Wageningen University – Social Sciences

MSc Thesis Chair Group: Rural Sociology

Growing your own food:

An in-depth study amongst allotment gardeners in Utrecht

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Communication, Health and Life Sciences

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Student: Kylie Totté

Supervisors:
Dr. E.J. Veen
L. Sovová

Examiner:
Prof.dr.ir. J.S.C. Wiskerke

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Preface

Food is a topic that fascinates me in many ways. It is a basic need for all of us, so the importance of it is huge. But at the same time it is not just a basic need. It is a way to connect with each other, a way to distinguish ourselves: as a group or as an individual. It can be a major source of joy and festivity, but also of disaster, sickness and fear. This is probably the reason why I decided to study Nutrition and Dietetics when I was 19 years old. I wanted to learn about this complex field, and learn skills to practically be able to guide others in it. Right now, about eight years later, I have just written my thesis for the master specialisation Health & Society, which broadens the context even more. The sociological perspectives of the study have taught me more about how to approach complex matters in society. This has been valuable for me to get more understanding of the world we are living in, but also makes me realize that I find it meaningful to keep a connection to the basics of life, to some simplicity. And there gardening comes in. Cultivating your own food is one way to connect more with what you eat, and besides that it can be a fun and environmentally friendly leisure activity as well. I found it interesting to dive into this topic, and I am glad to present the results of this study. It has not been an easy job to write this thesis, but I learned much more about working on my own, outside my comfort zone, which I think is valuable for the future.

I want to thank my respondents for their interest in this study, for their enthusiastic participation and for the nice conversations. Without you this study couldn't have taken place! Thank you Lucie and Esther for your guidance support and good comments to help me further in the writings. Lucie, I think you did a very good job replacing Esther during her pregnancy leave. Thank you my family and friends for your support, listening to me, and for helping me to put things in perspective when I felt a bit lost. I especially still remember one helpful saying of a friend: 'a thesis is like a painting, each time you just paint another layer and get a little bit closer to the end result'.

I hope you enjoy reading!

Abstract

Urban agriculture is a topic that received renewed attention the last decades. Different functions and benefits can be assigned to it, as well on individual, community, and environmental level. As in the global North the food function of urban gardens has not been studied much so far, especially not in the Netherlands, this study attempted to investigate the role of the food function for gardeners and how it shapes their households food provisioning practices. The focus of the study was specifically on allotment gardens, and took place in Utrecht. A cross-sectional study was carried out, using both quantitative and qualitative methods, in the form of consumer diaries and interviews. 11 gardeners of different allotment gardening associations participated. A theoretical framework for considerations on food choices was applied, as well as social practice theory to understand the practices of gardening and food provisioning. The allotment turned out to play a substantial role in household food supply for this study population, with on average 62% of fruits and vegetables originating from the allotments during the month of quantitative data collection. Motivations for food production mostly related to hobby and relaxation, though the outcome in terms of harvest was valued much by the respondents, as the food is fresh, organic and tasty. Besides, the harvest was being used well in the household, both fresh and preserved, and when having surpluses, the food found its way outside the household as well.

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1. Introduction

1.1 Urban agriculture

Growing your own food has gained popularity in the Netherlands during the last decade. This trend is mostly seen in urban areas, with for example rooftop and balcony gardening, and it has received attention in newspapers and magazines (Berendsen, 2001; Flameling, 2012; Visser, 2013). The general term for referring to a wide variety of food production practices in and around cities is 'urban agriculture' (Drescher, Holmer & Iaquinta, 2006). It is a growing activity, also on the global level, and therefore a growing research area as well.

From the perspective of individual practitioners, 'urban gardening' might be the most meaningful component of urban agriculture. It includes three different types of gardens: home gardens, allotment gardens and community gardens (Drescher, Holmer & Iaquinta, 2006). The home garden can be found directly adjacent to the gardener's residence, which distinguishes it from the other two types of urban gardening. The community garden can be defined as "a plot of land used for growing food by people from different families, typically urban-dwellers with limited access to their own land" (Okvat & Zautra, 2011). An allotment garden can be seen as a specific type of community garden, as the extra characteristic of it is that there are individual parcels on the land (Van den Berg et al., 2010).

This study focuses on allotment gardens, or in short 'allotments'. Allotments are, contrary to the community garden, already around for a long period of time. Since the 18th century plots of land were made available in Europe for poor labourers to grow vegetables and fruits (Van den Berg et al., 2010). Since they are around for a long time already, they might be perceived as old-fashioned and less carried by the new generation, which makes them easily forgotten in current debate on alternative food production (Veen, Derkzen & Visser, 2014). Currently the Netherlands has about 240.000 allotments, spread over about 1.000 complexes and parks (Van den Berg & Ronde, 2010). A mix of allotment types can be found: from the luxury recreation garden to the functional garden (Berendsen, 2001).

Multifunctional agriculture

The concept of multifunctional agriculture (MFA) has received attention in scientific and policy debates since about the last two decades, after being addressed at the United Nations Rio Earth Summit in 1992 with respect to sustainable development. Since that time its role in debates on the future of agriculture and rural development has become increasingly important (Renting et al., 2009).

Agriculture is considered multifunctional when it has other functions next to food and fibre production (Huang et al., 2015). Those functions can be seen in the light of provision of goods and services that satisfy societal needs or demands, such as food security; environment protection; rural vitality, etc. (Pourias, Aubry & Duchemin, 2016). However, Renting et al. (2009) explain that there is some ambiguity in the interpretations of multifunctionality among various institutions on the international level. Depending on the context in which it is used, the approach can be more economically and market related, or more socially related.

Zooming into community gardening in particular, different functions that can be assigned to this type of urban agriculture are related to individual well-being, community well-being and environmental well-being (Okvat & Zautra, 2011). Functions fitting into these categories have also been made visible in a figure by Duchemin,

Wegmuller & Legault (2008), see figure 1. The authors have composed this figure by making use of several academic sources, and have explained the described functions inside the circles with the words that are outside the circles. For example, the function 'Health' of urban agriculture can be explained by 1: the fact that gardening is a form of physical activity which is healthy for the body, 2: the garden producing fresh and healthy foods, and 3: gardening as a form of relaxation and being in nature which is good for people's mental health.

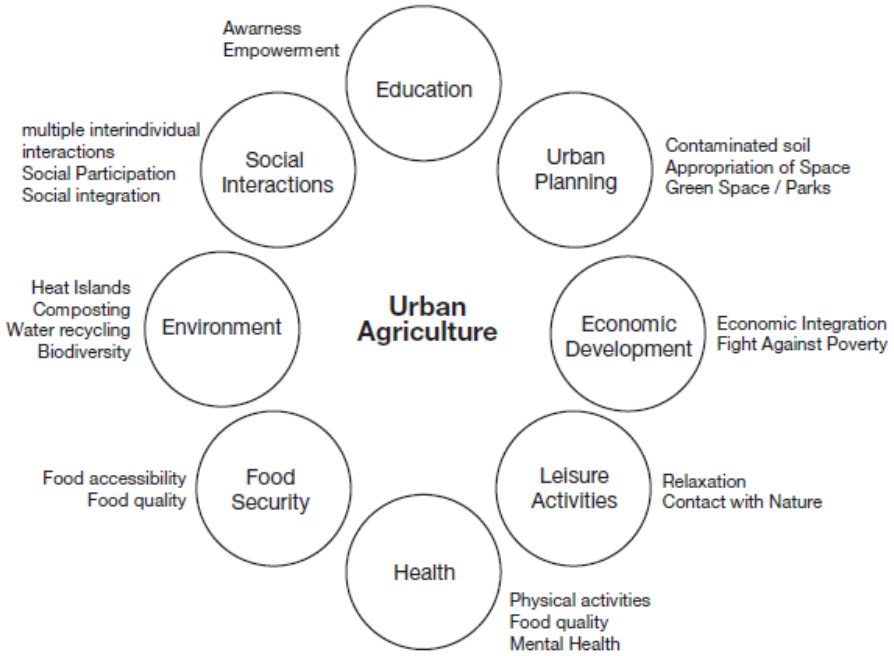

Figure 1: Different areas in which functions of urban agriculture operate

The multifunctionality concept is interesting and valuable because several scholars have described the multiple functions of community gardening in a review of studies that have been conducted on community gardening (Draper & Freedman, 2010; Okvat & Zautra, 2011). It is therefore acknowledged that gardening can have several functions at the same time, both from a public as from an individual perspective. The concept helps to see urban agriculture in the bigger picture.

1.2 Problem orientation and knowledge gaps

Kortright and Wakefield (2011) explain in their article that technological developments in our society have had consequences for the way we are involved with the sources of our food. Nowadays, food often travels through long commodity chains before it arrives in local supermarkets, which causes ignorance of what we actually eat and drink. They state that "food security is threatened by food supply systems that are not environmentally sustainable (e.g. energy-intensive) and by a lack of local understanding (at both the individual and community level) and control of the food we eat" (p.41).

Some authors see urban food production as a way to reclaim control over the food system in the global North, by residents participating in community gardening (Baker, 2004). However, for the gardeners themselves, their involvement does not necessarily relate to gaining more control over their own food. Many of them state that they garden as part of their everyday routine, to grow culturally appropriate food, to connect with others, to save some money on their food groceries or to exercise (Baker, 2004). Also in the Netherlands this is shown for

example by Veen (2014): in the two allotments that were studied, it appeared that the main motivation for the gardeners was the joy they had in gardening (together). This can be explained by the fact that growing food is not a basic necessity in the Netherlands, as it is a developed country with relatively low unemployment numbers and adequate social security (Van der Schans, 2010). Besides that, fresh food is easily accessible throughout the country (Van der Schans, 2010). This is in contrast with the global South, where urban food production is very important for the population's food supply (Pourias, Aubry & Duchemin, 2016).

As serving citizens' livelihoods is not a main function of urban gardening in the Netherlands, research mainly focuses on other functions of gardening, such as the social functions (Veen, 2015) and the mental and physical health benefits (Van den Berg et al., 2010). However, the fact that Dutch allotment gardeners are not necessitated to grow food does not provide any information about whether they grow food and how much that would be. In that respect it is interesting to know more about the garden produce itself as well. More information on the garden produce would contribute to knowledge about the role of the garden in household food supply in the global North.

Some studies have been conducted on the garden produce of urban gardeners. For example, Pourias, Duchemin & Aubry (2015) have conducted a study on collective gardens in Paris and Montreal, investigating their food function through quantifying production and comprehensive interviews with gardeners. In their conclusion they state that more data would be needed on other sources of household food supply as well, namely food purchases. Another study on quantifying production by Sovová (2015) was carried out on allotments in the urban area of Brno in Czech Republic. The respondents of this study were able to cover on average one third of their households' fruit and vegetable consumption from their gardens, which suggests that the allotments have a significant potential for food production. Looking at a more qualitative study in Toronto, urban gardeners who cultivate food were self-sufficient in at least some foods through the harvest season. They also felt that the garden increased their consumption of fresh foods as the garden enhances their accessibility (Kortright & Wakefield, 2011).

Next to investigating the garden produce of collective gardens itself, Pourias, Aubry & Duchemin (2016) also investigated the motivations of community gardeners in Paris and Montreal. Most of the gardeners in their study said that the possibility of cultivating food was a motivation for them to participate in the gardening activity, which made it the most mentioned function of the gardens in this sample. The second and third most mentioned were the social function and the (mental and physical) health function. Those results are for all three types of gardens that they studied together. Figure 2 shows their findings, split out into the different types of gardens that were studied.

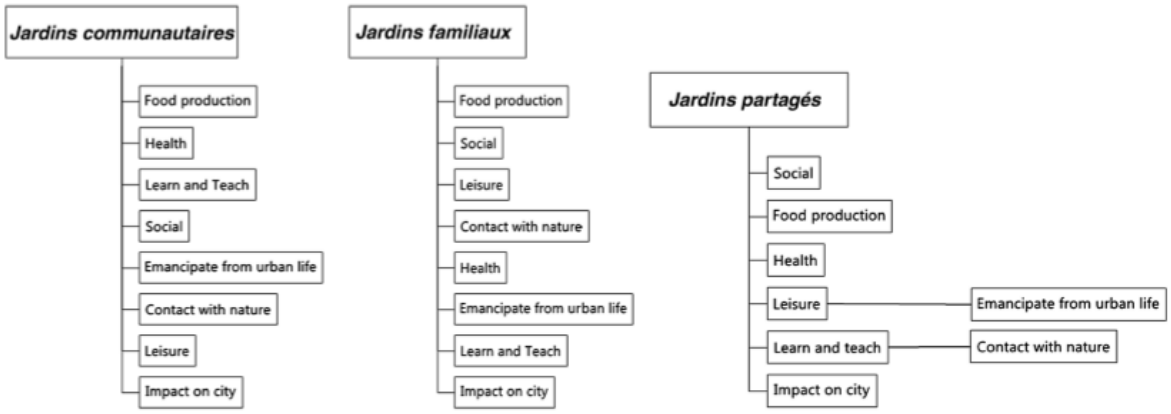

Figure 2: Functions mentioned most by gardens in each type of garden, in decreasing order (Pourias, Aubry & Duchemin, 2016) Note: in their article the writers use the term 'collective gardens' as an overarching concept for the three types of gardens mentioned in this figure. The 'jardin familiaux' matches with the allotment.[1]

A study in New York showed as well that 'access to fresh foods' is one of the most important three functions for the gardeners, next to enjoying nature and receiving health benefits (Armstrong, 2000). What could be of influence here though, is that the United States are known to have so-called urban 'food deserts', which refers to areas with poor access to healthy and affordable food (Beaulac, Kristjansson & Cummins, 2009).

It appears that in the Netherlands no precise data is available yet on the topic of food production in urban gardens. It would be meaningful to examine the food function more thoroughly, as we do not know how important the actual yields are for Dutch allotment gardeners. Questions to answer would be: How much food do urban gardeners cultivate in their gardens? What are their motivations to grow food on their plot? How do they complement their harvest for their household? Where do they choose to get these groceries and why? The aim of this study is therefore to explore the topic of food production in allotments in the Netherlands by investigating food provisioning practices of allotment gardeners who choose to grow food in their allotment. This will be done through an in-depth research of a small group of allotment gardeners, using both quantitative and qualitative methods.

1.3 Research questions

After investigating the topic, its concepts and the knowledge gaps, the following research questions were set up:

Main research question:
What is the role of allotments' food function for gardeners in the Netherlands and how does it relate to their household food provisioning practices?

Sub-questions:

[1] The difference with figure 1 of Duchemin (2008) is that the functions in figure 2 are from the perspective of the individual gardeners, while in figure 1 the functions are more from a general or public perspective. However, the functions are very close to each other.

- Which and how many fruits and vegetables are being harvested by the gardeners during a defined period in the harvest season?
- Which and how much fruits and vegetables come into the household in different ways during the same period? And through which sources?
- What are gardeners' motivations for food production in the allotment?
- Why do gardeners choose to grow certain fruits and vegetables in their allotment and to buy others?
- How much of total production is being harvested?
- How is the harvest used by the gardeners?

2. Theoretical framework

In this chapter I will explain the theoretical framework that is used for this study. This framework will help to see the research questions in a broader context and in the end it will also help to answer the research questions. Two different theories are applied: theory on food choices and social practice theory.

2.1 Theory on food choices

In order to be able to understand and reflect on household food provisioning practices, and on the sub-questions about choices for growing or buying food, some more theoretical support will be needed. Theory about consumer choices can be used for this purpose. Research that has been conducted in the United Kingdom has revealed that when making choices between stores, people value 'convenience' and 'accessibility' the most, which are, putting it in a simple way, referring to physical distance (Jackson et al., 2006). When making choices within stores, people would mostly consider the quality of the products relative to the price of the products. Quality is a rather subjective indicator that is linked to taste, colour and freshness (Jackson et al., 2006).

As a more general theory, Warren Belasco, describes in his book 'Food – The Key Concepts' (2008) that "food choices are the result of a complex negotiation among three competing considerations: the consumer's identity (social and personal), matters of convenience (price, skill, availability), and a sense of responsibility (an awareness of the consequences of what we eat)." The triangle in figure 3 illustrates these negotiations, although Belasco explains that the triangle is not equilateral: identity and convenience mostly have a bigger role in the negotiations than responsibility has. The triangle should therefore be seen from the baseline first; decisions on what to eat start with a "pushing and tugging between the dictates of identity and convenience, with somewhat lesser guidance from the considerations of responsibility." (Belasco, 2008: p. 8) A bit more of an explanation for the three considerations is given below the figure.

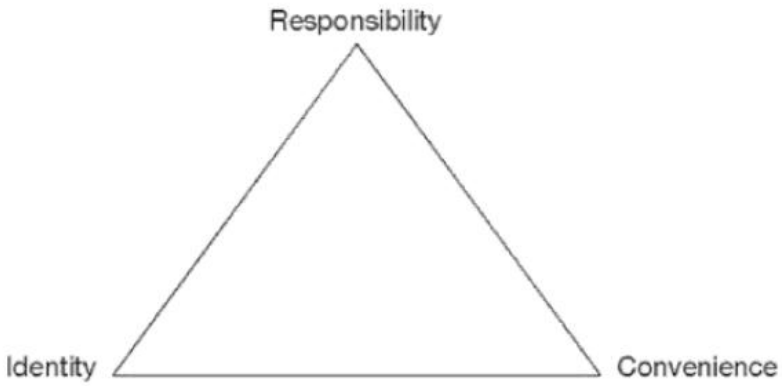

Figure 3: Triangle of considerations for food choices (Belasco, 2008)

Identity
Identity implicates considerations of personal preference, the sense of who and where you are, pleasure and creativity. Identity includes factors such as taste, family and ethnic background, personal memories (good and bad associations between past events and particular foods). When it comes to identity, food choices are expressed through rituals, etiquette, symbols and arts. It can be about what people eat, but also about what they don't eat (Belasco, 2008: p.8).

Convenience
Variables such as price, availability and ease of preparation are included in convenience. Those variables are all related to requirements of energy, time, labour, and skill. It involves concerns such as: 'Can I afford it?' and 'Can I make it?'. Besides that, it strongly connects to the whole food chain that makes food accessible to the consumer which includes amongst others farmers, food industry, supermarkets and restaurants (Belasco, 2008: p.9).

Responsibility
Responsibility refers to being aware that our actions have consequences (short- or long-term) - on different levels: personal, social, physiological and political. Responsibility means awareness of our position in the food chain and the impact that we have on nature, animals, other people and the division of power and resources over the planet. It entails both being aware of how the food got on our plate, and being aware of the consequences of our actions in the future. Belasco states that in general responsibility is not the strongest factor in food choices, but that maybe it *should* be (Belasco, 2008: p.9).

2.2 Social practice theory

Though the theory on food choices is very useful for reflecting on part of the research question, it does not cover it completely. It cannot totally help to answer what the role of the food function of allotments is, and the motivations cultivating food are not embedded in this theory. Therefore social practice theory will be used to shed a theoretical light on the research question as well. This theory is mostly interwoven in the results chapter and in the discussion.

Several academics have produced work about social practices, and there is not one description of this theory. It has its origins in the work of sociologists Bourdieu (1977) and Giddens (1984), and more recent work has been published such as the work of Shove (2012) and Røpke (2009). My application of the theory is inspired by the works of Veen (2015) and Angelino (2017), who used it to explain the practices of cultivating food in urban gardens, food provisioning and meal sharing.

Theory of practice has a focus on everyday life and centres around the performance of practices. What a practice exactly entails is described in different ways, but a common and recent definition being used is of Reckwitz (2002): 'a routinized type of behaviour which consists of several elements, interconnected to one another: forms of bodily activities, forms of mental activities, 'things' and their use, a background knowledge in the form of understanding, know-how, states of emotion and motivational knowledge'.
In doing things like cooking or cycling, people (being practitioners) actively combine the elements of which these practices are made. There are three elements of which practices are made, defined by Shove, Pantzar & Watson (2012):

- Competences: the skills and know-how that people have
- Materials: the things people use when they are performing practices
- Meanings: the significance of the practice

Practices change over time: new practices appear, and others disappear when there are no practitioners anymore (Røpke, 2009). Besides that, the performance of practices can be subject of change as well, as circumstances in everyday life are never the same because of which people need to adapt, improvise and experiment (Warde, 2005). This also creates new linkages or breaks linkages between the three elements competences, materials and meanings (Shove, Pantzar & Watson, 2012).

Furthermore Røpke (2009) describes that practices compete for the time of practitioners, which is based on

Pred's (1981) basic premise that 'every individual follows a path in time and space, carrying out practices that take up time and have to take place in space'. The consequence is that we are restricted by 1: limited time resources, 2: the impossibility of participating in more practices at the same time taking place in different spaces, and 3: the time it takes to move from one space to the other. Thus, practices need to find their place in people's life. Whether people sustain practices, depends on whether they perform them recurrently (Shove, 2012).

As I am always interested in practical relevance of theoretical frameworks, I appreciate that Shove, Pantzar & Watson (2012) explain this for their work. They state that for policy interventions, most programmes depend on seeing behaviour as a matter of individual choice, being based on attitudes and sometimes social norms and habits as well. For having a chance to bring about healthier and more sustainable ways of life, policy makers would have to intervene more in the dynamics of social practice (p.18).

2.3 Use of the theories

With this research I aim to contribute to the theory on food choices and social practice theory by applying it to the data that I collected from my respondents.

The in paragraph 2.1 described theory on consumer choices for food can mostly be used to shed light on the second part of the main research question which aims to get more insight in gardeners' household food provisioning practices and therefore in the food choices they make. It can also help us to understand how the allotment functions as a source of food and how it differs from other sources, as food choices can also be seen in the sense of choices within the allotment garden. This concerns choices for what to grow or not to grow in the allotment. I will use the theory to explain the motivations, choices and reasoning that the respondents expressed in the qualitative and quantitative data that I got from them.

Social practice theory is useful to understand and answer the research question as it can be applied for the practices of 'gardening' and 'food provisioning'. Food provisioning consists of different activities or practices: production, acquisition, preparation, consumption and disposal (McIntyre & Rondeau, 2011). Technical skills are needed for these activities such as growing, shopping, meal planning and cooking (McIntyre & Rondeau, 2011). Within this study the activities of production, acquisition and consumption play a role, as the aim is to answer questions on the harvest in allotments, choices for growing or buying food, and the use of the harvest.

Furthermore, social practice theory helps to understand the practices itself, by looking at the three elements that practices are made of, defined by Shove, Pantzar & Watson (2012). Mostly the element 'meaning' will come forward, as one of the sub-questions is about the motivations for cultivating food, which actually will express the meaning of this practice for the study participants.

3. Methodology

In this chapter I describe the study design that has been applied for this research, as well as the methods that were used for data collection. I explain the usefulness of these methods and how they have been used in practice.

3.1 Study design

To be able to perform this research, a group of Dutch allotment gardeners was needed to gather information from. Next to that, it was necessary to use a mixed-methods design as I was interested in both the quantity of the produce in allotments and the qualitative framing of motivations and choices for food production. Therefore the aim was to find allotment gardeners from whom to gather in-depth information. As the project was intended to have a time frame of half a year, a small group of gardeners was realistic to include in the study. This made my supervisors and I decide to include about ten participants, which eventually became eleven. Two important methods for data collection were used: consumer diaries and interviews, about which more can be read in paragraph 3.3. The data collection period lasted for one month. As there were no follow-up stages, the study can be considered to be a cross-sectional study. The cross-sectional study design is widely used in social research and can be ideal for descriptive purposes, such as describing characteristics and attitudes of a population (De Vaus, 2001), like in this research. This research is descriptive of nature: as there was not much information yet on food production in Dutch allotments, it mostly aimed to answer *what* is going on instead of *why* it is going on.

3.2 Participants and recruitment

The city of Utrecht has been the study site for this research. It is one of the bigger cities of the Netherlands and therefore suitable to study urban food growing. Besides that, its location was very practical for me as a researcher. Utrecht counts fifteen allotment associations (Overleg Volkstuinen Utrecht [Counsel Allotment Gardens Utrecht], n.d.) of which eleven were contacted via email. This happened between mid-May and the beginning of August of 2017, by emailing the addresses that were found on the associations' websites. This specific period of the year was important because of the harvesting season that mainly runs from June until September. Recruitment has also been done through visiting three allotment associations and speaking to people who were around there. In the end though, what led to the best result was a second call via email which was shorter and more eye-catching than the first one. The information letter and short call that were sent can be found in appendix 1. Besides that, a few board members of allotment associations were very helpful in recruiting gardeners by asking them to participate, which made them gate keepers in this research. In the end, one gardener has been recruited face-to-face in the garden. The other participants have been recruited via self-selection by signing up after reading the call via email, and by snowball sampling, which means that some gardeners have recruited other gardeners of their association.
The following in- and exclusion criteria have been used for recruitment:

<u>Inclusion criteria:</u>

- Using an allotment in Utrecht (or eventual mid-Netherlands, not further away out of practical reasons)
- Gardeners of all ages (above 21)
- Cultivating (any amount of) fruits and/or vegetables in the allotment during August and/or September
- Being able to fill in a consumer diary for four weeks in August and/or September
- Being available for an interview during August or September

<u>Exclusion criteria:</u>

- People who were not active in their allotment during August and/or September could not participate in the study, nor could people who were not able to record data for four weeks in total. With 'being active' I mean: being in the garden at least once a week.
- People who did not grow any fruits and/or vegetables in their allotment during August and/or September

The eleven participants that were finally included in the study are members of four different allotment gardening associations in Utrecht. Those associations are situated in different neighbourhoods in the city and differ in for example number of plots and gardeners and size of the plots. More information about the respondents and the associations can be found in chapter 4, which describes the results of the study.

3.3 Explanation of data collection methods

3.3.1. Consumer diaries

I used a participatory research method in the form of a consumer diary. This method was used by Pourias, Duchemin & Aubry (2015) and Sovová (2015) as well, and was well received by the respondents. The consumer diaries have been used to precisely find out what and how many fruits and vegetables gardeners harvested from their allotment, and what and how many fruits and vegetables they obtained to complement this for their household during that same period. Participants were asked to fill in a consumer diary for fruits and vegetables for four weeks (about one month). Data of one month were expected to give a reasonable indication of the harvesting and shopping behaviour of the participants in the particular season that this study was conducted, and was the maximum period feasible within the time frame of this project. Every time the participants harvested, went grocery shopping or obtained fruits or vegetables in a different way, they filled in what it was, how much it was, where it came from and whether they used it for themselves or gave it away. As it might not always be clear what 'fruits and vegetables' exactly entails, I clarify here that potatoes, onions and herbs were also included in the study. I chose to do so because I wanted to count everything in that is grown in the allotments.

Format and usage by the participants

The format for the consumer diaries was self-composed, in consultation with my supervisors, and was based on what information was needed to answer the research question, finding out what is how much is harvested from the allotments and what and how much comes into the household through other sources, and how it is used. The format contains columns where the respondent can fill in 'type of vegetable/fruit', 'quantity', 'source' and 'usage'. An instruction was given as well, including an example to show how the participants should write the information down. The format that was used for the consumer diaries can be found in appendix 3. I instructed most participants in person about how to fill in the consumer diary at the end of the interview. For some participants, the interview could not be planned before, so they already made a start with it and I checked how they did it after the interview. In the end, I found out that not everyone had understood the instructions in the same way. I actually intended to gather the information per harvesting or shopping moment, but a few participants wrote down per day what they consumed in the household. For example, respondent 1 harvests or shops fruits or vegetables, writes the weight down in the consumer diary, and stores a part of them; and respondent 2 writes down what he uses that day, which can be just obtained from any source or out of his stock. These differences in filling in were not considered to have a big influence on the data. In the discussion in chapter 5 I will elaborate further on this topic.

3.3.2. Interviews

Another important method for data collection were semi-structured interviews. The aim of the interviews was to gather information on motivations for allotment gardening and for growing food, on activities in the garden, decision-making for cultivating and buying food, and usage of the harvest. Qualitative research adds to the

quantitative method of the consumer diaries, as it intends to understand the world from the respondents' point of view and to reveal the meaning of their experiences instead of looking for scientific explanations (Kvale, 2007). The interviews took place from mid-August until the beginning of September 2017 and were all executed in Dutch. Participants were visited either at their home or in their allotment, depending on their preference and the time, and also on the Dutch weather circumstances. With one participant it even started raining heavily during the interview so we continued the interview in the wooden garden shed. Actually it was interesting to do the interview in the allotment itself, as it directly gave me an impression of what the participant was talking about. The interviews took about 30-60 minutes each and were recorded with a voice recorder or laptop and were transcribed word by word afterwards.
The interview questions were partly based on previous studies, and on additional information desired to complement and clarify the information of the consumer diaries. I formulated specific questions and mostly asked them in that order, though I left space for the participant to switch between questions or topics. Besides that, I liked the interviews to be rather informal by making it a nice conversation as well. As a preparation, I went through a book about interviewing as a research instrument (Hulshof, 2016). The interview questions can be found in appendix 4.

3.4 Data analysis methods

Consumer diaries

Microsoft Excel was used to process and analyse the data of the consumer diaries, eventually enabling me to present the data in a descriptive way in tables and graphs. The first step was filling in the data from the (paper) consumer diaries in Excel sheets, first making a separate sheet for each participant and afterwards making another sheet with all participants' data together. As I did not explicitly state that the participants had to write down weights of the fruits and vegetables, but were also allowed to write down numbers or units (e.g. five apples), it was necessary to make a list of average weights for fruits and vegetables. The weights that I used for products that were not weighed yet by participants are shown in appendix 5. Those weights have been determined by weighing products of an average size on the weighing scale in the supermarket, and by using the website of supermarket chain Albert Heijn. The website of Albert Heijn was mostly useful for determining weights of products that were being packed by multiple pieces, because it gives a standard weight for those packages. In that way I could make a calculation or an estimation of the weight of one piece. Furthermore I sometimes also looked at the weights that other participants wrote down, and took an average or made an estimation. For example when a participant wrote down '1 pumpkin' without a weight, and other participants did write down weights, I used those weights as indications. When a participant explicitly stated in the consumer diary that he harvested or bought (e.g.) a big or a small apple or zucchini, I adapted the weight using common sense.
Some entries in the consumer diaries came as a surprise. A few participants wrote down mushrooms in their diaries when they bought them in a shop (they were not cultivated in the allotments). Although mushrooms are officially funghi, I decided to include these entries as mushrooms are in general classified in the category of vegetables (Voedingscentrum [Dutch Nutrition Centre], n.d.) and used in the kitchen that way as well, for example when stir-frying them together with vegetables. There was also one respondent who harvested nuts. I decided to include those as well, as I wanted to include everything being harvested from the plots.

Interviews

The interviews were manually transcribed word by word. In general I wrote down everything that was said, only in a few cases I decided to skip small parts because they were too aberrant from the interview questions. Most 'side stories' I did work out though, as they were interesting and reflected the enthusiasm of the participants. After transcribing the interviews, I analysed them on paper using markers, looking for recurring themes and thereby coding them. Per sub-question that I wanted to answer I grouped the answers of the participants. Furthermore interesting quotes were selected to use in the results chapter. I did not use a digital coding program as I felt like the amount of data was manageable by hand.

3.5 Gift vouchers

As participation in the study was rather time consuming and demanding for the participants, gift vouchers with a value of 20 euro were promised in advance to create an extra motivation for joining. The gift vouchers were reimbursed by the university and were sent by mail to each participant after they were interviewed and had sent or handed in their consumer diary of four weeks. A remark here is that a few participants explicitly mentioned that they would have also participated if they would not receive a gift voucher, as they were interested in the subject of the study.

3.6 Ethics

In order to inform the participants about the aim and activities of the study and about their rights, informed consent forms were given to them before the start of the interview. The participant was able to read through this document and sign it when he or she decided to agree and participate. The informed consent form can be found in appendix 2. Furthermore I have secured that participants' data is processed anonymously by not using their names in this report. For using the names of the allotment gardening associations, I asked permission to my participants and to the secretary of the involved organizations by email correspondence.

4. Results

In this chapter the results of the research will be described, using the data that have been gathered from both the consumer diaries and from the interviews. The chapter starts with a description of the study population. After that, the sub-questions of the research will be answered with the qualitative and quantitative data. Also, I will directly describe linkages between the results and the theory on food choices and social practices described in chapter 2. For the sake of convenience, the main research question and the sub-questions are written below again.

Main research question:
What is the role of allotments' food function for gardeners in the Netherlands and how does it relate to their household food provisioning practices?

Sub-questions:

- Which and how many fruits and vegetables are being harvested by the gardeners during a defined period in the harvest season?
- Which and how much fruits and vegetables come into the household in different ways during the same period? And through which sources?
- What are gardeners' motivations for food production in the allotment?
- Why do gardeners choose to grow certain fruits and vegetables in their allotment and to buy others?
- How much of total production is being harvested?
- How is the harvest used by the gardeners?

4.1 Characteristics of the study population

The study population consists of 11 allotment gardeners living in Utrecht, The Netherlands. Those gardeners have voluntarily signed up after reading or hearing the call for respondents. Of the study population six participants are female and five are male. The age range is 55-69 years old, with an average of 62.9 years old. Of the eleven respondents, six are retired. The other five respondents have a paid job of at least 28 hours a week. According to the chairwoman of OVU, the consultative body of allotment gardening associations in Utrecht, the average age of my study population is a bit higher than the average age of people having an allotment in Utrecht (personal communication, February 2nd 2018). A possible explanation for this could be that younger gardeners might have less time for participating in a study like this for reasons such as having busy jobs and/or having younger children at home. It should therefore be kept in mind that the study population is a small group that does not give a full representation of the Utrecht gardener population as a whole. Table 1 provides an overview of the respondents, including the size of the allotment(s) that they rent.

Table 1: overview of the study population

Respondent	Age	Gender	Household size	Allotment size
1	57	F	1	170 m2
2	66	F	1	400 m2
3	68	M	2 (but often family or friends join for dinner)	80 m2 and 250 m2
4	69	M	2	250 m2 and 250 m2 (incl. two garden sheds)
5	68	F	2	225 m2

6	55	M	3 or 4	100 m2
7	65	M	1	250 m2 (incl. garden shed)
8	56	F	3 or 4	161 m2
9	69	M	2	270 m2
10	56	F	2	200 m2 (incl. garden shed)
11	63	F	1 or 2	160 m2

4.2 Characteristics of the allotment gardens

The respondents are members of four different allotment gardening associations in Utrecht, with five gardeners from an association in the South of the city called 'de Nijvere Pier'; three gardeners from 'Utrecht Zuid' which is also in the South of the city; two gardeners from 'De Driehoek', located in the North-East; and one gardener from an association located on the Eastside of the city centre called 'Abstede'. Appendix 6 shows a map of Utrecht, and where the allotment gardening associations are located. De Nijvere Pier and Abstede are relatively small associations with respectively 67 and 60 plots (Ecologische Tuiniervereniging De Nijvere Pier, n.d.; Tuindersvereniging Abstede, 2018). Utrecht Zuid and De Driehoek are bigger associations with respectively 151 and 137 plots (ATV Utrecht Zuid, n.d.; Ecologisch Tuinenpark De Driehoek, n.d.). At De Nijvere Pier and Abstede, the plots do not have garden sheds, at De Driehoek most plots come with a garden shed, and at Utrecht Zuid about 100 plots come with a garden shed. What is called a garden shed can divert from a tool box until a stone built cottage. Gardeners pay a yearly rent for their plot(s) to the associations, which in their place rent the plots from the municipality (Ecologisch Tuinenpark De Driehoek, n.d.). Environment-friendly gardening is mandatory by the municipality for every allotment gardening association in Utrecht, which at least means no use of chemical pesticides and fertilizer (Overleg Volkstuinen Utrecht, n.d.). Of the four involved associations, two call themselves 'ecological' gardening associations and the other two speak about 'nature-friendly gardening'. Besides the private plots, the associations have some shared facilities as well such as an association building. De Nijvere Pier has a communal plot with apple and pear trees for shared use, which I counted as a separate source of food when analysing the data.

4.3 Sources and quantities of fruits and vegetables

4.3.1 Obtained fruits and vegetables during the data collection period

The data of one month of all eleven respondents have been merged to show results for the study population as a whole. In figure 5 the pie chart gives an overview of the data of all eleven respondents. It shows the quantity of vegetables and fruits obtained from all different sources that were mentioned by the gardeners. The quantities are displayed in grams. It shows that for the month that the gardeners recorded their harvest and groceries, most fruits and vegetables (looking at the weight) originated from the allotment. Further several other sources of fruits and vegetables were used: supermarkets, neighbourhood shops, health food stores, farmer shops, wholesalers and Hello Fresh. The neighbourhood shops are mostly Turkish or Moroccan (green) groceries, which are around a lot in Utrecht. A health food store sells especially organic products and mostly there is also attention for local produce. With a farmer shop I mean a shop lying adjacent to an actual farm who partly sells own harvest. A wholesaler sells bulk packages of inland or imported goods, mostly to companies and entrepreneurs. Hello Fresh is a popular company that delivers recipes and all the ingredients for them at your home once a week, as an easy solution for preparing fresh healthy meals. Other sources were "from the wild", meaning that some respondents wrote down that they picked some food alongside the road or in the forest, gifts, and the communal plot at the allotment association. The latter has been marked as a separate source from the private allotment because four respondents obtained fruits and (in one case) nuts from, sometimes in quite big amounts. Marking this food as originating from the private allotment might give a

distorted view of the data. One respondent mentioned going to the market now and then, but in the consumer diary of one month this did not show.

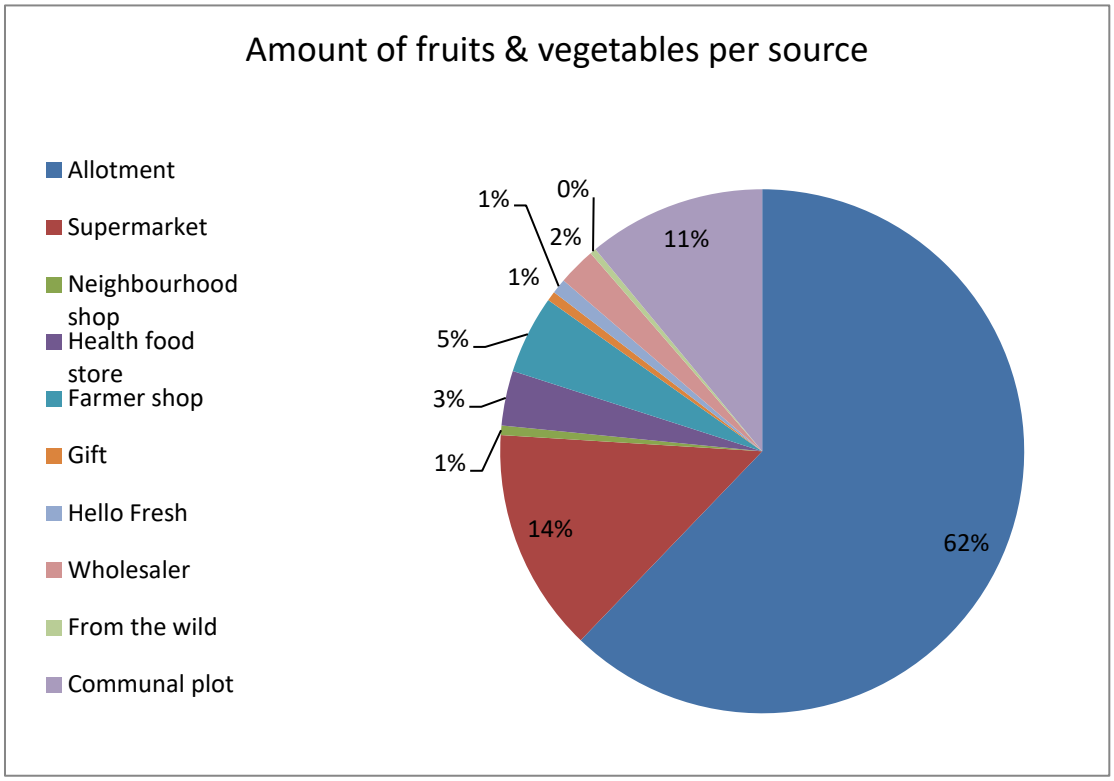

Figure 5: Amount of fruits and vegetables that came into the household divided per source, for the study population as a whole

Underneath, table 2 gives an overview of the quantities in kg and the percentages of the total amount of fruits and vegetables that came into the households.

Table 2: Amounts of fruits and vegetables in kg per source

Source of fruits and vegetables	***Weight in kg (rounded to 1 decimal)***	***Percentage of total***
Allotment	407,2	62%
Supermarket	90,4	14%
Neighbourhood shop	3,8	1%
Health food store	22,2	3%
Farmer shop	31,7	5%
Gift	3,9	1%
Hello Fresh	6,0	1%
Wholesaler	15,3	2%
From the wild (picking alongside the road or in the forest)	2,5	0(,..)%

Communal plot at the association	71,9	11%
Total	**654,9**	**100%**

When looking at the weight of the vegetables and fruits that came into the household, it becomes clear that for the month that the gardeners have written up the data, they could on average get 62% of the fruits and vegetables (and herbs) that their household needed from their allotment. Looking at differences between respondents, the ranges for the allotment as a source of fruits and vegetables differ from 45% to 90%. Complementing these data with data from the interviews, it can be concluded that most of the respondents like to grow their own fruits, vegetables and herbs and appreciate to reach a certain level of self-sufficiency in the household with it, although they do not insist on being completely self-sufficient. As respondent 1 said: *"Yeah you know what, I don't have to live from it, it's for my relaxation, so I don't want to worry about it because then it's no fun anymore (laughs)."*

There were big differences in kilograms of harvest as well. The weight of the harvest of one month varied from 15,7 kg until 90,1 kg (including the harvest that some respondents got from the communal plot) with an average of 43,5 kg of harvest per respondent. It should be noted that the respondent who harvested 90,1 kg was an outlier compared to the rest: the second highest amount harvested was 58,4 kg. The outlier can be explained by the fact that this respondent obtained 39 kg of (fallen) pears from the communal plot of the gardening association. An interesting observation is that the household size does not necessarily associate with the amount of fruits and vegetables in kg being harvested from the allotment. For example, a one-person household got 38,7 kg from the allotment (excl. communal plot) and a three-person household got 17,9 kg from the allotment. Therefore, it seems that other factors besides household size determine as well how much is grown in the allotments, such as people's motivations for food cultivation, about which more can be read in 4.4. During the interviews, respondents were asked to estimate the percentage of fruits and vegetables originating from the allotment during the data collection period. The respondents tried to give an estimation and except two of them, they underestimated the amount of fruits and vegetables originating from the allotment in their household.
Furthermore, the amount of sources for fruits and vegetables that were used differed per respondent; some respondents used two different sources for their household and others used six. In appendix 7 pie charts for each individual respondent can be found, expressing the amounts of fruits and vegetables in grams and percentages per used source for each respondent.

4.3.2 Type of crops harvested from the plots

The respondents all filled in their consumer diaries for one month in August/September[2]. Table 3 shows what they have been harvesting from their allotments (including the communal plot of the allotment association, if present) during that period making a division between vegetables, fruits, herbs and category 'other'. In the category 'other' I only counted in the edible crops coming from the allotment; most gardeners also grew flowers and ornamental plants but those were not relevant for this study. When looking at the amount of different varieties of crops, the gardeners mostly kept themselves busy with growing vegetables during the period of data collection.

Table 3: Overview of products harvested from the allotments (including the communal parts) during the data collection period

Vegetables	**Fruits**	**Herbs**	**Other**

[2] There was a little difference between the starting points of respondents: some started the second week of August, others the third (this had to do with holidays). But all of them kept up the data in a period of four weeks spread over August and September.

Arugula Beans (green, runner, wax and broad beans) Beet (red, chioggia, cylindra) Bell pepper/paprika Broccoli Bunch onion Cabbage (pointed, red, savoy, kale) Carrot Celeriac Celery Chard Cherry tomato Cucumber (regular and mini) Eggplant Endive Fennel Garden peas Garlic Kohlrabi Leek Lettuce ('regular', curly, oak leaf, lollo rosso/verde) Little gem Lamb's lettuce Onion Pointed (sweet) pepper Potato (different varieties) Pumpkin Purslane Rhubarb Red chicory Shallot Snow peas Spinach Sweet corn Tomato Turnip Zucchini	Apple Blackberry Blueberry Fig Grape Pear Plum Raspberry Strawberry Quince	Basil Celery Chive Dill Jalapeño pepper Laurel Lavas Lemon balm Marigold Mint Nasturtium Oregano Parsley Rosemary Savory Thyme	Almonds Walnuts

The results in the table above should of course be seen in the light of the season and specific month, as the consumer diaries have all been filled in in August and September. A list of crops being harvested in for example June could look different, and during wintertime the list would be much shorter. When looking at the weight of the harvest, the total weight per crop harvested from the allotments was the highest for potato, followed by apple, zucchini, tomato, green beans, cucumber, onion and pear.
Within the types of crops there was sometimes more variety, for example for lettuce there could be curly lettuce, lollo rosso etc. Some gardeners just wrote down 'lettuce', others wrote down a specific type of lettuce. I assume that when they wrote down 'lettuce', in most cases they mean the most regular type of lettuce, and when it was a "special" variety, the gardener has written it up with its special name.

4.4 Gardeners' motivations for gardening and food cultivation

4.4.1 Motivations for gardening

To start, there was a bit more of a general question to the participants about their motivations for allotment gardening. As one of the reasons for starting with allotment gardening, all of the respondents stated that they simply liked the activity of gardening or that they wanted to find out whether they liked the activity. Three of the respondents said that they grew up with gardening, already helping their parents as a small kid in their allotment or kitchen garden, and they had actually never quit gardening. Two respondents named it 'a way of life' and one respondent a 'passion'. One respondent mentioned jealousy as a reason for starting, as she was jealous of the mum of a school friend of her daughter who told her that she had an allotment[3]. The respondents continued gardening mostly because the activity gives them relaxation, eases their mind, and gives them a counterbalance for their job or a nice daytime activity. Social contacts at the allotment association were specifically mentioned as a motivation by two respondents.

Respondent 9: *"I used to work a lot with people, so in my spare time I liked to be busy in the garden, to be outside."*

Respondent 11: *"But also just, I notice that I find it very relaxing, just a bit of rooting in the ground."*

Concluding, respondents described the meaning of the practice of gardening for them. This mostly comes down to gardening as a hobby/leisure activity. It becomes clear though that it was not always a deliberate choice to start gardening: for some respondents it was already a routinized type of behaviour since their childhood.

4.4.2 Motivations for cultivating food

The motivations of respondents for food production in the allotment also express the meaning/significance of this practice for them. All the motivations that were mentioned by the respondents are being displayed below in figure 4.

Figure 4: Motivations for cultivating food in the allotment mentioned by the respondents

Enjoying the activity

Some of the motivations for food production are similar to the ones for gardening in general: all gardeners mentioned that they enjoy cultivating food because they find the activity of gardening fun or relaxing, and cultivating food is part of the picture. As respondent 7 explained:

"You see many people who only have a piece of grass and flowers, but well, then I wouldn't have anything to do

[3] Quotation from the interview: *"She told me that she had a kitchen garden. And then I felt this wave of jealousy, like: she with her painted nails does, and I don't?!"*

in the garden, only a bit of sitting. Cultivating vegetables is more active and exciting in my opinion."

Habit/way of life
As shown in figure 4, being used to cultivating food and seeing it as a way of life were mentioned. Five respondents mentioned that they aim to or like to eat as much self-cultivated food as possible, for reasons of 'being able to do so', as a 'type of sports' and 'finding it a courteous thing to do when you are able to'. This can be seen as a deliberate choice, but for three respondents it was also a practice that they grew up with or out of their former profession, that they found worth continuing in their lives.

Access to fresh, tasteful and organic food and knowing what you eat
Six of the gardeners mentioned the accessibility to fresh, organic and/or tasteful food as a motivation for cultivating food. In contrast to the organic options in the shops or supermarkets, some of them mentioned that they feel more certain that there has not been messed with the food. A few respondents also mentioned that in the shops organic food is expensive, so the self-cultivated organic food feels extra valuable for them in that sense.
Respondent 5: *"Knowing how it grows, and eating from your own garden without pesticides, that is of course tasty and fresh."*
Respondent 8: *"I think it is a great wealth to put something in the ground and to be allowed to eat from it. And also more and more that I know what I eat and that I know for sure that there hasn't been tampered with it."*
Linking this type of motivation to the theory on food choices in chapter 2, it actually seems to express all three considerations of the triangle. It has to do with identity in the sense of personal preferences and beliefs, it has to do with convenience as the respondents express motivations regarding price, and it has to do with responsibility because of environmental concerns. A note regarding responsibility: for the respondents who expressed the strongest environmental considerations during the interviews and therefore stating that they almost consume 100% organic food in their household, their consumer diary showed conforming data: they used a health food store or farmer shop as a source because of the greater variety of organic food there.

Seeing or showing how food grows
Four respondents mentioned that they like to see how things grow. Respondent 6: *"I like to follow the miracle of nature."* One of those respondents also mentioned wanting to teach her daughter how food grows when she was still a small kid.

Cultivating rare varieties
Furthermore, two respondents explained that they want to have specific varieties of vegetables or fruits that are difficult to get in supermarkets or shops, and therefore cultivate those by themselves, such as rare varieties of apples, or fresh peas. This motivation can mostly be linked to considerations of identity, because it expresses a preference for certain tastes or other characteristics of the crop.

Idealism/responsibility
One respondent explicitly mentioned a type of idealism as a motivation for cultivating food, as he would like to see a more sustainable food system with short logistic lines, for the future of the new generations. A few other respondents also mentioned related matters in the interviews, for example when discussing the process of food choices when shopping.
Respondent 11*: "It is so difficult to make choices as a customer, thinking about what would be most careful, so we are not very dogmatic in that sense. I do buy things that are not from here like bananas and oranges but as much as I can from suppliers of which I think, ok, that seems good to me."*
These considerations strongly relate to 'responsibility' when looking at the triangle for food choices. Those respondents expressed an awareness of their actions having impact on the environment, other people, division of power and resources and the future.

Giving away
Lastly, one respondent mentioned that he really enjoys giving away his self-cultivated food. When looking at the consumer diary this respondent gave away about half of the food that he harvested from the allotment.

Respondent 4: *"I have too much and it's fun to give things away, and to let people taste different things than from the standard organic farmers with obligated measures for tomatoes and colour of beets and so on."*

4.5 Considerations regarding growing or buying

4.5.1 Considerations regarding food growing

The gardeners mentioned one or more factors that play a role in their choice for which crops to cultivate and which to buy. The overarching themes that have been made for those factors are shown in table 4, including the times they were mentioned by the respondents to answer the question. One should be aware though of the fact that some crops are in the garden for several years, so the gardeners do not have to make choices for each crop every single year. Some things are permanently in the garden, like apple, pear or plum trees and berry bushes. Further there are perennials like strawberries, asparagus and rhubarb which last for a few years.

Table 4: Themes regarding choice for growing or buying mentioned by gardeners

Theme	***Times mentioned***
Convenience	6
Possibility (climate, soil, space)	6
Taste	5
Past experiences	4
Experimenting	4
Diversity/rare varieties	2
Failure (in that specific year)	2
Combination cultivation	1

Convenience
Five gardeners stated that the crops in the garden should be relatively easy to cultivate. This means that it is not too difficult, laborious or time consuming to cultivate the crops.
Respondent 1: *"I mostly look at what is easy or doable to cultivate in the garden."*
Respondent 10: *"Some things are so cheap in the supermarket, is it then worth the effort, are you going to invest all that time in it."*
One of those five gardeners mentioned though that he still chooses a few more laborious crops next to the easier ones, as he likes to experiment and is curious how things work out.
Related to convenience, a sixth gardener said that what she grows depends on how much time she wants to spend on the allotment that year. It can for instance be the case that she strews some flower seeds over a part of the plot, so it won't take up too much time that year. This does not mean though that on the rest of the plot she only grows 'easy' crops.

Possibility (climate, soil, space)
Another factor that was mentioned often, four times, was simply whether it is possible to cultivate a crop in The Netherlands or in the specific allotment or not. The gardeners mentioned the Dutch climate, and also the type of soil, though the latter can be different for allotments within the same city; it appears that on the one side of the city there can be sandy soil and on the other side of the city clay soil.
Respondent 9: *"Carrots that doesn't work out in our garden with that clay soil, they all get limbs. So we don't do that anymore, we are not gekke Henkie."* (Dutch expression: crazy/silly Henkie)
Two gardeners also mentioned space, as they would want to cultivate more or a bigger variation of crops but it

just does not fit in the allotment anymore, or the crop would take too much space.

Taste
The theme 'taste' refers to respondents who explained that they mostly choose to cultivate crops in their allotment that they and/or their family find tasty. Some respondents also find some crops from the allotment tastier than their equivalent in the supermarket or shop. Related to taste, one gardener mentioned that she likes to have some variation in crops; she bases her choice partly on what she has missed to eat from the allotment the previous season.
Respondent 6: *"I just sometime thought: that is tasty fruit and I would like to have it for some years."*
Respondent 10: *"Some things are just really tasteful from the garden, so that's why I really want to have them."*

Past experiences
The respondents also looked at their experiences from the past. What they have been cultivating and how that worked out. They have some successful crops that they continue cultivating. Contradictory to that, another respondent said that she actually cultivates anything, because first of all she and her family eat anything and second because the experiences from the past do not seem to give guaranties for the future.
Respondent 7: *"I'm not going to put cauliflower in the garden when I know that it will be eaten by caterpillars."*
Respondent 10: *"The funny thing is that, one year the one thing works out really well and the other year the other works out really well."*

Experimenting
Experimenting with new crops was mentioned several times as well. The 'fun' element is important here. Each of the gardeners really seemed to enjoy the activity of gardening, but four of them explicitly stated in the interview that their choice for cultivating or shopping is dependent on experimenting with new varieties of crops.
Respondent 5: *"We have relatively many gardeners of other cultures at our association, and they have other things in their garden. And then you think, oh I'm going to try that too. So it is more from hearing, of others, and seeing in each other's garden."*

Diversity/rare varieties
A bit related to experimenting with new (varieties of) crops, is the theme diversity/rare varieties. Two gardeners mentioned that they specifically choose for special or rare varieties of vegetables and fruits because of their special characteristics and/or because their availability in supermarkets or shops is low.
Respondent 8: *"For potatoes I only have special varieties that colour nicely in salads or are extra tasty. Next to that I buy the normal organic potatoes."*
Respondent 3: *"I would for example never plant an Elstar, because they are available throughout the whole year."*

Failure (in that specific year)
Two gardeners mentioned failure of crops as a reason for buying or not buying fruits and vegetables in the supermarket. They said that sometimes they intend to grow a certain type of fruit or vegetable in the allotment, but it does not work out due to weather circumstances or it is eaten by birds, mice or snails. In that case they will buy it in the supermarket.

Combination cultivation
Another factor that was mentioned by one gardener was combination cultivation. She mentioned that her choice also depends on which crops can be combined with each other in the allotment. Some gardeners apply a principle of this, as some crops would have a positive or negative influence on each other when you place them next to each other.

4.5.2 Considerations regarding shopping

During the interviews the main considerations regarding shopping that play a role for the respondents have

been discussed briefly. I will group the considerations below in 'choices between stores' and 'choices within stores', linking to the study of Jackson et al. (2006) described in 2.1. As the results showed direct linkages triangle of Belasco (2008), I will discuss those as well.

Choices between stores

For choices between stores, an important factor amongst the respondents is convenience. Five of the respondents mentioned that their choice for where to buy groceries mostly depends on convenience in the sense of the shop that is closest by or where they can buy everything they need in once. The Hello Fresh as a food source is also related to convenience, as the recipes and ingredients are delivered to your doorstep.

Respondent 9: *"Albert Heijn is the closest supermarket from here. I'm not going to walk by all the stores, I find that a waste of my time."*

The factor 'price' belongs to considerations of convenience when using Belasco's theory. For their choices between stores, this can be a decisive factor for respondents. Two respondents mentioned choosing to go to supermarket Lidl or Jumbo instead of Albert Heijn because the vegetables there are cheaper.

For others, considerations regarding convenience are more on the background. Three respondents stated that they would still go to a shop that is further away. It seems that considerations regarding identity or responsibility have greater priority for them.
Respondent 2: *"Since two years we have a health food store here. I am happy with that. Now I don't have to go to the centre anymore."*
Respondent 8: *"The health food store is not that far away. But I very consciously choose to go there. I find it important that I don't take in chemical residues and I find it important that what I eat grows on soil that is treated with respect."*

One respondent mentioned that he wants to support the local middle class, a Turkish greengrocer in his neighbourhood, so he gets part of his groceries there. This seems related to considerations of responsibility, as it relates to divisions of power.

Choices within stores

Some topics came back repeatedly during the interviews regarding choices within stores. One of them was 'price', and was mostly mentioned in relation to buying organic fruits and vegetables or not, as non-organic is usually the cheaper variant. Some respondents do not buy organic fruits and vegetables because they find them too expensive, others sometimes choose to buy them, and three respondents expressed that they (almost) always buy organic fruits and vegetables.
Respondent 1 explains: *"On the one hand I find it important how we handle our food and the environment, but I let myself retain by the price now and then."*
Respondent 9: *"It may differ a bit, but when it is twice as expensive or something like that, then it becomes too much for me."*

Several respondents expressed that they don't feel like buying (everything) organic, because they trust the regulations in regular agriculture, or because they already eat organic fruits and vegetables from their allotment a large part of the year.

The second topic that was mentioned several times was the origin of the fruits and vegetables. Five respondents expressed a sense of eating local (or European) produce.
Respondent 6: *"Well, where I do look at are flown in vegetables, I prefer not to do that."*
Respondent 2: *"Then there are green beans from Egypt and then I think, well, I won't buy that. I want to eat as much as possible from the Netherlands."*

The considerations regarding buying organic food and buying local produce relate to considerations of responsibility as they express awareness of one's position in the food chain. I also heard some considerations related to identity, for example a gardener mentioning that she always buys bananas because her sons really like to eat them. This is related to taste and to family. Another gardener mentioned that she chooses to buy grapes and chicory in the supermarket, which are not in her allotment, but she just enjoys the taste of those crops.

Furthermore, when looking at the consumer diaries and the interviews, some points can be noticed about respondents' shopping behaviour for fruits and vegetables in order to feed their household. When complementing the self-cultivated foods with shopping, the respondents mostly bought: exotic fruits and vegetables that cannot be cultivated in the allotment because of the climate, such as bananas and peaches; fruits and vegetables that could be grown but are not very convenient to grow yourself because of e.g. big time investment compared to the end product, relative big chance of "failure" or because the type of soil does not really make it easy, such as spinach and carrots; "convenience products" like packaged pre-cut vegetables that are ready to use; products that could not be harvested yet, such as apples; or products of which the harvest was simply not sufficient to fully feed the household.

4.6 Use of the harvest

4.6.1 Part of the production being harvested

During the interviews I asked the gardeners whether they harvest everything that can be harvested from their plots. All gardeners except one said that they aim to harvest everything that can be harvested, as they find it would be a waste to let it go bad on the field. One respondent said that she does not harvest everything. Sometimes she forgets things or she does not have time. This does not mean though that the harvest is less important to her than for other respondents; 83% of fruits and vegetables in her consumer diary originated from the allotment.
When sowing or planting, the respondents count in that part of the crops will be eaten by snails, insects, birds or rats, or will fail because of the weather or disease. They told that it is impossible to exactly know in advance what the outcome in terms of harvest will be. For most gardeners this does not seem to bother them a lot though (apart from a few glimpses of frustration), it seems to have a certain charm, or at least it keeps the gardening exciting to them. This makes sense as they are not dependent on the food from the allotment for their and their families' subsistence.

Respondent 6: *"And what I also really like is that the one year the production is so different from the other year, while I do the same actions."*

Respondent 9: *"It seems a lot of fun gardening, but it is a really a fight haha. At eight in the morning I am already catching snails."*

4.6.2 Consumption: fresh, conserving, giving away, etc.

For most respondents holds that the biggest part of their harvest is consumed freshly within their own household. They stated this in the interviews and it also became visible in the consumer diaries. They also store some of the harvest (in their basement), such as potatoes, onions, garlic, beets, pumpkins and apples for making apple sauce.
Eight of the eleven respondents mentioned making jam of their fruits, which can be jam of e.g. strawberries, prunes or blackberries, but also of pears. One respondent told that she makes a lot of jam of pears that fall on the ground on the communal plot of the allotment association. This jam is for own consumption, for giving away and for selling on a 'homemade market' that is hold once a year in the city.

Respondent 11: *"It is a lot of work, but you get tasty jam and everyone finds it tasty so that is nice to hear as well. And besides that, I just find it a waste when those pears remain lying there."*

About freezing fruits and vegetables, the opinions are divided. Most respondents like to store part of their harvest in their freezer, in order to be able to eat from it during wintertime. A few respondents mentioned that they do not really like to freeze their fruits and vegetables, as they like it better when it is fresh.

Respondent 2: *"I don't put them in the freezer, no, I don't really like that, then the power goes off a bit I think."*

Other preserving techniques mentioned were: making chutney, drying (of herbs), canning, and making juice. Two respondents mentioned fermenting: making sauerkraut and making brandy (of medlars). Therefore it seems that the respondents have the needed competences for using their harvest well, or were keen on learning them.

When the harvest is too much for their own household, the respondents think of other destinations for it. They give it away to family, friends, neighbours or other gardeners (the latter is sometimes also an exchange). One gardener mentioned giving lettuce to her chickens, which are in her home garden. Two gardeners have friends or family who own a restaurant, and sometimes bring surpluses or special varieties to the restaurant, such as beets, prunes, quinces and medlars. As thanks, they can sometimes go there for dinner at a bit of a discount. One of them also sometimes brings surpluses to the Turkish greengrocer in his neighbourhood. One gardener said that his grandchild likes to 'play shop', selling some bean surpluses. Also, two respondents said that in the past they have brought some surpluses to the Foodbank, and would still want to do so. Lastly, one of the respondents sometimes uses social media for selling pumpkins. Considerations regarding responsibility on a small scale are involved here. On a local scale, several respondents expressed that they do not want food to go to waste or they want to give it to people who are in need of it. From this study it does not get clear whether, next to trying to use the surpluses well, there would also be other reasons for the respondents to bring the food 'in circulation', such as earning a bit of money, or fostering social bonds.

5. Discussion and conclusion

In this chapter I will reflect on my results and broaden the topic again, putting the results in the light of the bigger picture that I described in the introduction and theoretical framework. Next to that, I will reflect on the methods of this study, give recommendations for future research and present a brief conclusion.

The aim of this study was to find out about the food function of allotments for Dutch allotment gardeners, with the following main research question to answer:
What is the role of allotments' food function for gardeners in the Netherlands and how does this shape their household food provisioning practices?

The results of this study contribute to knowledge about the role of the allotment garden in household food supply in the Netherlands and therefore also in the global North. As a frame to analyse the results, I used the theory on food choices of Belasco (2008) and social practice theory, described in chapter 2. I aimed to contribute to the use of these theories by applying it to my data.

5.1 Reflections on motivations for gardening and on food production

Investigating the motivations of the respondents for gardening and food production has given insight into the meaning of these practices for them. First of all, I noticed that my respondents were very passionate about their allotment gardens and their activities, and really liked to tell me about it. Gardening is clearly a big hobby for them. The food function of the allotment is important for the gardeners, as it gives them activity in the garden: for retired people as a nice, peaceful (social) daytime activity, for working people as relaxation next to their job. Next to that they value the food function of the allotment as it gives them access to fresh, organic and tasty food. The hobby aspect is still involved here, as some of the gardeners specifically like to grow special varieties of fruits or vegetables. Related to social practice theory, it became clear that for some respondents gardening or food growing did not really feel like a deliberate choice, but was more of a routinized type of behaviour which had its origin in their childhood or early adulthood.

The motivations of the gardeners in my study show many similarities with previous research outcomes. As I have shown in figure 2 in chapter 2, Pourias, Aubry & Duchemin (2016) found different motivations for allotment gardening in Paris and Montreal, which very much can be linked to the motivations that I found among my respondents for gardening and for food cultivation. It seems though that the order of importance of motivations is different amongst my study population. For their study population, Pourias, Aubry & Duchemin found that food production is the main motivation for participating in gardening activities. In my study population the respondents put most emphasis on liking the activity of gardening. Veen (2015) also found in her study of several gardens that for a certain community gardening project in the Netherlands, motivations for participating mainly related to gardening as a hobby (p. 75).

The motivation of finding relaxation or relieving stress in a natural environment is well explained in the literature. For example the theory of Kaplan & Kaplan (1989) says that looking at natural objects does not require directed attention and therefore it allows to restore. This theory explains the relaxation function of gardening, which was also adopted in the model of multifunctional agriculture that I used in my introduction.

Regarding the food production in the allotments, all respondents harvested food from their allotment as this was a condition to participate in the study, but as was shown in paragraph 4.3, the amount varied per respondent. It became clear that for this study population the harvest from the allotments plays a significant role in the household food supply, ranging from 45 until 90% for the month of data collection, with an average of 62%. The respondents also stated that they use several preservation methods, so the harvest still plays a role

during wintertime, and some of the respondents continued growing a few crops during wintertime as well. Comparing with the study population of Sovová (2015) in Czech Republic, respondents got on average 46% of their households' fruits and vegetables from their allotment. This means that the Dutch gardeners obtained more from their allotments percentage wise. This comparison is not totally fair though, as the data collection period for the study in Czech Republic was six months. It is plausible that the percentage would be lower for my study population as well when the data collection period would take six months, as at the beginning and at the end of the harvest season a bit less food will be ready to harvest yet. Next to that, it can make a difference which type of vegetables or fruits can be harvesting during a specific month and which ones are being bought. For example, pears were included in my data, which weigh quite heavy. When collecting data in a month that pears cannot be harvested yet, but for instance only different types of berries, there could be a difference in outcomes when gardeners would buy pears in a store.

The differences between the amounts per respondent can depend on various factors together: the size of the plot, the lay-out/use of the plot (food, grass, ornamentals, etc.), the type of motivations of the gardener, household size (though not in all cases), and the type of crops that the gardener grows (the one crop weighs more than the other).

5.2 Reflections on growing or buying

Different considerations played a role when making choices for which crops to cultivate in the allotment and which to buy, and where to buy them. The theory of Belasco about food choices could be linked well to the findings.
As I wrote in chapter 2, Belasco describes in his book (2008) that the triangle of food choices is mostly not equilateral: considerations regarding identity and convenience mostly play a bigger than considerations regarding responsibility. Indeed, I found that convenience and identity have an important role, for example when respondents mostly grow crops that are relatively easy to cultivate and grow what they and their family like to eat. However, most respondents also expressed matters related to responsibility as well. Some respondents stated that they buy as much organic as they can, and will go a bit of a longer distance for a store that fits their beliefs. Other respondents expressed considerations regarding responsibility, but in the end other factors such as price weighs more for them and determines their choices. It is interesting though to hear about people's doubts and thoughts, thinking about where to put their priorities. I got the impression that amongst this study population, considerations regarding responsibility might actually be equilateral to the ones regarding convenience and identity. This can be explained by the fact that the respondents are not just consumers; they are also producers of food. For that reason their awareness about the food production and related processes is likely to be higher than for the average consumer.
Concerning responsibility considerations, several of my respondents expressed that they prefer not to buy vegetables that are flown in, like beans from Egypt. I found some related quotes in the thesis of Veen (2015), where respondents expressed this as well. One of them for example said: *"I feel that one should eat with the seasons. So that is what determines my meal. Beans from Egypt and so on, I don't think that's such a good idea" (*p.77).

When looking at the results of my study when it comes to food choices, I think it would be interesting to make a comparison between gardeners and non-gardeners on this topic. In that case a clearer answer could be given to whether gardeners truly base their food choices more on considerations of responsibility than non-gardeners. Questions to answer would be: What is the influence of having an allotment and/or cultivating food on the food choices that people make? Does cultivating food have an influence on considerations regarding responsibility?

From the data of both the interviews and the consumer diaries, it seemed that there were two types of

gardeners: the one type who mostly chooses to grow crops in the garden that are easy or doable, and the other type who actually chooses to grow special crops that sometimes take a bit more effort to grow. This type of choice can be linked to food choices within the allotment garden, in which considerations of identity, convenience and responsibility play a role as well. For example, for the one gardener convenience in the sense of ease of cultivation is of big importance, and for the other gardener identity in the sense of wanting that certain taste of the fresh self-cultivated crop is of bigger importance than the effort that needs to be put in growing it.

5.3 Reflections on the methods, limitations and recommendations for future research

During the process of executing this study, and mostly during processing the data that has been collected, some matters popped up that I would recommend to do differently in future research. The internal and external validity of the study could be improved by taking these matters into account. The points are being summed up below.

5.3.1 Study population

Firstly, I would want to emphasize again that the study population was very small with eleven respondents. This research should therefore be seen as mainly qualitative, even though I used a quantitative method as well. It should also be kept in mind that the study population was not composed to be a reflection of the gardener population in the Netherlands or in Utrecht. The results should therefore be seen within their context: they only hold for my study population, and I cannot say whether they could be extrapolated to other groups.
The respondents voluntarily signed up for the research after reading or hearing about the call. It is likely that those gardeners have a specific interest in the topic of food production in allotments, probably more than the average allotment gardener in Utrecht. As I have already written in chapter 4.1, the average age of my study population seems to be higher than the average age of the Utrecht allotment gardener. A tip that I subsequently got from the chairwoman of the OVU (the consultative body of allotment associations in Utrecht) for getting a more representative/ diverse study population, was to recruit gardeners on Saturdays at the allotment gardening associations. Saturday would be the day that most gardeners are present there, also the younger ones. My visits at allotment associations were during week days, and usually there were not many people present. I spoke to a few, but most of them were not able to participate in the research. As I wanted to reach a bigger public, I chose to send around emails, which worked out well in terms of reactions that I got. For getting a (more or less) representative sample of the Utrecht gardener population though, I would recommend trying out the Saturday visits at the associations.

5.3.2 Consumer diaries

The consumer diaries were a nice method to work with. The respondents seemed to like to work with it and filled it in accurately. I noticed that it is important to be sure that the respondents know how you want it to be used. Apparently there was a little bit of confusion about it, or at least the format could be understood in different ways. The intention was to collect data per harvesting/shopping moment, but some respondents filled in per day what was consumed within the household, because of the boxes showing each week day. Methodologically it would have been more valid when all consumer diaries would have been filled in the same way, though it did probably not give big differences in the data. It was a first time to use this method in the Netherlands, and for further use I would recommend to make a few improvements. I found a format in the article of Pourias, Duchemin & Aubry (2015), which was used in France and seems to have worked out well. I only found this format after I had started my data collection, as I experienced some time pressure for starting this quickly, as the harvest season almost came to an end. I would recommend considering to use the format the format of Pourias, Duchemin & Aubry, or to make the best out of the two.

For future research I would also recommend to let respondents fill in the weights of the fruits and vegetables

themselves as much as they can. They can use a kitchen scale or scale, depending on the products and amounts. It took me quite some work to find out the (average) weights of fruits, vegetables and herbs, in order to make estimations of the weight of the products that the gardeners harvested. Next to that, it is more accurate when respondents weigh the harvest by themselves. There was a reason though why I chose not to obligate them: I was a bit afraid that it would feel as too much effort for potential respondents and that they might renounce to participate. I think it could be asked though, and probably they would not mind to do so.

Because of time restrictions I let the respondents fill in the consumer diary for one month. Gathering data from a whole gardening season would give more information of course. Besides that, the harvest also depends on the specific year, as there is much influence of weather circumstances. So in case a researcher is much interested in the quantitative data as well, I would recommend executing a study with a wider time span.

A note can be made about the use of 'weight' as an indicator for finding out the division between fruits and vegetables from the allotment and from other sources. The weight does not say everything about the share of harvest from the allotment garden in the household. For example, a potato is heavy compared to herbs and certain vegetables. A person could use a lot of herbs that are self-cultivated, but buy his potatoes in a shop. One could also look at how many times a person harvests a certain crop from the allotment. Though in this case, as I described a few paragraphs above, not all respondents wrote down their yield per harvest moment; some respondents wrote down per day what was consumed. So in this particular case it was most efficient to use the weights as an indicator.

5.3.3 Interviews

The interviews were semi-structured. The topics and questions were set up in advance, but there was space to ask more questions and to get deeper into the matters that respondents came up with. I attempted to ask as many open questions as I could, in order to let the respondent talk freely. A limitation here could be that I was the only person who took the interviews, and for that reason there is a chance of interviewer bias. Also I was the only person who performed the analysis of the interview data. My own frame of reference and my interviewing and coding skills have an influence here on the data collection and on the analysis; the interpretation could be done differently by another person. I tried to reduce bias here by using literature and by discussing my findings and writings regularly with my supervisors.
Regarding the content of the interviews, I think it would be complementary for future research to ask gardeners specifically whether they think that cultivating food in the allotment influences their shopping behaviour, and also their diet. In my interview this question was not asked so directly, but I think it would give more information on how the gardeners feel about this topic.

I did not perform observations in the allotment gardens, although I did see some of the plots during the interviews. In order to get a more complete view of the data, it would have been a possibility to do observations in all the allotments. This could have given me more information and an overview of the surface that is being used for vegetables, fruit, herbs, flowers etc. I asked the respondents in the interview how they use their plot, but I think seeing it, and taking some pictures could have been complementary to the data.

5.4 Conclusion

This was a first attempt to investigate the food function of allotment gardens for households in the Netherlands, using a participatory research method in the form of a consumer diary. During the data collection period of one month, the allotment played a major role in the household food supply for fruits and vegetables of the respondents, with a share of on average 62%. It still plays a role outside the harvest season as the respondents stated that they use conservation methods like storing, freezing and making jams. The exact share of the allotment in food supply depends on different factors such as the size of the plot and motivations of the

gardener. For the respondents gardening was mostly a hobby or a passion, with every gardener having his/her own way of gardening, specializations, joys etc. The one really likes to grow rare/special varieties of vegetables or fruits, the other likes to grow herbs, and another likes to provide himself with stock of self-cultivated potatoes and garlic. One thing is for sure: all respondents experience joy and/or relaxation in the gardening activities and that is their main motivation for performing the practice. The food function of the allotment shapes the respondents' food provisioning practices in the sense that they consciously think about their choices for what to grow in the allotment, taking into account the possibilities that they have. They complement the harvest for their household, taking into account what self-cultivated foods they already have. The aim is to use the harvest well, and when having surpluses, the respondents looked for ways to make those being used as well. From the results it seems that responsible consumption is being raised by food cultivation in allotment gardens, as respondents expressed more considerations regarding responsibility for their food choices than one would expect from the theory on food choices of Belasco.

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Appendix 1: Call for respondents via email and information letter

Beste meneer/mevrouw,

Op korte termijn ben ik voor mijn masterscriptie op zoek naar tuinders die willen meewerken aan een onderzoek naar het gebruik van de hedendaagse volkstuin, en dan met name de rol van voedselproductie in de tuin. Het lijkt me erg leuk om een aantal tuinders van (naam vereniging) in het onderzoek te betrekken. Zou u bereid zijn mijn bericht te verspreiden onder de tuinders van (naam vereniging)? Of hebt u een idee wie hierin geïnteresseerd zou zijn en met wie ik persoonlijk contact zou kunnen opnemen voor deelname? Ik hoop van u te horen. Alvast bedankt!

De oproep in het kort:

Gezocht: tuinders die willen meewerken aan een wetenschappelijk onderzoek

Ik ben op zoek naar:

- mannen en vrouwen die in het bezit zijn van een volkstuin
- die voedsel verbouwen in hun tuin (veel of weinig, iedereen is welkom om deel te nemen!)
- die in aug/sept 1 maand willen bijhouden wat zij oogsten uit de tuin en hoe zij dit aanvullen voor hun huishouden via andere kanalen (het is niet erg als de weken niet aansluitend zijn, i.v.m. bijvoorbeeld vakantie)
- die bereid zijn mee te werken aan een interview van 30-60 minuten

Voor uzelf levert dit ook iets op. U krijgt namelijk inzichtelijk hoeveel u verbouwt in uw tuin en hoe dit in verhouding staat tot andere manieren van voedsel verkrijgen. Als dank voor deelname is er ook een presentje.

In de bijlage kunt u uitgebreidere informatie vinden over het onderzoek. Bij interesse in deelname of bij vragen zie ik uw email of telefoontje tegemoet!

Met vriendelijke groet,

Kylie Totté
kylie.totte@wur.nl
06…

Beste tuinders,

Wij, Esther Veen, Lucie Sovova en Kylie Totté, zijn verbonden aan Wageningen University, en doen onderzoek naar de mate waarin mensen van hun volkstuinen eten. We zijn vooral geïnteresseerd in de rol van zelfverbouwd voedsel in stedelijke huishoudens. Daarom willen we graag onderzoeken hoeveel groente en fruit mensen verbouwen, en hoeveel dat is in vergelijking tot de hoeveelheid groente en fruit die mensen kopen (of op andere manieren verwerven). Ook willen we graag weten of mensen groente en fruit krijgen van, of geven aan, familie en vrienden. Tenslotte willen we onderzoeken wat bepaalt welke 'strategieën' mensen gebruiken om aan voedsel te komen: waarom besluiten mensen bepaalde producten te verbouwen maar andere te kopen?

Bij deze nodigen we u van harte uit om deel te nemen aan dit onderzoek

Wat houdt deelname in?

Om te bepalen hoeveel groente en fruit mensen van hun tuin eten, en hoe dat zich verhoudt tot de andere kanalen die mensen gebruiken voor het verkrijgen van groente en fruit, gebruiken we *voedseldagboeken*. Dat betekent dat u een boekje of schema zult krijgen waarin u alle groenten en fruit die uw huishouden 'binnen komen' kunt noteren – het gaat dan dus om groenten en fruit van de tuin, van de supermarkt, of van waar dan ook. Het idee is dat u dit gedurende een maand doet, in de zomer (augustus/september). Daarnaast zouden we u graag interviewen. We bespreken dan de verschillende manieren waarop uw huishouden aan groente en fruit komt. Het interview zal een half uur tot een uur duren. Kylie zal de interviews gaan afnemen. We zijn op zoek naar een diverse groep mensen: het maakt daarom niet uit hoeveel groenten en fruit u verbouwt, en u heeft geen specifieke kennis nodig.

Wat levert het op?

Doel van het onderzoek is meer te weten te komen over de rol van (volks-)tuinieren als manier om aan voedsel te komen. Uw deelname zou ons daar erg bij helpen! Daarnaast krijgt u inzichtelijk hoeveel u eigenlijk verbouwt, en hoeveel dat is in vergelijking met de groenten en fruit die u koopt. Vanzelfsprekend delen we ook onze resultaten met u.

Als u wilt meewerken, of als u vragen heeft, neemt u dan alstublieft contact op met bij voorkeur Kylie.

We wensen u vele mooie en vruchtbare momenten toe in uw tuin!

Kylie Totté (kylie.totte@wur.nl)

Lucie Sovova (sovova@mail.muni.cz)

Esther Veen (esther.veen@wur.nl)

Appendix 2: Informed consent

Toestemmingsverklaring tuindersonderzoek Wageningen Universiteit

(informed consent)

Beste deelnemer,

Dankuwel voor uw interesse in het onderzoek 'voedselvoorziening door volkstuinders in Nederland'. Graag vragen wij uw deelname, om op die manier informatie in te winnen over het verbouwen van voedsel in volkstuinen in Nederland en de rol van dit voedsel in het huishouden. Hiervoor stemt u in met beschikbaarheid voor een interview van 30-60 minuten en het bijhouden van een zogenaamd voedseldagboek gedurende een periode van vier weken.

Uw gegevens zullen anoniem en vertrouwelijk behandeld worden en enkel op die manier kenbaar worden gemaakt aan derden. We zullen uw naam dus niet vernoemen in verslagen en presentaties. Geluidsopnames, foto's en video's zullen enkel gebruikt worden voor wetenschappelijke analyse.

U stemt d.m.v. deze verklaring in met vrijwillige deelname aan het onderzoek (afgezien van de cadeaubon ter waarde van €20,- die u zult ontvangen aan het einde van het onderzoek). U heeft het recht om op elk moment zonder opgaaf van reden uw deelname aan het onderzoek te beëindigen.

De betrokken onderzoeker zal uw resterende vragen omtrent het onderzoek naar vermogen beantwoorden.

Bij voorbaat bedankt voor uw tijd en moeite!

Naam deelnemer:
Datum:
Handtekening:

Naam onderzoeker:
Datum:
Handtekening:

Appendix 3: Format consumer diary

Voedseldagboek tuindersonderzoek

Instructies voor het invullen

Beste deelnemer,

In het onderstaande schema kunt u de gegevens voor het tuindersonderzoek bijhouden. Wij vragen u om vier weken lang bij te houden wat er binnenkomt aan groenten en fruit in uw huishouden. Zowel van uw tuin als via andere wegen. Zo kunnen we achterhalen welke rol de volkstuin speelt in de voedselvoorziening van het huishouden.

Aandachtspunten:

- Het gaat om het registreren van groenten en fruit. Ook aardappelen, uien en kruiden tellen wij hierbij mee.
- Het is niet erg als de weken onderbroken worden door een vakantie of uitstap, zolang u de gegevens in totaal vier weken lang bij houdt. Graag de onderbreking dan even met data aangeven in het schema.
- Vergeet alstublieft niet om ook de hoeveelheden te vermelden. Dit mag in gewicht zijn, maar in aantal stuks. Bijvoorbeeld:
  - 1 kg aardappelen, of:
  - 10 kleine aardappelen
- U hoeft niet bij te houden wat u buitenshuis eet, bijvoorbeeld in een restaurant of bij vrienden of familie.

Bij verdere vragen kunt u mailen naar kylie.totte@wur.nl of bellen naar 06….

Succes en bij voorbaat dank!

Vriendelijke groet,

Kylie Totté

Week nr:	**Soort groente of fruit**	**Hoeveel (in gewicht of aantal stuks)**	**Bron (volkstuin, supermarkt, markt, boer, gekregen, etc.)**	**Gebruik (eigen consumptie vers, conserveren, weggeven)**
Voorbeeld	- tomaten - sperziebonen	- 6 stuks - 300 gram	- buurtwinkel - tuin	- eigen consumptie - weggegeven
Maandag				
Dinsdag				
Woensdag				
Donderdag				
Vrijdag				

Zaterdag				
Zondag				

Appendix 4: Interview questions

De tuin

- Sinds wanneer bent u in het bezit van de tuin?
- Deelt u de tuin met anderen? Zo ja, met hoeveel personen?
- Hoe groot is uw tuin?
- Welk deel van de tuin gebruikt u voor voedselproductie?
- Waarom heeft u een volkstuin?
- Wat heeft u doen besluiten om voedsel te verbouwen in uw tuin? En waarvoor gebruikt u de tuin nog meer?
- Wat verbouwt u zoal in uw tuin? Is hetgeen u momenteel in de tuin verbouwt representatief voor wat u normaal gesproken zo ongeveer verbouwt?
- Gedurende welke periode in het jaar verbouwt u groenten en fruit?
- Waarom kiest u ervoor om bepaalde groenten en fruit te verbouwen en andere te kopen?
- Heeft u en/of uw tuindersvereniging een bepaalde filosofie of regels bij het tuinieren? (bijv. biologisch, …) Wat vindt u daarvan?
- Oogst u alles van hetgene u verbouwt? Of gaat er ook een deel verloren? (bijv. door even niet actief te zijn in de tuin, of door beestjes) Zo ja, kunt u hier een inschatting van maken in een percentage?
- Wat doet u met groente en fruit die u oogst uit de tuin? -> eigen consumptie vers, eigen consumptie geconserveerd, weggeven, anders. Waarom?

Gebruik in het huishouden

- Hoeveel personen telt uw huishouden?
- Wie in uw huishouden haalt de boodschappen?
- Waar haalt u gewoonlijk uw boodschappen voor groenten en fruit? Hoe vaak doet u dit?
- Wat vindt u belangrijk bij de keuze voor waar u boodschappen haalt? (prijs, kwaliteit, herkomst voedsel, locatie van de winkel)
- Zijn er buiten de tuin en boodschappen ook andere manieren waarop groenten en fruit uw huishouden binnenkomen? (zoals het krijgen van voedsel)
- Kunt u een schatting maken van het percentage aan groente dat de komende maand van de tuin komt in uw huishouden? En hoe is dat bij fruit? (en in totaal?)
- Hoe staat dit percentage in verhouding tot andere maanden?

➔ Goed doorvragen naar beweegredenen, meningen, inzichten.

Algemeen

- Locatie van de tuin:
- Geslacht tuinder: m/v
- Leeftijd tuinder:
- Evt. beroep tuinder:

Appendix 5: Used weights for vegetables, fruits and herbs

Product	*Used weight (g)*
Fruits	
Apple	180
Banana	180
Bunch of grapes	175
Date	22
Fig	32
Grapefruit	220
Kiwi	110
Lemon	180
Lime	90
Minneola	150
Orange	180
Peach	150
Pear	225
Pineapple	1400
Plum	60
Vegetables	
Beet	150
Broccoli	500
Bunch onion	25-30
Bunch of carrots	920
Cabbage (spitskool)	650
Carrot	100
Cauliflower	900
Cherry tomato	10
Chicory red/white	130
Corn cob	225
Cucumber	400
Eggplant	300
Endive	400

Fennel	270
Garlic	1 clove = 3-5 1 bulb = 40
Herbs like mint, basil, thyme, etc.	± 3-4 grams per twig
Kohlrabi	250
Leek	200
Lettuce	iceberg lettuce: 520 cabbage lettuce: 335
Mini cucumber	70
Onion	130
Paprika	200
Patisson	500
Pointed paprika	150
Potato	Small: 85 Big: 145 Average: 115
Pumpkin	1000
Radish	12
Red pepper	17
Rucola (a hand full)	30
Shallot	35
Sweet potato	180
Tomato	80/90
Zucchini	320

Appendix 6: Map of allotments in Utrecht

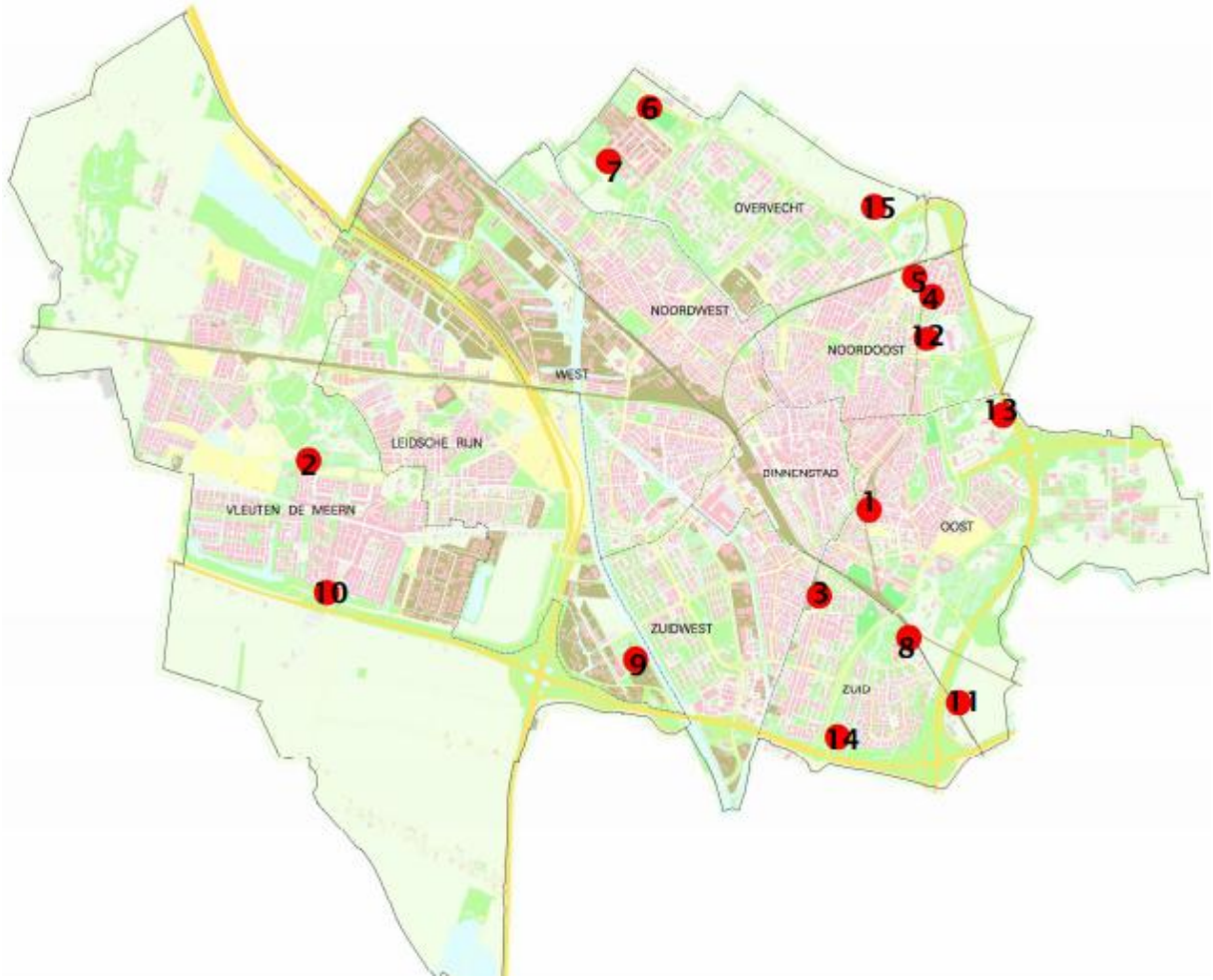


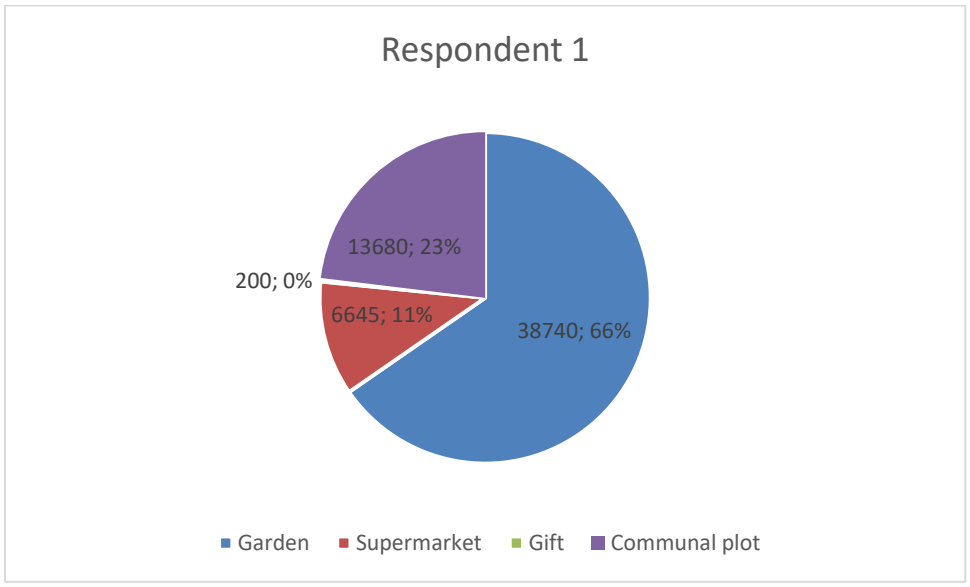
Figure 5: Map of allotments in Utrecht (Gemeente Utrecht [Utrecht municipality], 2012) [4]

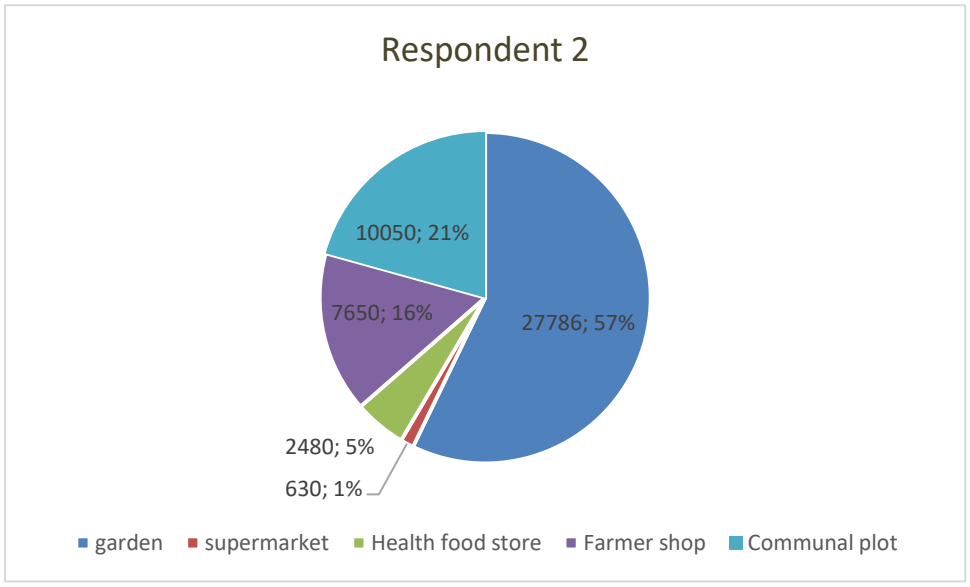
Legend

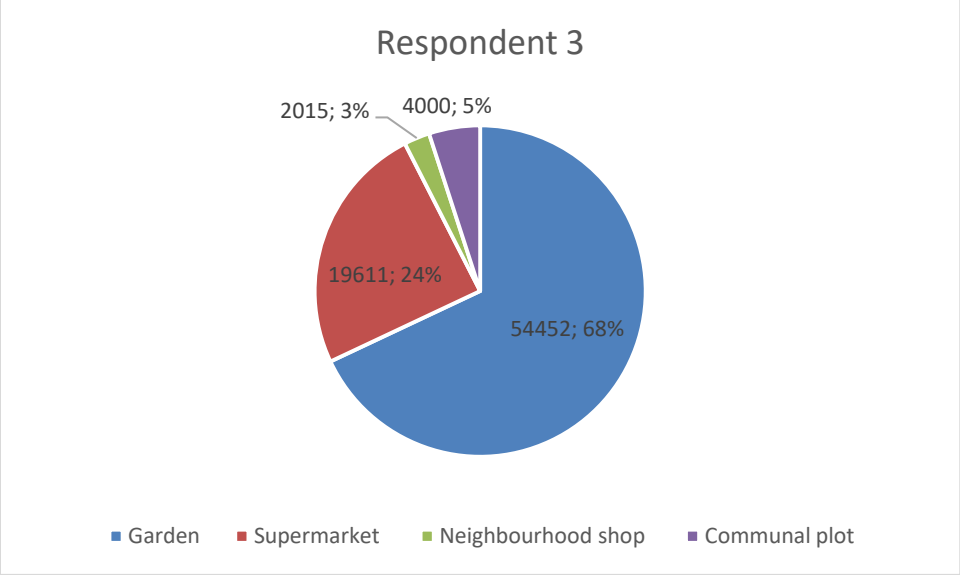
1. **Abstede**	60 allotments
2. Anders Bezig Zijn	25 allotments
3. Briljant	28 allotments
4. Ons Buiten	100 allotments
5. **De Driehoek**	137 allotments
6. Flora's Hof	74 allotments
7. Ons Genot	183 allotments
8. De Groene Lunet	73 allotments
9. De Hoge Weide	150 allotments
10. Nijevelt	46 allotments
11. **De Nijvere Pier**	67 allotments
12. De Pioniers	121 allotments
13. Stadion	140 allotments
14. **Utrecht Zuid**	151 allotments
15. De Doordouwers	100 allotments

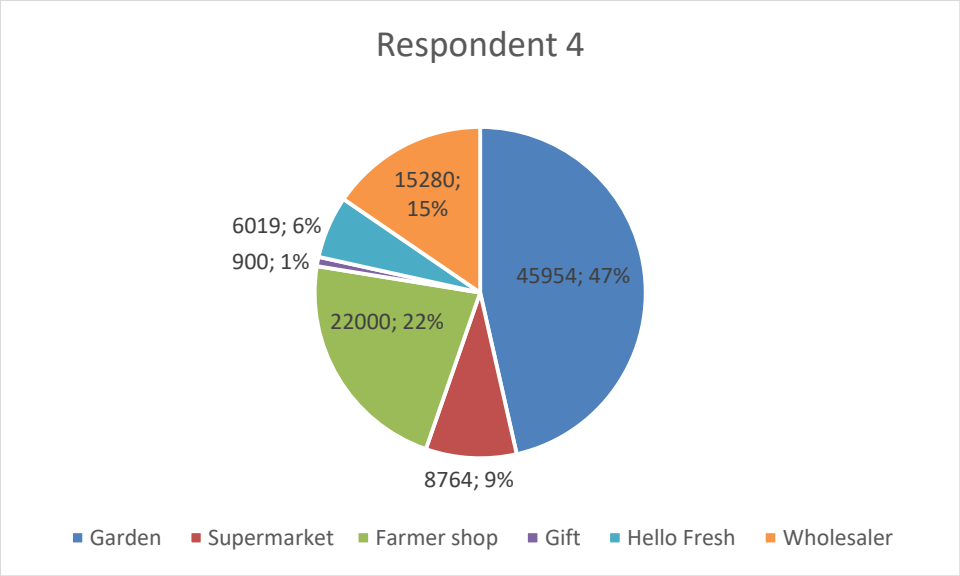
[4] In the meantime one new gardening association has been established: Himsmade in Leidsche Rijn (VAR NWS, 2017)

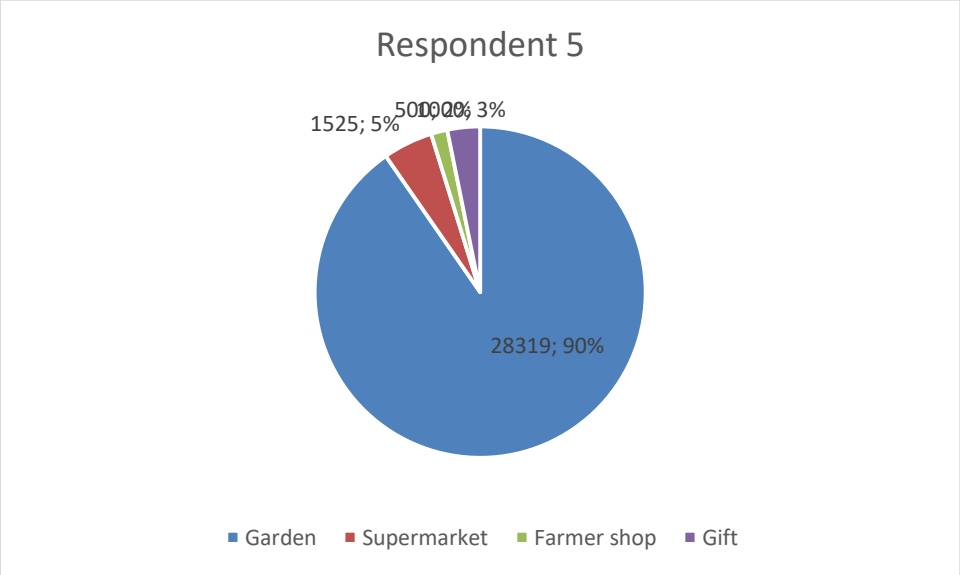
Appendix 7: Pie charts per respondent – expressing amounts (in grams) and sources

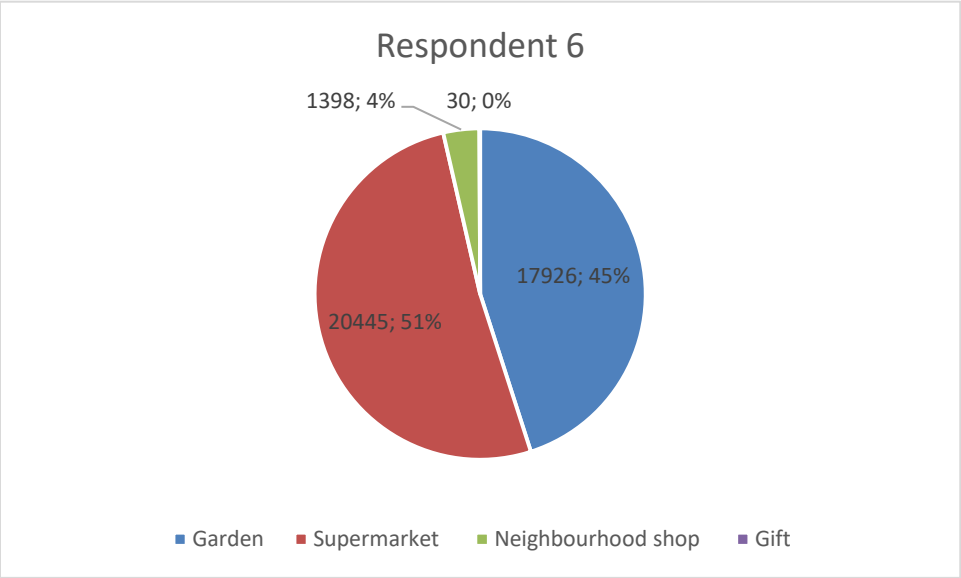


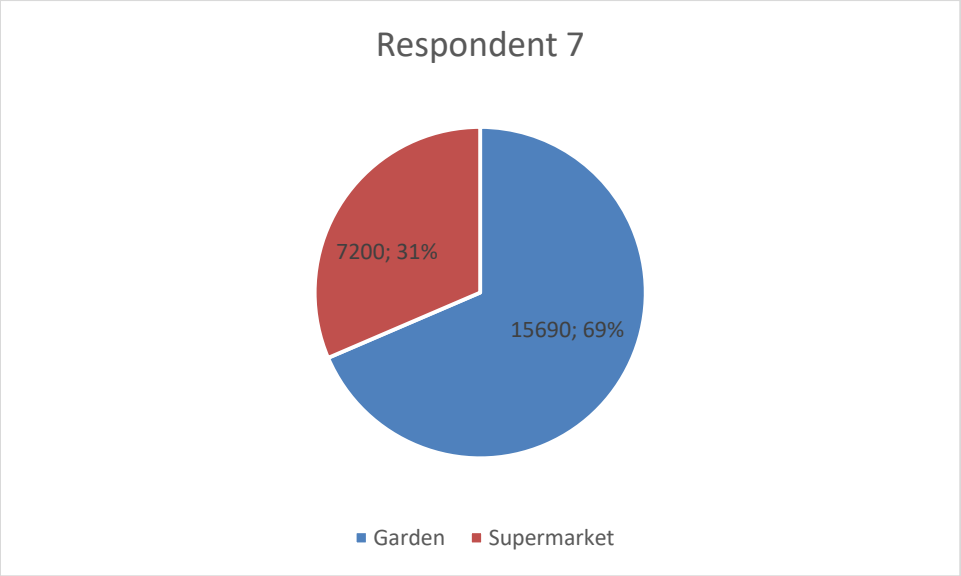


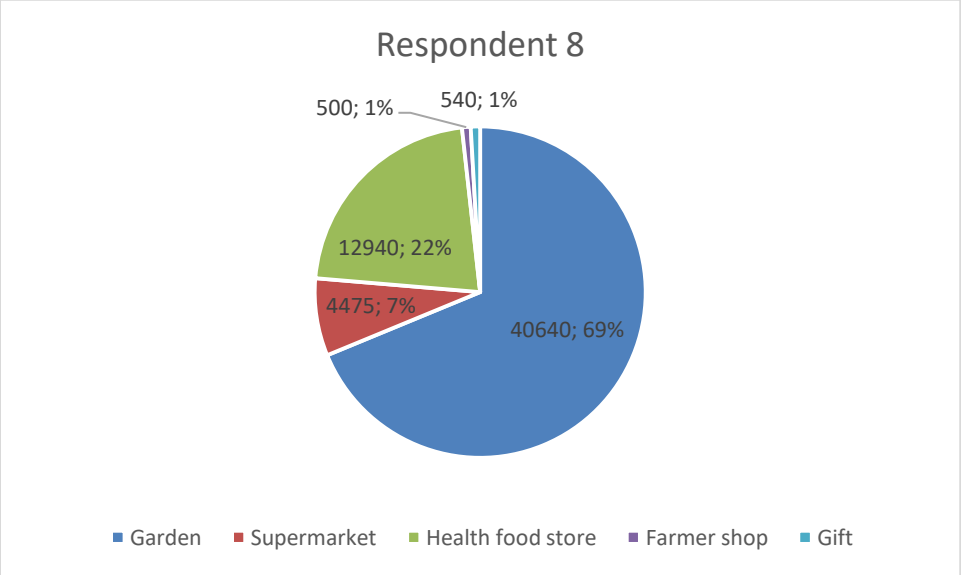

Respondent 3
2015; 3%
4000; 5%
19611; 24%
54452; 68%
Garden
Supermarket
Neighbourhood shop
Communal plot

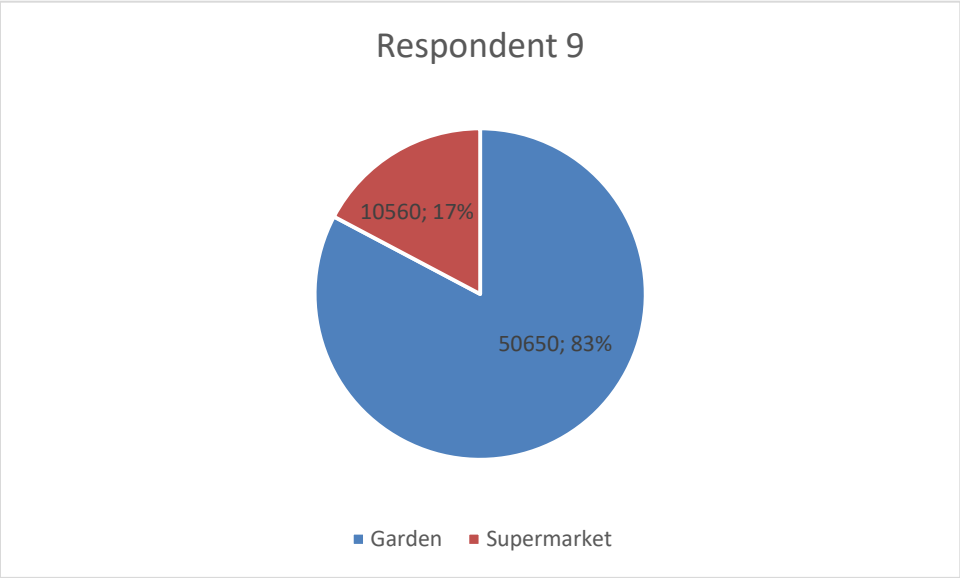

Respondent 4
15280; 15%
6019; 6%
900; 1%
45954; 47%
22000; 22%
8764; 9%
Garden
Supermarket
Farmer shop
Gift
Hello Fresh
Wholesaler

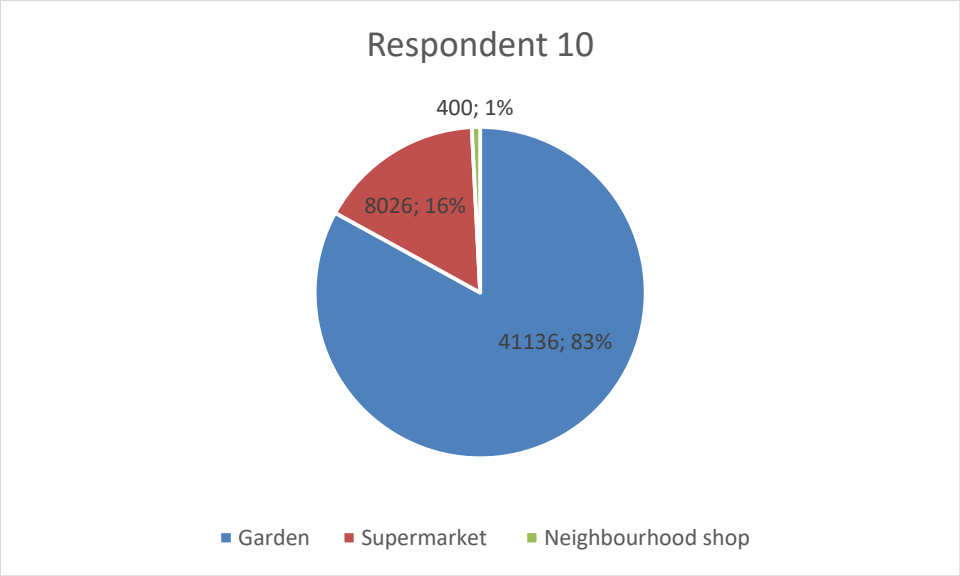

Respondent 5
1525; 5%
3%
28319; 90%
Garden
Supermarket
Farmer shop
Gift

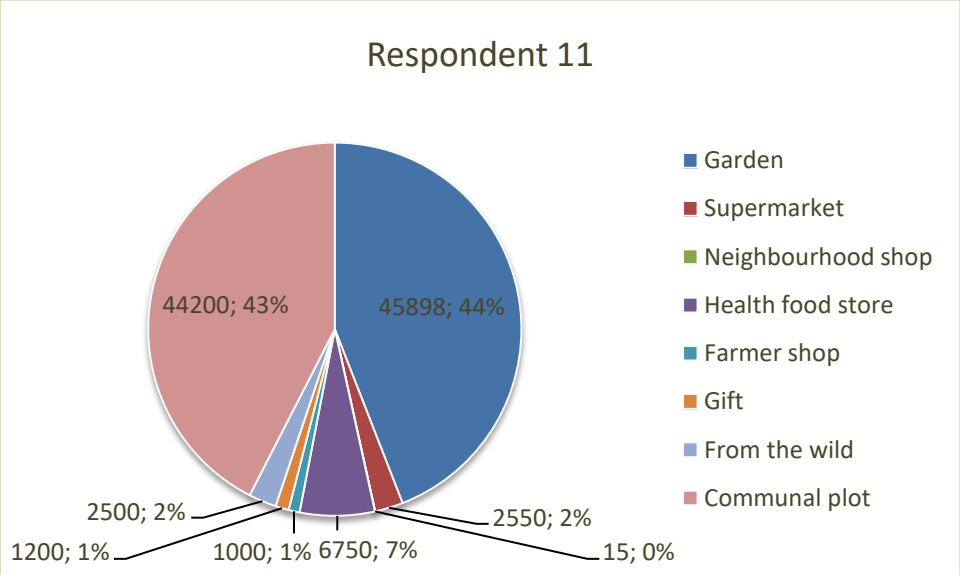

Respondent 6
1398; 4%
30; 0%
17926; 45%
20445; 51%
Garden
Supermarket
Neighbourhood shop
Gift


Respondent 7
7200; 31%
15690; 69%
Garden
Supermarket


Respondent 8
500; 1%
540; 1%
12940; 22%
4475; 7%
40640; 69%
Garden
Supermarket
Health food store
Farmer shop
Gift


Respondent 9
10560; 17%
50650; 83%
Garden
Supermarket


Respondent 10
400; 1%
8026; 16%
41136; 83%
Garden
Supermarket
Neighbourhood shop


Respondent 11
44200; 43%
45898; 44%
2500; 2%
1200; 1%
1000; 1%
6750; 7%
2550; 2%
15; 0%
Garden
Supermarket
Neighbourhood shop
Health food store
Farmer shop
Gift
From the wild
Communal plot