

THE ROLE OF URBANITES IN SUSTAINING URBAN AGRICULTURE:
A CASE STUDY OF SHANGHAI

A Thesis

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ABSTRACT

Urban agriculture has been raised as a strategy to cope with urban challenges in both the industrialized and the developing world under the global wave of sustainable development. In developing countries, urban agriculture is usually for pro-subsistent purposes, while in developed countries, it is more pro-recreational. Urban agriculture in China has both the two features. Meanwhile, the rapid development of cities has brought up many challenges impeding the sustainability of urban agriculture. Shanghai, as one of the largest cities and economic centers in China, has witnessed the most typical challenges facing urban agriculture, which includes decrease in agriculture population, income gap between agriculture households and non-agriculture households, farmland decrease, agriculture pollution and food safety as the major issues.

Previous studies have been focusing mainly on the above mentioned challenges especially from the stance of producers and policy makers. However, with increasing market demand for cultural and spiritual needs from urban agriculture, this study aims to describe the role of urbanites in sustaining urban agriculture by analyzing the different patterns of urbanites involvement in urban agriculture, thus providing policy implications for sustaining urban agriculture.

Qingpu, an important agriculture district in Shanghai Municipality has been chosen as a case study for this research. By identifying the patterns of urbanite involvement through interview survey to key informants, this study discusses the potentials and limitations in sustaining urban agriculture through urbanite involvements. Questionnaire survey has been conducted to a target group ranging from the 20s to the 60s, with the 30s to 40s as the majority, in the district center of the study area to identify the factors influencing different patterns of involvement as well as the geographic and demographic distribution. Combined

with policy review, implications are provided from the study to sustain urban agriculture in Shanghai. The framework proposed by this study can be replicated to capture the social phenomenon of urbanite involvement in urban agriculture in cities with different sizes of population or economic development levels. Studies can also be conducted with the same case over different periods to capture the chronological changes of such a phenomenon.

Two major patterns of urbanite involvement in urban agriculture, recreational involvement and farming involvement, have been discovered. It is estimated that more than two-thirds of the target group have been involved in urban agriculture for recreational on-farm activities, including harvest experience and restaurant services. Around 10% of the target population are involved in farming activities for self-consumption or for business. Both of the two patterns of involvement can address the challenges of agriculture pollution, income gap between agriculture household and non-agriculture household as well as the food safety issues, but cannot address the farmland decrease issue. Urbanite involvement in farming activities can also provide possible solutions for the labor shortage issue facing urban agriculture.

For the factors influencing urbanite involvement in urban agriculture, it can be inferred from the questionnaire result that urbanites who are interested in all types of agro-activities are those younger in age, having agriculture background or gardening habits, which can serve as criteria for the farmland transfer system when selecting successful bidders for farm or farmland management. Those people also tend to appreciate more the cultural and other values embedded in urban agriculture, while showing more concern towards the cultivation methods, which is an important factor for addressing the agriculture pollution and food safety issues in Shanghai. Results have also shown that with more frequent involvement of urbanites in agro-activities, more efficient information exchange on agro-products is possible, since those frequently involved tend to purchase their products directly through producers more often.

For the spatial distribution of different agro-activities, generally relations or connections based on kinship or friendship are always important factors for urbanites to get involved in urban agriculture. To be specific, harvest experiences are preferred in places either further away from downtown areas, or having specific agro-products. While eat-on-farm experiences are generally preferred in places close to residence. Since the observations of farming activities are rare, it is hard to generate other features apart from kinship or friendship connections.

With limited reported observations of public perspectives on sustainable urban agriculture, it can be inferred with cautiousness that food safety is a major concern among urbanites, along with concerns towards the agricultural environment protection. Institutional changes such as introducing better monitoring mechanisms might be needed for better urban agriculture management.

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LIST OF ABBREVIATIONS

CSA	Consumer Supported Agriculture
NGO	Non-Governmental Organization
NPO	Non-Profit Organization
IFOAM	International Federation of Organic Agriculture Movements
OFDC	Organic Food Development Center

LIST OF TERMS

yuan: this is the currency in China, also known as RMB. 1 *yuan* is approximately 0.16 US dollars, or about 16 Japanese *yen*.

mu: this is the Chinese measurement for area. 1 *mu* is approximately 1/15 hectares, or about 666.67 square meters.

Consumer supported agriculture: this is a form of contract between consumer and agro-product producers, where the consumer usually pays the producer on a seasonal or yearly basis for agro-products delivered by the producer on a regular basis.

Organic Food Development Center: this is a certification institute under the administration of China's State Environmental Protection Administration.

1 INTRODUCTION

Despite the long history of urban agriculture and its various origins in different parts of the world (Smit et al., 1996), it was only during recent decades that urban agriculture has been raised as a strategy to cope with urban challenges in both the industrialized and the developing world under the global wave of sustainable development (Bruntland, 1987). Many studies have been exploring its effect on urban poverty alleviation and income generation in the Global South (Battersby and Marshak, 2013), as well as community building in post-industrialized cities in the Global North (Armstrong, 2000).

1.1 Definition of urban agriculture

Mougeot (2000) defined urban agriculture as “an industry located within (intra-urban) or on the fringe (peri-urban) of a town, a city or a metropolis, which grows or raises, processes and distributes a diversity of food and non-food products, (re-)using largely human and material resources, products and services found in and around that urban area, and in turn supplying human and material resources, products and services largely to that urban area”; while Pearson et al. (2010) expanded the definition based on the ideas of Smit et al. (1996) as the “producer, processor and market for food, plant- and animal- sourced pharmaceuticals, fiber and fuel on land and water dispersed throughout the urban and peri-urban areas, usually applying intensive production methods” to include more stakeholders. Yokohari (2003) referred to urban agriculture in the context of Japan as “agro-activities” not only by “professional farmers”, but also “various activities related to agricultural and horticultural productions, such as poverty alleviation programs for poor urban residents, horti-therapy programs for patients with physical and/or mental disabilities, and gardening in allotment gardens and backyards by citizens”, which gives more meaning to the activity and also relates

urban agriculture to more contextualized functions.

Based on the above definitions, at least two commonalities can be generated:

- (1) The geographic location of urban agriculture has to be physically close to urban areas, either within or at the fringe of towns or cities; and
- (2) Interaction between urbanites and farm, farmers or farmland exists.

The first feature takes shape differently in different social contexts. For example, in North America, where the zoning system clearly differentiates urban from rural (Pryor, 1968), urban agriculture refers to agro-activities within the urban boundary, as shown in the green circles illustrated in Figure 1(a), usually on vacant lots or small-scale gardens (Lovell, 2010). In Japan, due to the historical mixture of land use, urban-rural boundary is hard to identify (Yokohari et al., 2000), and the physical pattern of urban agriculture can be illustrated in Figure 1(b). There can also be urban agriculture happening only at urban fringe, especially in the case of China, where the land ownership belongs to the government. The high potential for GDP generation from commercial or residential land use makes urban agriculture impossible within the urban boundary under the urban planning system, as shown in Figure 1(c). In many other cases, all situations co-exist, as long as urban agriculture is integrated into the ecological and economic systems of urban areas (Mougeot, 2000), which is something to be discussed in the second feature of urban agriculture.

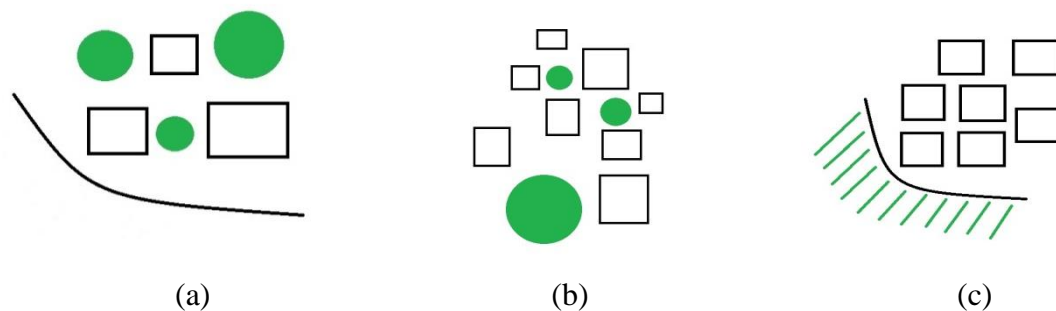


Figure 1: Illustration of different physical patterns of urban agriculture

The interaction between urbanites and the elements of agriculture is another important

feature of urban agriculture. The interactions can be (1) exchange of agro-products with cash, with or without direct contact between urbanites and farmers, (2) exchange of agro-services with cash, which includes mainly on-farm recreational services and (3) exchange of labor, where urbanites can perform as farmers.

However, such interactions are for pro-subsistent purposes in developing countries but pro-recreational in developed countries. The urban agriculture sees both in China, a country witnessing rapid economic transformation, which has huge impacts on agriculture activities and the emerging conflicts between urban and rural (Fan, 1990).

1.2 Urban agriculture in the context of China

1.2.1 Historical notion of urban agriculture in China

Agriculture has been inseparable from cities in the long history of China. The night soil generated from cities had been used to fertilize staples and crops on farmland outside the city walls, while the agro-products fed the urban population (Chen and Tang, 1999). The urban food self-sufficiency in China excelled until 1990s (Smit, 1996), reaching a peak during the central planning period from 1950s to 1970s, when collective agriculture production triggered tremendous growth in staple production mainly due to the increase in input, especially human labor (Fan, 1990). Such “close-to-city agriculture” was stressed mainly on its role in urban food security.

However, the later technological change and institutional reform had great impact on the overall agriculture landscape in China (Fan, 1990). Increased input of chemical fertilizer and pesticide, along with mechanization, substituted human labor in production, making it possible for labor to be released from farmland, while also reducing the use of organic compost from urban and rural organic waste. The labor mobility from agriculture sector did not become possible until 1978, when the market mechanism was introduced to replace the

central planning strategy. The Household Responsibility System introduced in 1978 allowed the previously rigidly categorized “agriculture population”, under the household registration system, to find other job opportunities in the city while maintaining their farmland as a source for food and income, directly causing the decrease of agriculture population (Brümmer et al., 2006). Under such a system, the agriculture population has been redefined as those having the land use right or contract rights to farmland granted for 30 years by the government, even though the farmland ownership belongs to the government. The contract is possible to be extended, unless development is to occur on the designated farmland approved by the government, in which case the farmers with 30-year contract rights to the farmland will receive a certain amount of compensation. In a sense, the 30-year contract right to farmland serves as a type of social welfare for the agriculture population, who are free to transfer the farmland management right for rent as long as it is still used for agricultural purposes, and are exempted from any tax under agro-activities since the agriculture tax was abolished in 2004 (Brümmer et al., 2006). This is almost like having the ownership of farmland for 30 years.

On top of that, urbanization and industrialization process has caused farmland close to urban areas to be encroached by urban land use (Yin et al., 2011). This global phenomenon has created a dilemma for the implementation of farmland protection policies written in the revised Agriculture Law in place since 2003.

Industrialization has also triggered advancement in the development of food supply chain and transportation network, the “close-to-city agriculture”, thus, has a smaller role to play in urban food security. The notion of “peri-urban agriculture” has been then introduced mainly to provide fresh produce and nutrition balance for the urban population. The construction of the fresh market system makes sure the fresh agro-products can be constantly delivered to every township in the city (Cai and Zhang, 2000). Based on “peri-urban agriculture”, the

concept of “urban agriculture” was then introduced to explore the multi-functionality of the fragile agriculture activities under the pressure of urban encroachment (Yu, 2002).

1.2.2 The contemporary definition of urban agriculture in China

Even though the idea of urban agriculture was said to be introduced to the Chinese academy in early 1990s (Yu, 2002), its definition and the focus of research differ among researchers. Fang et al. (2008) concluded several perspectives on the connotation of urban agriculture in China as follows:

- (1) Urban agriculture is based on modern technology in terms of production methods, as well as the application of Information Technology (IT) in management and the exchange of market information and so on.
- (2) Urban agriculture takes the form of intensive production due to limited farmland resource within or close to urban areas.
- (3) Urban agriculture utilizes the resources in cities to create value-added products for exportation or to compete in a larger-scale market.
- (4) Urban agriculture emphasizes multi-functionality including cultural function as well as ecological functions to meet the needs of urban consumers and support healthy urban environment.

All of the above aspects do not necessarily contradict each other and can be integrated in urban agriculture, or even rural agriculture under the wave of modernization and industrialization. However, in light of the two features generated from the definition of urban agriculture earlier, the fourth point enables urban agriculture to distinguish itself from traditional rural agriculture. The proximity of urban agriculture to cities provides more convenience and opportunities for urbanites to interact or get involved in agriculture, and rural agriculture has disadvantage in terms of physical distance to accommodate such needs.

This gives a good reason for urban agriculture to be maintained under the rapid urbanization process all over China.

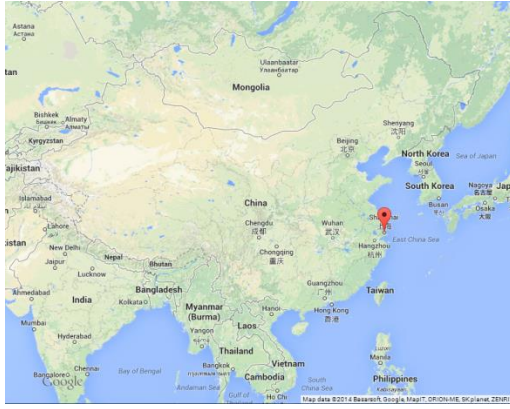
Such needs have been observed by Shi et al. (2011) in her study on an ecological farm providing various agro-services close to Beijing, where she proposed the definition of urban agriculture in the context of China as “Agro-activities carried out within the administrative border of the city, can both be gardening by urban residents and farming by peasants in peri-urban villages” to “meet the demands for agricultural products, cultural and spiritual needs from urban residents and provide eco-services to the city” (Deng et al., 2010).

With the above discussion, we can see that urban agriculture is still an indispensable part of cities in China, with other important functions other than food production. However, there are challenges facing urban agriculture that needs to be addressed, which will be introduced in the next session.

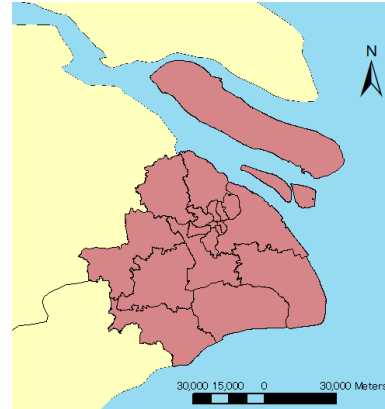
1.2.3 Challenges of urban agriculture in China – Shanghai as an example

Shanghai (Figure 2), with a population of around 24 million¹, is one of the most populated cities in China. As an economic center, Shanghai well demonstrates the impacts of technological change, institutional reform as well as the urbanization and industrialization process on agriculture close to urban areas. Meanwhile, Shanghai is also one of the first cities in China to integrate the notion of urban agriculture into planning strategies and policy making (Yu, 2002). The challenges that Shanghai is facing towards sustaining urban agriculture for sustainable urban development are typical in large cities in China, especially under the pressure of urban development. The following review reveals the most referred challenges discussed in previous researches on urban agriculture in Shanghai.

¹ Data source: Shanghai Statistics Yearbook 2012 <http://www.stats-sh.gov.cn/data/toTjnj.xhtml?y=2012>



(a)



(b)

Figure 2: Location of Shanghai in China (a) and administrative area of Shanghai Municipality (b)

Decrease in agriculture population

As indicated in section 1.2.1, the introduction of Household Responsibility System as well as technological changes triggered the decrease in agriculture population (Fan, 1990). The “registered agriculture population” in Figure 3 indicates the number of people who still maintain the primary tenure right to farmland through the Household Responsibility System in Shanghai, while the “employees in the agriculture industry” indicates the “full-time farmers” from the above agriculture population. The gap between the two curves somehow reflects the number of “registered agriculture population in Shanghai” who are partly maintaining agriculture while employed in other sectors in the city, considered as “part-time farmers”, or those not engaged in serious farming at all. Even though some researchers argue with improved agriculture technology, there still exists potential for labor to be released from agriculture sectors (Yuan, 2011), Deng et al. (2010) argues that labor shortage, along with the aging of labor and lack of knowledge and awareness towards the market demands, has become the major factor impeding the sustainable development of urban agriculture.

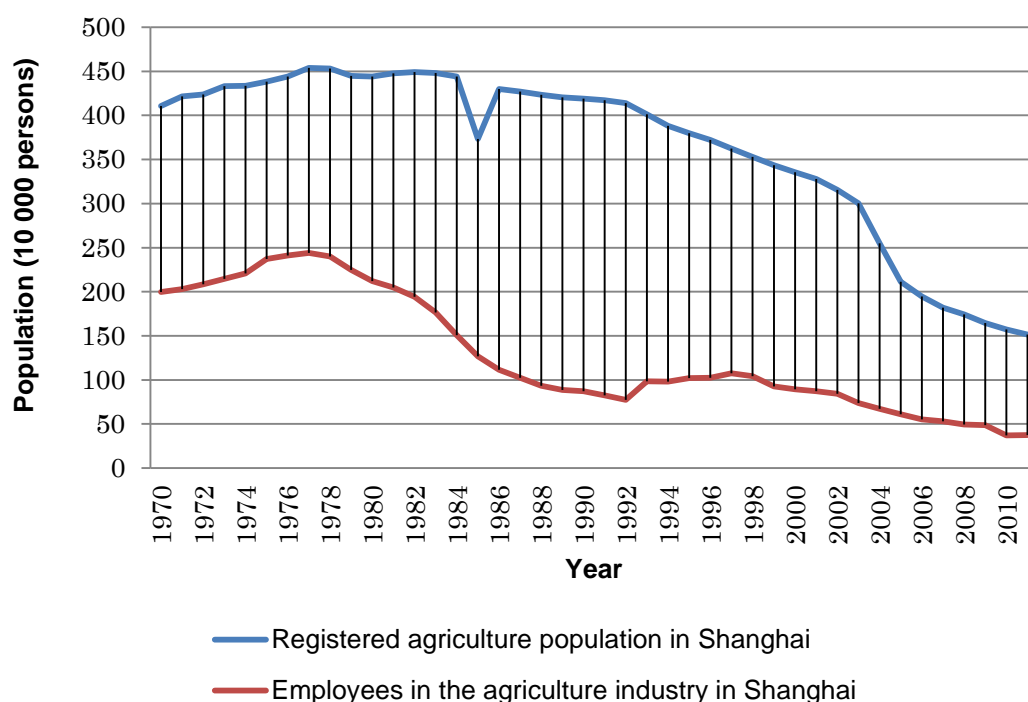


Figure 3: Agriculture population change in Shanghai²

Income gap between agriculture households and non-agriculture households

The problem of income gap between agriculture households and non-agriculture households has been a long term concern of the government (Yuan, 2011). Figure 4 shows that the trend has been increasing over years. To cope with the problem, Shanghai Municipality has been encouraging the formation of “Family Farm” with policy incentives as a strategy to increase the income of agriculture household (Wang et al., 2011). The idea is to encourage more farmland tenure transfer so as to scale-up production of a single agriculture household. However, the natural fragmentation of farmland due to the intrusion of urban land use (Zhang et al., 2004) as well as the cultural tradition of small-scale intensive farming (Shi et al., 2011) somehow create more difficulty to the scaling-up effort and the result is not so satisfactory (Wang et al., 2011). The aging process of the population remaining in agriculture sector also worsens the situation due to lack of manpower as well as the skills to apply

² Data source: Shanghai Statistics Yearbook 2012 <http://www.stats-sh.gov.cn/data/toTjnj.xhtml?y=2012>

modern technology to production.

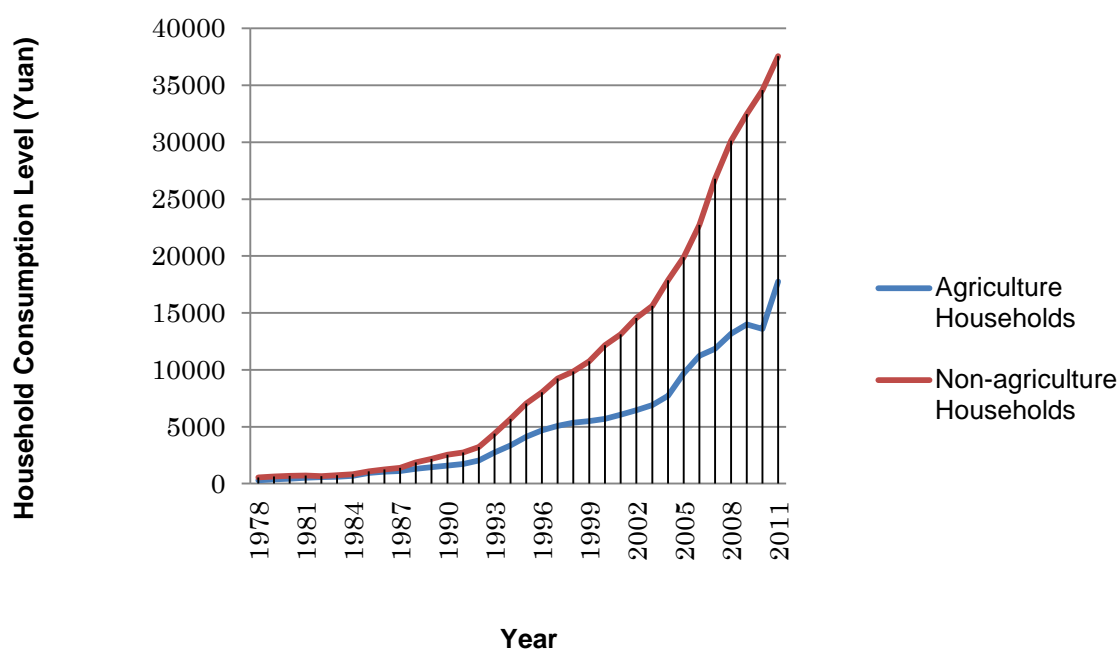


Figure 4: Income gap between agriculture households and non-agriculture households in Shanghai ³

Farmland decrease

Figure 5 along with Figure 6 illustrate the phenomenon of urbanization encroaching farmland. According to Yin et al. (2011), 9.11% of farmland in Shanghai was converted to urban land-use from 1979 to 1990, 14.82% from 1990 to 2000 and reached the peak of 33.86% from 2000 to 2009. This has been another factor impeding the potential for sustainable development of urban agriculture in Shanghai according to Deng et al. (2010). The fragmentation of farmland (Zhang et al., 2004) also poses problem for scaling up production as mentioned earlier.

With strong planning strategy and the farmland protection policies written in the Agriculture Law, the Municipality is determined to preserve the amount of farmland

³ Data source: Shanghai Statistics Yearbook 2012 <http://www.stats-sh.gov.cn/data/toTjnj.xhtml?y=2012>

remaining within the administrative border, mainly at the urban fringe, of Shanghai. In order to maintain the amount of farmland in accordance with the policy requirement from the central government rigidly since 1997, the Municipality requires the same amount of reclamation from other land use as the amount taken from farmland to be developed before the development on farmland actually occurs (Zhang et al., 2008).

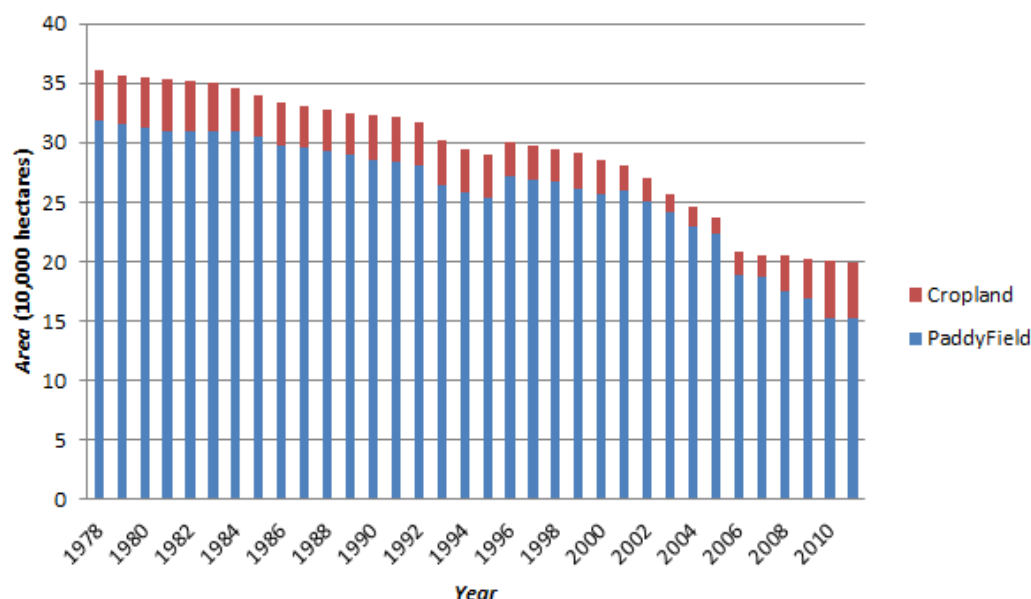


Figure 5: Farmland change in Shanghai⁴

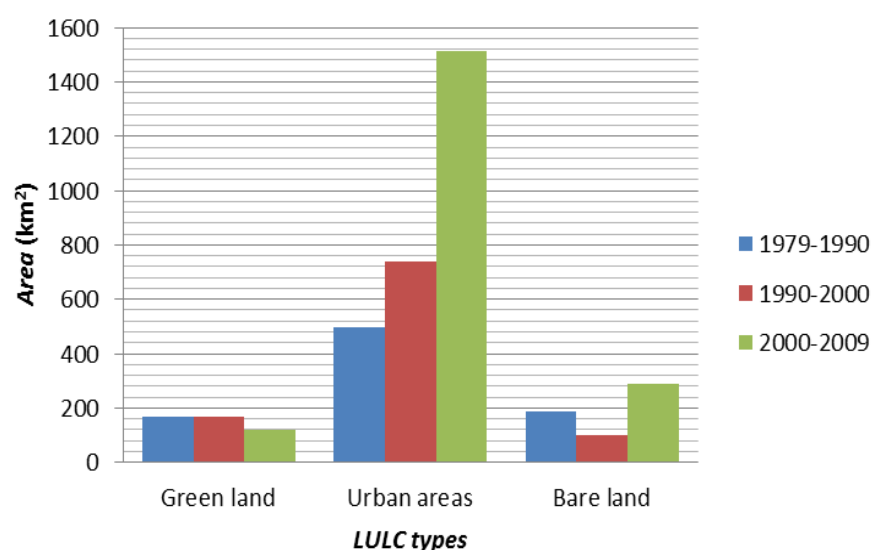


Figure 6: Amount of farmland transferred to other land use or land cover types in Shanghai ⁵

⁴ Data source: Shanghai Statistics Yearbook 2012 <http://www.stats-sh.gov.cn/data/toTjnj.xhtml?y=2012>

⁵ Data source: Yin et al., 2011

Agriculture pollution from excessive use of chemicals

Intensive farming has triggered excessive use of chemicals to maintain the overall production of staples and crops (Qian et al., 2010), which then became an impediment to the urban agriculture sustainability due to its impact on soil quality. The leakage of nutrition to water body as well as the pesticide residues also causes risks to the environment and public health (Deng et al., 2010). Figure 7 and 8 illustrate the amount of chemical fertilizers and pesticides in use per 10 000 hectares of farmland in Shanghai over years.

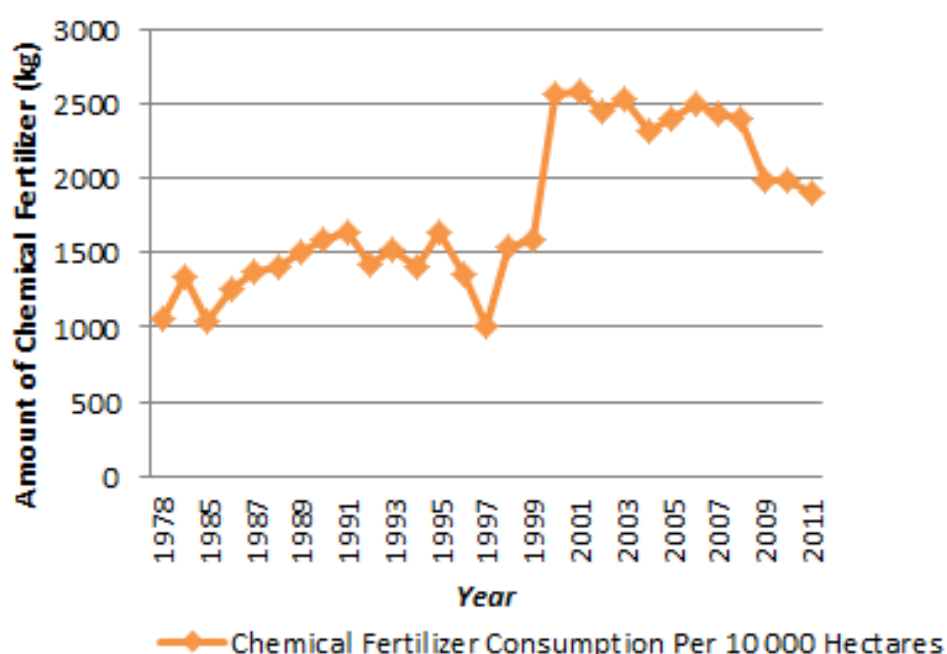


Figure 7: Chemical fertilizer consumption change in Shanghai⁶

⁶ Data source: Shanghai Statistics Yearbook 2012 <http://www.stats-sh.gov.cn/data/toTjnj.xhtml?y=2012>

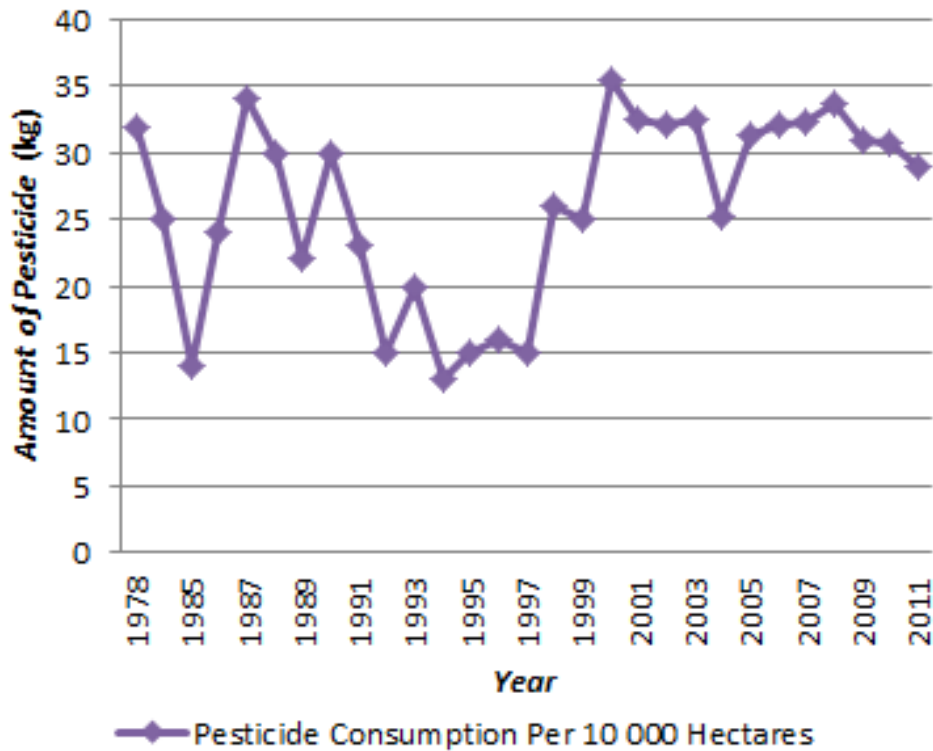


Figure 8: Pesticide consumption change in Shanghai⁷

Food safety

When the fresh market system was first introduced in 1980s, it had been places for peri-urban producers to sell their agro-products directly to consumers (Cai & Zhang, 2000). However, such interface collapsed along with the introduction of modern food supply chain and transportation network. Dealers have replaced the producers in the exchange of agro-products with cash and the profit has been extracted from producers. In order to reduce the cost of production, chemicals have been excessively used regardless of its potential hazard to the environment and public health as stated earlier (Deng et al., 2010; Qian et al., 2010). Even though the sampling inspection in fresh markets has been introduced to control the possible hazard of pesticide residues⁸, the repeatedly occurring incidents of food poison (Shi

⁷ Data source: Shanghai Statistics Yearbook 2012 <http://www.stats-sh.gov.cn/data/toTjnj.xhtml?y=2012>

⁸ As a result from the preliminary interview to governmental officials and fresh market managers in Qingpu District of

et al., 2011) as well as the untrustworthy certification system for organic food (Qiao, 2012) cast concerns on food safety issues under the current food distribution system and market structure.

1.3 Limitation of previous research

Previous studies have been focusing mainly on the above mentioned challenges especially from the stance of producers and policy makers. Most papers have been prescriptive, making suggestions based on experiences in successful cases of sustainable urban agriculture in other countries. Analysis from consumers' perspectives to understand their role in sustaining urban agriculture is still missing.

1.4 Research objectives

In light of the trend observed by Shi et al. (2011) of the increasing market demand for cultural and spiritual needs from urban agriculture, this study aims to describe role of urbanites in sustaining urban agriculture by analyzing the different patterns of urbanites involvement in urban agriculture, thus providing policy implications for sustaining urban agriculture.

1.4.1 Research questions

Based on the above research objectives, the following research questions are proposed:

(1) What are the patterns of urbanite involvements in urban agriculture?

To illustrate the significance of such involvements, the following up question is what are the potentials and limitations in sustaining urban agriculture through such involvements in terms of addressing the challenges facing urban agriculture in Shanghai?

(2) What are the factors influencing the above involvements?

(3) What is the geographic and demographic distribution of different patterns of involvement?

The answers of the above research questions will be combined with policy review for policy implications.

1.4.2 Research framework

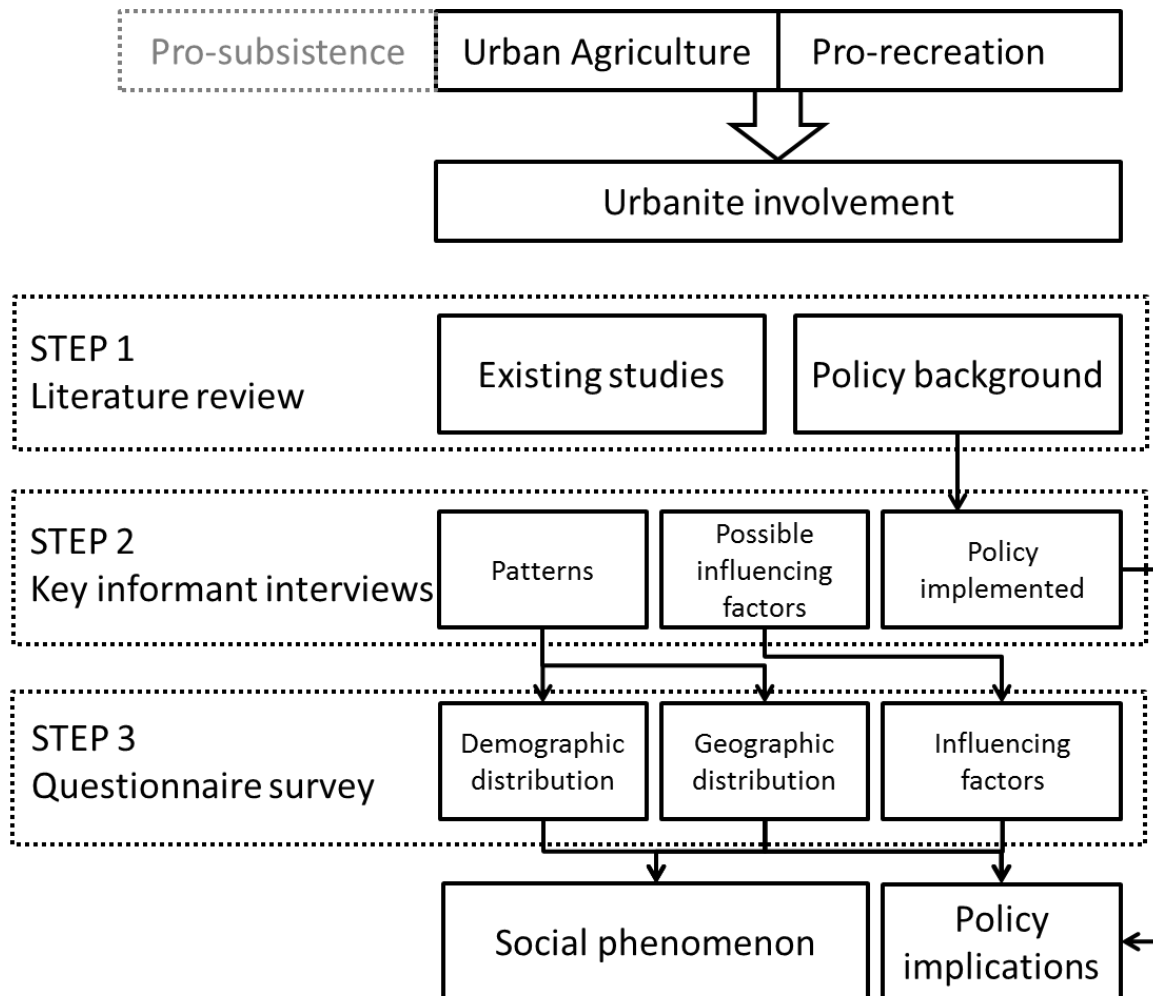


Figure 9: Research framework

2 METHODS

This research has been an empirical study based on the case of Shanghai. The representativeness of Shanghai for studying urban agriculture has been discussed in section 1.2.3. Qingpu District (Figure 10), an important agriculture district in Shanghai, is chosen for the study. It is located at $120^{\circ} 53'E \sim 121^{\circ} 17'E$, $30^{\circ} 59'N \sim 31^{\circ} 16'N$, with a total area of 668.54 sq km and an altitude between 2.8m to 3.5m. Having 11 administrative divisions (township-level administrations), Qingpu District has a residential population of 1,169,801 with 477,306 being locally born⁹. Qingpu was subsumed to the administration of Shanghai Municipality during the 1950s as a strategy to safeguard food self-sufficiency during the central planning period. The urbanites in this district are a mixture of those having certain relationships with the existing agriculture population due to the institutional change in 1978 and those originally from urban areas without such background. Studying the behavior of those two different groups of urbanites might also cast some light in approaching the challenges towards sustaining urban agriculture in the context of Shanghai.

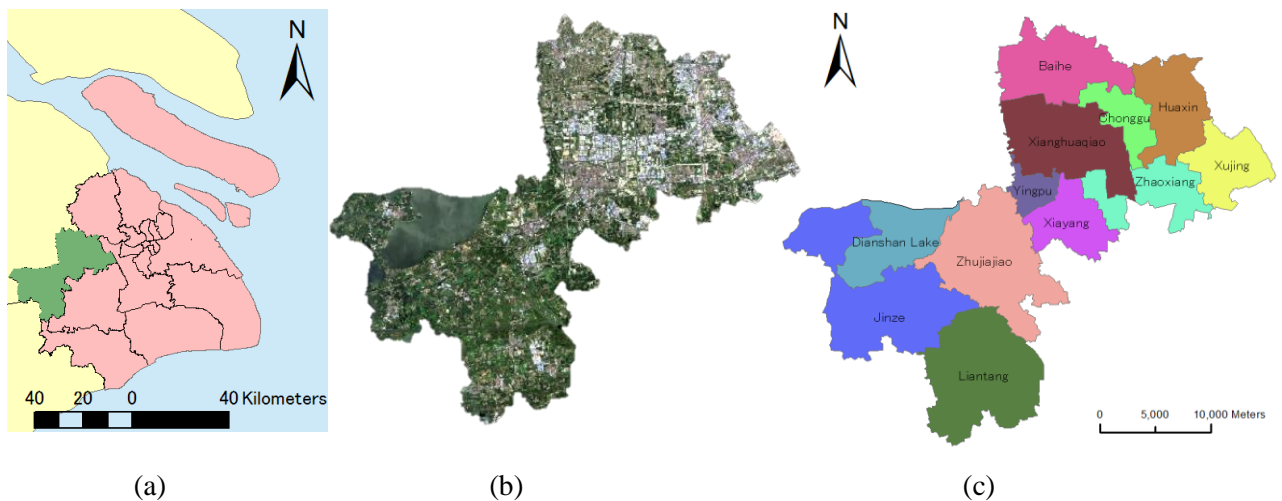


Figure 10: Location of Qingpu in Shanghai (a), remote sensing image (b) and administrative divisions (c)

⁹ Data source: Qingpu Statistics Yearbook, 2013. http://stat.shqp.gov.cn/gb/special/node_31247.htm

2.1 Literature review

Literature review has been conducted on the existing studies on urban agriculture in different parts of the world, focusing on the definition, physical patterns and major functions of urban agriculture in different social contexts. Studies on urban agriculture in China have also been reviewed, and the major challenges of urban agriculture have been addressed. Limitations of previous researches been discussed based on the main focuses of previous studies on urban agriculture by other Chinese researches. The results of the above literature review have already been discussed in Chapter 1.

The overall policy background is conducted through literature survey, which then serves as the basis for questions for interviews to governmental officials to understand the policies on the ground.

2.2 Interview survey:

Key informant interviews have been conducted to the following two groups of people:

- (1) Officers in the agriculture branches in the district-level and township-level governments in Qingpu District, Shanghai. Totally 12 interviews have been conducted to understand the current urban agriculture policies being implemented, mainly focusing on the farmland management right transfer, the supply chain of agro-products and the subsidies for agriculture.
- (2) Agriculture practitioners or farmers in the field to identify different patterns of urbanite involvement within Qingpu District, with semi-structured questions.

Appendix A includes all the interview transcripts.

2.3 Questionnaire survey

2.3.1 Questionnaire design

A questionnaire is designed (Appendix B) based on the results from the interviews to key informants to quantify the phenomenon observed.

The questionnaire contains the four main parts as follows:

- (1) Demographic information including age, gender, place of residence (detailed to township), educational level, personal income, whether employed in agriculture sectors, and whether having background in agriculture (having direct family members employed in agriculture sectors).
- (2) Consumer choice on agro-products including source of agro-products and the frequency in using different sources, and the major concerns when choosing agro-products.
- (3) Participation in different agriculture related activities including the frequency of participation, the place of participation and things that have been valued in such agro-activity participations.

2.3.2 Target group

The target group for the questionnaire survey is urbanites around 35 years old, allowing a range from 20s to 50s. There are three reasons for choosing this group of people:

First of all, the demographic distribution in Qingpu shows that the target group is the major age group¹⁰ to be representative in describing the phenomenon.

Table 1: Age group distribution of the locally born population in Qingpu

Age group	Total	<17	18~34	35~59	>60
Population (10,000)	46.50	5.22	9.71	20.35	11.23

¹⁰ Data source: Qingpu Statistics Yearbook, 2013. http://stat.shqp.gov.cn/gb/special/node_31247.htm

Secondly, Jin and Zhao (2008) have found that people in early middle-age tend to be the major consumer of green agro-products, which is relevant to the focus of this study.

Thirdly, these urbanites are the group who might have some agricultural background, namely, whose parents or relatives might be still in the agriculture sector, since the Household Responsibility System was introduced in 1978.

2.3.3 Distribution methods

The questionnaire has been distributed to all the eight primary schools in Xiayang and Yingpu Jiedao shown in Figure 11 (a) and (b), which are two townships composing the district center of Qingpu, the highly urbanized area in the district. One class of students were randomly selected from each grade in each of the eight primary schools and were asked to take back the questionnaires for either of their parents to fill in and bring back to school the next day. Totally 2200 questionnaires were distributed, with a return rate of 84.2% (receiving 1853). Figure 11 (a) is the distribution of the locally born population. The places of residence of the respondents are shown in Figure 11 (b). The questionnaire respondents also include 42 respondents not answering their places of residence, 52 not specifying the township where they reside but indicating that they live in Qinpu, 2 living in other districts of Shanghai and 5 living outside Shanghai Municipality.

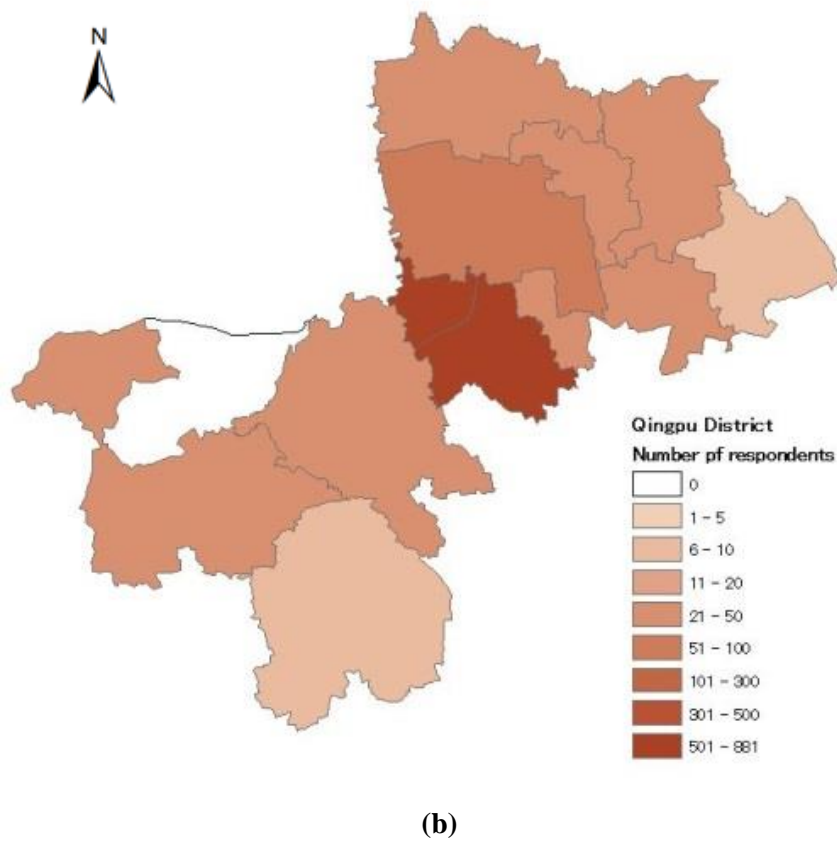
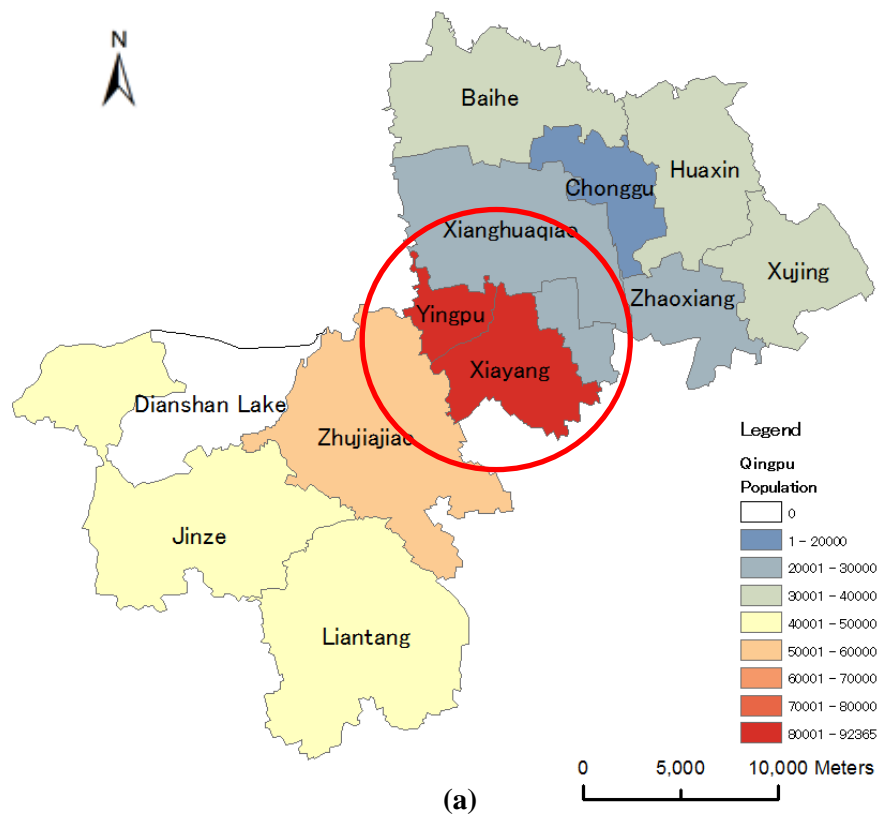


Figure 11: Distribution of questionnaire respondents

2.3.4 Criteria of selecting valid questionnaires

For spatial analysis, all the questionnaires returned have been used without eliminating uncompleted or invalid questionnaires.

For statistical analysis, the following criteria have been adopted to select valid questionnaires:

- (1) Respondents should be aging between 20 and 60.
- (2) Respondents should not be employed in agriculture.
- (3) Questionnaires should be fully completed, except for filling in the place of agro-activity participation and the last question on the opinion on sustainable urban agriculture.
- (4) Questionnaires that are filled according to specific requirements attached to certain questions, such as having proper sequences in the ranking of choices (Questions 2-1, 2-2, 3-5, see Appendix B), without duplicating the choices in the sequence of ranking.
- (5) Questionnaires that meet the validity tests:
 - a. those who filled in the place for agro-activities should also choose the frequency of participation (Question 3-4);
 - b. those who have chosen the values being appreciated in participating in agro-activities (Question 3-5) should also have chosen the activities that they participated in (Question 3-4);
 - c. those who have not chosen participating in any agro-activity in Question 3-1 should not have chosen the activities listed from 3-2 to 3-4.

Only questionnaires meeting all the above criteria will be used for further statistical analysis. The valid questionnaire respondents amount to 1025.

2.4 Analytical methods

2.4.1 Qualitative analysis

Qualitative analysis will be mainly based on key informant interview surveys.

Policy review will be based on the results from the interviews to officers in agriculture branches of the district-level and township-level governments.

Flowcharts and diagrams will be used to summarize the different patterns of urbanite involvement to illustrate its potentials and limitations in coping with the major challenges to the sustainability of urban agriculture in Shanghai.

Results from Question 3-6 in the questionnaire survey on public perspective on sustainable urban agriculture has been summarized in key words.

2.4.2 Statistical analysis

Part of the results from the questionnaire survey will be analyzed using the following statistical methods:

Demographic distribution of agro-activity participation

Estimation of proportions of different patterns of urbanite involvement using 95% confidential interval based on z-score.

General description on consumer choice on agro-products and agro-activity participation

General preference among the respondents on their consumer choice on agro-products and agro-activity participation using percentage of certain factor being chosen for ranking and a mean score with 95% Confidential Interval using t-score.

Factors influencing consumer choice on agro-products and agro-activity participation

(1) Multivariate regression has been used to test the effect of age, income, education on consumer choice on agro-products, and participation in agro-activities. To avoid the influence of the interaction among explanatory variables, the explanatory variables, have

been centered to their means in the regression, along with the introduction of cross-product terms to the regression, which are also centered to the means (Agresti and Agresti, 1970).

Same methods have been used to identify the influence of frequency in agro-activity participation on the consumer choice on agro-products and the values they appreciate in agro-activity participation.

- (2) For group comparison between those having agriculture background, meaning those having direct family member employed in agriculture sector, and those having no such background, t-test, using Welch's approximation in degree of freedom (Agresti and Agresti, 1970), has been used to test the difference in consumer choice on agro-products, and participation in agro-activities.

Same test has been conducted between those having gardening habits and those having no such habits.

T-test has also been used to identify the difference in age, income and education between groups having agriculture background and those having not, as well as between groups having gardening habits and those having not, to reduce the effect of those three explanatory variables.

- (3) Group comparison between those having agriculture background and those having no agriculture background on the proportion of people having gardening habit is conducted using z-score.

All the statistical analysis has been conducted using STATA 11.0.

2.4.3 Spatial analysis

Part of the questionnaire results have been illustrated based on spatial analysis using ArcGIS 10.2.

Geographic distribution of agro-activity participation

Observations of townships where different types of agro-activities take place, counted through the “Place” column in Question 3-4 in the questionnaire survey, have been spatially demonstrated to show the frequency. The following aspects have been illustrated as proportion to the total observations of agro-activity occurrence in each township:

- (1) The proportion of observations that occurred in the same township where the respondent resides.
- (2) The proportion of observations that occurred in the same township where the respondent has certain kinship or friendship relations (identified by the “Place” column of (1) and (2) in Question 3-4 of the questionnaire)
- (3) The proportion of observations that occurred in the township where cultural resources are abundant in terms of traditional celebrations and festivals (identified by the “Place” column of (1) and (2) in Question 3-4 of the questionnaire)
- (4) The proportion of observations without none of the above three influencing factors, which can indicate the geographical preferences of urbanites to join such activities.

Since places of residence, places where the respondents visit their friends and places where cultural resources are abundant can be overlapped, the proportions of the above mentioned three cases do not necessarily add up to 100%, as shown in Chapter 3.

The attitudes towards urban agriculture and policies favoring the promotion of urban agriculture activities will be judged based on the observations from the preliminary interviews conducted to agriculture branches of township-level governments, marked with “+” as positive and “-” as negative in the maps.

3 RESULTS AND DISCUSSION

3.1 Policy review

3.1.1 Farmland management right transfer

In China, registration is not required for one to become a “farmer”. Being an agriculture producer does not necessarily mean that one has to be registered as “agriculture household”, the ones having 30-year contract rights to certain amount of farmland as explained in the introduction chapter. The ones who are having management rights to farmland are the ones considered as “farmers”. The management rights to farmland allow the farm or farmland manager to bear all the costs and profits of production. The management rights to farmland can belong to the same agriculture households who have contract rights to farmland, or to be transferred to other entities or individuals. The transfer of management rights to farmland has the patterns shown in Figure 12:

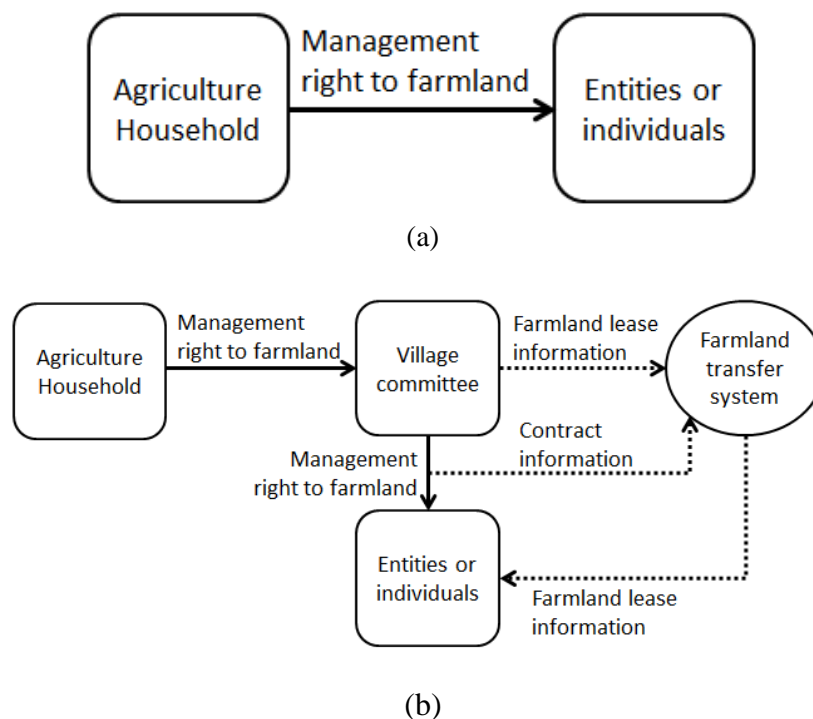


Figure 12: Transfer of management rights to farmland

The first pattern, shown in Figure 12 (a) is the case in which agriculture households, having contract rights to farmland transfer the management rights to farmland directly to entities, such as cooperatives, agriculture companies, NGOs or NPOs, or to individuals who are interested in farming, without notifying the village committee, which is the lowest level government in China and also the body that issues contract rights to farmland to agriculture households. The farmland rent will be negotiated between the agriculture household and the entity or individual who wants the management right to farmland.

The second pattern shown in Figure 12 (b) is monitored and controlled through the Farmland Transfer System created by the Agriculture Committee of Qingpu District Government. The agriculture households who are willing to transfer the management rights to farmland will inform the village committee where the farmland belongs to, and the village committee will inform the agriculture branch of the corresponding township-level government, who is responsible for monitoring and controlling such information. All the information will be then recorded online for those who are interested to browse and bid for such management rights. The bidders will then contact the agriculture branch that releases the farmland lease information. The background information of bidders will be screened by the agriculture branch and the successful bidders will sign the contract with the village committee that leases the farmland. The rent of farmland under this case will be decided by the township-level agriculture branch, but paid to agriculture households who transferred the management rights. The information of the contracts, containing the profiles of the successful bidders, will also be recorded on the website.

During the time of the interviews to key informants conducted by the author in August, 2013, the Farmland Transfer System was still under construction where the information was not yet fully recorded online and the website was not opened to the public. But the operation

of the system was already on-going. By creating such a system, the Agriculture Committee of Qingpu District intends to better protect the rights of agriculture households and exclude those who are not qualified in terms of financial background, technology, credibility and management plans (See Appendix A).

However, the government tends to support local agriculture households in the first place. For the local agriculture households in the village where farmland management rights are released, it is more likely for them to become successful bidders, like the case of Mr. Qiu (interviewee 6 in Appendix A III Interviews to the agriculture practitioners and farmers), who manages totally more than 1000 mu of farmland for rice production within Jinze Township.

3.1.2 Agro-product supply chain and quality monitoring

As introduced in Chapter 1, the agro-products nowadays are usually sold from fresh markets or supermarkets, and consumers do not have chance to get information of agro-products directly from producers, shown in Figure 13.

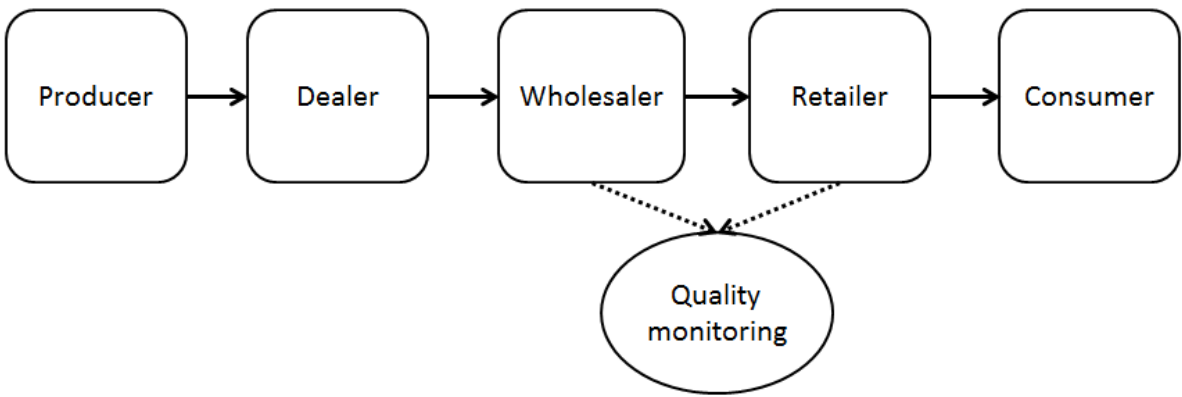


Figure 13: Common agro-product flow in the current market system

In such an agro-product supply chain, dealers usually go to purchase agro-products from producers and sell the products to a wholesale’s market, where the products are transferred to fresh markets or supermarket chains. Examinations on pesticide residues are usually

conducted with sampling methods on agro-products supplied by dealers before the products are allowed into the wholesale's market. Sometimes, such examinations are also conducted by the retailers in fresh markets or supermarkets. However, these processes are not strictly controlled and not transparent, which leaves possibilities for food poisoning and food safety concerns (see interviewee 1 in Appendix A, III Interviews to the agriculture practitioners and farmers).

In a supply chain where the profit has to be shared by all the stakeholders before the products finally reach consumers, the producers tend to use excessive chemical fertilizers and pesticides to reduce the cost (see interviewee 6, 8 and 9 in Appendix A, III Interviews to the agriculture practitioners and farmers). Consumer choice is hardly reflected in such a process, and producers show no special concern towards the quality and safety of their products since consumer choice is not a pressure for them, thus causing agriculture pollution and risk for food poisoning.

Regardless of the above situation, there are several certification systems in China. The "Safe Agro-Product" (无公害农产品) label is based on a certificate issued by agriculture departments of provincial or municipal level governments. It has the basic requirements on the agriculture environment, the production process and the quality of products based on the standard issued by the national government on different products. Use of chemicals and pesticides are still allowed under the "Safe Agro-Product" standard. The "Green Food" (绿色食品) certification, also issued by agriculture departments, has stricter requirements on the production process. It has two sets of standards, the higher sub-standard of which is close to the requirement for organic production (Jin and Zhao, 2008). However, the "Organic Food" (有机食品), the highest level of certification of its kind, is certified by a third party other than the government. The most common institutions are IFOAM and OFDC (see interviewee 11 in

3.1.3 Subsidies

According to the interview to the Agriculture Committee of Qingpu District Government, the following subsidies are available for farmers on the field, or the managers of farmland (referred from Appendix A, I Interview to the Agriculture Committee of Qingpu District Government):

(1) Organic fertilizer, the price of which is originally 400 *yuan*/ton, could be bought at a price of 100 *yuan*/ton, which means the government pays the additional 300 *yuan*/ton for the fertilizer. This means a discounted price as a subsidy and the receiver of the subsidy will not receive cash for this subsidy. This applies to all types of crops and vegetation, including staples, mainly rice, fruits and vegetables.

(2) The application of pesticide and herbicide is partly covered by the government. For example, one crop of rice will need 8~9 times of spray of pesticide and herbicide, the 6~7 times of which will be paid by the government.

(3) Seedlings and seeds are fully covered by the government.

(4) The use of green manure is granted by the government according to the amount of farmland growing vegetation used for green manure. Such encouragement enhances the soil fertility and reduces the use of chemical fertilizer and pesticides, while reusing the residues from crops, such as straws and stalks.

(5) Staple subsidy is granted according the amount of farmland used for growing staples.

(6) Vegetable subsidy is granted to those who grow vegetables with an IC card of certain amount of deposit, which can be used to purchase necessary production inputs, such as fertilizers, pesticides and so on, at the will of the grower.

(7) Machinery subsidy is granted to those purchasing machinery for agriculture production, with a certain percentage of the cost covered by the government.

(8) Scale operation subsidy is granted to those managing large-scale production under the reference of the newly created policy supporting Family Farm. Those qualified in scale will be granted 150 *yuan*/mu for producing staples and 100 *yuan*/mu for producing vegetables from the district-level government.

The interviews to the agriculture branches of township-level governments revealed that (8) scale operation subsidy can be received from the municipality, district and township-level governments, where the township-level subsidy is determined by each township level government independently. This implies that scale operation and Family Farm have strong policy support.

However, interview to Mr. Qiu (see interviewee 6 in Appendix A, III Interviews to the agriculture practitioners and farmers) revealed that normal production is not so profitable and is highly reliant on governmental subsidies, which has also been discussed by Wang et al. (2011) in their research on Family-Farms.

The amount and types of subsidies received differ according to the crops being grown and area of farmland being managed, regardless of who is the “farmer” and whether the “farmer” is registered as agriculture household or not.

3.2 Different patterns of urbanite involvement in urban agriculture

Apart from exchanging agro-products with cash by urbanites from the flow discussed in section 3.1.2, which is the first pattern of interaction between urbanites and urban agriculture introduced in section 1.2, this section is trying to unveil the other patterns of urbanite involvement in urban agriculture based on the key informant interviews.

3.2.1 Recreational involvement

The recreational involvement is the on-farm recreational experiences by urbanites, or, the interaction between urbanites and urban agriculture through the exchange of cash with agro-services, which corresponds to the second pattern of interaction between urbanites and urban agriculture as introduced in section 1.2. The involvement pattern is shown in Figure 14.

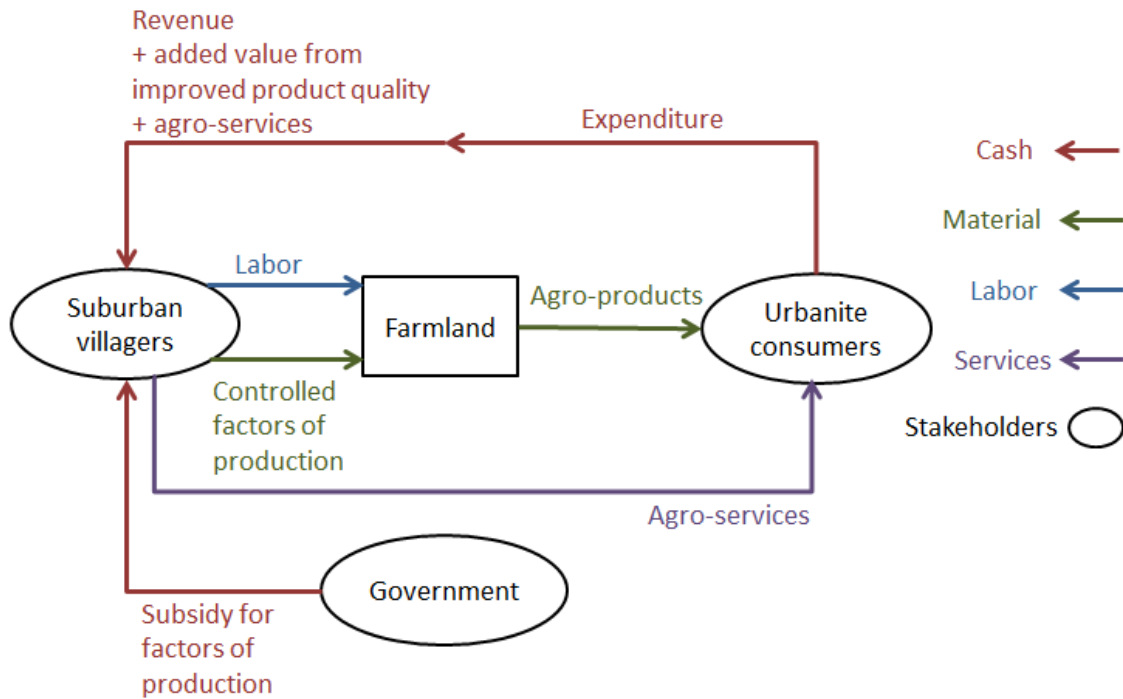


Figure 14: Recreational involvement by urbanites in urban agriculture

By enjoying the agro-services provided by local suburban villagers running the farm, the cultural values embedded can be internalized as revenues for the local villagers in the cash flow, which addresses the income-gap problem. The increased revenue also comes from the improved quality of products since the urbanites have the chance to observe how the agro-products are produced on the farm. Products under such monitoring are better valued, thus can be sold at a better price.

Meanwhile, due to the controlled use of chemical inputs, the soil quality improves and the agricultural environment can be protected, according to the manager of the agriculture

experience farm in Cenbo Village (interviewee 5, Appendix A III Interviews to the agriculture practitioners and farmers). He also indicated that such activities could have educational values and help people to learn about the traditional tools for production, traditional cultivation methods, traditional cooking, while enjoying the agriculture landscape and raising respect towards farmers.

However, in such recreational involvements, urbanites are still the consumers and the labor shortage problem cannot be solved in this pattern of involvement.

Therefore, such involvements can address the challenges of food safety, agriculture pollution, and narrow the income gap by internalizing the values from agro-services, but cannot address the issue of agriculture population decrease or agro-labor shortage.

The most common agro-services include on-farm restaurant services and harvesting experiences according to the interviews to the agriculture branches of the township level governments.

3.2.2 Farming involvement

For farming involvement, the interaction becomes more intensive in terms of labor exchange, financial investment and farm management from urbanites, which corresponds to the third pattern of interaction between urbanites and urban agriculture as introduced in section 1.2. As shown in Figure 15, urbanites now become the farm managers, or “farmers”, while the original suburban villagers, usually those registered as agriculture household with contract rights to farmland, receive the rent from urbanite farmers. The management rights are transferred to urbanite farmers as explained in section 3.1.1. Therefore, urbanite farmers, in this context, refer to those registered as non-agriculture household but doing farming on a regular basis and having management rights to farmland.

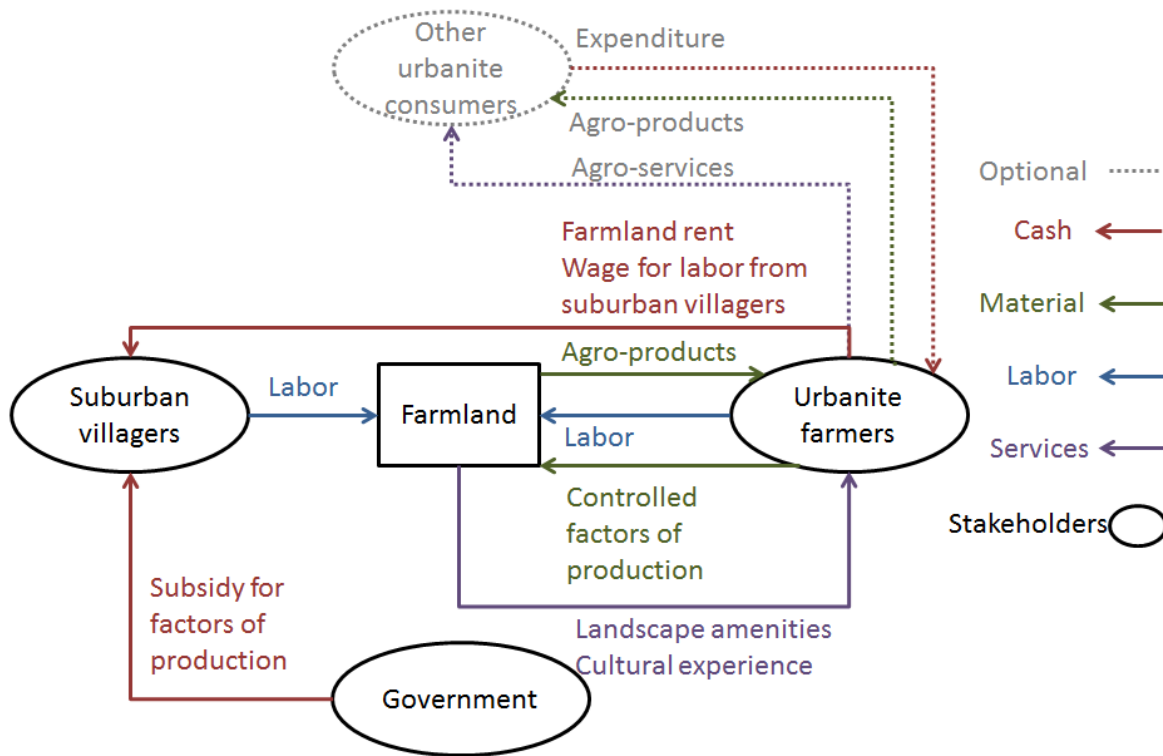


Figure 15: Farming involvement by urbanites in urban agriculture

Sometimes the suburban villagers also serve as long-term or short-term labor for the urbanite farmers and receive wage for such labor, since urbanite farmers usually have other jobs in urban areas during weekdays. Among the 10 cases of urbanite farmers in the preliminary interviews, 9 are part-time farmers who have other economic activities in urban areas, and only Mr. Song (interviewee 13) has fully left his original job position in the IT industry.

Since in many cases, those urbanite farmers started agriculture due to their concern towards food safety issues (6 out of 10 of the urbanite farmer interviewees), the use of agrochemicals has been controlled. Actually, out of the 10 urbanite farmers being interviewed, 8 use organic cultivation methods, while the rest 2 strictly control the use of chemical fertilizer and pesticide, the amount of which is almost half compared to the normal cultivation methods in the case of Mr. Qiu (interviewee 6). Therefore, food safety concerns and agriculture pollution are out of question in such cases.

Urbanites performing as farmers are the supplementary labor to urban agriculture, which can then address the challenge of agriculture population decrease.

However, the income gap issue remains ambiguous in this pattern of involvement. The profit from selling agro-products and providing agro-services only belong to the urbanite farmers, while the agriculture households can only receive cash from those urbanite farmers for the farmland rent and the salary for labor. Meanwhile, subsidies in the form of cash are usually distributed to agriculture households who are not the real farm managers in such cases. The absolute amount of cash from farmland rent and salary for labor as income for the agriculture household might be more than what they can earn by doing farming and selling the products on their own. In Mr. Qiu's case, a typical suburban farmer, an annual profit of 350 *yuan/mu* mainly comes from the governmental subsidies; while in cases where the agriculture household rent out farmland to urbanites at 1200 *yuan/mu* annually and offer labor with monthly salary of around 2000 *yuan*, the annual revenue can be much more from every unit of farmland, which is not reliant on governmental subsidies. Nonetheless, the urbanite farmer might be earning even more through the same amount of farmland. The profit distribution remains a problem; while at the same time, some urbanite farmers are claiming that the subsidy is not enough to support their management (interviewee 1 and 3).

The two common types of farming involvement include urbanite farmers growing agro-products for self-consumption only, and urbanite farmers providing the agro-products and agro-services to other urban consumers (see the optional flows in Figure 15), regarded as business farming.

The major features of such urbanite farmers include:

- (1) comparatively young (aged 50, 42, 39, 50, 29, 42, 30, 42, 33 respectively and 1 unknown), compared to the 5 farmers with agriculture household status (aged 55, 60,

50, 52, 65 respectively).

- (2) with higher education level (9 with college education or above and 1 unknown), compared to the 5 farmers with agriculture household status (all with middle school/junior high school education or even below),
- (3) used to be or still are white collars having quite good economic status, and
- (4) having certain agriculture background in terms of influence in their childhood from parents or relatives doing agriculture (7 out of 10).

According to the interview with Ms. Huang, there are four types of urbanites who are interested in doing agriculture:

- 1) Those having parents or relatives still living in farming villages have easy access to farmland resources. They usually ask their relatives, friends or parents to help them with farm work when they are not available.
- 2) Those not having agriculture background, but with relatively strong financial force, tend to invest in agriculture to realize their life goal.
- 3) Real estate investors who want to take up farmland that is intended for future development.
- 4) Those who are only investing in agro-tourism and agro-services.

These aspects are to be tested in later sections from the questionnaire survey.

3.3 Factors influencing consumer choice on agro-products and participation in agro-activities of urbanites

3.3.1 Summaries of general observations

General consumer choice on agro-products

With the results from the 1025 questionnaire respondents valid for statistical analysis, Table 2 and Table 3 summarize the preference in the source of agro-products and the factors

being considered when choosing agro-products by urbanites.

Table 2: Preference in the source of agro-products

Source of agro-products	Relative frequency (%)	Estimation of mean
Purchasing from fresh markets	93.66	7.16±0.12
Purchasing from supermarkets	64.29	4.29±0.20
Free gifts from friends or relatives who are doing agriculture	45.85	3.13±0.21
Self-production	22.63	1.6±0.19
Directly purchasing from producers	10.44	0.60±0.11
Purchasing from online	8.20	0.42±0.09
CSA contracts	3.22	0.08±0.03

Note: Based on Question 2-1 in the questionnaire survey, respondents are asked to choose the sources of agro-products in use. Each respondent can choose more than one source. The relative frequency of each source is calculated regardless of the sequence of the choices.

The estimation of mean is based on the summary from the 1025 respondents. Each choice then becomes a variable, the value of which is based on a score from 0 to 8 according to the position of the choice in the sequence given by each respondent. If a certain choice in one observation is not chosen by the respondent, it is then given 0 in that observation. If a certain choice in an observation comes first in the sequence, it is given 8. The rest of the choices will be given 7, 6, etc. based on the sequence. The choice of “Others” is excluded from the statistical summary.

The estimation of mean composes of the point estimation $\pm 1.96se$ under $p=0.05$. se is the standard error.

Table 3: Factors being concerned when choosing agro-products

Factor	Relative frequency (%)	Estimation of mean
Freshness	97.66	5.44±0.07
Seasonality	65.46	2.99±0.14
Price	61.46	2.53±0.14
Cultivation method	49.07	2.15±0.14
Certification	37.85	1.35±0.12

Note: Based on Question 2-2 in the questionnaire survey, respondents are asked to choose the factors being concerned when choosing agro-products. Each respondent can choose more than one factor. The relative frequency of each source is calculated regardless of the sequence of the choices.

The estimation of mean is based on the summary from the 1025 respondents. Each choice then becomes a variable, the value of which is based on a score from 0 to 6 according to the position of the choice in the sequence given by each respondent. If a certain choice in one observation is not chosen by the respondent, it is then given 0 in that observation. If a certain choice in an observation comes first in the sequence, it is given 6. The rest of the choices will be given 5, 4, etc. based on the sequence. The choice of “Others” is excluded from the statistical summary.

The estimation of mean composes of the point estimation $\pm 1.96se$ under $p=0.05$. se is the standard error.

As seen in Table 2, fresh markets are most frequently used by urbanites as a source of

agro-products, followed by supermarkets. More than 40% of the respondents have been getting free agro-products as gifts from their relatives or friends while about 20% are producing certain agro-products on their own to some extent. The choices of directly purchasing from producers and CSA contracts are the major items of interest, since these ways of getting agro-products enables direct information exchange with producers, which then serves as a monitoring mechanism by consumers to control the product quality as well as cultivation method. Such monitoring can have an impact on the food safety issue as well as the agriculture pollution issue. However, the result shows that such direct contact between producer and consumer is rarely observed, since only about 10% of the target group would directly purchase agro-products from producers and only about 3% have CSA contracts with producers. The online stores can be either operated by producers directly or by dealers, which can be a way for exchanging agro-product information.

Result from Table 3 shows that freshness has been most concerned when urbanites are choosing agro-products, followed by seasonality. Price has been a concern, but not a major one. Cultivation method is only concerned by about half of the group, and is not a top priority. Certification comes last with a little more than one-third of the group taking it into consideration. However, concerns towards cultivation methods or certification by urbanite consumers could be an important driving force to control food safety as well as agriculture pollution issues.

General participation in agro-activities

Table 4 shows the percentage of respondents participating in different types of agro-activities, corresponding to item (4), (5), (6) and (7) in Question 3-4 and the estimation of average frequency of participation by each respondent. Table 5 shows the values being appreciated in participating in different activities.

Table 4: Participation in agro-activities by urbanites

Activity	Relative frequency (%)	Estimation of mean
On-farm restaurant experience	63.61	1.06±0.06
On-farm harvest experience	51.80	0.64±0.04
Farming for self-consumption	10.44	0.18±0.04
Business farming	4.49	0.07±0.02

Note: Based on Question 3-4 in the questionnaire survey, respondents are asked to choose the activities that they have been participating in. Each respondent can choose more than one activity. The relative frequency of each activity is calculated regardless of how frequently the respondent participates in that activity.

The estimation of mean is based on the summary from the 1025 respondents. Each activity then becomes a variable, with a score given based on the following:

0: No participation at the moment;

1: Seldom (at least once a year but less than once a month);

2: Sometimes (at least once a month but less than once a week);

3: Often (at least once a week)

The choice of “Others” is excluded from the statistical summary.

The estimation of mean composes of the point estimation $\pm 1.96se$ under $p=0.05$. se is the standard error.

Table 5: Values appreciated in participating in the agro-activities

Value	Relative frequency (%)	Estimation of mean
Friendship or kinship	74.44	7.84±0.29
Sense of entertainment and relaxation	60.98	5.83±0.29
Agriculture landscape	46.05	4.33±0.29
Safe agro-product source	36.88	3.35±0.28
Traditional cooking	30.54	2.59±0.24
Traditional cultivation methods	22.63	1.88±0.22
Traditional custom	21.46	1.68±0.20
Historical sites	9.37	0.57±0.11
Economic profit	7.51	0.38±0.10
Family inheritance	4.78	0.26±0.09

Note: Based on Question 3-5 in the questionnaire survey, respondents are asked to choose the items that they value by participating in agro-activities. Each respondent can choose more than one item. The relative frequency of each item that has been valued is calculated regardless of the sequence of the choices.

The estimation of mean is based on the summary from the 1025 respondents. Each choice then becomes a variable, the value of which is based on a score from 0 to 11 according to the position of the choice in the sequence given by each respondent. If a certain choice in one observation is not chosen by the respondent, it is then given 0 in that observation. If a certain choice in an observation comes first in the sequence, it is given 11. The rest of the choices will be given 10, 9, etc. based on the sequence. The choice of “Others” is excluded from the statistical summary.

The estimation of mean composes of the point estimation $\pm 1.96se$ under $p=0.05$. se is the standard error.

As shown in Table 4, recreational agro-activities, mainly including enjoying on-farm restaurant services and harvest experiences, are much more frequently participated than farming activities by urbanites. Both of the two popular recreational agro-activities have seen participation from more than half of the target population. Farming activities are participated by only about 10% of the target population.

The values being most appreciated include the sense of recreation and relaxation and agriculture landscape, ranking 2nd and 3rd respectively in Table 5. Because Question 3-5 is asked after Question 3-4 which includes activities such as visiting friends or relatives and attending wedding or other ceremonies, the appreciation for friendship or kinship might be a reflection on those activities. Other values such as the safe agro-product resource, traditional cultural values in terms of cooking, cultivation methods and custom, have been moderately appreciated. Histories, economic profits, family inheritance values have been appreciated least.

3.3.2 Effect of age, education and income level

As introduced in Chapter 2, multivariate regression has been used to test the effects of age, education and income level on consumer choice on agro-products, including preference in different sources of agro-products and factors being concerned when choosing agro-products, and participation in agro-activities. Age, education year and income level have been set as the explanatory variables in the regressions. The discrete scores of different income levels have been explained in the note of Table 6.

Age, education and income effect on consumer choice on agro-products

Table 6: Effect of age, education and income on the preference in source of agro-products

	(1)	(2)	(3)	(4)	(5)	(6)	(7)
Age	-0.084*** (-2.84)	-0.011 (-0.73)	0.022 (1.27)	0.085*** (3.01)	-0.003 (-0.22)	-0.081*** (-3.09)	-0.002 (-0.55)
Education year	0.329*** (6.67)	-0.024 (-0.91)	0.047 (1.63)	0.149*** (3.15)	0.051** (2.38)	-0.052 (-1.18)	0.004 (0.58)
Income level	-0.007 (-0.08)	0.046 (0.97)	0.117** (2.25)	0.060 (0.70)	0.06 (1.53)	-0.143* (-1.8)	-0.009 (-0.73)
F	9.677***	0.328	2.471**	4.141***	2.081*	3.229***	0.207
R ²	0.054	0.002	0.014	0.024	0.012	0.019	0.001

Note: t-value is shown in parenthesis.

The income level for each observation has been given a discrete score as follows:

1: Less than 2000 *yuan*/month,

2: 2000~4000 *yuan*/month,

3: 4001~6000 *yuan*/month,

4: 6001~8000 *yuan*/month,

5: 8001~10000 *yuan*/month,

6: More than 10000 *yuan*/month;

(1) refers to preference in free gifts from friends or relatives who are doing agriculture as a source of agro-products.

(2) refers to preference in directly purchasing from producers as a source of agro-products.

(3) refers to preference in purchasing from fresh markets as a source of agro-products.

(4) refers to preference in purchasing from supermarkets as a source of agro-products.

(5) refers to purchasing from online as a source of agro-products.

(6) refers to self-production as a source of agro-products.

(7) refers to CSA contracts as a source of agro-products.

The values of (1) ~ (7) have been explained in the note of Table 2.

***, ** and * mean significance at the 1%, 5% and 10% levels, respectively (N=1025)

Table 6 shows that younger people or people with higher education level tend to get free agro-products from friends and relatives more frequently. People with higher income tend to purchase from fresh markets slightly more often. Older people or people with higher education tend to use supermarkets as source of agro-products more often. People with higher education also tend to purchase online more frequently. Younger people or people or those with lower income tend to have self-produced agro-products as a source more often. The major concern has been purchasing agro-products directly from producers or through CSA contracts, where direct contact with producer and more effective exchange of information on agro-products are possible, thus improving the quality of agro-products as well as controlling the agriculture pollution. However, the results show no significant effect of age, education and income level on these sources of agro-products by urbanites when they are getting agro-products.

Table 7: Effect of age, education and income on factors being concerned when choosing agro-products

	(1)	(2)	(3)	(4)	(5)
Age	0.022 (1.15)	-0.007 (-0.76)	-0.012 (-0.62)	-0.005 (-0.24)	-0.011 (-0.67)
Education year	0.064** (1.98)	-0.007 (-0.46)	0.269*** (8.27)	0.121*** (3.54)	-0.005 (-0.19)
Income level	-0.163*** (-2.79)	0.024 (0.81)	0.030 (0.50)	0.002 (0.04)	0.081 (1.60)
F	2.772**	0.648	13.902***	2.925***	1.024
R ²	0.016	0.004	0.076	0.017	0.006

Note: t-value is shown in parenthesis.

The score for income level has been explained in the note of Table 6.

(1) refers to the emphasis on price when choosing agro-products.

(2) refers to the emphasis on freshness when choosing agro-products.

(3) refers to the emphasis on seasonality when choosing agro-products.

(4) refers to the emphasis on cultivation methods when choosing agro-products.

(5) refers to the emphasis on certification when choosing agro-products.

The values of (1) ~ (5) have been explained in the note of Table 3.

*** and ** mean significance at the 5% and 10% levels, respectively (N=1025)

Results from Table 7 show that people with lower education level and higher income level

address less on the price of agro-products. People with higher education level also tend to concern more about the seasonality and cultivation methods of agro-products. There is no significant effect of age, education and income on the concerns towards the freshness and certification of agro-products.

Age, education and income effect on agro-activity participation

From table 8, it can be inferred that generally, younger people tend to participate slightly more in all types of agro-activities. With higher education, people tend to participate more in on-farm harvest experiences and less in farming for self-consumption. People with higher income tend to enjoy on-farm restaurant services more often.

Table 8: Effect of age, education and income on agro-activity participation

	(1)	(2)	(3)	(4)
Age	-0.011* (-1.75)	-0.016* (-1.77)	-0.015*** (-2.84)	-0.007** (-2.03)
Education year	0.02* (1.91)	0.002 (0.17)	-0.016* (-1.87)	-0.007 (-1.22)
Income level	0.011 (0.55)	0.069*** (2.59)	-0.001 (-0.08)	-0.001 (-0.08)
F	1.829*	2.030*	2.068*	1.500
R ²	0.011	0.012	0.012	0.009

Note: t-value is shown in parenthesis.

The score for income level has been explained in the note of Table 6.

(1) refers to how frequently one participates in on-farm harvest experiences.

(2) refers to how frequently one enjoys on-farm restaurant services.

(3) refers to how frequently one participates in farming for self-consumption.

(4) refers to how frequently one participates in business farming.

The values of (1) ~ (4) have been explained in the note of Table 4.

***, ** and * mean significance at the 1%, 5% and 10% levels, respectively (N=1025)

Table 9: Effect of age, education and income on values appreciated in participating in agro-activities

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
Age	0.036 (-0.89)	0.020 (0.48)	-0.055 (-1.36)	-0.007 (-0.20)	0.007 (0.23)	-0.009 (-0.57)	0.027 (0.93)	-0.100** (-2.52)	0.010 (0.72)	0.008 (0.63)
Education year	0.203*** (2.98)	0.320*** (4.67)	0.393*** (5.78)	0.018 (0.31)	-0.114** (-2.19)	-0.024 (-0.89)	-0.044 (-0.90)	0.064 (0.96)	-0.013 (-0.59)	-0.032 (-1.53)
Income level	0.101 (0.81)	0.169 (1.36)	0.232* (1.88)	0.144 (1.37)	-0.030 (-0.32)	-0.053 (-1.07)	-0.118 (-1.33)	-0.200* (-1.66)	-0.109*** (-2.64)	-0.037 (-0.97)
F	3.258***	5.652***	8.920***	1.447	2.165**	1.089	0.981	1.803*	2.049*	1.932*
R ²	0.019	0.032	0.050	0.009	0.013	0.006	0.006	0.011	0.012	0.011

Note: t-value is shown in parenthesis.

The score for income level has been explained in the note of Table 6.

(1) refers to the emphasis on friendship and kinship as a value appreciated in participating in agro-activities.

(2) refers to the emphasis on agriculture landscape as a value appreciated in participating in agro-activities.

(3) refers to the emphasis on entertainment and relaxation as a value appreciated in participating in agro-activities.

(4) refers to the emphasis on traditional cooking as a value appreciated in participating in agro-activities.

(5) refers to the emphasis on traditional cultivation methods as a value appreciated in participating in agro-activities.

(6) refers to the emphasis on historical sites as a value appreciated in participating in agro-activities.

(7) refers to the emphasis on traditional custom as a value appreciated in participating in agro-activities.

(8) refers to emphasis on safe agro-product source as a value appreciated in participating in agro-activities.

(9) refers to the emphasis on economic profit as a value appreciated in participating in agro-activities.

(10) refers to the emphasis on family inheritance as a value appreciated in participating in agro-activities .

The values of (1) ~ (10) have been explained in the note of Table 5.

***, ** and * mean significance at the 1%, 5% and 10% levels, respectively (N=1025)

Results from Table 9 show that younger people tend to value more the safety of agro-products obtained through participating in agro-activities. People with higher education put more values on friendship or kinship, the agriculture landscape, the sense of entertainment and relaxation by participating in agro-activities, but slightly less appreciation towards the traditional cultivation methods. Higher income group also tend to value the sense of entertainment and relaxation more, but appreciate less the product safety and possible economic profit in participating in agro-activities. It seems that none of the above three factors help people to address more the traditional cultural values embedded in urban agriculture activities.

3.3.3 Agriculture background effect

Agriculture background means those having direct family members working in agriculture sector. Among the 1025 valid questionnaire respondents, 652 do not have agriculture background, while the rest 373 have certain agriculture background. T-test has been used to test the difference, calculated by the mean score of respondents having immediate family member in agriculture sector minus the mean score of respondents having no immediate family member in agriculture sector of each variable. In order to reduce the effect from age, education and income, the three explanatory variables in section 3.3.2 have been tested using t-score as response variables under the effect of agriculture background, shown in Table 10. There is only a little difference in the education year between the two groups. We may almost assume that the effect of agriculture background is independent of the effect from other factors. The null hypothesis for the t-test has been the difference between the two groups equals zero in testing any variables.

Table 10: Age, education and income level differences under the effect of agriculture background

Variables	t-score	95% CI of difference
Age	-0.65	(-0.631,0.319)
Education year	1.86*	(-0.015,0.579)
Income level	0.93	(-0.084,0.234)

Note: the score for income level has been explained in the note of Table 6.

* means significance at the 10% level.

Agriculture background effect on consumer choice on agro-products

Table 11: Agriculture background effect on the preference in source of agro-products

Source of agro-products	t-score	95% CI of difference
Free gifts from friends or relatives who are doing agriculture	3.13***	(0.264, 1.154)
Directly purchasing from producers	1.34	(-0.075, 0.399)
Purchasing from fresh markets	-4.70***	(-0.924, -0.379)
Purchasing from supermarkets	-3.10***	(-1.070, -0.241)
Purchasing from online	0.02	(-0.185, 0.189)
Self-production	6.41***	(0.924, 1.740)
CSA contracts	1.89	(-0.002, 0.135)

Note: *** means significance at 1% level.

As indicated in Table 11, people having agriculture background tend to get free agro-products from their friends or relatives more often than those having not. The group having agriculture background also tend to have self-production as a source of agro-products more frequently, who are then less frequently purchasing agro-products from fresh markets or supermarkets. There is no significant difference in how frequently the two groups are purchasing agro-products directly from producers or through CSA contracts, which are the major concerns in this study as stated in the previous sections.

Table 12: Agriculture background effect on factors being concerned when choosing agro-products

Factor	t-score	95% CI of difference
Price	1.06	(-0.130,0.441)
Freshness	-1.00	(-0.215,0.070)
Seasonality	-1.20	(-0.477,0.116)
Cultivation methods	1.05	(-0.141,0.463)
Certification	-1.31	(-0.400,0.079)

According to Table 12, it seems that agriculture background does not have significant effect on any of those factors being concerned when people are choosing their agro-products.

Agriculture background effect on agro-activity participation

Table 13: Agriculture background effect on agro-activity participation

Activity	t-score	95% CI of difference
On-farm harvest experience	4.83***	(0.142,0.337)
On-farm restaurant experience	2.25**	(0.019,0.285)
Farming for self-consumption	2.79***	(0.035,0.203)
Business farming	2.55**	(0.018,0.136)

Note: *** and ** mean significance at the 1% and 5% levels, respectively.

According to the results show in Table 13, it can be inferred that people having agriculture background are more frequently participating in all types of agro-activities.

According to Table 14, people having agriculture background tend to value more the cultural traditions embedded in urban agriculture such as the traditional cultivation methods and the traditional custom. They also tend to value more the possible economic profit and family inheritance through such activities. However, they tend to generally appreciate the entertainment and relaxation less through such activities. It can be seen also they slightly value more the safety of agro-products through such activities.

Table 14: Agriculture background effect on values appreciated in participating in agro-activities

Value	t-score	95% CI of difference
Friendship or kinship	-0.05	(-0.618, 0.585)
Agriculture landscape	1.07	(-0.275, 0.937)
Sense of entertainment and relaxation	-2.82***	(-1.477,-0.265)
Traditional cooking	-0.30	(-0.582, 0.429)
Traditional cultivation methods	3.35***	(0.332, 1.273)
Historical sites	1.37	(-0.072, 0.411)
Traditional custom	3.06***	(0.246, 1.128)
Safe agro-product source	1.87*	(-0.030, 1.138)
Economic profit	3.28***	(0.152, 0.605)
Family inheritance	2.88***	(0.100, 0.530)

Note: *** and * mean significance at the 1% and 10% levels, respectively.

3.3.4 Gardening habit effect

Among the 1025 valid questionnaire respondents, 389 have gardening habits either on their rooftop or vacant lots near their houses or apartments. T-test on means has been conducted between groups having gardening habit and groups not having such habits. The difference of the means is calculated by the means of those having no gardening habit minus those having gardening habits. To reduce the effects from other factors, t-test has also been conducted on age, education year and income, show in Table 15. From Table 15, it can be seen that people having no gardening habits tend to be a little older and earn a bit more than those having gardening habits. As for the effect of agriculture background, the proportion of people having gardening habits among those with agriculture background is estimated to be 11.7% to 24.1% higher than those without agriculture background at 95% CI.

Table 15: Age, education and income level differences under the effect of gardening habits

Variables	t-score	95% CI of difference
Age	1.98**	(0.003,0.967)
Education year	1.07	(-0.132,0.452)
Income level	1.67*	(-0.023,0.290)

Note: the score for income level has been explained in the note of Table 6.

** and * mean significance at the 5% and 10% levels, respectively.

Effect of gardening habits on consumer choice on agro-products

Table 16: Effect of gardening habits on the preference in source of agro-products

Source of agro-products	t-score	95% CI of difference
Free gifts from friends or relatives who are doing agriculture	0.52	(-0.320, 0.550)
Directly purchasing from producers	-4.71***	(-0.839,-0.345)
Purchasing from fresh markets	0.49	(-0.103,-0.172)
Purchasing from supermarkets	3.50***	(0.320, 1.140)
Purchasing from online	-1.08	(-0.290, 0.085)
Self-production	-20.00***	(-4.161,-3.416)
CSA contracts	-4.39***	(-0.236,-0.090)

Note: *** means significance at 1% level.

According to the result from Table 16, those having gardening habits tend to more frequently purchasing agro-products directly from producers or based on CSA contracts,

which is important in exchanging the information on agro-products to control product quality and agriculture pollution. Self-production is far more preferred by them as a source of agro-products. They also tend to purchase agro-products from supermarkets less frequently.

As shown in Table 17, people having gardening habits are showing much more concerns towards how agro-products have been produced. The differences of the rest of the factors remain almost the same between the two groups.

Table 17: Effect of gardening habit on factors being concerned when choosing agro-products

Factor	t-score	95% CI of difference
Price	0.78	(-0.167, 0.387)
Freshness	0.49	(-0.103, 0.172)
Seasonality	0.52	(-0.215, 0.370)
Cultivation methods	-2.91***	(-0.741, -0.144)
Certification	-0.41	(-0.295, 0.194)

Note: *** means significance at 1% level.

Effect of gardening habits on agro-activity participation

Table 18: Effect of gardening habits on agro-activity participation

Activity	t-score	95% CI of difference
On-farm harvest experience	-3.23***	(-0.250, -0.061)
On-farm restaurant experience	-0.68	(-0.178, 0.086)
Farming for self-consumption	-5.14***	(-0.312, -0.139)
Business farming	-3.70***	(-0.171, -0.053)

Note: *** means significance at the 1% level.

As shown in Table 18, people having gardening habits tend to be more frequently involved in harvesting experiences as well as both types of farming activities.

Table 19: Effect of gardening habits on values appreciated in participating in agro-activities

Value	t-score	95% CI of difference
Friendship or kinship	2.66***	(0.215, 1.420)
Agriculture landscape	-0.38	(-0.715, 0.481)
Sense of entertainment and relaxation	0.53	(-0.440, 0.763)
Traditional cooking	-0.46	(-0.621, 0.384)
Traditional cultivation methods	-4.41***	(-1.522, -0.585)
Historical sites	-3.10***	(-0.642, 0.145)
Traditional custom	-2.98***	(-1.093, -0.225)
Safe agro-product source	-4.58***	(-1.941, 0.777)
Economic profit	-3.28***	(-0.580, -0.146)
Family inheritance	-3.22***	(-0.550, -0.133)

Note: *** means significance at the 1% levels, respectively.

As shown in Table 19, people having gardening habits tend to appreciate more the cultural traditions embedded in urban agriculture including the traditional cultivation methods, the history and traditional custom. They also tend to value more on the safety of products as well as the possible economic profits and family inheritance. However, they emphasize less on the friendship or kinship in participating in agro-activities.

3.4 Association between agro-activity participation and consumer choice on agro-products

As stated in section 2.4.2, multivariate regression has also been used to the influence of frequency in agro-activity participation on the consumer choice on agro-products and the values they appreciate in agro-activity participation. According to Table 20, it can be inferred that those who are more frequently enjoying the on-farm restaurant services as well as farming for self-consumption tend to purchase directly from producers more often. And for those participating in harvest experiences, both of the two types of farming activities, self-production is a more frequently used source of agro-products. Whereas, people doing business farming tend to less frequently purchasing agro-products from fresh markets and those doing farming for self-consumption tend to less frequently purchasing agro-products from supermarkets.

Table 20: Association between participation in agro-activities and the preference in source of agro-products

	(1)	(2)	(3)	(4)	(5)	(6)	(7)
(a)	-0.035 (-0.13)	0.073 (0.53)	-0.011 (-0.08)	0.143 (0.57)	0.126 (1.11)	0.372* (1.70)	-0.005 (-0.15)
(b)	0.186 (1.19)	0.171** (2.13)	0.018 (0.20)	-0.110 (-0.75)	0.124* (1.85)	-0.189 (-1.47)	0.027 (1.24)
(c)	-0.476 (-1.00)	0.661*** (2.69)	0.149 (0.56)	-1.103** (-2.47)	-0.076 (-0.38)	1.764*** (4.51)	0.100 (0.128)
(d)	0.121 (0.22)	-0.329 (-1.15)	-1.083*** (-3.48)	-0.348 (-0.67)	-0.085 (-0.36)	1.567*** (3.42)	-0.056 (-0.72)
F	2.119**	3.546***	5.410***	1.900*	0.701	14.249***	4.056***
R ²	0.021	0.034	0.051	0.018	0.007	0.123	0.039

Note: t-value is shown in parenthesis.

(a) refers to how frequently one participates in on-farm harvest experiences.

(b) refers to how frequently one enjoys on-farm restaurant services.

(c) refers to how frequently one participates in farming for self-consumption.

(d) refers to how frequently one participates in business farming.

The values of (a) ~ (d) have been explained in the note of Table 4.

(1) ~ (7) refers to the same variables as explained in the note of Table 6, the values of which have been explained in the note of Table 2.

***, ** and * mean significance at the 1%, 5% and 10% levels, respectively (N=1025)

Table 21: Association between participation in agro-activities and factors being concerned when choosing agro-products

	(1)	(2)	(3)	(4)	(5)
(a)	0.211 (1.24)	-0.039 (-0.46)	-0.632 (-0.36)	0.215 (1.19)	0.241 (1.63)
(b)	0.038 (0.38)	-0.019 (-0.39)	0.083 (0.79)	0.024 (0.23)	0.057 (0.66)
(c)	0.237 (0.77)	-0.091 (-0.60)	0.244 (0.77)	0.273 (0.84)	-0.075 (-0.28)
(d)	-0.237 (-0.66)	0.196 (1.11)	-0.430 (-1.15)	-0.799** (-2.11)	-0.119 (0.70)
F	0.391	0.684	0.750	0.997	0.800
R ²	0.004	0.007	0.007	0.010	0.008

Note: t-value is shown in parenthesis.

(a) ~ (d) refer to the same variables as explained in the note of Table 20, the values of which are explained in the note of Table 4.

(1) ~ (5) refers to the same variables as explained in the note of Table 7, the values of which have been explained in the note of Table 3.

** means significance at the 5% level (N=1025)

According to the results from Table 21, people involved in business farming tend to address less on the cultivation methods when choosing agro-products. Those people are more likely to gain agro-products mainly through self-production and the cultivation method might have already been taken into account through their farming activities.

Table 22 shows that most of the values listed in the table have been appreciated by those participating in recreational agro-activities including on-farm harvest experiences and restaurant services. People who participate in harvest experiences more often tend to address more on the traditional cultivation methods and those enjoy on-farm restaurant services more often appreciate more the traditional cooking as well as traditional custom. The recreational agro-activity participants tend to care less about the possible economic profit behind. People doing farming for self-consumption more frequently tend to value more the traditional cultivation methods. Those doing business farming tend to value less the agriculture landscape and the entertainment of urban agriculture, but address more on the possible economic profits.

Table 22: Association between participation in agro-activities and values being appreciated

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
(a)	0.208 (0.58)	2.198*** (6.19)	2.303*** (6.49)	0.485 (1.61)	1.155*** (4.37)	0.314** (2.20)	0.568** (2.25)	0.615* (1.81)	0.102 (0.89)	0.229** (2.13)
(b)	0.134 (0.64)	0.682*** (3.26)	0.760*** (3.64)	1.309*** (7.55)	0.341** (2.19)	0.197** (2.34)	0.668*** (4.49)	0.609*** (3.04)	-0.012 (-0.18)	0.144** (2.27)
(c)	-0.196 (-0.30)	-0.373 (-0.59)	0.697 (1.09)	-0.082 (-0.16)	1.240*** (2.61)	-0.116 (-0.45)	-0.197 (-0.44)	0.924 (1.52)	-0.155 (-0.75)	0.039 (0.20)
(d)	-0.651 (-0.86)	-1.723** (-2.31)	-1.655** (-2.22)	-0.328 (-0.53)	-0.101 (-0.18)	0.023 (0.08)	-0.495 (-0.93)	0.879 (1.23)	0.777*** (3.22)	0.241 (1.07)
F	2.215**	6.763***	7.466***	9.411***	8.963***	2.366***	4.386***	6.101***	9.074***	6.464***
R ²	0.021	0.063	0.069	0.085	0.081	0.023	0.042	0.057	0.082	0.060

Note: t-value is shown in parenthesis.

(a) ~ (d) refer to the same variables as explained in the note of Table 20, the values of which are explained in the note of Table 4.

(1) ~ (10) refer to the same variables as explained in the note of Table 9, the values of which are explained in the note of Table 5.

***, ** and * mean significance at the 1%, 5% and 10% levels, respectively (N=1025)

3.5 Demographic and geographic distribution of different patterns of urbanite involvement

3.5.1 Demographic distribution of different patterns of urbanite involvement

Based on the number of respondents choosing item (4) and (5) in Question 3-4 in the questionnaire survey, the estimation of the proportion of the target group having recreational involvement in urban agriculture is $71.12\% \pm 2.77\%$ with 95% confidence ($N=1025$, $z=1.96$).

Based on the number of respondents choosing item (6) and (7) in Question 3-4 in the questionnaire survey, the estimation of the proportion of the target group having farming involvement in urban agriculture is $11.51\% \pm 1.95\%$ with 95% confidence ($N=1025$, $z=1.96$).

The overlapping part of the above two patterns of urbanite involvement is estimated to be $10.44\% \pm 1.87\%$ with 95% confidence (see Figure 16).

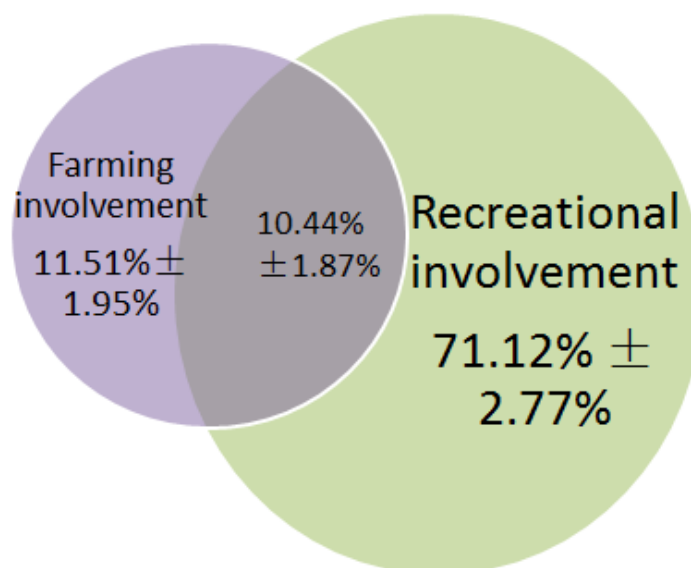


Figure 16: Proportion estimation of different patterns of urbanite involvement in urban agriculture

As shown above, a large portion of urbanites involved in farming activities, whether for

self-consumption or for business, is highly overlapping with those involved in urban agriculture for recreational purposes. However, because most people participate in agro-activities for recreation and landscape amenities, as shown in Table 5, how many of the recreational involvements can be actually turned into farming involvements cannot be predicted in this study.

3.5.2 Geographic distribution of different patterns of urbanite involvement

Recreational involvement

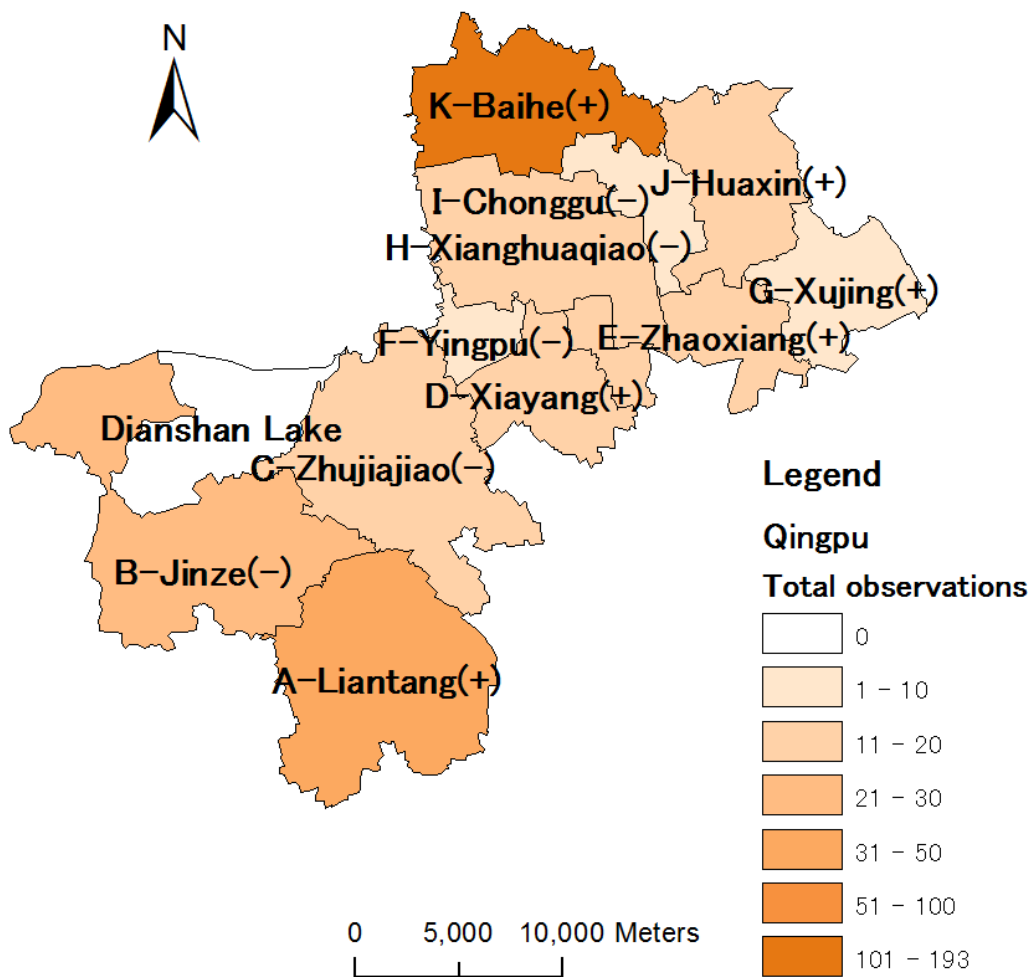


Figure 17: Observations of occurrence of harvest activities in 11 townships in Qingpu

Figure 17 shows the distribution of harvest activities in Qingpu district detailed to

township level based on the reports from all the questionnaire respondents. Table 23 shows the detailed numbers and also the percentage of observations in each township that are close to the residential area of the respondents, the same township where they have relatives or friends, the places with abundant cultural resources and related to none of the above factors.

Table 23: Observations of occurrence of harvest activities in 11 townships in Qingpu

Township	A	B	C	D	E	F
Total observations	33	26	15	18	18	5
Residence	6%	8%	27%	89%	17%	100%
Kinship or friendship	55%	65%	53%	83%	33%	60%
Cultural resources	30%	35%	33%	39%	17%	60%
None	45%	31%	33%	0%	61%	0%
Township	G	H	I	J	K	Total
Total observations	4	19	7	14	193	352
Residence	100%	5%	57%	14%	7%	N/A
Kinship or friendship	100%	42%	43%	57%	23%	N/A
Cultural resources	100%	16%	14%	50%	13%	N/A
None	0%	53%	14%	29%	72%	N/A

Note: Residence means the percentage of observations that are close to the residential area of the respondents. *Kinship or friendship* means the percentage of observations that are in the same township where the respondents have relatives or friends to visit. *Cultural resources* means the percentage of observations that are abundant in cultural resources. *None* means the percentage of observations that are not affected by the above three factors.

As shown in Table 23, the top three townships with the most observations (A-Liantang, B-Jinze and K-Baihe), taking up more than 70% of all the reported observations, tend to be places where the respondents visit their friends and relatives. Cultural resources account for about one-third of the observations to be attracted to enjoy harvest experiences in Liantang and Jinze. Apart from those factors, these places tend to be far from where the district center locates (see Figure 11 in Chapter 2), which means people prefer rural areas for harvest experiences. Also, Baihe is very famous for its strawberry, which might be another attraction for urbanites to enjoy the agro-activities there. The signs in the parentheses indicate whether the township government has been promoting urban agriculture with policy support or not. It can be inferred that Jinze has more potential to be explored to promote such activities since it is geographically preferred by urbanites, but not supported by the township government in

terms of policy.

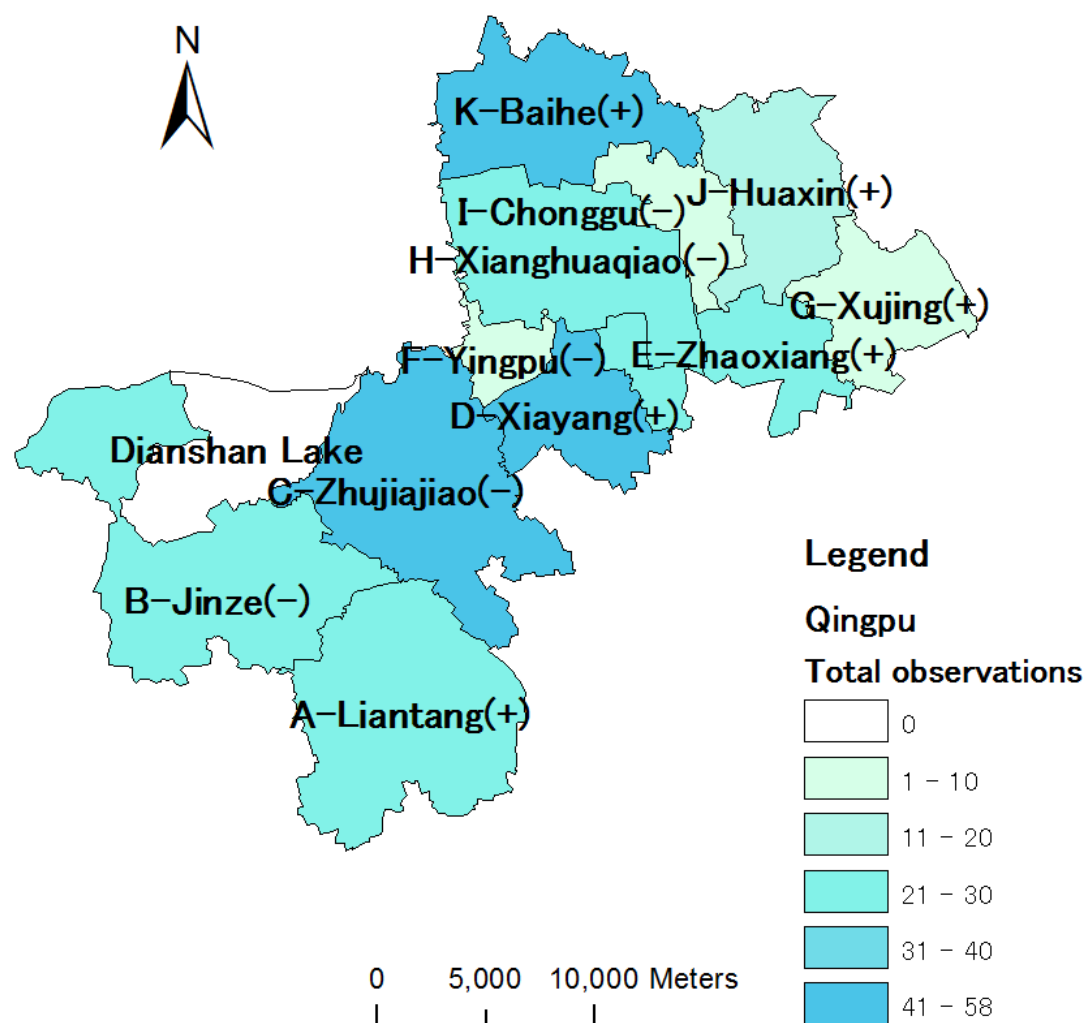


Figure 18: Observations of occurrence of on-farm restaurant services in 11 townships in Qingpu

Figure 18 together with Table 24 shows the geographic distribution of on-farm restaurant services reported by respondents in each township in Qingpu.

Table 24: Observations of on-farm restaurant services in 11 townships in Qingpu

Township	A	B	C	D	E	F
Total observations	27	30	48	51	27	9
Residence	7%	0%	10%	67%	30%	0%
Kinship or friendship	56%	63%	35%	59%	37%	67%
Cultural resources	33%	30%	21%	18%	22%	44%
None	41%	30%	56%	14%	48%	0%
Township	G	H	I	J	K	Total
Total observations	4	21	8	18	58	301
Residence	75%	33%	13%	22%	12%	N/A
Kinship or friendship	100%	57%	38%	83%	47%	N/A
Cultural resources	75%	19%	25%	61%	34%	N/A
None	0%	24%	38%	11%	17%	N/A

Note: all the variables have the same explanations as in the note of Table 23.

As shown in Table 24, the township that observes the most on-farm restaurant services (K-Baihe) is mostly due to kinship or friendship relations. The township that observes the second most on-farm restaurant services (D-Xiayang) is mostly due to being close to the residential area where the respondents live. For C-Zhujiajiao, it is an ancient township which has historical sites well preserved and is abundant in fresh aquaculture production due to its proximity to the Dianshan Lake. These aspects together with the beauty of the lake-farm scenery might be the reason for its attraction for on-farm restaurant services. However, Zhujiajiao township government does not emphasize on its agriculture attraction, the potential of which can be better explored with more policy support. Generally speaking, we can see the areas surrounding the Dianshan Lake, areas close to residence, as well as areas with kinship or friendship connections are preferred by urbanites to enjoy on-farm restaurant services.

Farming involvement

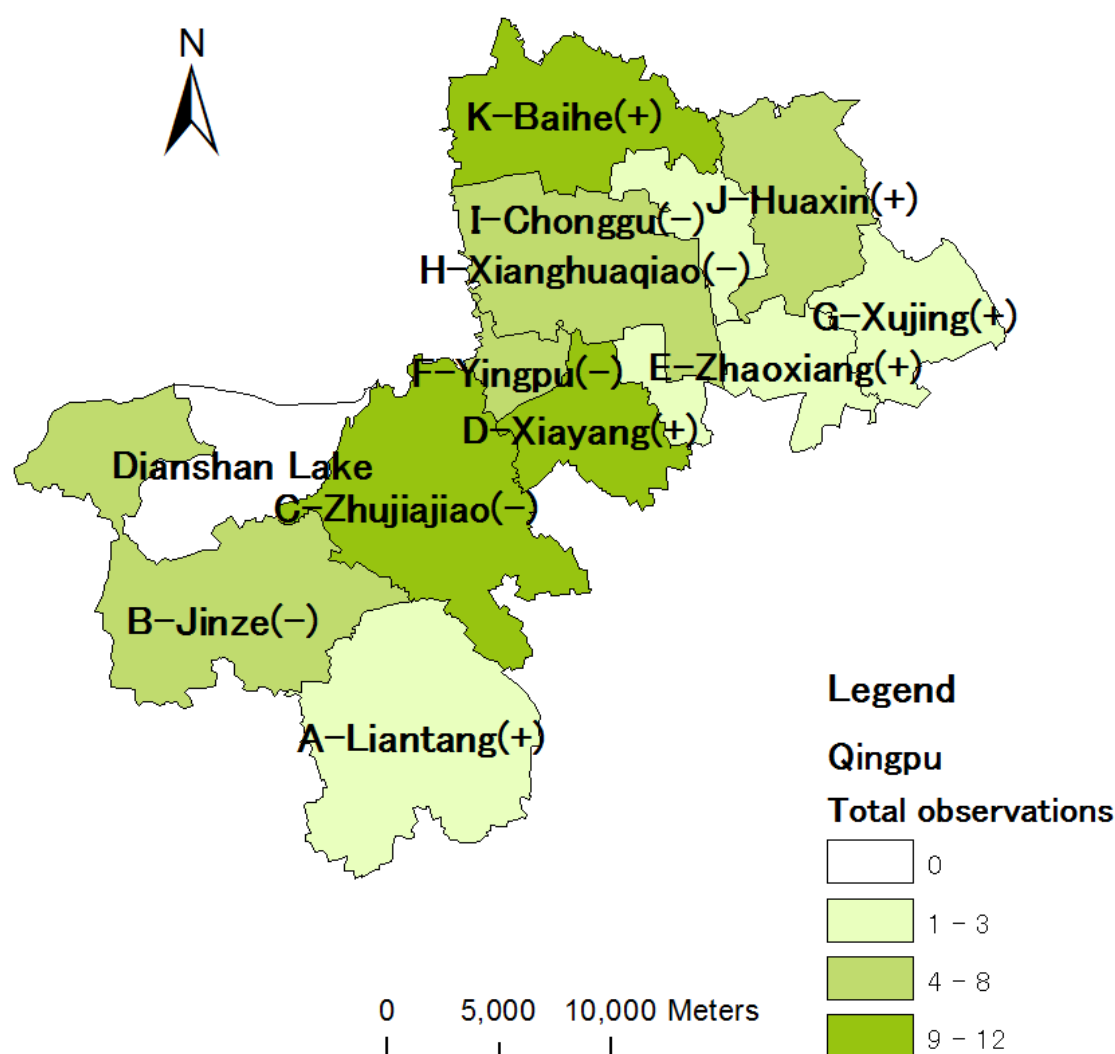


Figure 19: Observations of occurrence of farming for self-consumption in 11 townships in Qingpu

Table 25: Observations of farming activities for self-consumption in 11 townships in Qingpu

Township	A	B	C	D	E	F
Total observations	3	8	9	9	2	4
Residence	0%	0%	33%	67%	50%	100%
Kinship or friendship	67%	63%	67%	33%	0%	100%
Cultural resources	67%	50%	33%	33%	0%	50%
None	33%	38%	22%	22%	50%	0%
Township	G	H	I	J	K	Total
Total observations	1	5	2	5	12	60
Residence	100%	60%	50%	20%	25%	N/A
Kinship or friendship	100%	60%	50%	80%	67%	N/A
Cultural resources	100%	0%	50%	40%	50%	N/A
None	0%	20%	0%	0%	33%	N/A

Note: all the variables have the same explanations as in the note of Table 23.

Farming for self-consumption is not so commonly observed. Among the reported observations, the top three townships that are most observed with such activities include K-Baihe, C-Zhujiajiao and D-Xiayang. Kinship or friendship relations seem to be an important factor for the respondents to choose their place for farming practice in Baihe and Zhujiajiao. This is in accordance with the interview result with Ms. Huang (see Appendix A, III Interviews to the agriculture practitioners and farmers). In the case of D-Xiayang, the adjacency to residential area seems to be more important. Policy support might be needed for B-Jinze and C-Zhujiajiao in encouraging such activities, where observations are relatively more.

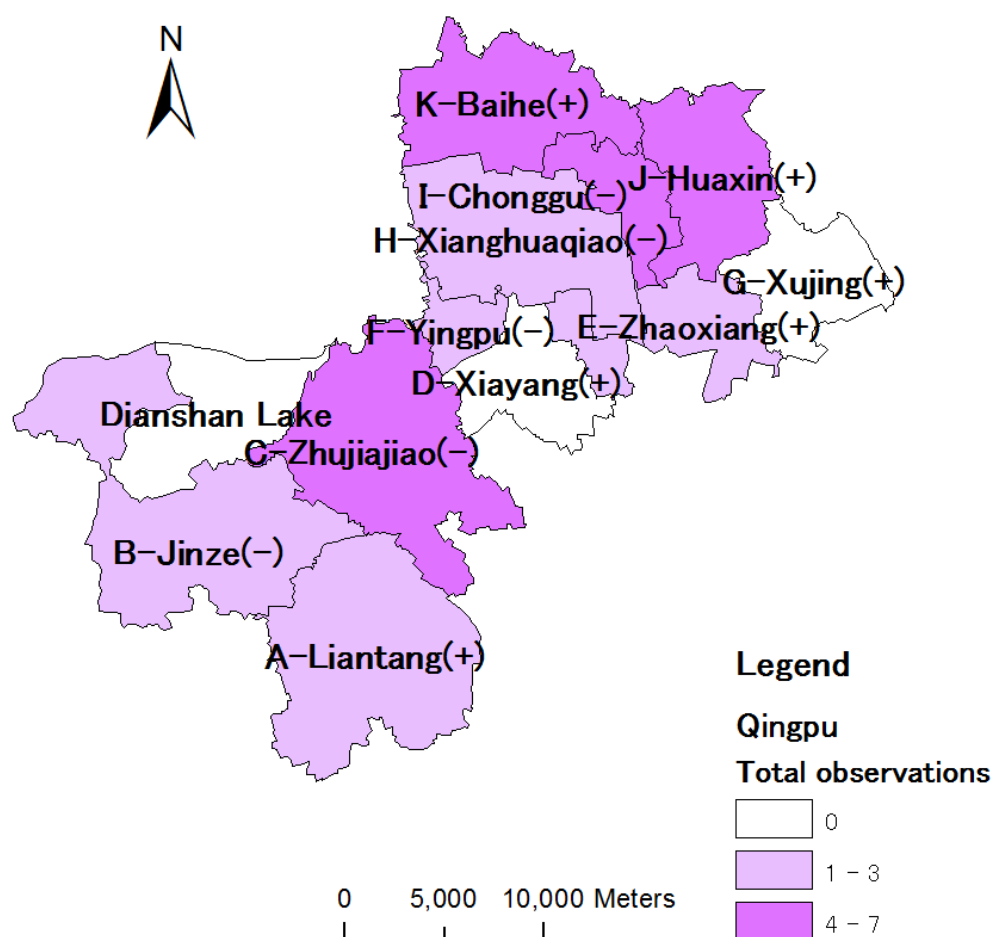


Figure 20: Observations of occurrence of business farming in 11 townships in Qingpu

Table 26: Observations of business farming activities in 11 townships in Qingpu

Township	A	B	C	D	E	F
Total observations	3	2	7	0	2	3
Residence	67%	0%	29%	0%	0%	67%
Kinship or friendship	67%	50%	43%	0%	50%	67%
Cultural resources	67%	50%	43%	0%	50%	67%
None	0%	50%	43%	0%	50%	33%
Township	G	H	I	J	K	Total
Total observations	0	1	5	5	6	34
Residence	0%	0%	20%	20%	50%	N/A
Kinship or friendship	0%	0%	40%	60%	50%	N/A
Cultural resources	0%	0%	40%	20%	17%	N/A
None (%)	0%	100%	40%	20%	33%	N/A

Note: all the variables have the same explanations as in the note of Table 20.

According to Figure 20 and Table 26, generally, areas farther away from the district center are preferred, even though kinship and friendship relations are important factors for business farming by urbanites to occur in most cases, such as the cases in K-Baihe, C-Zhujiajiao and J-Huaxin. Among the townships that are relatively abundant in such activities, C-Zhujiajiao and I-Chonggu are not supportive in terms of policies, where more potential exists in encouraging urbanites into business farming.

3.6 Public perspectives on sustainable urban agriculture

Table 27 summarizes the key words from the 119 reported observations in Question 3-6 in the questionnaire for answering the perspectives on sustainable urban agriculture.

According to the reported observations from Table 27, product safety, environmental protection and institutional change are the top three factors that the 119 urbanites think are important. For the institutional change, monitoring mechanism has been a major concern. Many people have been addressing the role of the public or consumers in monitoring the product quality.

Table 27: Public perspectives on important factors for sustainable urban agriculture

Categories	Agro-service promotion	Product safety	Accessibility
Key words	Agro-tourism Recreation Farming education Landscape amenities	Better quality Healthy Green No genetic modification(GM) Controlled/no use of chemicals Organic Seasonal products Fresh produce Certification on products	Farmland Farm Agro-products
Observations	13	67	9
Categories	Environmental protection	Conscience of producers	Technology
Key words	Low carbon Pollution free Air quality Energy efficiency	Credibility Good faith	Scientific cultivation methods Modernization Efficiency Transportation Information channel
Observations	39	6	19
Categories	Price	Farmland protection	Institutional change
Key words	Affordability Stability	Stablized amount Resistance to development	Management system Social service system Structural optimization Policy support (financial support, subsidies, planning strategies) Monitoring mechanism (Government, public) Market channel/accessibility
Observations	12	14	37

Categories	Capacity building	Consumer support	Profitability
Key words	Educational/technological support for producers Nurturing young farmers	Market demand Consumer supported agriculture	Farmer's income Livelihood Urban-rural inequality Financial benefit
Observations	7	7	4
Categories	Cultural tradition	Farming for self-consumption	Total
Key words	Friendship/kinship promotion Traditional custom	Rooftop/vacant lot gardening Farming for self-consumption	N/A
Observations	4	6	119

Referring to the most preferred sources of agro-products as explained in Table 2 in section 3.3.1, there should be mechanisms for the public to be able to obtain the information of the products, producers and ways of cultivation especially in the fresh markets and supermarket chains. Methods include introducing systems for the traceability of food (Regattieri et al., 2007).

3.7 Limitations of the study and future directions

Due to the limitation of time and operability, there have been constraints in terms of scale in this study. Firstly, this study only focuses on one specific district in Shanghai, but not on the municipality level. Secondly, the target population for questionnaire survey has also been limited to a specific group of interest. Thus, the generalization of the results for wider application needs to be testified with further empirical studies in a larger range and more randomized sampling for surveys.

The geographic data on the occurrence of different agro-activities have not been detailed to smaller scale to identify more geographic and cultural features of agro-activity participation.

However, the proposed framework can be replicated to capture the social phenomenon of

urbanite involvement in urban agriculture in cities with different sizes of population or economic development levels. Studies can also be conducted with the same case over different periods to capture the chronological changes of such a phenomenon. Adjustments might be needed to adapt the framework to different social contexts.

The issue of farmland decrease has not been addressed in this study because this is highly dependent on the urban planning strategies of the municipality and how the farmland protection law can be implemented by the government of all levels, which is out of the scope of this study. A policy study might be needed to address this issue.

Another point is that this study has focused on urbanites as the main stakeholder without touching upon the migrant farmers, another group of important stakeholder in urban agriculture in China. Future researches can focus on the behavior of migrant farmers, who are usually considered as the vulnerable groups in the social text of China.

The questionnaire survey in this study has not separated people by their registration status as an “agriculture household” or a “non-agriculture household”, which should be another issue to be considered in future researches.

4 CONCLUSIONS AND IMPLICATIONS

Two major patterns of urbanite involvement in urban agriculture, recreational involvement and farming involvement, have been discovered. It is estimated that more than two-thirds of the target group have been involved in urban agriculture for recreational on-farm activities, including harvest experience and restaurant services. Around 10% of the targeted urban population are involved in farming activities for self-consumption or for business. Both of the two patterns of involvement can address the challenges of agriculture pollution, income gap between agriculture household and non-agriculture household as well as the food safety issues. That is because with urbanites involved, more efficient information exchange on agro-products is possible when urbanites purchase their products directly through producers, as indicated in Table 20 in Chapter 3, which serves as monitoring mechanism for controlling agriculture pollution and food safety issues. Also more values have been appreciated, thus creating more income for farm managers through more participation in agro-activities, as shown in Table 22 in Chapter 3. Urbanite involvement in farming activities can also provide possible solutions for the labor shortage issue facing urban agriculture. Since people participating in farming activities are highly overlapped with those participating in recreational activities, it can be inferred that there might be more observations from those participating in recreational agro-activities then joining in real farming activities in the future.

For the factors influencing consumer choice on agro-products as well as the involvement in agro-activities, Figure 21 summarizes all the associations and interactions. With regard to the source of agro-products, special focus has been attached to the direct purchase from producers by urbanite consumers, as it is a more efficient way for information exchange on agro-products. For the factors being concerned when agro-products are chosen, concern

towards cultivation methods is highlighted. These two factors under the consumer choice on agro-products are addressed because they serve as a monitoring mechanism by urbanite consumers on pollution control and food safety. The values appreciated have been divided into three aspects including landscape and entertainment which are recreation based values, the cultural traditions including traditional cultivation methods and traditional custom, which reflects the cultural values embedded in urban agriculture, and the economic profit and inheritance values which indicates the potential for urban agriculture to be economically sustainable.

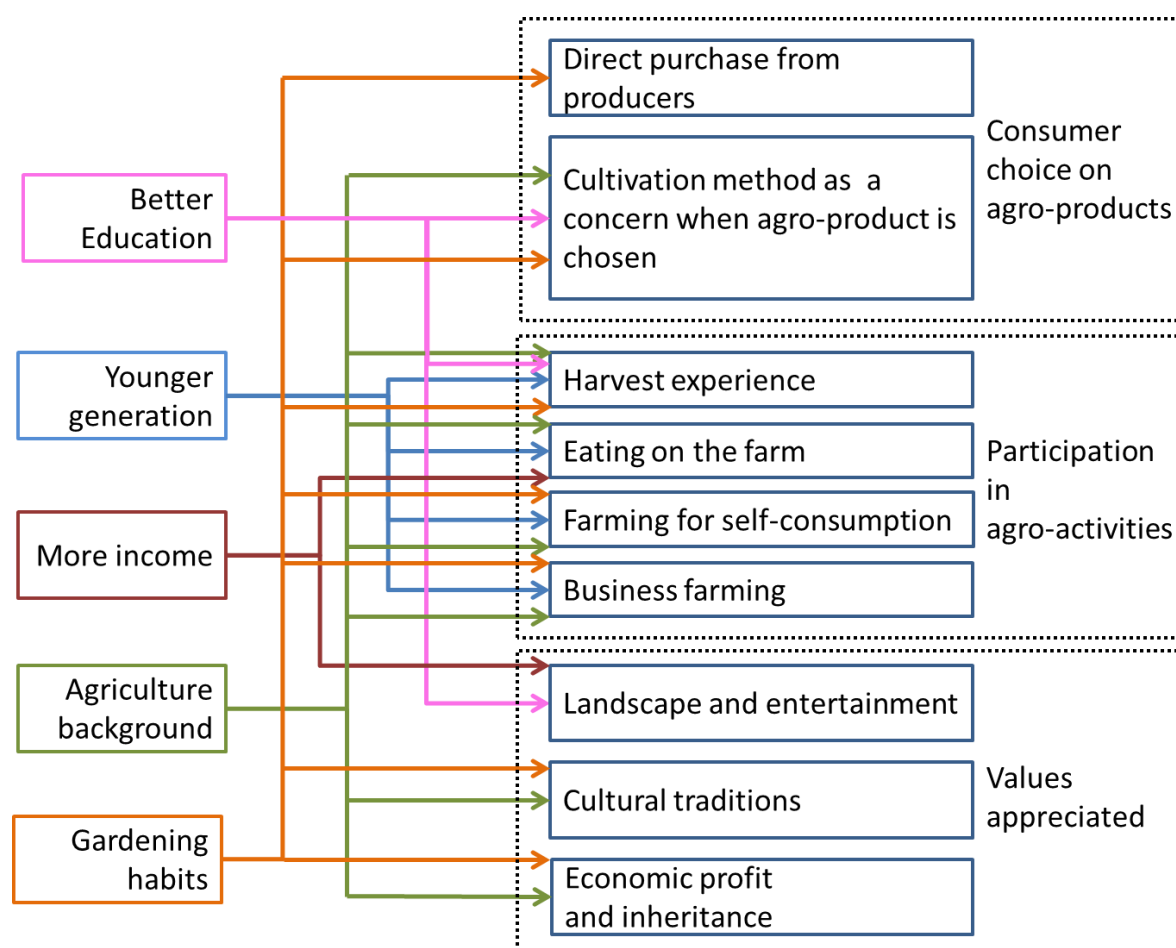


Figure 21: Factors positively influencing consumer choice on agro-products, participation in agro-activities and values appreciated

If we track back from the arrows shown in Figure 21, it can be inferred that urbanites who

are interested in all types of agro-activities are those younger in age, having agriculture background or gardening habits. These can serve as criteria for the farmland transfer system when selecting successful bidders for farm or farmland management, instead of the current tendency to transfer farmland management right to local villagers or agriculture households, who are relatively old with inadequate awareness towards environmental protection and food safety issues. With the increase of overall income level, we might be able to predict an increase in the participation in recreational agro-activities by urbanite consumers.

For the spatial distribution of different agro-activities, generally relations or connections based on kinship or friendship are always important factors for urbanites to get involved in urban agriculture. To be specific, harvest experiences are preferred in places either further away from downtown areas, or having specific agro-products, like strawberry in the case of Baihe. This corresponds to the appreciation for agriculture landscape by harvest experience participants, as indicated in section 3.4 in Chapter 3. While eat-on-farm experiences are generally preferred in places close to residence. Since the observations of farming activities are rare, it is hard to generate other features apart from kinship or friendship connections.

There are several townships where certain agro-activities are relatively abundant but without proper policy support, where more support is suggested to sustain the relative advantages of urban agriculture activities.

With limited reported observations of public perspectives on sustainable urban agriculture, it can be inferred with cautiousness that food safety is a major concern among urbanites, along with concerns towards the agricultural environment protection. Institutional changes such as introducing better monitoring mechanisms might be needed for better urban agriculture management.

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APPENDIX A

Interview Transcripts

I Interview to the Agriculture Committee of Qingpu District Government

1. What are the basic categories of farmland?

Based on the *Law of Land Administration of the People's Republic of China* and the *Agriculture Law of People's Republic of China*, the Prime Farmland is the protected farmland, the use of which is only restricted to the use of cultivation for crops or staples and is not allowed for the use of fish ponds, orchard or woodland.

For villagers, all types of land used for agriculture purpose are called farmland.

For Land Use Planning Departments, farmland includes arable land, woodland, orchards and fish ponds.

The exact amount of each type of farmland in Qingpu is currently under measurement.

2. Is there any mechanism for farmland transfer under the current policies?

Yes, there is. As long as a certain agriculture household has the contract rights to farmland, designated for 30 years per term, the management rights can be attached to any individual or entity that is not using the farmland for commercial or industrial development purposes. Those households having contract rights to farmland with the government can rent out their farmland freely under legal contracts and get payments accordingly.

The farmland transfer rate among agriculture households with farmland contract rights in Qingpu now reaches 75.4%.

The two main ways of farmland transfer include voluntary farmland transfer by agriculture households and farmland transfer under the Agriculture Committee. The latter one not only includes those farmland contracted with agriculture households, but also those contracted with village committees or equivalent collective entities or groups. The bidding for management rights undergoes the procedure in which individuals or entities are valued based on their financial background, technology, credibility and management plans.

Actually the government is encouraging farmland transfer under the Agriculture Committee so that the rights of agriculture households can be well protected and also the monitoring and management of such transferring process could be easier.

Agriculture households willing to transfer their farmland through the system under the Agriculture Committee will be granted 200 *yuan/mu* per year and receive a rent of 1000 *yuan/mu* at the moment.

3. What kind of subsidies are available for agriculture households?

Most of the subsidies are granted for managers of farmland, which include:

- (1) **Organic fertilizer**, the price of which is originally 400 *yuan/ton*, could be bought at a price of 100 *yuan/ton*, which means the government pays the additional 300 *yuan/ton* for the fertilizer. This means a discounted price as a subsidy and the receiver of the subsidy will not receive cash for this subsidy. This applies to all types of crops and vegetation, including staples, mainly rice, fruits and vegetables.
- (2) The application of **pesticide and herbicide** will be partly covered by the government. For example, one crop of rice will need 8~9 times of spray of pesticide and herbicide, the 6~7 times of which will be paid by the government.

- (3) **Seedlings and seeds** will be fully covered by the government, offered in real staff.
- (4) The use of **green manure** will be granted by the government according to the amount of farmland growing vegetation used for green manure. Such encouragement enhances the soil fertility and reduces the use of chemical fertilizer and pesticides, while putting the residues from crops, such as straws and stalks, into use.
- (5) **Staple subsidy** is granted according the amount of farmland used for growing staples.
- (6) **Vegetable subsidy** is granted to those who grow vegetables with an IC card of certain amount of deposit, which can be used to purchase necessary production inputs, such as fertilizers, pesticides and so on, at the will of the grower.
- (7) **Machinery subsidy** is granted to those purchasing machinery for agriculture production, with a certain percentage of the cost covered by the government.
- (8) **Scale operation subsidy** is granted to those managing rather large-scale farm production under the reference of the newly created policy supporting family farm. Those qualified in scale will be granted 150 *yuan/mu* for producing staples and 100 *yuan/mu* for producing vegetables.

4. Who are qualified as the Family Farm operators so as to get the scale operation subsidy?

There are several criteria to qualify one agriculture household to be the operators of a Family Farm.

- (1) The operators of a Family Farm have to be registered as agriculture household within the local district that grants the subsidy (not registered in other districts, or cities, or provinces; not registered as non-agriculture household even within the district).
- (2) The member of the household should be the main labor force to operate the farm. The labor employed by the household should not exceed the total number of family members of the household.
- (3) The household should be making a living highly dependent on agriculture. The income from agricultural production should take up over 80% of the total household income.
- (4) The Family Farm should be a scale operation, reaching 50 to 200 *mu* if staple is cultivated or 25 to 100 *mu* if vegetable is grown on the farm.
- (5) The Family Farm should have a clear balance sheet for record.
- (6) The Family Farm should be able to serve as a model for other farm operators.

5. Does the government still purchase staples as it did back in 1950s to 1970s?

When it comes to food security, the government still stores certain amount of staples by purchasing from farmers each year, usually under the instruction from the higher-level government. But nowadays, more often, farmers sell their products to dealers.

6. Where to get the contact of farmers and producers for further interview?

Each township has an agricultural information center which manages the information of farmland contracts and managers of farmland. It can be accessed through each township government.

II Interviews to the agriculture branches of township-level governments in Qingpu District

Interview1: Xujing Zhen Government - Agricultural Branch

Interviewees: Mr. WU Y. and Mr. ZHU W. (2013.08.05)

General agricultural condition in Xujing:

Farmland in Xujing has been distributed in 9 villages within its administration. Most of the farmland has been transferred from the original agriculture households, who have 30 years contract rights to farmland, to the village committees. The village committees then transfer the management rights to cooperatives or migrant workers. A village called Jinyun in Xujing has part of its farmland designated as Prime Farmland which is protected by the Agriculture Law. However, another village called Lujiajiao has most of its farmland turned into residential sites for Economical Housing. The area for vegetable cultivation has amounted to about 1000 *mu*, while rice cultivation has reached about 1700 *mu* at the time of the interview. Two local villagers have established two cooperatives separately to manage rice-duck and rice-frog integrated farming, which takes up 400 *mu* of farmland. The rest 1300 *mu* have been cultivated separately by other households including migrant workers, which actually are the major agriculture labor force in Xujing. Most of the farmland in Xujing has been concentrated in three villages called Jinyun, Lujiajiao and Jinlian.

The requisition of farmland for other purpose of use should be submitted to the Municipality government with the acknowledgement of the national government.

The management of farmland has been mainly conducted by village committees, individual agriculture households or entrusted operation by other individual or entities with proper farmland transfer agreements or contracts.

Sales of agricultural products:

Agro-products in Xujing are normally not sold to supermarkets because supermarkets signs contracts with suppliers, which cannot reflect the instant market price of agro-products. The agriculture households have to abide by the price negotiated with dealers from supermarket chains. Such deals are not profitable for individual agriculture households.

Featured agricultural activities in Xujing:

The two cases of rice-duck and rice-frog integrated farming are both situated in Jinlian Village. Both of them receive regional and national subsidies. They use bio-pesticide for pest control. Products are sold through contracts with institutions or corporates, usually as welfare for the employees. The price of their products can reach 34~40 *yuan*/kilogram.

General observation:

Generally speaking, the officers in the Agriculture Branch of Xujing Zhen Government were very enthusiastic in promoting agriculture activities in the region. However, they also showed frustration towards the development pressure, since the township is very close to the city center of Shanghai.

Interview 2: Jinze Zhen Government – Agriculture Branch

Interviewees: Mr. LI X. and Mr. CHEN X. (2013.08.06)

General agricultural condition in Jinze:

The agriculture land in Jinze totally amounts to 60,241 *mu*, among which 27,764 *mu* is under the 30-year contract with agriculture households, and 4615 is private plots belonged to farmers out of the range of the farmland contract. The rest of the farmland goes to the 30

village committees within the administration of Jinze. At the time of the interview, the management right of totally 31646.64 *mu* of all the farmland has been transferred with totally 176 contracts. All the transfer procedures have gone through the farmland transfer system developed and monitored by the Agriculture Committee of Qingpu District.

Featured agricultural activities in Jinze:

There is a village called Cenbo in Jinze, which is famous for its diversified agriculture educational programs, agro-tourism and other activities. Several other villages in Jinze also promote agro-tourism or recreational farms. There is village called Caibang where a businessman from Taiwan is managing a farm specializing in growing strawberries. A businessman from Jiangxi Province grows grapefruit in a village called Dongtian, which is rare in the district. Chendong village is another model for promoting Family Farms.

General observation:

Officers in the Agriculture Branch of Jinze Zhen Government were not showing much interest in developing featured agriculture activities, even though many people interested in agriculture but without proper rights to farmland went to consult with them for getting farmland use rights. The township branch has problems in measuring the farmland area and calculating agriculture properties belonged to different individuals and entities. Special policies for agriculture promotion is lacking in the township government branch.

Interview with the Village Committee of Cenbo

Interviewee: Mr. ZHOU F. (2013.08.20)

General agricultural condition in Cenbo:

The total area of Cenbo Village is more than 3000 *mu*, among which 2000 to 2500 *mu* is for agriculture use, including fish ponds. The area of farmland used for cultivation is around 1500 to 1600 *mu*. 203 *mu* has been used for rice production, the management contract of which is signed with a local farmer who has big machinery. 180 *mu* is intended for growing vegetables and 70 *mu* for growing mushrooms. The rest of the farmland has been used for planting trees or used as nursery. Within the 180 *mu* farmland intended for growing vegetables, 20 *mu* has been contracted with a local cooperative for an agriculture experience farm, where urbanite people come and sign CSA (Community Supported Agriculture) contracts with the cooperative to claim for a small plot of farmland for weekend farming or gardening, similar to community garden. When urban consumers are not available even during weekends, the cooperative members, consists of local villagers, will help to look after their crops until they come and harvest, according to the agreement in the contract.

It is easier to get subsidies by forming up a cooperative. Especially that rice cultivation needs certificate for qualification to receive proper governmental support and subsidies. The pesticide and herbicide subsidy is actually distributed with an IC card, which contains 50 *yuan/mu* for the cooperative who applies.

Interview 3: Zhujiajiao Zhen Government – Agriculture Branch

Interviewees: Mr. SHEN G. and Ms. CHEN J. (2013.08.07)

General agricultural condition in Zhujiajiao:

The local farmers in Zhujiajiao Zhen are quite resistant to farmers from outside their own township. And Zhujiajiao Zhen is not keen in promoting ecological or organic agriculture, which they assume should be situated near natural protection areas. Another reason is that such kind of agriculture needs a lot of initial investment in road construction and other

infrastructure to attract more customers. Plus, the sales of the products remain as another problem. It is said that Cenbo village also did a lot of such investments. However, Zhujiajiao is undertaking a lot of development projects. So agriculture promotion is not a priority, despite the rich historical and cultural resources in the township.

The requisition of farmland also becomes a problem since the compensation for the vegetation on the ground goes to farm managers while the compensation for the farmland itself goes to Village Committees or villager's groups. Because of this, some people tend to plant trees just to receive compensations. This is also one of the reasons why Zhujiajiao Zhen hesitates to transfer farmland management rights.

The farmland management right transfer contracts are usually signed in the end of November or early September, namely between November 11 and December 31. Since 2010, there have been unified templates for contracts so that there could be standardized terms for better management and monitoring. New bidders for certain farmland management right have to pay 600yuan/mu for rent and another 500yuan/mu as guarantee. The original farmers who have contract rights to certain farmland will then receive 1020 yuan/mu as rent. Then there will be subsidies granted for the farmland managers including 270 yuan/mu for cultivation of crops, 120 yuan/mu for agriculture utilities, 150 yuan/mu for scale production from the township-level government and 150 yuan/mu for scale production from the district-level government, totally amounting to 600 yuan/mu in the case of Zhujiajiao. Local villagers are prioritized in the process of bidding and if conditions are basically same for several bidders, the decision will be made by lottery.

Even though farmers are encouraged to grow rice, rice cultivation cannot be lasted for three years without rotation. The wet rice can be sold at 0.6 yuan/kilogram and dry rice can be sold at 0.7 yuan/kilogram.

Featured agricultural activities in Zhujiajiao:

There are totally 28 villages in Zhujiajiao Zhen. However, the farmland in 2 villages called Xinwang and Zhangjiawei has been fully reclaimed by the government for development. 4 of the villages are fishing villages with no farmland. 2 villages have been used for green space to accommodate the up-coming development, and villagers are reregistered as urbanites. 2 other villages are undergoing villager relocation because of the new development of Zhujiajiao New Town. A village called Dianfeng is incorporated into a suburban park and a village called Shajiadai has to disappear because of the construction of a new railway. Because Shanwan Village and Xinhua Village are situated near a major highway, the villagers use their farmland only for planting trees. In Zhoudang Village, local villagers usually rent out their farmland to migrant farmers for growing vegetables. Wanlong Village also has a vegetable farm which is collaborated by local villagers and outsiders. In Zhangma Village, there is a blueberry garden, a loquat garden called Nongqingyuan and a farm with restaurant service called Xunmengyuan. Jianxin Village is probably the only village where local farmers still have the will to do farming. There are also several cases for CSA where organic vegetables and rice are produced.

General observation:

While a lot of things are going on in the agriculture sector in Zhujiajiao, the urban development needs excel the motivations to promote agriculture activities in the township government. The officers in the agriculture branch honestly expressed the unwillingness to compromise urban development opportunities to agriculture promotion.

Interview 4: Liantang Zhen Government – Agriculture Branch

Interviewee: Mr. LIU J. (2013.08.08)

General agricultural condition in Liantang:

Generally, the farmland in Liantang is managed by scale producers, cooperatives and individual agriculture households. According to statistics, there is totally 58,000 *mu* of farmland, among which 35,000 *mu* has been used for rice cultivation, usually planted in May or June and harvested in October or November. 1 *mu* of paddy field can yield about 500 to 700 kilograms of rice. The rotation crops can be wheat or barley, which accounts for 12,000 *mu*, 8000 *mu* of green manure and 10000 *mu* of water bamboo, which is the featured crop in the township. The rest of the farmland, amounting to 23000 *mu* has been used for specifically planting water bamboo. Other agricultural production includes 10000 *mu* of fish ponds and 3080 *mu* of vegetable plantation.

Most of the farmland management right transfer has been conducted under the farmland transfer system under the Agriculture Committee, which already accumulates to 35000 *mu* and the remaining 28000 to 30000 *mu* will also undergo such process. The transfer fee, or the farmland rent, is charged at 1200 *yuan/mu* per year. The water bamboo is mainly cultivated by individual agriculture households. After such transfer, the management right will go to 64 cooperatives including 6 for managing fish ponds, and the scale will be around several hundred to one thousand *mu* for each cooperative. 6 of such cooperatives have been the leading cooperatives in the region.

For individual agriculture households handling large scale rice protection, there are 48 of them who have been cultivating rice for more than 50 *mu*. 40 agriculture households are recognized as scale producers for planting water bamboo on farmland larger than 20 *mu*. Most of the vegetables have been cultivated by migrant farmers in greenhouses, and there are totally 70 of such migrant households. But some of them have been planting watermelon, which is too much burden for the soil and has been gradually stopped by the government.

Application of chemical fertilizers and pesticides is in accordance with national standard.

Featured agricultural activities in Liantang:

There are several trials for organic agriculture within Liantang. Mr TAO Z. has been producing organic rice which yields about 500 kilograms per *mu* annually and at be sold at 0.7 *yuan/kilogram*. He also tries to grow organic water bamboo, but the yield is not satisfactory and creates a lot of deficits. If it is not for the constant consumers of his, he will have to bear more loss.

Ms. HUANG G., graduated from one of the top universities in Shanghai, rents out about 80 *mu* farmland for organic cultivation. She hires human labor for weeding and has already invested about 20000 to 30000 *yuan* to her production. She has hired around 40 local labors to help her with her production. Because she has just started this business, there is not yet any data on her yield.

One of the attractions of Liantang is its Modern Agriculture Park. There have been a lot of things going on in this Park. The two famous agriculture corporates situated inside the park, Zizaiyuan and the Phoenix Ecological Park, or the Oriental Phoenix International Country Club known among its club members, take up 4000 *mu* and 600 *mu* of farmland respectively. Apart from rice production and vegetable cultivation, those corporates provides on-farm restaurant services, agriculture experiences, educational programs, agro-tourism, exhibition, accommodation and recreation services as well.

General observation:

Generally speaking, the officer of the Agriculture Branch in Liantang Government is very positive about the agro-activities happening in the township and is keen on promoting the featured agro-products along with agriculture festivals and other events.

But he holds on his opinion on the combination effort of urbanites and local villagers in farm management. He thinks that the problem lies in that many villagers are the elderly, even older than the legal age for working.

Interview 5: Baihe Zhen Government – Agriculture Branch

Interviewees: Mr. WU Q. and Ms. ZHOU B. (2013.08.08)

General agricultural condition in Baihe:

Baihe Zhen has totally 45000 *mu* of farmland, among which around 34000 *mu* has the contract rights belonging to individual agriculture households. Out of those 34000 *mu*, 13500 *mu* is now under the farmland transfer system, while the rest is either transferred by agriculture households directly or still under their cultivation. The Agriculture Committee of Qingpu District is requiring totally 100,000 *mu* of farmland within the district to be transferred under its farmland transfer system and Baihe Zhen has been required to contribute 12,000 *mu* of that number. Now all the contract rights and management rights to farmland are being confirmed. About 10% of the farmland in the township has been managed by migrant farmers. The farmland management right is transferred at an average price of 1400 *yuan/mu* annually.

Featured agricultural activities in Baihe:

Baihe is famous for its strawberry production, which can bring up the service industry with agro-activities and events. Up till the time of the interview, Baihe has successfully held the Strawberry Festival for 4 years during March, April and May, with visitors accumulating to 400,000. The restaurant and accommodation services have been provided by individual agriculture households, but lacking standard and regulations. But the situation is turning better these years. Wuli Village is the first to provide such services. Most of the businesses have been promoted online by young people living in the village. Services have been reserved through the internet. There are totally about 50 such households in Wuli Village providing such services. The top earner can actually earn 200,000 *yuan* within March and April. Another young college graduate in Nanxiang Village opened up an online store for selling strawberries and coordinates the supply chain to sell the products from the village. To avoid being out of stock, he also grows some strawberries by himself. The online store makes himself more than 100,000 *yuan*. On average, one household can earn about 70,000 to 80,000 *yuan* within the Strawberry Festival. But there are several problems with this. First of all, the delivery and quality of service is imbalance among different agriculture households. Secondly, the infrastructure such as parking lot and other facilities is not convenient. Thirdly, there lacks regulation and a lot of services have been disordered and malicious competition also occurs from time to time. Since there are totally more than 3000 agriculture households in Baihe growing strawberries, there lies opportunity to develop tourist routes based on that.

Another interesting case is a strawberry farm managed by a pre-white-collar, Ms. ZHOU Y., who used to work in a high-rise in the city center of Shanghai, and her father, Mr. ZHOU Y., who is originally a farmer in Jinxiang Village. The organic products by the Zhous won them several prizes. They even got the OFDC organic certificate in 2009. Other than selling the products, they also provide on-farm restaurant services, harvest experiences and agro-tourism services.

A similar story goes to Mr. ZHOU A., who established a cooperative to grow rice instead of his father, a local farmer owning contract rights to certain amount of farmland. Mr. ZHOU A. also runs a business as an urbanite during weekdays, selling medical devices.

Interview 6: Chonggu Zhen Government – Agriculture Branch

Interviewees: Ms. CAI M. and Mr. DING H. (2013.08.12)

General agricultural condition in Chonggu:

Chonggu does not stress on agricultural development. 90% of the farmland in the township has been cultivated by migrant farmers, which is in accordance to the population structure of the township with 36000 migrant workers out of the total population of 51000. Many of them have been producing vegetables and crops for economic benefits. Those migrant farmers usually rent out 2 to 3 *mu* of farmland per household for management, except for one farmer who has been managing a farm of 300 *mu*. However, the agricultural environment under their management has been in very poor condition. Especially greenhouse production has triggered a lot of heat pollution. The main focus of the agriculture branch in Chonggu is to improve the situation and start training programs, especially for vegetable, rice and wheat cultivation. Also, they have been trying to improve the living conditions of those migrant farmers as well, mainly focusing in two villages called Xinlian and Huilong, to rebuild the shacks in between the farmland where those migrant farmers live.

The rent for farmland in Chonggu has been 1400 *yuan/mu* for rice cultivation purpose. Farmers doing rice cultivation can receive subsidies.

Product safety control:

Vegetables produced have to undergo examinations for chemical residues before they can be sold. By sampling examination, 90% of the products reach the national criteria. Most of the pesticides and herbicides in use have been designated by the government, usually less toxic and more efficient. Products cannot be sold until two weeks after the application of pesticides.

Sales of agricultural products:

Most of the individual farmers sell their products to the nearby fresh markets or to dealers. Products produced by cooperatives are sold to the fresh markets in the city center of Shanghai or supermarket chains.

Featured agricultural activities in Chonggu:

There is one cooperative in Chonggu which opens up an on-farm restaurant and provides harvesting experiences. This Junyan Agriculture Cooperative has grown more than 100 *mu* of mushrooms as well. They also have vegetable delivery and other channels for selling their products.

Another case is a farm managed by Ms. WU Y., who is originally from Anhui Province. She establishes a vegetable delivery center on her farm with standard quality. She also provides restaurant service and other agro-tourism services on her farm.

General observation:

Instead of promoting agriculture in the township, Chonggu Zhen Government is more focusing on cleaning up the agriculture environment, especially those managed by migrant farmers, as well as their living conditions. There is no intention for other policy support for promoting agro-activities in the township.

Interview 7: Xianghuaqiao Jiedao Government – Agriculture Branch

Interviewee: Ms. ZHENG F. (2013.08.12)

General agricultural condition in Xianghuaqiao:

Even though there are totally 23 village committees in Xianghuaqiao, only 12 still have farmland, totally amounting to more than 20000, out of which 12600 *mu* is under contract rights to individual farmers. However, the transfer rate of the farmland with individual farmer's contract rights has reached 69.46%. Among the 12600 *mu*, 7000 to 8000 has been designated for rice production, while the rest has been transferred to village committees and then secondarily rented out to migrant farmers for producing vegetables and fruits. Local individual farmers having contract rights to farmland tend to rent out their farmland at 1800 *yuan/mu* for farmland management right transfer. Since 2013, with the new farmland transfer system under the Agriculture Committee, the price has been set at 1200 *yuan/mu*. The new farmland transfer system will start to examine individual bidder's qualification for farmland management right from 2014.

Featured agricultural activities in Xianghuaqiao:

There are not so many featured agro-activities in Xianghuaqiao. Only one cooperative named Xiangsui is managing on-farm experiences including fishing.

Another farm called Hongyang produces vegetables that are sold to supermarket chains.

General observation:

Since Xianghuaqiao Jiedao has been planned mainly for the manufacturing industry, agriculture is not a main policy focus in the township. In recent years, residential area has also taken up part of the farmland. The agriculture branch of Xianghuaqiao only carries out the policies from the upper-level government and implements the farmland transfer system scheme without extra promotion towards agro-activities.

Interview 8: Zhaoxiang Zhen Government – Agriculture Branch

Interviewee: Mr. TANG Z. (2013.08.13)

General agricultural conditions in Zhaoxiang:

In Zhaoxiang, agriculture only takes up 0.4% of all the economic activities, while the tertiary industry takes up 80.8% and the rest goes to the secondary industry. The 14600 *mu* farmland in Zhaoxiang has been totally transferred, among which 14216.96 *mu* is under the protection for prime farmland. The farmland management rights have been transferred to village committees, then to the cooperatives established by village committees. Because of urban development, most of the villagers in Nansong Village have been relocated to a new neighborhood called Jinhulu. The remaining 550 *mu* of farmland has been used for rice paddy, managed by the Village Committee of Nansong. The municipal-level, district-level and township-level governments all have subsidies for scale management. Such aggregation of management right to farmland is better for rice production. To gain the farmland management right, the bidders have to pay at least 1323 *yuan/mu* every year and the rent will increase 5% each year on forth.

Most of the farmland managed by migrant workers has been environmentally destroyed due to excessive production using up too much soil fertility. Therefore, the new contracts will not be signed with those farmers.

Zhaoxiang encourages the establishment of local cooperatives. Currently, it has 14 cooperatives, among which 8 are managed by village committees while 6 are established by individual agriculture households, mainly for producing vegetables, grapes, loquats and

raising livestock. Contracts for farmland management right have been signed once every three years and can be extended. However, there are some agriculture corporates in Zhaoxiang not really doing agriculture but simply as nursery gardens for greenery.

Featured agricultural activities in Huaxin:

There is one cooperative called Songze Rice Cooperative in Zhongbu Village, which not only produces rice but also has a loquat orchard. There are also several other villages that have similar patterns of agro-activities.

Zhaoxiang does not have high-quality agro-products. Therefore, the agriculture branch is now trying to invite planner to help design eco-agriculture gardens. The two new projects under negotiation have been:

Firstly, a modern agriculture park taking up 250 *mu* will be assigned to an agriculture company named Youzhi. It will produce value-added high-quality products using modern technologies, including the E-monitoring of all the procedures for cultivation to be accessed by consumers from online. The seedlings will be provided by Shanghai Agriculture Science Institute. There will also be E-exhibition halls for visits.

Secondly, an agriculture park for cultural innovation will be introduced to invite agro-production and agro-tourism.

General observation:

Even though Zhaoxiang has been close to the industry zone within Qingpu District and has several main highways going through, the officers in the agriculture branch of Zhaoxiang Zhen Government have been keen on promoting modern and creative agro-activities.

Interview 9: Huaxin Zhen Government – Agriculture Branch

Interviewees: Mr. ZHUANG R. and Mr. SHEN Y. (2013.08.14)

General agricultural conditions in Huaxin:

There are totally 19 villages in Huaxin, among which 16 still have farmland. The arable land in Huaxin amounts to 16591.69 *mu*, and 16129.69 *mu* has been transferred in terms of farmland management rights. The township undertakes the responsibility to produce rice on at least 10000 *mu* of farmland based on the requirement from the district-level government. The lowest rent for transfer is 1000 *yuan/mu*, while some reached an oral agreement of 1300 *yuan/mu*. In most cases, individual agriculture households transfer their management rights to village committees. Since each village committee has a cooperative, the cooperatives will then pass on the management rights to mostly migrant farmers. Only three village committees are coordinating unified management, using machinery for massive cultivation and employed some short-term labor within the villages. Some villages also have nurseries and orchards, managed by local villagers.

Featured agricultural activities in Huaxin:

There is one village called Yangjiazhuang which has formed a marketing system for all the agriculture households in that village. Each agriculture household in that village has 50 *mu* of farmland, which is in accordance with the scale management. The village committee manages the market channel for all the products and provides machinery for processing rice. The rice produced from Yangjiazhuang is officially certified as Safe Products.

Such model has been promoted in several other villages in Huaxin as well. By doing this, several vegetable products produced in Huaxin also got certified.

General observation:

Huaxin is quite keen on promoting the quality of agro-products and focusing on the transformation of management systems to promote efficient sales and guarantee market channel.

Interview 10: Xiayang Jiedao Government – Agriculture Branch

Interviewee: Mr. CAI J. (2013.08.15)

General agricultural conditions Xiayang:

There are totally 8 villages in Xiayang. All the contract rights of farmland in Xiayang have been confirmed with individual agriculture households, while 98% of the management rights have been transferred to village committees. Village committees have five working groups including the coordinating group; the planning group, which is responsible for planning for the functions and size of each plot of farmland and publicize the above information; the monitoring group, which conducts examinations and monitoring if certain farmland has been managed as planned and subsidies have reached the ultimate manager; the land dispute mediation group, which is in charge of the process of contract signing during the farmland management right transfer process; and the farmland law enforcement group, which is to protect the proper use of farmland and prevent illegal use of farmland. Currently about one-third of the farmland has been transferred to agriculture corporates or cooperatives. The rest has been either transferred to family farms managed by local agriculture households or to migrant farmers for planting fruit trees and other cash crops.

Featured agricultural activities in Xiayang:

Since part of Xiayang is designated as the district center of Qingpu, the agriculture activities have strong function for recreation and provide agro-tourism resources.

There are four major recreational farms in Xiayang, mainly for loquat production, aquaculture, special on-farm restaurant services and agriculture education services. The township has been planning for better integration of those farms to form an agro-tourism zone to develop tertiary industry from the agriculture resources in the area and provide places for training and meetings as well.

General observation:

Xiyang has been mainly considered urban for most part of the township, especially the northern part of which is where the district government locates and serves as the district center. However, the agricultural resources in the area are never less abundant compared to other townships in the district. The cultural resources embedded forms a feature for Xiangyang and the agriculture branch has been carefully planning for the integration of those agriculture resources with a lot of enthusiasm.

Interview 11: Yingpu Jiedao Government – Agriculture Branch

Interviewee: Ms. XU H. (2013.08.15)

General agricultural conditions in Yingpu:

Yingpu has only 5 villages and only 2 still remains some farmland. One village has 100 *mu* and the other has 900 *mu*. All the farmland has been transferred to migrant farmers for vegetable cultivation, producing rice, cole, wheat and barleys. All the local agriculture households were registered as non-agriculture households and move to live in the downtown area.

Featured agricultural activities in Yingpu:

The only thing that has been going on is the improvement of the living conditions of migrant farmers who are working on the field. There is no other specialty of agro-activities in the township, not even the commonly seen on-farm restaurant services.

General observation:

Most parts of Yingpu are the old downtown area of Qingpu District. Agriculture is never a priority in the township. With rare farmland resource, the agriculture branch of the township is also not interested in promoting agriculture activities.

III Interviews to the agriculture practitioners and farmers

Interviewee 1: Mr. SHEN B. (2013.08.17)

Profile:

- (1) **Gender:** Male
- (2) **Age:** 50
- (3) **Registration status:** Non-agriculture in other districts of Shanghai
- (4) **Education:** College/Bachelor degree
- (5) **Location of the farm:** Cenbo Village, Jinze Zhen (Township)
- (6) **Place of residence:** Sometimes in Cenbo Village, sometimes in downtown Shanghai
- (7) **Status as a farmer:** part-time farmer, having other income sources
- (8) **Other occupation/income source:** receiving housing rent from downtown Shanghai; real estate investor

Farming activities:

- (1) **Farmland information:** 4 *mu* farmland has been rented through secondary contracts with the Village Committee of Cenbo, and another 5 *mu* from other resources. The price of the farmland rent is 1100 *yuan/mu*.
- (2) **Labor information:** Apart from Mr. Shen and his wife, 2 villagers from Cenbo Village, who are from the local agriculture household registered within the village, are hired as labors working 12 months a year on the farm. A wage of 50 *yuan* per day is given per person. Sometimes more labors are hired when farm work is too heavy and the wage is under negotiation on the spot.
- (3) **Subsidies:** The only subsidy that he receives is the organic fertilizer subsidy, while thinking it inadequate.
- (4) **Costs:** There has been no record for costs.
- (5) **Production:** There has been no record for the amount of production.
- (6) **Cultivation method in use:** Using fermented straw and rapeseed as organic fertilizer, which is adopted from traditional cultivation methods; Natural Farming method is also adopted.

Motivations for farming:

Mr. Shen does this out of personal interest and hobby, also for self-production purpose, while enjoying the landscape of the farm. There is a strong concern towards safe and reliable food and he wishes to produce qualified safe food for others as well. Even though sampling examination is conducted when agro-products are entering the fresh market or wholesale's market, there are still concerns towards the standard and the way it is conducted. By doing agriculture on his own, Mr. Shen also wishes to improve the price of agro-products so that more young people will be interested in farming and start to respect farmers and the environmental protection efforts behind. He has always been dreaming to manage a farm, as he was raised up in an agriculture household when he was a child in his hometown.

He is willing to continue farming for another 10 years, but also remains the possibility to transfer the farmland currently under his management to other farmers so that more people will start to do organic farming. He is also somehow willing to cooperate with other farmers so that he can get more farmland to be used for organic farming and deal with the agriculture pollution issue and get more people into organic farming.

Interviewee 2: Mr. WANG F. (2013.08.17)

Profile:

- (1) **Gender:** Male
- (2) **Age:** 42
- (3) **Registration status:** Non-agriculture in other districts of Shanghai
- (4) **Education:** College/Bachelor degree
- (5) **Location of the farm:** Cenbo Village, Jinze Zhen (Township)
- (6) **Place of residence:** Sometimes in Cenbo Village, sometimes in downtown Shanghai
- (7) **Status as a farmer:** part-time farmer, having other income sources
- (8) **Other occupation/income source:** Profit from stocks market

Farming activities:

- (1) **Farmland information:** 8 *mu* of farmland through secondary contract with the Village Committee of Cenbo with a rent of 1100 *yuan/mu*.
- (2) **Labor information:** hiring 3 local villagers from Cenbo, 12 months a year, with a monthly payment around 1300 to 1900 *yuan* per person. Sometimes, short-term labors are also hired with a daily wage of 60 *yuan* per person. On average, he has to hire such short-term labors for 30 days a year.
- (3) **Subsidies:** The only subsidy that Mr. Wang receives is the subsidy for organic fertilizer. But he doesn't care if he can receive subsidies or not.
- (4) **Costs:** There has been no record for costs.
- (5) **Production:** There is no record for the amount of production each year. But Mr. Wang gets yearly 50000 *yuan* by selling his products. He does this by signing CSA (Consumer Supported Agriculture) member contract with certain consumers and sometimes goes to farmer's market for selling his products.
- (6) **Cultivation method:** He uses traditional cultivation methods combined with modern agricultural technologies, especially that he uses fermented night soil as the base fertilizer, then adding fermented straws and stalks, as well as rapeseeds. He can usually use up several kilograms of rapeseeds.

Motivations for farming:

Mr. Wang does farming out of his own interest in agriculture and his concern towards food safety issues, hoping to provide safe products for consumers. He would like to continue farming as long as he can. He is willing to transfer his farmland to other people for them to enjoy organic farming with no charge for the rent. He is more than happy to cooperate with other farmers to include more people in organic farming.

Interviewee 3: Ms. KANG H. (2013.08.17)

Profile:

- (1) **Gender:** Female
- (2) **Age:** 39
- (3) **Registration status:** Non-agriculture in other districts of Shanghai
- (4) **Education:** Master in Ecology
- (5) **Location of the farm:** Cenbo Village, Jinze Zhen (Township)
- (6) **Place of residence:** Sometimes in Cenbo Village, sometimes in downtown Shanghai
- (7) **Status as a farmer:** part-time farmer, having other economic activities
- (8) **Other occupation/income source:** hired by an NGO as a project manager, conducting educational activities and ecological tourism.

Farming activities:

- (1) **Farmland information:** Through the NGO entity, Ms. Kang is able to contract 38 *mu* of farmland in Cenbo Village. The price for the rent is about 1200 *yuan/mu*.
- (2) **Labor information:** Through the NGO that she works with, she is able to hire 5 local villagers in Cenbo whole year round, paying them each 1300 to 1900 *yuan/month* for female or 2400 to 2800 *yuan/month* for male, depending on number of workdays. She also hires another two local villagers for short-term labor, paying them 50 *yuan* per day for 180 days a year.
- (3) **Subsidies:** Ms. Kang gets organic fertilizer subsidy amounting to around 24000 to 36000 *yuan* per year and also 200 *yuan/mu* for staple subsidy. However, she still thinks that the subsidy is not enough to cover the costs.
- (4) **Costs:** Every year, she spends about 32800 *yuan* on machinery, 6000 to 9000 *yuan* on organic fertilizer and other bio-fertilizer. The bio-pesticide cost her around 1000 to 2000 *yuan* annually and another 2000 to 3000 *yuan* for other physical methods for pest control.
- (5) **Production:** She has cultivated 8 *mu* of vegetables, 5 *mu* of fruit trees and another 30 *mu* of staples including beans, sesame, etc. Staples and vegetables can be cultivated in crop rotations. The total amount of production is still under calculation. She sells 10% of her products through fresh market or farmer's market, 30% by delivery order, 50% by CSA contracts with institutions or companies. The rest of the products are self-consumed.
- (6) **Cultivation method:** She uses straws and stalks as fertilizers. The human and animal waste from local villagers has also been used after fermentation. The NGO with which she has a contract has helped her to collect the residues from coffee to be used also as fertilizer. Most of the pest control methods have been physical or biological, causing almost no harm to the environment or human health.
- (7) **Other agro-activities:** Ms. Kang is also very enthusiastic in taking initiatives in providing agro-services to other consumers, which includes on-farm restaurant services, fishing, harvest experiences, agro-tourism with or without accommodation. She tries hard to explore the embedded values of agriculture, such as agricultural landscape, the traditional cultivation methods, traditional cooking methods, folk art, traditional ceremonies and festival celebrations as well as the natural resources such as biodiversity and ecological services.

Motivations for farming:

Ms. Kang started her current business just one year ago. The most important reason for Ms. Kang to be involved in agricultural activities is that she wants to perform organic farming to protect the agricultural environment and solve the agricultural pollution problem. She also wants to devote herself in educating kids by initiating agriculture-related programs. Doing agriculture has also been her childhood dream and now personal interest and hobby, especially when the food safety issues have been a major concern nowadays. Meanwhile, she herself can enjoy the agriculture landscape by immersing herself on the farm.

She wants to continue farming as long as she can, but she is not willing to transfer the farmland to other people. She will be very happy to collaborate with other farmers so that her effort in organic farming can perform as an example to help more farmers understand organic agriculture and ecological farming and to spread the idea further.

Interviewee 4: Ms. GU H. (2013.08.17)

Profile:

(1) **Gender:** Male

(2) **Age:** 50

- (3) **Registration status:** Non-agriculture outside Shanghai
- (4) **Education:** Bachelor's degree and above
- (5) **Location of the farm:** Cenbo Village, Jinze Zhen (Township)
- (6) **Place of residence:** Sometimes in Cenbo Village, sometimes in downtown Shanghai
- (7) **Status as a farmer:** part-time farmer, having other economic activities as main
- (8) **Other occupation/income source:** Corporate executive (construction company): 150000 *yuan* per year; Corporate representative (architecture company): 150000 *yuan* per year.

Farming activities:

- (1) **Farmland information:** Mr. Gu has been managing 12 *mu* farmland for rice cultivation in Cenbo Village by means of the farmland transfer system, with an annual rent of 1100 *yuan/mu*.
- (2) **Labor information:** Other than Mr. Gu and sometimes his friends and his son, who has been affected by autism, he also hires one local villager from Cenbo to help him with farm work. Usually he only needs that labor for 6 months a year, with a daily wage of 45 *yuan*, amounting to a monthly payment of about 1000 *yuan*.
- (3) **Subsidies:** Mr. Gu basically receives no subsidies and he has no idea about how much that could be.
- (4) **Costs:** Mr. Gu spends about 1500 *yuan* annually on machinery. There are no other costs from farming in his case.
- (5) **Production:** Mr. Gu uses all his 12 *mu* farmland for rice cultivation, with an annual production of 5000 kilograms. In winter, he produces wheat on 2 *mu* of his farmland, which yields 200 kilograms per year. Another 2 *mu* has been used for producing rapeseed and 20 kilograms of oil can be extracted from his production. He sells 80% of his rice, amounting to 4000 kilograms, within Shanghai through CSA membership contracts and the rest 20% outside Shanghai through retailers. By selling his products alone, he earns 90000 *yuan* per year. He estimated that he can easily earn a profit of 6000 *yuan/mu* from all his agro-activities.
- (6) **Cultivation method:** Mr. Gu uses Natural Farming for his production, and raises ducks on his paddy field to eat up the worms and fertilize the soil. He also uses urban waste as organic fertilizers, which amounts to 500 *kilograms/mu* and approximately 50 *kilograms/mu* of the residues of rapeseeds that he grows.
- (7) **Other agro-activities:** Mr. Gu is keen on providing educational programs in collaboration with NGOs due to his son's condition. He provides on-farm experiences for normal consumers as well, with restaurant services and accommodation. He undertakes events on World Autism Day (April 2) each year and also celebrates the first harvest of his rice on the first Thursday of December, which he names as the "the Strawman's first rice" festival. He values the agriculture landscape that creates on his farm. By introducing extra services on his farm, he earns additional 10000 *yuan* per year for harvesting and one-day tours and another 10000 *yuan* annually from agro-tourism and accommodations.

Motivations:

Mr. Gu names his farm as "Begin". Born in an industrialized city in Northern China, Mr. Gu started his career as an architecture designer after he graduated from architecture school. He established his own architecture company at the age of 40 and started agriculture cultivation at the age of 48. The main reason for doing this is for his autistic son. He cannot find a proper place to accommodate his son in Shanghai, the city where he works, when he cannot move his registration status to Shanghai. He wants to establish something himself. He got the idea of

ecological farming from one of his friends, who is also keen on agriculture. He believes that exposing his son in nature and farming can improve his conditions. Even though he experienced several failures in the beginning, he was able to continue by doing weekend farming while maintaining his job in the city during weekdays. He has a friend majoring in agriculture who takes care of the technical parts of his farm management. Now farming becomes his hobby and both he and his son enjoy the agriculture landscape very much, which he regards as an escape from urban life. He also feels proud of himself to be able to produce in an organic way and reduces agriculture pollution. Now, having 50 stable CSA memberships, he also enjoys boating in the river with his members near his farm and initiated the “weekend farmer” event to include more urbanites in agro-activities.

He now expands his organic farming business to places outside Shanghai as well and wishes to continue at least 10 more years. He is very willing to rent out his farm to other farmers to encourage them and help them gain respect. He is more than happy to collaborate with other farmers so that they can also produce organic products that can sell a good price, while helping to solve the agricultural pollution issue.

Interviewee 5: Manager of the agriculture experience farm in Cenbo Village (2013.08.20)**Profile:**

- (1) **Gender:** Male
- (2) **Age:** 55
- (3) **Registration status:** Agriculture within Cenbo Village, Jinze Zhen
- (4) **Education:** Middle school/Junior high school graduate
- (5) **Place of residence:** Within Cenbo Village, Jinze Zhen
- (6) **Status as a farmer:** Part-time farmer, having other income sources
- (7) **Other occupation/income source:** Managing another countryside hotel focusing on restaurant and accommodation business, which takes up 70~80% of his income

Farming activities:

- (1) **Farmland information:** Renting 20 *mu* farmland from Cenbo Village Committee with yearly rent of around 1200 *yuan/mu* (In reality, the rent varies from 900 to 1400 *yuan/mu* in different years)
- (2) **Labor information:** The cooperative entity of the experience farm hires 7 local villagers to work 12 months a year with a monthly salary of 1200 *yuan*.
- (3) **Subsidies:** Organic fertilizer subsidy amounts to around 15000 *yuan* annually.
- (4) **Costs:** The total cost of managing the garden is about 40000 *yuan* annually, including expenditure on organic fertilizer amounting to 5000 *yuan*, purchasing seeds and seedlings with 6000 *yuan* and other costs. Basically it consumes around 2 tons of organic fertilizer per *mu*. The farm does not use any machineries or chemicals, so there are no costs in those terms. The costs balance the benefits with almost no extra profits.
- (5) **Production:** The farm produces around 25000 kilograms of local vegetables each year. By selling the products directly to consumers visiting the farm, it earns around 20000 to 30000 *yuan* annually and another 50000 *yuan* for providing agro-services or activities such as harvesting experiences and CSA contracts. About 50% of the products are sold based on the CSA contracts and each member pays 2220 *yuan* annually for renting 113 square meters of farmland for weekend cultivation as well as the products grown on that plot of land. 80% of the land available for such CSA contracts was signed during the time of the interview. Another 50% of the products were sold to occasional consumers coming to the farm for a tour or harvest experience, the revenue of which amount to about 20000

to 30000 *yuan* annually.

(6) Cultivation method: The farm sticks to organic method but there is no certification for the farm.

(7) Other agro-activities:

The farm provides educational tour and events that help people get to know about vegetables and agriculture. It also provides accommodation service with the help of the local villagers. Harvest experience is most popular on the farm. By providing different types of services, the farm is able to explore the value of agriculture landscape, traditional tools for production, traditional cultivation methods, traditional cooking and raises people's respect towards farmers.

The educational programs and events are usually free of charge.

The farm promotes itself by advertising on local newspapers and websites. Sometimes journalists come and interview the owner of the farm. He also introduces customers from the hotel that he runs to the farm.

Motivations:

The farm aims to provide educational opportunities for urbanites to learn and experience the process of agriculture production. By organic farming, the cultivation itself will help to promote the quality of the soil and protect the local agriculture resources and environment.

The manager is willing to continue this business at most for another 5 years. They will try to promote a program serving more organic vegetables to attract more CSA members. The manager himself is not willing to rent out the farm because he thinks that managing the farm on his own makes more profit. He is considering hiring 10 more local villagers as labors next year.

Interviewee 6: Mr. QIU H. (2013.08.20)

Profile:

(1) Gender: Male

(2) Age: 60

(3) Registration status: Agriculture within Cenbo Village, Jinze Zhen

(4) Education: Primary school/Elementary school graduate

(5) Place of residence: Within Cenbo Village, Jinze Zhen

(6) Status as a farmer: Full-time farmer

(7) Other occupation/income source: None

Farming activities:

(1) Farmland information: Renting 203 *mu* of farmland from Cenbo Village Committee at 850 *yuan/mu* annually. Also renting another 800 *mu* from other villages within Jinze Zhen.

(2) Labor information: Hiring 5 to 6 local villagers annually working for him all year round. He also establishes a cooperative with 27 members.

(3) Subsidies: Getting machinery subsidy with 50% of the price of the machineries; Staple subsidies from township-level, district-level and municipality-level government amounting to 450 *yuan/mu* every year; pesticide and herbicide subsidies; seeds and seedling subsidies; green manure subsidy is about 250 *yuan/mu* on 40% of the farmland that he rented. For these 40% of farmland planting green manure as crop rotation, the profit amounts to about 100*yuan/mu* per year. This amount of subsidy is fairly satisfactory for Mr. Qiu.

(4) Costs: Adding the 850*yuan/mu* for rent, 900*yuan/mu* for chemical fertilizer, pesticide and

herbicide, labor, machineries and so on, 1 *mu* of rice cultivation costs about 1750 *yuan*.

- (5) **Production:** 1 *mu* of rice production can be sold for 1650 *yuan*. Adding the 450 *yuan/mu* staple subsidy from all three levels of government, Mr. Qiu can actually earn 350 *yuan/mu* annually on average. 30% of the rice products are left as seeds, while 30% are milled to be sold within Qingpu District and Jinze Zhen, the rest 40% unprocessed are sold to dealers to the broader market.
- (6) **Cultivation methods:** Rice production in this case is intensive production heavily dependent on chemical fertilizers, pesticides and herbicides. Totally about 38 to 40 bags of different chemical fertilizers are in use each year, including sometimes compound fertilizer. Pesticides or herbicides have to be sprayed 6 to 7 times a year. There is no certification for the product.
- (7) **Other agro-activities:** there are no other agro-activities in this case and no other cultural resources been valued.

Motivations:

Farming is Mr. Qiu's business for living. It is profit, even though highly dependent on subsidies, that drives him continue with this business. At his age, Mr. Qiu is willing to continue his business for another 10 years. But he is not willing to rent out his farmland to other farmers, nor does he want to collaborate with other farmers.

Interviewee 7: Mr. SHEN Y. (2013.08.21)

Profile:

- (1) **Gender:** Male
- (2) **Age:** 29
- (3) **Registration status:** Non-agriculture within Xujing Zhen
- (4) **Education:** Bachelor's degree
- (5) **Place of residence:** Within Xujing Zhen
- (6) **Status as a farmer:** Part-time farmer
- (7) **Other occupation/income source:** Rental from a plant of 100 square meters

Farming activities:

- (1) **Farmland information:** 140 *mu* of rice paddy with a rent of 1000 *yuan/mu* at Jinyun Village, Xujing Zhen
- (2) **Labor information:** Hiring 2 local villagers with an annual salary of 20000 *yuan* per person, or 1700 *yuan/month*. Short-term labor is hired for pesticide spray, removing weeds. The rest of the farm work is managed by Mr. Shen and his wife.
- (3) **Subsidies:** Mr. Shen receives the subsidy for rice production, scale management subsidy at 267 *yuan/mu*, organic fertilizer subsidy at 300 *yuan/ton*, subsidy for bio-pesticide extracted from herbs, machinery subsidy, subsidy for seeds and green manure subsidy.
- (4) **Costs:** The annual total costs for production amounts to 200,000 *yuan* including machinery, fertilizer, farmland rent, labor and so on. The rent for machinery costs 170*yuan/mu* with an initial cost of 100 *yuan/mu*. Truck has been rented from the village committee while the transplanter has been rented from the agriculture branch of Xujing.
- (5) **Production:** Mr. Shen's farm has a row yield of 425 kilograms/*mu* which then can be processed into 300 kilograms/*mu* of rice. The processed rice is then sold at 5 *yuan/kilogram*. All of his production is either sold or given to his friends. He usually signs CSA contracts with his consumers as well as corporates and other entities. The total profit can amount to 200,000 *yuan* annually.

- (6) **Cultivation methods:** Mr. Shen does rice-duck integrated farming and uses the seedling provided by the government with 4 kilograms of seedling per *mu*. He uses machinery for rice transplantation. 20 sheldrakes have been put into 1 *mu* of rice paddy. The bio-pesticides, also supplied by the district government, have been sprayed 4 times a year. Matrine has been sprayed twice a year with 120ml/*mu* every time to prevent rice leafhopper, costing 100 *yuan/mu*. While the other type of bio-pesticide has been sprayed also twice a year with 120ml/*mu* every time. The cost is a bit lower at 35*yuan/time*. Milk vetch has been planted as green manure for the base with additional 800kilograms/*mu* of organic fertilizer, mainly fermented from excrements, before the rice transplantation. 7 days after the transplantation, urea is used as top application with an amount of 5 kilograms/*mu*.
- (7) **Other agro-activities:** There have been no other agro-activities on the farm that Mr. Shen manages. Even though traditional cultivation methods have been highly valued during the production process.

Motivations:

Mr. Shen's father is a farmer in the village where his farmland is located. The farmland that Mr. Shen has been managing is designated as the protected farmland. Even though Xujing is very close to the city center of Shanghai and has witnessed rapid development, the farmland under protection cannot be used for other purpose unless the national government agrees. Mr. Shen thinks that sustainable management of farmland is good for the soil and nutrition can be remained. He is willing to continue such a business since it is quite profitable at the time.

Interviewee 8: Migrant farmer at Lujiajiao Village in Xujing (2013.08.21)

Profile:

- (1) **Gender:** Male
(2) **Age:** 50
(3) **Registration status:** Agriculture outside Shanghai
(4) **Education:** Below middle school
(5) **Place of residence:** Lujiajiao Village, Xujing Zhen
(6) **Status as a farmer:** Full-time farmer
(7) **Other occupation/income source:** None

Farming activities:

- (1) **Farmland information:** 200 *mu* of rice paddy in Lujiajiao Village, Xujing Zhen, rented at 1000 *yuan/mu*. The farmland has been transferred to him by means of the village committee under the farmland transfer system.
- (2) **Labor information:** 5 to 6 short-term labor is hired for rice plantation or harvest, paid 200 *yuan/day* and 30 days a year. 2 full labors from the family devote themselves on an annual basis.
- (3) **Subsidies:** Staple subsidy of about 300 *yuan/mu*; subsidy for seeds and seedling; pesticide subsidy. Only 30 *mu* of his rice paddy has been subsidized and the rest 170 *mu* receives no subsidies.
- (4) **Costs:** For every *mu* of rice paddy every year, the herbicide costs about 150 to 170 *yuan*, chemical fertilizers about 180 to 200 *yuan*, machinery 80 *yuan*, harvest fee 100 *yuan*, labor 200 *yuan*, pesticide 60 *yuan*, seeds 40 to 50 *yuan* and others 30 *yuan*. Adding the rent for the farmland, the total costs for every *mu* of rice paddy amount to 1840 to 1890 *yuan*.
- (5) **Production:** 30 *mu* yields 500 kilograms/*mu* while the other only produces 250

kilograms/*mu*. The reduced production is due to too many weeds and lack of rain at the time of the interview. The raw products can be sold at 0.6 *yuan*/kilogram, with 30 *mu* seeing an annual revenue of 1000 to 1300 *yuan*/*mu* and 500 *yuan*/*mu* for the rest 170 *mu* of rice paddy. About 50% of the products have been bought by the government and the rest sold to rice dealers.

(6) **Cultivation method:** Truck has been rented from the village committee while the transplanter has been rented from the agriculture branch of Xujing. Some of the seedlings have been provided by the agriculture branch of Xujing, while the rest have been purchased on his own. For every *mu* of rice paddy, 35 to 40 kilograms of urea has been used plus 25 kilograms of compound fertilizer from his own pocket. Totally 7 times of herbicide spray has been partly subsidized.

(7) **Other agro-activities:** None

Motivations:

Agriculture is subsistent for them. As long as there is subsidy from the government, the rice production can still earn them a living.

Interviewee 9: Mr. LIU L., manager of the Songze Rice Cooperative (2013.08.22)

Profile:

(1) **Gender:** Male

(2) **Age:** 52

(3) **Registration status:** Agriculture within Zhaoxiang Zhen

(4) **Education:** Middle school graduate

(5) **Place of residence:** Zhongbu Village, Zhaoxiang Zhen

(6) **Status as a farmer:** Full-time farmer

(7) **Other occupation/income source:** None

Farming activities:

(1) **Farmland information:** 1099 *mu* of farmland in Zhongbu Village. Since Mr. Liu is managing the cooperative on behalf the village committee of Zhongbu Village, there is no fee for farmland rent. More than 900 *mu* has been used as rice paddy. The rest has been used for loquat cultivation, either for flower pots or for the fruit.

(2) **Labor information:** 30 local villagers have been employed with a monthly salary of 1800 *yuan* and annual bonus. Short-term labors have been more than a hundred.

(3) **Subsidies:** Rice subsidy of 300 *yuan*/*mu*, scale management subsidy of 300 *yuan*/*mu*, part of the pesticide subsidy, part of the machinery subsidy and full seedling subsidy.

(4) **Costs:** machinery cost 50 *yuan*/*mu* annually, harvest 80 to 90 *yuan*/*mu*, fertilizer 200 to 300 *yuan*/*mu*, pesticides 100 *yuan*/*mu* and labor 1000 *yuan*/*mu*.

(5) **Production:** The paddy field yield about 500 kilograms/*mu* of rice and is sold to dealers, then processed and sold to supermarkets or corporates. The processed rice is mainly sold in Shanghai.

(6) **Cultivation methods:** Machinery has been used in both rice transplantation and harvest. Seedlings have been supplied by the government. However, chemical fertilizer has to be purchased. Usually 500 kilograms of ammonium bicarbonate is used for 1 *mu* of paddy field, 30 to 40 kilograms of urea per *mu* as top application together with another 40 kilograms of compound. Parts of the pesticides have been bio-safe ones. The total amount for each *mu* is about 100 to 250 grams.

(7) **Other agro-activities:** The cooperative also provides harvest festival for loquat.

Motivations:

Only for economic benefits

Interviewee 10: Mr. ZHOU A. (2013.08.23)**Profile:**

- (1) **Gender:** Male
- (2) **Age:** 42
- (3) **Registration status:** Non-agriculture within Qingpu District
- (4) **Education:** College graduate
- (5) **Place of residence:** Xiayang Jiedao, Qingpu District (Downtown Qingpu)
- (6) **Status as a farmer:** Part-time farmer
- (7) **Other occupation/income source:** Managing a company for selling medical devices

Farming activities:

- (1) **Farmland information:** Mr. Zhou's farm is located in Shenlian Village, Baihe Zhen. He rented 1104 *mu* farmland both by signing contracts with 8 agriculture households in the village and by signing contract with the village committee under the farmland transfer system. He produces rice and wheat on his farm. The rent for rice paddy field is 1200 *yuan/mu*.
- (2) **Labor information:** There are totally 8 full-time employees on his farm, with 3 granted a monthly salary of 2500 *yuan* plus annual bonus by Mr. Zhou. He also hires more than 20 short-term labors for busy season during the year. Most of the labors are from local villagers.
- (3) **Subsidies:** subsidy for machinery purchase, usually 50% of the original price; organic fertilizer subsidy at 300 *yuan/ton*; pesticide subsidy; subsidy for staple cultivation at 400 *yuan/mu*; seedling subsidy; green manure subsidy at 200 *yuan/mu*; and scale farming subsidy.
- (4) **Costs:** For every *mu* of farmland, the total costs adding the farmland rent is around 1800 *yuan* every year.
- (5) **Production:** Mr. Zhou's farm yields 700 kilograms/*mu* of raw products each year. At first, he sold it to the government at 0.7 *yuan/kilogram*, which generates revenue about 1960 *yuan/mu*. Then he bought some milling facilities himself and starts to sell processed rice at 1.5 *yuan/kilograms*, which then generates 2200 *yuan/mu*. He can also earn additional profits from wheat production. Most of the products have been sold by CSA contracts with corporates or institutional entities. All the products have producing date and examination reports. The rest of the 40% have been sold by individual consumers, mostly as fine gifts for their friends and relatives. Mr. Zhou's products always sell out 2 to 3 months after being produced.
- (6) **Cultivation methods:** Mr. Zhou modified the agriculture infrastructure including water channels and so on before he actually starts cultivation. He uses machinery instead of pure human labor. The types of pesticides being used are designated by the municipal government, with little toxicity. Only organic fertilizers at 200 kilograms/*mu* and 20 kilograms/*mu* of BB fertilizers have been used with no other chemical fertilizers. Green manure is also used as the base.
- (7) **Other agro-activities:** There are no other agro-activities in this case. But since the production is under rigid management with controlled use of chemicals, the products have been certified as Safe Products.

Motivations:

Mr. Zhou started his agriculture business out of his own concern towards food safety issues. He will eliminate those products not qualified after examinations. But since organic production has high requirement on the agricultural environment, it is hard to reach the standard if the agro-activities are at urban fringe or near the city, where a lot of pollutions occur. But he is very keen on producing safe products for himself and other consumers as well. He would like to invest the profits from his medical device company into agriculture production in the future. Not having enough space for product storage poses challenges to Mr. Zhou.

Mr. Zhou's father is a local villager at Shenlian Village. That's where he can get most contact with the local villagers and government officers. He is also keen on establish a farmer's association to exchange information on agro-products and production methods.

Interviewee 11: Manager of the Oriental Phoenix International Country Club at Liantang Modern Agriculture Park (2013.08.24)**Profile:**

- (1) **Gender:** Male
- (2) **Age:** unknown
- (3) **Registration status:** Non-agriculture in other districts of Shanghai
- (4) **Education:** unknown
- (5) **Place of residence:** Downtown Shanghai
- (6) **Status as a farmer:** Part-time farm manager
- (7) **Other occupation/income source:** Real estate

Farming activities:

- (1) **Farmland information:** The Oriental Phoenix International Country Club takes up 1600 mu of farmland at the Modern Agriculture Park in Liantang, among which 450 mu has been used for growing organic vegetables and another 250 mu for outdoor activities. The rest has been used as rice paddy. The business kicked off in 2010 and the preparation for the business started in 2008.
- (2) **Labor information:** About 70 to 80 local villagers have been employed in the agriculture corporate with monthly salaries. The technology support is provided by organic experts.
- (3) **Subsidies:** The government subsidizes more than 10,000,000 yuan for constructing agriculture infrastructure for 350 mu of farmland.
- (4) **Costs:** Costs balance revenue at the moment.
- (5) **Production:** Most of the vegetables are sold through CSA membership contracts, which charges at 6480 yuan yearly. Products will be delivered once a week and totally 52 times a year. Each delivery includes 3.5 kilograms of vegetables of 8 kinds. There are currently more than 1000 members, who are mainly white collars or entrepreneurs. Those members can also enjoy all the agro-activities for free with 10% discount on restaurant service and 40% off on accommodation.
- (6) **Cultivation methods:** All the products have been certified as organic by IFOAM and OFDC. The organic fertilizers have been fermented from duck and cow wastes, supplied by certain suppliers. The watering system includes a biofilter pond designed by Shanghai Marine University and automatic spraying facilities. The soil undergoes three-year continuous application of organic fertilizer to restore its fertility. Crop rotation has also been adopted. Pests have been controlled through physical methods and weeds removed by human labor. Seedlings are not genetically modified. In order to avoid introducing

pollution from car exhausts, the eco-tourism inside the park has been using electric cars.

- (7) **Other agro-activities:** Eco-tourism is provided by the agriculture corporate along with accommodation and restaurants. Other facilities include conference hall, BBQ facilities, a Golf court, a table tennis room, basketball court, fishing pond, tandem bicycles, a swimming pool and Kara Okay.

Motivations:

The manager of the park is originally a real estate developer and always wants to have a European-style farm for growing organic vegetables and recreation for himself and his friends.

Interview 12: Mr. SHEN X. (2014.01.03)

Profile:

- (1) **Gender:** Male
(2) **Age:** 65
(3) **Registration status:** Agriculture in Jinxiang Village, Baihe Zhen
(4) **Education:** Middle school (not graduated)
(5) **Place of residence:** Within Jinxiang Village, Baihe Zhen
(6) **Status as a farmer:** Part-time farmer
(7) **Other occupation/income source:** Gardener on other farms; carpenter with a monthly salary of 3000 *yuan*.

Farming activities:

- (1) **Farmland information:** Having two greenhouses for growing strawberries, totally 768 square meters.
(2) **Labor information:** Only Mr. Shen and his wife manage their farm.
(3) **Subsidies:** 4% loss due to natural disaster is covered by governmental compensation, which amounts to 1370 *yuan* last year. After his strawberries got certified, he started to get 200 to 300 *yuan* for pesticide subsidy each year.
(4) **Costs:** The total costs including fertilizers, building greenhouses and seedlings amount to about 10,000 *yuan* each year.
(5) **Production:** The two greenhouses are both for strawberry production, which yields around 2560 kilograms of strawberries each year. Mr. Shen also grows some tomatoes, water melons and muskmelons for self-consumption. 60% of the products were sold to the strawberry wholesale market established by the township government, while the rest 40% has been sold to consumers who come to the farm for harvest experiences. Every kilogram of strawberry can be sold at 10 to 12.5 *yuan*. The total revenue for selling strawberries each year is about 60,000 *yuan*. Extracting the cost, the profit can amount to 50,000 *yuan*.
(6) **Cultivation methods:** Chemical fertilizers such as Potash and compound fertilizers have been used as well as organic fertilizer such as residues of corns, green manure from milk vetch. Bio somatotrophic hormone has also been used. The pesticides have been provided by the government, which is less toxic.
(7) **Other agro-activities:** Strawberry harvest experience is available on the farm. Visitors can also enjoy one-day agro-tourism and the home made cuisines from the Shen's. People come to enjoy the agriculture landscape while experiencing harvesting.

Motivations:

Mr. Shen grows strawberries for a living. He also considers collaborating with those who are

running accommodation business in the village and also provide technical support to other strawberry farms in the village.

Interviewee 13: Mr. SONG Q. (2014.01.04)**Profile:**

- (1) **Gender:** Male
- (2) **Age:** 30
- (3) **Registration status:** Non-agriculture in other districts of Shanghai
- (4) **Education:** Bachelor's degree
- (5) **Place of residence:** Downtown Shanghai
- (6) **Status as a farmer:** Full-time farmer
- (7) **Other occupation/income source:** Used to work in the IT industry

Farming activities:

- (1) **Farmland information:** Mr. Song first rented 50 *mu* of farmland from the authority managing the Liantang Modern Agriculture Park at a price of 1200 *yuan/mu*. The contract has been 30 years. He newly added another 30 *mu* of farmland which is still vacant at the moment. He plans to use the extra 30 *mu* for constructing a water pond and collect rain water, as well as a place for agro-tourism on his farm. The current 50 *mu* is productive but not for agro-tourism.
- (2) **Labor information:** For the 50 *mu* of blueberry farm, Mr. Song hires 4 to 5 local villagers to help him manage. These villagers are all above 60. Including yearly bonus, those villagers receive a daily wage at about 70 *yuan* for females and 95 *yuan* for males. He will have to hire more people to construct the vacant 30 *mu* of farmland.
- (3) **Subsidies:** The only subsidy that Mr. Song receives is the subsidy for organic fertilizer at 300 *yuan/ton*.
- (4) **Costs:** Mr. Song has spent about 110,000,000 *yuan* for infrastructure construction since he started his blueberry farm in 2011. The yearly operation cost is about 250,000 *yuan*. These costs cannot be covered until five years later.
- (5) **Production:** Mr. Song used 40 *mu* for growing blueberry, 2 *mu* for blackberry and 5 *mu* for raspberry. Due to the high temperature in Shanghai in 2013, the total 50 *mu* only yields 750 kilograms of berries. The berries are sold at more than 50 *yuan/kilogram*. Most of the consumers will come to harvest their own berries on the farm. Mr. Song also opens online store for selling his products. Most of the consumers are middle or high income groups.
- (6) **Cultivation methods:** Mr. Song has been using organic production for growing berries. He uses purified water and the soil from Northeastern China. Organic fertilizer made from mushroom beds, cow wastes, woods, water bamboo and other materials have been used. For each *mu*, 10 tons of organic fertilizer has to be used. He also purchases some mineral organic fertilizer and liquid organic fertilizer. Only a little chemical fertilizer has been used when the trees were still seedlings. Mr. Song uses insecticidal lamps for killing 50% of the pests. The rest can be killed by the ladybugs on the trees by establishing such bio-food chain. He also mixes lime powder and sulfur powder to chase away pests.
- (7) **Other agro-activities:** Consumers can come to the farm and pick their own fruits, enjoy the agriculture landscape and recreation from harvesting.

Motivations:

Mr. Song started growing blueberries and other berries because he wanted to change his lifestyle. His previous career in the IT industry was too tiring for him. In his hometown,

blueberries have been grown and he has a strong passion on that. Another reason for growing berries is because it generates high economic values and is suitable for investment. By doing organic agriculture, even more value can be added to the product. Organic vegetable production, on the other hand, has too much requirement on technology and needs intensive production in a massive scale. It also challenges the acceptance from the public. Mr. Song is determined to manage his farm well and collaborate with more people.

The only difficulty that he has been having is that it is hard to get a loan from banks for his production since agriculture has nothing to be mortgaged. He has established a cooperative just one year ago, which is not meeting the minimum time requirement for the government to grant a loan.

Organic production by new farmers has just started within the recent few years and China still needs proper eco-agriculture technologies. Some traditional cultivation methods are not completely suitable in the modern world, which has to be combined with modern science and technologies.

Interviewee 14: Ms. HUANG G. (2014.01.05)

(1) Gender: Female

(2) Age: 42

(3) Registration status: Non-agriculture in Qingpu District

(4) Education: Graduate school level

(5) Place of residence: Downtown Qingpu

(6) Status as a farmer: Part-time farmer (weekend farming)

(7) Other occupation/income source: Work in the economic sector in Shanghai

Farming activities:

(1) Farmland information : Through secondary contract, she rents several tens of mu of farmland from one of the big agriculture corporates in the Liantang Modern Agriculture Park at a price of 1200 *yuan/mu*.

(2) Labor information: She is still looking for long-term labors, but it is hard to find labors from the village where her farm locates. The local villagers will think that she has deprived their farmland even though finally all the rent goes back to local villagers.

(3) Subsidies: Because of the secondary contract, there is no subsidy for scale management but only organic fertilizer subsidy.

(4) Costs: Since Ms. Huang just started her business in 2013, she has to sell her rice products at 7.5 *yuan/kilogram* to balance her cost for rice production.

(5) Production: Ms. Huang produces rice using the duck-rice integrated system. Up till now, there is no information for production yet, but Ms. Huang adopts CSA membership mechanism to keep her farm going.

(6) Cultivation methods: Duck-rice integrated system has been used to produce rice. By raising ducks in paddy fields, the duck's waste can become fertilizer for rice while ducks eat pests as their food. It is also a good way for weed control. She also uses other organic fertilizers such as green manure, rapeseeds and so on. The organic fertilizer with subsidy is provided by the township government, fermented from water bamboo leaves, to be used as base. But it contains too much weed seeds. A small amount of chemical fertilizer has been used as top application. Physical methods for pest control have also been used such as the insecticidal lamps.

(7) Other agro-activities: Ms. Huang's CSA members can join in the rice production process and bring their kids for education as well. She also plans to develop agro-tourism in the

near future and emphasize on educational training. To increase the urbanite's experience on the farm will be her main focus.

Motivations:

Ms. Huang wants to try out cultivation methods that do not use modern chemical fertilizer and pesticide and compare the production with normal scale production for rice. She is keen on organic farming. Since organic is relatively high-cost and is hard to be supported by the government, she wants to try out by herself. Her friends are also interested in her products and want to produce their own food. By doing this, she wants to raise the consciousness among the public towards the food safety and quality issues and awareness towards farmland pollution, thus to protect farmland resources. Ms. Huang grew up in a farming village and has always dreamed of having her own farm since childhood.

According to Ms. Huang, there are several types of urbanites interested in farming:

1. Those having parents or relatives still living in farming villages have easy access to farmland resources. They usually ask their relatives, friends or parents to help them with farm work when they are not available.
2. Those who do not have agriculture background, but with relatively strong financial force, tend to invest in agriculture to realize their life goal.
3. Real estate investors who want to take up farmland that is intended for future development.
4. Those who are only investing in agro-tourism and agro-services.

Interviewee 15: Mr. YANG L. (2014.01.06)

Profile:

(1) **Gender:** Male

(2) **Age:** 33

(3) **Registration status:** Non-agriculture in Shanghai

(4) **Education:** Bachelor's degree

(5) **Place of residence:** Sometimes in the village in Liantang Zhen and sometimes in downtown area

(6) **Status as a farmer:** Part-time farmer

(7) **Other occupation/income source:** Architecture designer

Farming activities:

(1) **Farmland information:** Mr. Yang's farm is located in Liantang Zhen, Qingpu District, currently renting 10.6 mu of arable farmland, 6 mu of which is used for growing grapes. Another 50 mu of woods have been rented for raising Guinea fowls. He rented part of the farmland from the village committee and part from local villages with a rent at 1200 yuan/mu. The rent raises 3% every year.

(2) **Labor information:** Mr. Yang invites his parents, who have agriculture experience, to help him manage his farm for growing grapes. At weekends, Mr. Yang's wife also helps with the farm work. He also hires a long-term labor with monthly salary of 2000 *yuan*.

(3) **Subsidies:** Since Mr. Yang's farm is relatively small in scale, it does not receive any subsidy support.

(4) **Costs:** Revenues have not been able to cover the costs yet since the start of the farm in 2012.

(5) **Production:** The farm yields more than 1500 kilograms of grapes last year, which is only one fourth of normal production. Products can be sold at 10 *yuan*/kilogram. Many friends of

Mr. Yang's will come at weekends for harvest experience. Mr. Yang also has several CSA members for his farm. Usually grapes are harvested in August and Mr. Yang releases the information for reservation in July through Weibo. He also provides restaurant services on his farm.

(6) Cultivation methods: Mr. Yang does not use any growth hormone for growing grapes. Organic fertilizer has been used instead of chemical fertilizers.

Motivations:

Mr. Yang grew up in a farming village. He likes fishing and initially he only wants to return to the village and start agro-tourism and provide recreational agro-services. However, after turning around, he found the grape yard with some housing facilities and bought it. By managing the grape yard, he enhanced his understanding towards agriculture and realized that normal agriculture production has been causing a lot of environmental pollutions, especially damage to the soil. He has been thinking producing something safe and healthy and wants to bring up the consciousness of neighboring local farmers to improve the soil quality by avoiding chemical fertilizer and pesticides.

He also raises Guinea fowls on his farm because he enjoys watching the animals walking in his farm during the weekend. He likes that sense of freedom, forgetting about the pressure from life.

He wants to cooperate with more people and share such resources. He enjoys attending the Nonghao Farmer's Market to integrate different products and attract more consumers.

However, the major challenge for him is that the grape market has been too competitive. Most people can accept products with less use of chemical fertilizer and use of non-toxic pesticides. But because of the normal agro-products are too cheap, some consumers cannot move away their concern towards price.

APPENDIX B
Questionnaire Form

1. Personal information

Gender		Age	
Place of residence	Zhen/Jiedao (equivalent to townships) Neighborhood/Village	Education level	
Personal income:			
A. Less than 2000 <i>yuan</i> /month B. 2000~4000 <i>yuan</i> /month C. 4001~6000 <i>yuan</i> /month D. 6001~8000 <i>yuan</i> /month E. 8001~10000 <i>yuan</i> /month F. More than 10000 <i>yuan</i> /month			
Are you employed in agriculture sector?			
A. Yes B. No			
Is there any direct family member of yours employed in agriculture sector?			
A. Yes B. No			

2. Consumer choice on agro-products

2-1 What are your main sources for agro-products? _____ (Please choose the sources that you use and rank them according to the frequencies that you use. The most frequently used source should come first)	
A. Free gifts from friends or relatives who are doing agriculture B. Directly purchasing from producers C. Purchasing from fresh markets D. Purchasing from supermarkets E. Purchasing from online F. Self-production G. CSA contracts H. Others _____	
2-2 What kind of concerns do you have when choosing agro-products : _____ (Please choose the factors that you think are important and rank them according to the importance. The most important aspects should come first)	
A. Price B. Freshness C. Seasonality D. Cultivation methods (the amount of chemicals in use, whether genetically modified, etc.) E. Agro-product certification (Safe Product, Organic Product, etc.) F. Others _____	

3. Participation in agro-activities					
3-1 How often do you participate in agro-activities?					
A. Often (More than once a week)		B. Sometimes (More than once a month, less than once a week)			
C. Seldom (More than once a year, less than once a week)					
		Yes		No	
3-2 Do you do rooftop gardening?					
3-3 Do you do gardening on vacant lots?					
3-4 Do you participate in the following activities? (Please tick only in the activities that you participate in and the frequency of participation. Please write down where the activities take place.)					
	Place e.g. XX Zhen/Jiedao	Often	Sometimes	Seldom	<u>Not involved now but</u> <u>interested in involving in the</u> <u>future</u>
(1) Visiting friends and relatives					
(2) Attending wedding or other ceremonies					
(3) Joining traditional cultural festivals					
(4) On-farm harvest experience					
(5) On-farm restaurant experience					
(6) Farming for self-consumption					
(7) Business farming (managing a farm, products for sale)					
(8) Others _____					
3-5 What kind of things do you value from participating in the above activities? _____ (Please choose the aspects that you think are important and rank them according to the importance. The most important aspects should come first)					

A. Friendship or kinship B. Agricultural landscape and natural scenery C. Sense of entertainment and relaxation D. Traditional cooking E. Traditional cultivation methods	F. Historical sites G. Traditional custom H. Safe agro-product source I. Economic profit J. Family inheritance K. Others_____
3-6 What do you think are the important elements for sustainable urban agriculture?	