |
| | The system | -Creating a new industry<br>-Multisector industry<br>-Low investment possibilities |

During the SWOT session with the participants, they focused a lot on the strengths of urban agriculture. They often mentioned *social* strengths early on, and the category of social strengths is the largest one in the SWOT. As the sub themes indicate, they either mentioned social *attributes* amongst the people within the urban agriculture movement, like having **experience**, **knowledge**, or **ambitions**, or the *activities* enabled with an urban farm, or how urban farming is affecting *society*. Activities encompasses the social activities related to their business. Some participants envisioned specific social activities as strengths, like being able to host **events** for people on their farms, or have **rehabilitation** work. Others looked at activities from a broader perspective.

*"I think that one strength is that it is a grassroot movement and there are people that want to engage in this, and support this."*

*"Raising awareness about food and how it is grown, how it works."*

Looking at the *society* level, there strengths are around examples like **sustainability**, **health benefits**, and **alternative food channels**.

*"But customers also have to opportunity to not only buy a vegetable, but to buy a whole new system."*

Even when looking at some of the other categories of *Strengths*, there are some aspects that fall under the *environmental*, *production*, or *economic* categories yet also be considered *social*. Like for example the **greener cities**, **local food**, or **job creation**. This adds to the argument that social strengths are seen as perhaps the largest impact of urban farming.

*Table [4] Results of the weaknesses from the SWOT, provided by participants*

| Themes | Sub Themes | Weaknesses |
|---|---|---|
| *Policy* | | -Lacking information<br>-Lacking adapted tools<br>-Hard with animal husbandry |
| *Knowledge* | | -Lack of knowledge |
| *Resources* | | -Time intensive |
| *Economic* | | -Not possible for cities to be self-sufficient |
| *Business Aspects* | Economic | -Lacking profitability<br>-Lacking financial sustainability<br>-Economically challenging<br>-Vulnerability<br>-Labor intensive<br>-Some crops are less suitable for urban farming |
| | The movement | -Lack of long-term evidence<br>-Lack of proven success |

Looking at the *Weaknesses*, this section is not as large as the *Strengths*. Most of the weaknesses are connected to lacking something; **lacking information**, **lacking adapted tools**, **lacking profitability**, **lacking financial sustainability**, **lack of proven success** et cetera. This coincides with what the participants have expressed regarding a need for further development of the sector. Some other weaknesses are connected to the farming, such as it

being **time intensive**, **labor intensive**, or to being a subject of **vulnerability** due to being a small scale business.

*"You grow in smaller quantities, smaller yields, and your are vulnerable to pest or disease."*

*Table [5] Results of the opportunities from the SWOT, provided by participants*

| Themes | Sub Themes | Opportunities |
|---|---|---|
| *Social* | Movement | -Aware market<br>-Public interest<br>-Health movement<br>-Local movement<br>-Sustainability trend<br>-Growing organic movement<br>-Increasing value of farming profession |
| | Activities | -Community around food<br>-Food events |
| *Business Aspects* | | -Blue ocean market[2]<br>-Company collaborations<br>-Demand<br>-Competitiveness |
| *Policy* | | -Municipality cooperation<br>-Funding |

Regarding *Opportunities*, there are three categories of aspects mentioned by the participants. The opportunities related to policy are only two; **municipality cooperation** and **funding**, whereas the social opportunities derived from the movement are several more. This could indicate that the participants have had more success, and see the development stronger from the public rather than from institutions.

*Table [6] Results of the threats from the SWOT, provided by participants*

| Themes | Sub Themes | Threats |
|---|---|---|
| *Policy* | System default | -Large scale production is default<br>-The system<br>-Pushed prices from conventional |

[2] A Blue ocean market is described in comparison to a Red ocean market as tapping into new markets with little to no competition. A Red ocean market is a well established market with tough competition (Kim & Mauborgne, 2005)

| | | |
|---|---|---|
| | | production<br>-Government regulations<br>-Lack of political support |
| | Involvement | -Lack of inclusion in city budgets<br>-Lack of support on municipality level<br>-Lack of investment<br>-Lack of long-term contracts<br>-Landowners<br>-Competition for land<br>-Land access (also suitable land) |
| *Surrounding Environment* | Visible | -Rodents<br>-Theft or damage |
| | Invisible | -Pollution<br>-Pathogens from birds<br>-Contaminated soil |
| *Societal Aspects* | The system | -Low value of vegetables |
| | Knowledge | -Lack of knowledge in society<br>-Lack of understanding from customers<br>-Willingness to pay<br>-Lack of motivation from private sector |
| *Business Aspects* | | -Yield losses<br>-Injuries |

The list of *threats* to the urban agriculture movement contains several aspects that are considered a 'lack of something', which can also be seen in the section regarding *weaknesses*. If one attempts to categorize these aspects there seem to be lacking of *involvement* from a *policy* perspective, and a lack of *knowledge* from *society* in general. These are the major threats against the urban farming movement in Malmö, together with **large scale production** being **default**, **pushed prices from conventional production**, and the **low value of vegetables**. On an individual farm level there are rather threats regarding **yield losses** or **injuries**, but also threats from the *surrounding environment*. This category has here been sub themed into *visible* and *invisible* threats. This is due to what has been expressed to be known issues amongst the farmers, versus what are considered hypothetical threats. Attacks by **rodents** or **theft** can quickly be noticed, whilst the effects of **pollution**, **pathogens**, or **contaminations** are threats that the farmers are aware of as a potential threat, although they do not have experience with them.

The fact that the strengths are outnumbering the weaknesses, and the opportunities are

fewer than the threats, arguably coincide with the initial assumption behind this study; that urban agriculture is viewed as a valuable practice and a tool for systemic change, yet there are some hinders for its development. Looking further at the strengths versus the opportunities it seems like the participants believe that the important benefits of urban farming is coming from within the practice, and not as often from the opportunities around it. For a similar analysis of weaknesses versus threats there are more threats mentioned, indicating that possibly many of the challenges faced are considered to be external factors.

Two word clouds have been made to show the frequencies of these aspects mentioned in the SWOT. One world cloud for positive associations; strengths and opportunities, as well as one for; weaknesses and threats.


*Figure [3] Word cloud of positive associations from the SWOT, provided by participants*

This word cloud shows that **local food** was the positive aspect most used by the participants.

*"The local food movement is on the rise, the local food demand statistics are there."*

*"I think that urban agriculture can contribute to the food system with local production."*

Other positive associations revolve around social factors like **education**, **engagement**, and **aware market**. Whilst some practical aspects were **good for organic production** and **job creation**.


*Figure [4] Word cloud of negative associations from the SWOT, provided by participants*

Here two of the most mentioned negative aspects of urban farming is **land access** and **competition for land**, which has been a central aspect both in the literature and during the interviews as well. Some other negative aspects often mentioned are connected to the farm business like **vulnerability**, **yield losses**, and the activity being **time intensive**. For the general view on society, the participants are concerned by the **lack of knowledge**. The participants mention lack of knowledge amongst decision-makers, the customers, society, and potential new urban farmers.

Many of the weaknesses and threats provided in the SWOT coincide with the challenges mentioned by the participants. Some examples are here provided:
-The challenge of **time** is similar to the weakness **time intensive**.
-The challenge with **lacking municipality knowledge/engagement** can be similar to the

weakness **lack of knowledge**.

-The challenge of urban agriculture being **less established than rural farming** is similar to the threat of **large scale production is default**.

-The challenge of a **lower price market** can be viewed as a result of the threat **pushed prices from conventional farming**.

There are also many challenges that are not mentioned within the SWOT and vice versa, showing that the SWOT contributed to an additional level of analysis. The access to land aspect was not particularly mentioned as a challenge, this is probably due to the fact that Malmö has been able to access some land in the city for Stadsbruk, yet it is a highly ranked negative aspects during the SWOT indicating that even if the participants themselves are not perceiving land access as a personal challenge, they are still aware of how situations have been, or could be without the incubator. Therefore, one can argue that the results from the interviews, as well as the results from the SWOT are both adding to a richer analysis, even if the interviews alone can answer the research questions and the aim.

# 7. Reflection

Social aspects have been repeatedly mentioned throughout the result section, even if commercial urban farming is focusing on business and profitability. The fact that many of these social and communicative strengths, opportunities, or solutions were often mentioned indicates that urban agriculture has a strong social aspect to it. As stated earlier in chapter 2, urban agriculture can bring social benefits like the increase of social interaction and activities (McClintock, 2010). This is something that is clear as well amongst the participants.

*"I think that an urban farm does not just produce vegetables but also awareness, knowledge, interest, and I think these things have completely disappeared when production became rural…"*

Some observations to the practical farming in the city are centralized around the level of vulnerability compared to large scale conventional farming. Losses in yields will affect a

small scale farmer harder. Even if the produce is sold fresh, it is beneficial to have a short term storage access. There is a need for solid organizing in order to manage time and tasks. Having access to proper storage is beneficial for management and planning. Furthermore, soils might be different in the city compared to a rural location and the structure of the soil can affect harvest and yields. A harvest of produce that does not live up to expected standards will not always be successfully sold, therefore there is a need for methods to decrease food waste such as subsistence use, composting, donating ugly produce, and on a larger scale educate your customers about the reality of growing vegetables. There are options in the city of Malmö to collaborate with the local waste companies. The educational farm at Botildenborg has previously engaged in an exchange with local waste company SYSAV, where their garden waste has been picked up and compost has been delivered.

A number of interviewees are during the interview calling for the recognition of urban farming, and for the need to be considered as an industry. However, when they describe the subject and answer the questions they speak as if the industry is already there. They answer questions using expressions like '...for me, as someone who is a part of the industry…'. This shows that they already view urban farming as a solid part of society. Furthermore, in many of the questions the participants mentioned policy or regulations, which indicates that it could be one of the root causes to their other challenges. When the growers were asked about their challenges they had slightly different issues, which is plausible given it is quite a personal question. Although, when asked if they would have become urban farmers without the incubator they all mentioned that land access would have been their greatest obstacle. So even if the access to land challenge was not the most talked about during the interviews it still shows that the issue is very important. The urban farming community in Malmö has found one way to overcome the land access issue with the incubator, and that could be the reason for not considering land access one of their current challenges.

## 7.1 The future of urban farming in Malmö

During the interviews, all the participants agreed that different countries have different conditions for urban agriculture. That some countries have practiced and facilitated urban

farming for many years, whilst the method is less common in Northern European countries like Sweden. Even though the movement is young in Sweden, all participants had a positive perspective on the future development of urban farming in the country. A few determining factors mentioned for this development are the engagement and interest from municipalities, politicians and society.

*"We first have to show the economic sustainability and profitability then the city can help this to grow. But dedicated farmers are needed, that are passionate and willing to work hard."*

*"I think it [the future of urban farming] is very bright, because it is needed. There is an interest from people, restaurants. I think when society and the public sector sees the value it will expand more."*

The most popular term in describing the future for urban farming in Malmö was 'bright'. Some had ideas around the public sector, and visions about institutions hiring urban farmers to provide food for schools, hospitals or other private actors. A more specific vision for the future was also provided by one participant;

*"I think a place like Malmö should aim to have in the future around 50 active farms that produce maybe 10% of the city's baby leaves and root vegetables. That is the type of future I think we can have."*

## 7.2 Relevance to agroecology

The previous chapter of results and discussion contained many social and economic factors, which are two of the three pillars of sustainability often focused on in agroecology (Wezel et al., 2009). In order to tie this study further with agroecology, the participants were additionally asked a question regarding their perception of urban farming and environmental sustainability. All participants saw positive relations between urban agriculture and the environment. They mentioned aspects like; reducing food waste, fresher produce, fast growing crops contribute to more yields, greening of city, utilizing land, carbon sequestration, alternative production systems, shorter transports, less soil disturbance, raising awareness. Some participants are more active and educated on the

subject, and some acknowledge the flaws and need for improvement as well as the positive aspects.

*"I think it is really hard to argue that it is THE solution to environmental issues, but it definitely contributes to environmental sustainability."*

*"All in all I think the environmental aspect is pretty good, of course there is quite some plastic involved which everyone is always questioning, so we try to use long-term plastic. The food is not delivered in plastic, but I think plastic in farming is a question."*

*"...I am not aware on how experienced they [urban farmers in Malmö] are with the processes [...] if you fertilize too much is washes off and can have bad influences on the ecosystem, and also the soil structure, it is so important that you keep in a good way."*

As stated in the section 3.3 Participatory Observations, there are some aspects and methods used by the urban farming community in Malmö which are valued in agroecology. However, there is room for improvement. With market gardening especially, some of the farmers tend to use the similar crops that are short in cycle. An idea of improvement could then be to include more diversity which can benefit biodiversity and ecosystems (Gliessman, 2015). Due to the existing challenges with time scarcity and management, an examples of low maintenance options could be flower strips. To offer another example that can help to increase revenue; one can use fruit trees or bushes. The question is, if the latter suggestion is achievable before some of the challenges the farmers in Malmö are experiencing are solved. To elaborate; challenges revolving policies, municipality support, land access and leasing can all be hindering long-term thinking and planning. The uncertainty for the future might create difficulties with planning and investing in good practices. Planting a tree can be considered an investment due to the time it takes before the first fruit is delivered.

## 7.3 Further research

A suggestion for further research could be conducting a similar study and interviewing key people at the municipality in Malmö, to analyse their challenges towards the development and implementation of urban agriculture in the city. This could lead to a better

understanding of their situation compared to the practitioners and stakeholders of this study, it can also lead to initiatives to build better bridges between the municipality and the urban farming movement in Malmö, where they can have dialogue about what is needed from both parts.

A larger step could be to interview other municipalities regarding their approach to urban planning and inclusion of urban agriculture, to better understand the possibilities for urban agriculture in Sweden in general. This could also benefit from a study with key people from the Swedish Board of Agriculture, to further see their thoughts on urban agricultural possibilities in Sweden.

On a broader scale, another research topic could be to investigate any potential possibilities of creating adaptations to the CAP, adaptations that better accommodates urban agriculture in Europe.

To once again connect this to agroecology, one could research further the concept of urban agroecology and if there are potential clashes between urban production and the values within agroecology. Moreover, if the goal of this study is to investigate the development of further growth for commercial urban agriculture, is there a point where the potential emerging of an urban agriculture industry could clash with the values of agroecology? If this clash occurred, then what would the ideal agroecological urban farm look like?

## 7.4 Method discussion

Qualitative research was a useful approach to this research, due to its enabling of detailed empirical data, as well as valuable inside to the perspectives of the participants. Complementing with a mixed methods approach and the triangulation led to a broader analysis though several different tools.

The semi-structured interviews were beneficial and the amount of questions were suitable. Perhaps one or two questions did not provide as much data as the others, however any small contribution is valued. All interviewees showed positive attitude and interest towards the interview and this study as a whole. When answering questions they often used strong words like ‘absolutely’, which gave the impression that the participants agreed to

relevance of the research questions. Occasionally, some questions needed further explanation or required a refraising (for example question 4, see Appendix page 66), indicating that those questions might have contained unfamiliar topics to the participant. Some participants offered invitations to their farms or even their homes as a place for the interview, which can portray some level of trust and investment to this study. When choosing the participants for interviewing there were some initial ideas to include a specialist on urban agriculture that was outside the movement in Malmö, however this was not possible due to time limits. There were also other participants considered from the incubator, and yet again this was not processed due to time limitations. This could have broadened the interviews even further.
Being able to audio record the interviews provided crucial for the analysis, and transcribing the interviews led to a smoother analysis.

The SWOT gave an enrichment to the analysis, however it was most beneficial in having the participants reflecting on the urban agricultural movement. The downside to using SWOT was due of the differentiation of internal aspects and external aspects. Occasionally there were factors that could be both internal or external depending on how it is viewed. The factors were sometimes hard to place in a category. Some participants asked whether the author could place the factors whilst they reflected on the factors, which was then the case. Even then the factors were at certain times hard to place, the factors therefore were at times shifted around after the interviews. This was done with the motivation to fit the context of the participants' phrasing when providing the factors.

The word clouds were not crucial to the study or the analysis, yet they offered an interesting visual of the most frequent words used by the interviewees.

Using IPA as an analysis method proved hand when especially when observing situations, analysing the context of the interviews, as well as when creating categories during analysis.

Regarding the outcome of this study, it can provide the voices of the urban agriculture movement in Malmö to be heard, and possibility spark future interest in the case from policy makers or researchers. It is hard to say that the results provided can reflect another situation than the one in Malmö, due to the number and selection of interviewees being rather small. Yet it can still provide inspiration and show example, here in a specific case of Botildenborg, which can motivate other studies or research.

# 8. Conclusion

The aim of this study was to investigate the challenges for commercial urban agriculture in Malmö. The most mentioned challenge by the participants was profitability, which was often described as a result of the existing lower price market pushing the prices down, and that vegetables are not valued enough in today's food system. Some of the farmers of this study need to have a second job in order to secure income.

Something that was seen as an important challenges to solve was regarding policy, indicating that lack of acknowledgement and inclusion is an obstacle for further development of the sector. On a broader level the participants referred to the whole agricultural industry and food system as being unfit to accommodate urban agricultural needs. On a municipality level there are often challenges with a lack of interest, support, or understanding. This could partly be due to lacking knowledge, which was additionally mentioned as a challenge on several levels.

There are many challenges that coincide with the existing literature found, however the main missing category of challenges was business aspects. This could potentially be due to lacking information regarding the business aspect of urban farming. Another aspect that did not coincide that should have was access to land. The incubator Stadsbruk has helped new farmers to first try out their business before potentially moving to their own growing lot and the participants did indicate that they would have big obstacles with obtaining land if they had not participated in the incubator. This also shows that having an incubator of some sort, or having an organization that is able to communicate between the municipality and the farmers can be beneficial. The solutions they believe to be helpful for the future are having a stronger organization or a lobby group to better reach policy-makers, as well as using many social channels to involve the public sector, educate and create awareness.

For the future, there are only bright reviews from the participants of this study, most of them are positive that the movement will grow. For further research, this study suggests that a case study with the municipality of Malmö could be beneficial, in order to investigate their perceived challenges. An initiative of that kind could help to further create bridges between the municipality and the actors of the urban agriculture movement.

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# 11. Appendix

## 11.1 Interview Guide

The following structure och the SWOT analysis and the thirteen questions were used as a guide when interviewing the participants of this study.

### 11.1.1 *SWOT*

A SWOT is a strategy tool often used by companies to develop their business strategies, but in this study it will be used as a tool to brainstorm and categorize aspects surrounding **urban agriculture**. So please help me fill out the SWOT. Examples of how to think… Which are the strengths/weaknesses of growing food in urban areas? Or are there any external opportunities/threats that can influence food production in the city?" Try to think about both practical and social aspects.
Strengths and Weaknesses are internal factors that are valued by the performance and possibilities of urban farming. Whilst Opportunities and Threats are factors that are external and can affect how urban farming can be done.

| | |
|---|---|
| **S**trengths | **W**eaknesses |
| **O**pportunities | **T**hreats |

### 11.1.2 *Interview questions*

1. What is urban farming for you?
2. What was your motivation for getting involved in urban farming?
3. As urban farmer/future urban farmer/somebody involved around urban farming in Malmö, what do you think is your biggest challenge? - How come?
4. Do you think there are more practical challenges with urban farming, or more social challenges with urban farming? - Motivate.
5. What is you perception on urban farming and environmental sustainability? - Please elaborate.
6. Are you aware of the regulations around urban farming in Sweden, or Malmö city specifically? - How come?
7. Are there certain challenges to specifically **commercial** urban farming? And do you have any ideas of how to tackle them? - Motivate.
8. Do you think there is a big difference in the possibilities of urban agriculture between different cities in Sweden? - How come?
9. Do you think there is a big difference in the possibilities of urban agriculture between different countries? - How come?
10. Have you tried/heard of any solutions to some of the challenges you have talked about today?
11. What do you think is the future of urban agriculture, in Sweden and globally?
12. If you would not have participated in the Stadsbruk incubator program, would you have gotten involved in urban agriculture. If yes, which challenges would you have had? *(Not asked to people employed at Botildenborg)*
13. Do you have anything you would like to add?