

URBAN AGRICULTURE – POPULATION'S ATTITUDE TOWARDS PRACTICE AND PRODUCTS IN LATVIA

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Abstract. The food growing practice is connected with Latvia's cultural-historical heritage and traditions, due to which agriculture, especially in the form of micro-farming for household self-consumption, is a developed practice in Latvia, including in cities. Trends of urban agriculture, which are characterised by inclusion in dimensions of the sustainability, develop the practice of community gardens that in Latvia are currently in the development stage. This highlights the need to evaluate the population's attitude and views on the aspects of urban agriculture in Latvia. The agricultural sector in Latvia is developed and rural regions are relatively close to urban areas, therefore, agricultural practices in cities for the realization of production can create a different, even negative attitude of society towards urban agriculture and its relevance in Latvia. Therefore, the aim of this study is the assessment of the attitude of the population in Latvia towards practices and products of urban agriculture. In order to achieve the aim, two tasks have been set: 1) to analyse the attitude of Latvia's population towards the practice of urban agriculture; 2) to analyse the population's attitude towards urban agricultural products, in the context of their food choice criteria. To fulfil the tasks, a survey of Latvia's population was conducted. In general, the population's attitude creates supportive aspects for urban agriculture in Latvia, but challenging are aspects of the attitude regarding the potential pollution of food in the urban environment, its role and performance in cities, which population do not associate with agricultural practices.

Key words: urban agriculture, population attitude, population survey, Latvia.

JEL code: A10, E20, O13, Q01, R00

Introduction

Research on urban agriculture is constantly growing, and not only the number of scientific publications is expanding, but also the variations of topics - from conceptualization issues to studies of focused aspects of practice. The analysis of different cases is also increasing in terms of scale, topics and methods. However, there are still only few studies on urban agriculture in Latvia. The traditions of growing food in Latvia are cultural and historical; however, agricultural practices in cities have been little studied. The relatively small number of studies on urban agriculture in Latvia creates both broad research opportunities in the context of the topic and challenges in data acquisition and processing. There are practically no statistics on urban agriculture in Latvia - there is only the number of enterprises registered in the agricultural sector, which often operate outside the city borders, and the number of registered livestock and poultry. Community gardens also register their activities in various ways, mostly as associations for educational and cultural purposes (Dobele, 2022), which makes it difficult to identify them. Therefore, primary data acquisition is important for urban agriculture research in Latvia.

Urban agriculture is able to create links between urban and rural environments, food production and consumption, nature and culture, people and place both at the macro level through community and social initiatives and at the micro level in individual habits and households (Wittenberg et al., 2022). Therefore, in the analysis of urban agriculture practices, it is essential to evaluate not only commercial practices and community activities, but also individual, household activities that ensure social sustainability at the individual, household level (Yumin, Shin, 2022). In 2021, the results of a population survey on motivational aspects of food growing practices in Latvian cities have been published (Dobele et al., 2021). But in order to evaluate urban agriculture in Latvia, in the context of the analysis of the population survey, it is essential to understand and evaluate not only the habits of the population in growing food, but also the attitudes

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and opinions about food grown in cities. Therefore, the aim of this study is the assessment of the attitude of the population in Latvia towards the practices and products of urban agriculture. In order to achieve the aim, two tasks have been set: 1) to analyse the attitude of Latvia's population towards the practice of urban agriculture; 2) to analyse the population's attitude towards urban agricultural products, in the context of their food choice criteria. To fulfil the tasks, a survey of Latvia's population was conducted in March-October 2021, in which 884 respondents participated.

Research results and discussion

The conceptual distinction between agriculture and the urban environment has been formed historically (Dobele, Zvirbule, 2020). Due to both this historically formed distinction and the negative consequences of the environmental impact caused by urbanization, agricultural activities in the city are often associated with the problem of quality food production due to air and soil pollution in the urban environment (Bourque, 1999), thus creating an additional challenge for the development of urban agriculture - the attitudes and perceptions of the population in urban food. In order to gather the perceptions and attitudes of Latvia's population towards the practices and products of urban agriculture, a survey was developed as part of the study. The survey was conducted in March-October 2021, therefore data on the population of Latvia at the beginning of 2021 were used to determine the sample size. According to the data of the Central Statistical Bureau, at the beginning of 2021, there were 1,893,223 inhabitants in Latvia (Iedzīvotāju skaits gada..., (n.d.)). With a confidence level of 95% and a margin of error of 5%, 385 respondents are required for the determined general population. 884 respondents took part in the population survey, which reduces the margin of error to 3.3% under the conditions of the general population. This shows that by using the survey data, the analysis of the population's attitude is feasible and the results are representative of the general population. Demographic information of the respondents is summarized in Table 1.

Table 1

Demographic information of respondents (n=884)

Gender		Age, years		Education received		Average household income*, EUR		Share of household food expenses on average per month, %	
category	resp., %	category	resp., %	category	resp., %	category	resp., %	category	resp., %
women	67	18-24	41	primary	1	up to 500	19	up to 15	7
		25-34	25	secondary	40	501-700	21	16-25	27
		35-44	18	college	5	701-1000	28	26-35	35
men	33	45-54	11	undergraduate	21	1001-1200	12	35-50	21
		55-64	4	master's	28	1201-1500	9	51-65	8
		over 64	1	PhD	5	over 1500	11	over 65	2

* - per 1 household member per month

Source: authors' calculations

46% of respondents live in Latvia's 10 state-cities, which are the largest in terms of population. Of them, 66% are engaged in growing at least one type of food product in their households, which indicates the high interest of urban residents in growing food even when they are in the urban environment. In order to analyse whether opinions about urban agriculture and its products are influenced by the place of residence (in or outside of the city) and involvement in urban agriculture practices, the respondents were divided into three groups:

- residents of state-cities, engaged in food production;
- residents of state-cities, not engaged in food production;
- residents who live outside state-cities.

The performance of urban agriculture practice, especially in economic aspects, is significantly influenced by not only the scale and type of the practice and price competitiveness, but also by consumers' perception and attitude towards urban agriculture products and their value (Yuan et al., 2022). Studies on the attitude of the population towards food grown in cities show several specific aspects. A 2019 study in Spain (Ercilla-Montserrat et al., 2019) on the population's attitude towards urban food grown on the roofs of buildings indicates that most respondents (94%) consider such food local and fresh, and 69% of respondents indicated that tomatoes grown in zero-soil technology are considered as greener agricultural practice than the traditional approach. The results of the study also indicate that residents with a higher level of income and higher education better accept the price of urban roof garden production, associating it with quality. With food quality, urban agriculture practitioners identify taste, freshness and sanitary aspects (Pourias et al., 2016). A different consumer assessment has been published in connection with a study in the Mexican city of Mérida, which indicates that residents are not interested in the production of urban agriculture, although they recognize the potential of urban agriculture in improving a balanced diet (Nadal et al., 2018). Differences in research results indicate that public opinions differ and cannot unify the experience of one country or city by applying it to a wider part of society. Therefore, it is necessary to develop studies of population's attitudes, analysing the experiences of different countries.

Urban agriculture in Latvia is characterized by several aspects - both the factors affecting the practice, functions, motivation, operating principles, etc. In addition, although urban agriculture in Latvia is also a multifunctional practice (Dobele et al., 2022a), its main activity and function is food production. Therefore, the study of urban agriculture in Latvia includes an analysis of the attitude and evaluation of population in two directions:

- 1) food selection criteria and factors affecting them;
- 2) assessment of attitudes towards food grown in the city.

For the analysis of factors affecting food choice, the citizens' survey questionnaire includes 10 criteria characterizing food products, which respondents rated on a 5-level Likert scale from 1 – not important to 5 – important. The average evaluation of selection criteria of food products is summarized in Table 2.

Table 2

Evaluation of selection criteria of food products (n=884)

Criterion	Residents of state-cities		Other residents	All residents, average
	grow food	do not grow food		
Freshness	4.63	4.67	4.77	4.68
Quality	4.52	4.52	4.57	4.54
Tested taste	4.10	3.92	3.86	4.00
Local Latvian product	3.61	3.39	3.31	3.47
Low price	3.21	3.22	3.35	3.26
Promotional product	3.22	2.95	3.14	3.13
Long lead period	3.21	2.96	3.13	3.12
Organically or biologically grown	3.21	3.05	3.01	3.11
A well-known farmer	3.19	2.59	2.89	2.95
Local product of the region, city	3.12	2.60	2.72	2.87
<i>Average for all criteria</i>	<i>3.60</i>	<i>3.39</i>	<i>3.48</i>	<i>3.51</i>

Source: created by the authors based on the respondents' assessment

In the evaluation of all respondent groups, the most important criteria when choosing food products are food quality, freshness and proven taste. They are also the primary selection criteria in the results of population surveys in other countries (McClintock et al., 2016; Ercilla-Montserrat et al., 2019; Gauder et al., 2019). The importance of these criteria can be assessed as contributing to the development of urban agriculture in Latvia, because the residents state-cities who are engaged in urban agriculture rate their food, grown in the city, as fresher, healthier and safer than what is bought in a store (the average assessment of the importance of aspects within the range of 0-1 is 0.89). Therefore, in the assessment of the population, self-grown urban food meets the most important criteria for choosing food products. Beliefs that home-grown food is fresher and healthier can also be identified in other countries' survey results on urban agricultural products (Degefa et al., 2021; McClintock et al., 2016; Ruggeri et al., 2016; Kirby et al., 2021), which shows that these perceptions are characteristic not only in the context of the motivation of the practice, but also in the perception of society in general.

The results of the survey show that urban agriculture practitioners have higher requirements in the selection of food products, as: 1) the average of all criteria is higher; 2) compared to the other groups of respondents, the average ratings of the importance of criteria for those involved in the practice of urban agriculture are higher in 7 out of 10 criteria: promotional product, long lead period, tested taste, organically or biologically grown product, local product and well-known farmer. Compared to other groups of respondents, urban agriculture practitioners have lower requirements regarding freshness, quality and low price of food products, although when comparing the criteria, freshness and quality are the most important choice criteria for all groups of respondents. However, for all criteria, the differences between the population groups are relatively small, which indicates relatively equal requirements in food choices, regardless of the place of residence (in the state-cities or outside them) and the involvement in the practice of urban agriculture.

In the context of the development of urban agriculture, the value of such criteria in the choice of residents as freshness, local product, well-known farmer can be positively evaluated, as these are criteria typical of urban agriculture products (Foodmetres. Food planning..., 2015; Opitz et al., 2016). As urbanization increases, the role of urban agriculture as a factor in providing healthy, fresh, local food also

increases, thus reducing the pressure of urbanization on the ecosystem and reducing the risk of creating food deserts (Boneta et al., 2019).

Analysing the relationship between the assessment of the significance of the criteria and aspects characterizing respondents (gender, age, level of education, average amount of income per 1 household member, proportion of expenses spent on food), an average positive statistical relationship (using B.Ratner's (2019) division that the average relationship is within 0.30-0.69) is found only among some indicators:

- 1) the importance of the local Latvian product and the age of the respondent (correlation coefficient: 0.35);
- 2) the relationship of the importance of the local region, city product with the age of the respondent (correlation coefficient: 0.30).

No statistically significant statistical relationship was found between other food selection criteria and aspects of respondents' characteristics. This shows that the population's food choice criteria are constant and without significant influence of the socio-economic aspects of the respondent.

More significant differences in the opinion of different groups of respondents are in the questions about the assessment of urban agricultural practices and products (Table 3).

In the evaluation of the population, the highest average rating in the range of 1-5 is for the aspects of urban agriculture attitudes and beliefs related to the social functions of the practice, as a complementary aspect of school education programs and experiences (average rating: 4.16) and the aspect of providing additional knowledge and education (average rating: 4.08). The promotion of education as the most realized function of urban agriculture has also been identified in a study on the multi-functionality of practice in Latvia (Dobele et al., 2022a). In addition, the opportunity to learn something new is also one of the biggest motivators for growing food in the city in the opinion of city dwellers of Latvia (Dobele et al., 2021). That emphasizes that urban agriculture in Latvia has a basis for development in terms of education, including the practice of growing food both in the educational process and realizing the function in community gardens. The attitude of the population towards urban agriculture in the context of this function is strongly positive.

However, the opinion of the social aspect, that urban agriculture contributes to collective and community formation is moderately important (average rating: 3.51), which can be influenced by the relatively small number of community gardens and, therefore, experience in Latvia's state-cities.

Table 3

Evaluation of urban agriculture practices and products in Latvia (n=884)

Aspect	Residents of state-cities		Other residents	All residents, average
	grow food	do not grow food		
Agricultural practice in schools complements the educational program and experience	3.98	4.30	4.32	4.16
Practicing agriculture in the city (in schools, social care homes, yards and elsewhere) provides education, additional knowledge	3.88	4.21	4.27	4.08
Agriculture in cities diversify and create a greener urban landscape	3.96	4.07	4.25	4.07
Growing food in the city is trendy	3.61	3.46	3.53	3.55
Home-city grown food is healthier than store bought food	3.78	3.07	3.59	3.55
Urban agriculture is a way to minimize adverse climate change	3.52	3.47	3.58	3.52
Growing food in the city promotes collective, community action (for example, gardens in schools, nursing homes, hospitals, courtyards of apartment buildings)	3.48	3.53	3.54	3.51
Food grown in cities is more expensive than store-bought	3.36	3.21	3.19	3.27
Due to urban pollution, food grown in cities is more polluted than food grown in the countryside	3.04	3.54	3.39	3.27
Growing food in the city is not agriculture	3.06	3.21	3.38	3.19
I am willing to support urban food growers by buying the food they grow	3.29	3.05	3.14	3.19
Growing food in the city is possible only as a hobby	2.98	2.98	2.81	2.93
Growing food in the city is not a business	2.73	2.56	2.42	2.60
Due to the use of agrochemicals (including plant protection products) used in agriculture, food grown in the countryside is unhealthier than food grown in the city	2.62	2.63	2.46	2.57

Source: created by the authors based on the respondents' assessment

In the context of environmental aspects, the opinion that urban agriculture diversifies and creates a greener urban landscape is also highly rated among Latvian population (average rating: 4.07). The concept of "green cities" is also included in the United Nation's publication on the role of urban agriculture (The place of..., 2011). The idea of green cities is also related to urban sustainability, which is one of the UN Sustainable Development Goals. It includes balancing consumed and produced resources, including food, improving environmental quality and developing green public areas (Goal 11: Make..., (n.d.)). Agricultural practices in cities not only make the urban environment literally greener, but also ensure environmental and ecosystem diversity (WinklerPrins, 2017; Simon, 2023). One of the conditions for the sustainability of cities is the development of "green infrastructure", which includes the creation of landscapes characteristic of agriculture, such as agricultural parks, small gardens, community gardens, etc. forms of urban agriculture (Tóth, Timpe, 2017). The high assessment of Latvian population in this aspect shows that the idea of urban sustainability in the greening of the urban environment is relevant in the public's attitude, which indicates potential public support for the development of urban agriculture practices. However, views on urban agriculture as greening of cities are higher among the part of the population that does not live in state-cities, which indicates a different evaluation of the urban environment. The opinion that urban agriculture mitigates the adverse effects of climate change is relatively lower rated

(average: 3.52), which shows that residents primarily value urban agriculture as a practice of greening and environmental diversification, but not as an ecosystem service.

Urban agriculture in Latvia is mostly practiced in the form of micro-agriculture - in small quantities, food is mostly grown in households for self-consumption (Dobele et al., 2021). The aspects in which the opinions of urban agriculture practitioners are higher, are directly related to the specifics and trends of the practice of urban agriculture in Latvia, which are characterized by trendiness (urban food growers believe that the practice is modern), the small volumes of urban agriculture (the practice is only a hobby and not entrepreneurship) and process specifics of practice (food is healthier, more expensive; willingness to support local growers). Similarly, the relatively lower rating of this group of respondents in social functions (socialization, education) may be influenced by existing practice trends, considering that the majority of respondents engage in food growing in their private property areas, within the household.

Analysing the attitude towards the produce of urban agriculture, it can be concluded that Latvian residents value such criteria as healthiness (inhabitants believe that food grown in the city is healthier than that bought in stores - average rating: 3.55) and expensiveness (inhabitants believe that urban agricultural products are more expensive - average rating: 3.27). Taking into account that freshness is an important criterion for selecting food for the people of Latvia, then the opinion about the healthiness of urban agricultural products can be conducive to the practice. However, the price aspect, taking into account that the respondents rate the importance of the low price criterion at an average of 3.26, can be a hindering aspect, evaluating it in the relation to the public's opinion about the expensiveness of the urban agriculture products. The high importance of the quality criterion can also be an obstacle to the development of urban agriculture, because Latvian residents do not believe that the products grown in the countryside due to the agrochemicals used could be more harmful than the products of urban agriculture. However, the opinion that food grown in cities is more polluted than food grown in the countryside has an average endorsement (average rating: 3.27) and is significantly lower among practitioners themselves (3.04). This shows a potential that with the additional research and public awareness the intensity of this belief could be easily changed, thereby promoting the development and public acceptance of urban agriculture.

Respondents disagree (average rating below 3.00) with statements such as "growing food in cities is possible only as a hobby" (average: 2.93) and "growing food in the city is not a business" (average: 2.60). Although urban agriculture is currently little practiced commercially in Latvia, public opinion shows a potential interest in its development. However, the factors negatively affecting the development of commercial practice are the cost of land resources and labour costs (Dobele et al., 2022b).

In analysing the relationship between the importance of opinions and aspects characterizing the respondents (gender, age, level of education, average amount of income per household member, proportion of expenses spent on food), no strong or moderate statistical relationship was found. Small tendencies of the statistical relationship (correlation coefficient in the range of 0.20-0.29) can be found between the age of respondents and beliefs such as: urban agriculture can minimize adverse climate changes (correlation coefficient: 0.25); agriculture in cities is possible only as a hobby (correlation coefficient: 0.27); horticultural practice complements the educational program (correlation coefficient: 0.21). No statistically significant relationship was found between other evaluations of urban agriculture practices and products and aspects of the respondents' characteristics, which allows concluding that the population's views on urban agriculture are persistent and generalizable, regardless of the socio-economic aspects characterizing the respondents.

Conclusions, proposals, recommendations

- 1) Urban agriculture in Latvia is a practice that has been little researched, therefore primary data collection on various aspects characterizing the practice is relevant for characterization and analysis. In the research, a population survey was conducted on opinions about practices and products of urban agriculture in order to assess the attitude of the Latvian population.
- 2) Urban agriculture in the context of the population's attitude has a high potential in realizing the functions of promoting and improving education. Opinions that urban agriculture diversifies and greens the urban environment are also relatively highly valued, although Latvian population value the functionality of the practice in mitigating the negative consequences of climate change lower than aspects of education.
- 3) The population of Latvia has a very positive assessment and views regarding the healthiness of food grown in cities, comparing it with what can be bought in stores. That interacts positively with the importance of food selection criteria such as food freshness. However, taking into account how important the quality criterion is for Latvian citizens in choosing food, it is necessary to develop research on the quality of food products in Latvia, especially comparing food grown in urban and rural areas.
- 4) The intensity of opinions and attitudes is relatively similar both among the residents of state-cities and among the residents of other territories. However, the attitude of the practitioners of the urban agriculture is relatively the most different, which can be influenced by experience and knowledge of the specifics of the practice in the urban environment. This shows that the aspect of informing the public about the specifics and possibilities of the practice is essential in the development of urban agriculture, especially in the implementation of social and environmental aspects.

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