

Stakeholder Opinions on Urban Agriculture: The Case of Iğdır

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Abstract

Urban agriculture encompasses all agricultural activities within or near urban areas. Due to its complex interactions within environmental, social, and economic contexts, urban agriculture faces various challenges. Therefore, various stakeholders are involved in the process of developing urban agriculture. This study aims to determine the place and importance of urban agriculture in the eyes of stakeholders in Iğdır City and its surrounding areas. This will provide an understanding of what can be done in the region within the scope of urban agriculture. Semi-structured interview forms were used in the study. Five questions were asked to the stakeholders, and descriptive analysis, one of the qualitative data analysis methods, was used to analyze the data. According to the findings, it was concluded that Iğdır city holds significant potential in terms of urban agricultural activities. Based on the stakeholder opinions, opportunities for urban agriculture in Iğdır City were discussed.

Keywords: Agricultural activities, local authorities, stakeholders, urban, urban agriculture.

Kent Tarımına İlişkin Paydaş Görüşleri: Iğdır Örneği

Öz

Kentsel tarım, kentsel alanların içinde ve çevresinde gerçekleşen tüm tarımsal faaliyetleri kapsamaktadır. Çevresel, sosyal ve ekonomik bağlamlardaki karmaşık etkileşimleri nedeniyle, kentsel tarım çeşitli zorluklarla karşı karşıyadır. Bu nedenle, kentsel tarımın geliştirilmesi sürecinde çeşitli paydaşlar yer almaktadır. Bu çalışma, kentsel tarımın Iğdır ili ve çevresinde paydaşların görüşlerini belirlemeyi amaçlamaktadır. Bu da kentsel tarım kapsamında bölgede neler yapılabileceğinin anlaşılmasını sağlayacaktır. Araştırmada yarı yapılandırılmış görüşme formları kullanılmıştır. Paydaşlara beş soru sorulmuş ve verilerin analizinde nitel veri analiz yöntemlerinden biri olan betimsel analiz kullanılmıştır. Elde edilen bulgulara göre, Iğdır ilinin kentsel tarımsal faaliyetler açısından önemli bir potansiyele sahip olduğu sonucuna varılmıştır. Paydaş görüşlerinden yola çıkılarak Iğdır ilinde kentsel tarım olanakları tartışılmıştır.

Anahtar Kelimeler: Tarımsal faaliyetler, yerel yönetim, paydaşlar, kent, kentsel tarım.

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1. Introduction

The population of cities is increasing day by day, and cities are constantly changing and developing in line with the needs of the growing population. Due to the intensity of urban life, people are confined to limited time frames and spaces during the day. Therefore, cities are becoming critical areas in ecological, economic, social, and cultural contexts. In this regard, incorporating agricultural activities within cities can provide opportunities for solving or reducing overcrowded cities' food and environmental problems. Urban agriculture is defined as a systematic sector that produces, prepares, and sells food within and near in the city by applying production methods on natural resources, to obtain products and significantly meet the daily consumption needs of urban dwellers (UNDP, 1996; Orsini et al., 2013; Türker & Akten, 2020; Türker & Anaç, 2022; Gül, 2022). Urban agriculture can be classified in various ways depending on its diversity, actors involved, objectives, land use, scale, location, characteristics, technology, and production systems (Lohrberg et al., 2015; Türker & Akten, 2023). It can be easily adapted to different types of built environments through various typologies, scales, orientations, and goals (Hodgson et al., 2011; Nadal Fuentes, 2015). Urban agriculture is a critical key to ensuring urban sustainability and creating healthier green environments (Türker & Akten, 2020; Türker, 2021; Türker et al., 2021). For example, urban agriculture can be integrated into the rooftops of buildings such as youth centers, shopping malls, or throughout the various sections of a building or site (Philips, 2013). According to a study conducted by Clinton et al. (2018), it is estimated that there is a total of 1-7 million hectares of land, equivalent to approximately 1.4% to 11% of urban areas, with the potential for urban agriculture worldwide. Urban agriculture faces various challenges due to its complex environmental, social, and economic interactions. Therefore, various stakeholders are involved developing urban agriculture to address these challenges. The literature suggests that urban agriculture activities are primarily managed through the interaction of stakeholders belonging to three main groups (Prové et al., 2016). These groups are classified as follows:

1. *Government:* This group includes institutions, organizations, institutes, agencies, and government-led bodies at the local, national, and international levels.
2. *Civil Society:* This group comprises individuals, volunteers, NGOs, and environmental education associations directly involved in urban agriculture.
3. *Market:* This group involves distributors, entrepreneurs, and consumers related to profit-oriented urban agriculture activities.

These three groups interact and play significant roles in the management and development of urban agriculture. Therefore, understanding the perception and development potential of urban agriculture among stakeholders, as well as gaining insight into how stakeholders influence the development of urban agriculture, can provide essential guidance to decision-makers and planners in developing strategies to address food and environmental issues in cities.

This study aims to find out stakeholders' perspectives regarding current and future urban agriculture developments in the city of Iğdır and its surrounding areas. Firstly, different stakeholders representing and having the potential to be involved in urban agriculture developments in Iğdır are identified. Subsequently, a semi-structured interview technique, a quantitative research method, is conducted with the identified stakeholders. In the conclusion section, recommendations based on urban agriculture are developed for the city of Iğdır within the scope of the evaluation.

2. Material and Method

2.1. Study Area

Iğdır is in the easternmost part of the Anatolia Region, within the Erzurum-Kars Section, at a latitude of 39.9193 and a longitude of 44.0455. It is situated along the Aras River, forming the border with the neighboring Armenian province. Nakhichevan and Iran also border Iğdır to the southeast and east, Ağrı to the south, and Kars province to the northwest (Figure 1). It has a total area of 3,588 km² (Aksoy, 2012). Due to its economic, social, and geographical conditions, Iğdır became the 76th province of Turkey, separated from the Kars province, through Law Decree No. 3806 on May 27,

1992 (Şimşek, 2018). According to the data from the Turkish Statistical Institute (TÜİK, 2022), the population of Iğdır City is recorded as 203,159.



Figure 1. The location of the study area

Extinct volcanic mountains surround Iğdır city and have a basin-like topography, which gives it a microclimate type. The average annual temperature is 11.6°C. The total annual precipitation is 258.6 mm. The plain area, where semi-arid climate conditions are observed, is characterized by steppe vegetation, while the higher elevations have Alpine vegetation (Türkoğlu & Şekercioğlu, 2017). In Iğdır city, it has been determined that of the 482 bird species found in Turkey, 321 either reside in this region or use it as a migration route. The recorded 321 bird species represent 66% of the bird species in the country and 60% in Europe (Türkoğlu, 2018). According to the land use status data, Iğdır City has 96,949 hectares of Class I and IV lands. Agricultural activities are carried out in 53,183 hectares, of which 25,706 hectares are Class I agricultural lands, covering 7% of the city's total area (Provincial Directorate of Agriculture and Forestry, 2019). Due to these characteristics, Iğdır and its surroundings are known as a region where agricultural production activities are carried out intensively.

2.2. Method

In studies related to stakeholder perspectives on urban agriculture, it can be observed that qualitative, quantitative, and mixed research methods are employed (Rogerson, 2011; Cohen & Reynolds, 2014; Sanyé-Mengual et al., 2018; Gianluca et al., 2021). The methodological approach of this study is given in Figure 2.

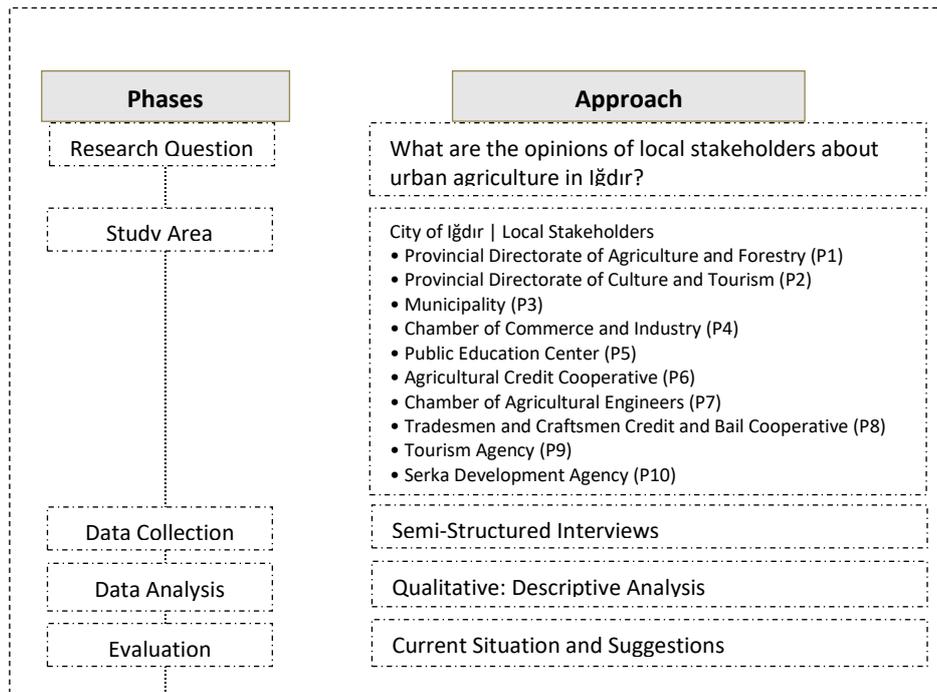


Figure 2. Methodological approach

The necessary ethical approval document for data collection in this study was approved by the Iğdır University Scientific Research and Publication Ethics Board on 24th March 2022. This study aims to evaluate urban agriculture in the city of Iğdır and its surrounding areas, gather stakeholders' perspectives in this context, and provide recommendations on how urban agriculture can be developed in the region.

Taking into account the primary stakeholder grouping of the state, civil society, and the market, the stakeholders that are influential in the decision-making mechanisms regarding the use of urban agriculture in the region are determined as follows: Iğdır Provincial Directorate of Agriculture and Forestry, Iğdır Provincial Directorate of Culture and Tourism, Iğdır Municipality, Iğdır Chamber of Commerce and Industry, Serka Development Agency, Public Education Center, Iğdır Agricultural Credit Cooperative, Iğdır Tradesmen and Craftsmen Credit and Guarantee Cooperative, Iğdır Chamber of Agricultural Engineers, and Iğdır Tourism Agency (Figure 1). Face-to-face interviews were conducted with administrators or administrative personnel representing the identified stakeholders. The study employed a qualitative research method, and semi-structured interviews were conducted with the stakeholders using a predetermined form. Qualitative research focuses on generating knowledge about how individuals perceive their potential, the world, and their lived experiences, aiming to conduct in-depth exploration (Merriam, 2018). The data analysis method used in this study is descriptive analysis. In descriptive analysis, data collected through observations, interviews, etc., are classified, summarized, and interpreted. In this type of analysis, quoting data from data sources can benefit the study's credibility (Altunışık et al., 2012). The interview form was developed with the input of landscape architecture department academics. In this context, the following questions were asked to the participants identified as urban agriculture stakeholders in Iğdır:

- Q1. Do you have any knowledge about urban agriculture gardens? If so, what do you think urban agriculture gardens include?*
- Q2. What other contributions can urban agriculture gardens make to the city/region beyond agricultural production?*
- Q3. In terms of professional significance, are the potential and characteristics of Iğdır suitable and sufficient for establishing urban agriculture gardens?*
- Q4. What are the major risks and hazards in establishing urban agriculture gardens?*
- Q5. What is the value of urban agriculture gardens for this city in terms of agricultural production, urban health, and economic and social values?*

The interviews were conducted at the designated dates and times determined by the stakeholders and lasted 30-45 minutes each. With the permission of the stakeholders, the interviewer took notes. During the interview, these notes were read back to the stakeholders to ensure an accurate understanding of the information they provided and to confirm its accuracy. Subsequently, the statements were adjusted to fit the academic language without altering their content. The obtained data were classified and interpreted. This process aimed to identify the current situation regarding urban agriculture in Iğdır and its surrounding areas and provide recommendations for its development and potential planning.

3. Findings and Discussion

In this section, the findings obtained from the descriptive analysis of the interview texts are presented. During the interviews with the stakeholders, the questions were coded as Q1, Q2...Q5, and the participants were coded as P1, P2, P3.....P10. The quotations are presented accordingly. The prominent findings from the responses can be summarized as follows:

Q1: Do you have any knowledge about urban agriculture gardens? If so, what do you think urban agriculture gardens include?

"Urban agriculture includes all areas where agricultural activities are conducted, including hobby gardens and community gardens etc."(P1)

"Hobby gardens, healing gardens, greenhouses, and flower gardens can be considered within the scope of urban agriculture areas."(P2)

"It can be associated with agriculture conducted within the city. This may include greenhouses, hobby gardens, and existing agricultural areas."(P4)

"It can involve cultivation and agricultural activities done for visual purposes."(P7)

"I have no knowledge about this concept."(P10)

Q2. What other contributions can urban agriculture gardens make to the city/region beyond agricultural production?

"Urban agriculture gardens can make significant contributions to creating awareness about green spaces, facilitating the establishment of sustainable green corridors within the city, and promoting mental and physical well-being."(P2)

"They provide social benefits to the community. The older generation in the region is already engaged in agriculture, and this can increase the participation of the younger population. Engaging in farming activities in their own gardens not only provides agricultural benefits but also serves as a social space for relaxation and entertainment."(P6)

"They provide employment opportunities for the city. They contribute to the local economy and have impacts on the regional and even national economies."(P8)

"These spaces can contribute positively to the local community by reducing daily stress and providing recreational areas for city residents. Thematic gardens such as hobby gardens or healing gardens can have positive effects on the community's mental well-being."(P10)

Q3. In terms of professional significance, are the potential and characteristics of Iğdır suitable and sufficient for establishing urban agriculture gardens?

"Iğdır has fertile agricultural lands due to its soil structure and climate. These favorable characteristics allow the formation of hobby gardens, medicinal gardens, and flower gardens, as well as the development of greenhouse farming economically."(P2)

"Iğdır has significant agricultural potential, but it is not adequately utilized."(P5)

"Iğdır's villages and nearby neighborhoods already have agriculture, and the local population meets their needs from these areas. Due to its climate and geopolitical location, Iğdır is suitable and sufficient." (P7)

"Iğdır is already an agricultural city, and it is suitable and sufficient."(P9)

Q4. What are the major risks and hazards in establishing urban agriculture gardens?

"Areas with high agricultural potential might be at risk."(P1)

"If irrigation lines are not drawn from drinking water, it does not pose a problem."(P3)

"There is no risk."(P4)

"There is no risk. However, plant diseases can increase, and uninformed agricultural activities can have negative effects on crops."(P7)

"I don't think there is any risk."(P9)

"Establishing the infrastructure poses a significant risk."(P10)

Q5. What is the value of urban agriculture gardens for this city in terms of agricultural production, urban health, and economic and social values?

"I don't think it will contribute economically. However, it can increase interaction and solidarity among the community. Additionally, it certainly has benefits in terms of urban health, such as the contribution of green spaces, heat balance, and employment opportunities."(P1)

"Even if the products obtained from these areas are not commercial, they promote interaction through local exchanges. For example, if apricot cultivation is not carried out on a commercial scale, the local community distributes the harvest to their surroundings and sends gifts to other cities during the harvest season, which activates and stimulates courier services. Besides, it helps create a green space texture for the city."(P3)

"First and foremost, it can contribute to establishing a culture of agricultural activities within the community. If the society reaches a point where they can produce their own products, it can lead to a transition to a culture where the community can meet their own needs, solving many economic and social problems and contributing to urban health."(P5)

"In terms of culture, it strengthens the connection between the local community and agriculture, enhancing their ties with the past. In addition to the economic dimension, it strengthens both the cultural and social bonds among the people."(P8)

The answers obtained after the questions directed to the stakeholders are summarized as follows:

According to the results of the interview with the *Iğdır Provincial Directorate of Agriculture and Forestry*, it is stated that Iğdır City has sufficient infrastructure in terms of natural values for urban agriculture areas. However, it is mentioned that there is a lack of legal basis for the protection, operation, and utilization of the generated income from urban agriculture gardens. Additionally, it is noted that urbanization and existing regulations do not support the development of urban agriculture gardens on agricultural lands.

Iğdır Provincial Directorate of Culture and Tourism stated that agricultural areas are not only a food production sector but also have the potential for wide-ranging activities in collaboration with the local community. These activities can raise awareness and promote green space consciousness among the urban population. They can also support the creation of new recreational and sustainable areas in the city, play a significant role in ensuring food security for the city and the country, and make substantial contributions to tourism and the local economy.

Iğdır Municipality emphasized that agriculture has been a longstanding tradition in the Iğdır Plain and a significant portion of the population is engaged in agricultural activities. The city has a high concentration of agricultural activities, and in the past, the region was able to meet the needs of the local population with its agricultural products. However, it was noted that in recent times, most of these products are imported from other regions. This decrease in the city's external trade dimension is believed to be related to urbanization and the degradation of agricultural lands. It was also suggested that the agricultural lands of the city have sufficient productivity for crop cultivation, and even on an individual level, there is extensive utilization of agricultural practices. Residents also use agricultural production areas for recreational and hobby purposes.

Iğdır Chamber of Commerce and Industry mentioned that activities aimed at improving agriculture within the scope of urban agriculture gardens are an effective method for protecting and developing agricultural areas. Furthermore, urban agriculture areas can contribute to the continuity of local food production and the preservation of the city's culture. They can also catalyze for existing and potential recreational activities, significantly contributing to the city's economy and adding various new functions to the industrial sector.

Public Education Center expressed that urban agriculture activities can introduce the local community to a new culture of crop cultivation. This can lead to reduced food costs and shorter distances for transportation, thereby ensuring food security. In addition, urban agriculture can provide positive contributions in economic and social aspects.

Serka Development Agency pointed out that agricultural activities in rural areas can positively effect on human psychology and mental health. The increase in the quantity and diversity of products resulting from agricultural activities can provide employment opportunities for the local community in various service sectors such as processing and marketing of these products. However, it is considered that the lack of sufficient infrastructure work and the establishment of a system could pose significant challenges for the city if urban agriculture gardens are not properly implemented.

Iğdır Agricultural Credit Cooperative stated that the spaces and areas created within the scope of urban agriculture gardens would contribute to the cityscape by adding green areas and providing a healthier living environment. It was also believed that they would play an essential role in strengthening the connection between the younger generation and the soil. These agricultural gardens could be utilized as research or experimental areas for individuals and communities seeking different methods and techniques in cultivation.

Iğdır Craftsmen and Artisans Credit and Guarantee Cooperative emphasized that reviving and expanding agricultural areas in these lands where agriculture has been practiced since ancient times can play a significant role in strengthening the cultural ties of the local community. It was also stated that it could contribute to strengthening national will and enhancing social and cultural bonds.

Iğdır Chamber of Agricultural Engineers stated that urban agriculture gardens contribute to production and increase the number of green spaces, positively impacting on urban health and climate. It is believed that the local community can have a significant influence in ensuring their own and the city's food supply by engaging in agricultural activities. Establishing thematic gardens such as healing and hobby gardens, taking advantage of the positive effects of agricultural activities such as meditation, can have overall positive effects on the city's local population. To create a city that is closely intertwined with nature and agriculture, it is considered necessary for local government and public institutions to work in a coordinated manner and raise awareness accordingly.

Iğdır Tourism Agency mentioned that events or festivals organized under the agriculture theme can contribute to the city commercially and socially. These events are believed to play a significant role in promoting the city's unique cultural values and even contributing to tourism growth.

There are studies in the literature that evaluate stakeholder perspectives on urban agriculture. These studies show that evaluations are made based on different stakeholder groups. For example, it is demonstrated that the group representing urban farmers has an influence on food production in urban areas (Hara et al., 2013; Cook et al., 2015; Sanyé-Mengual et al., 2016; Specht et al., 2016; Delgado 2018; Nadal et al., 2018; Diehl 2020). Non-governmental organizations (NGOs) and restaurants are important stakeholders in ensuring access to urban agriculture products to urban markets (Sanyé-Mengual et al., 2016; Specht et al., 2016; Pollard et al., 2017). It is also shown that the local community can either promote or hinder the implementation of urban agriculture activities as stakeholders (Specht et al., 2016; Sanyé-Mengual et al., 2018; Ramaloo et al., 2018; Nadal et al., 2018; Türker & Akten, 2021). These studies emphasize that urban agriculture can be successfully carried out with the contributions of different stakeholders and highlight the importance of considering stakeholders' perspectives.

It has been revealed that local and national governments, as another stakeholder group, can directly or indirectly influence the effectiveness of urban agriculture initiatives (Vásquez et al. 2002; Rogerson, 2011; Cohen & Reynolds 2014; Sanyé-Mengual et al., 2016; Specht et al., 2016; Paddeu 2017; Specht & Sanyé-Mengual 2017; Delgado, 2018; Nadal et al., 2018).

The potential of urban agriculture gardens was investigated within the scope of this research in Iğdır City and its surrounding areas. Qualitative research techniques, specifically semi-structured interviews, were employed to evaluate the views and recommendations of public institutions, private sector, and civil initiatives. Within this scope, interviews were conducted with various stakeholders, including Iğdır Provincial Directorate of Agriculture and Forestry, Iğdır Municipality, Iğdır Chamber of Commerce and Industry, Public Education Center, Serka Development Agency, Iğdır Agricultural Credit Cooperative, Iğdır Craftsmen and Artisans Credit and Guarantee Cooperative, Iğdır Chamber of Agricultural Engineers, and Iğdır Tourism Agencies. Each stakeholder was asked questions related to urban agriculture, and their views and recommendations regarding urban agriculture gardens in Iğdır City were obtained based on their areas of interest.

According to the interviews conducted within the scope of the study, it has been identified that the preservation, management, and establishment of the legal framework for urban agriculture gardens is an important issue. It has been recognized that the agricultural land productivity in Iğdır City can serve as an adequate source of food stock for the city and its surroundings. In addition to the

economic contributions of urban agriculture activities to the city and the industrial sector, it has been emphasized that they can also play a significant role in preserving the city's cultural fabric and ensuring its sustainability. Urban agriculture gardens have been acknowledged for their role in ensuring access to safe food. Besides their economic benefits, it has been highlighted that urban agriculture gardens can have positive physical and mental effects on human health. These gardens also play an essential role in strengthening the connection between the younger generation and the land and providing healthy living conditions. They have the potential to enhance cultural ties and strengthen national identity within society. It has been suggested that themed healing gardens can be established within urban agriculture gardens to benefit from the meditative effects. Recreational activities organized within the scope of urban agriculture can contribute positively to the city's recognition and its tourism potential at the regional and national levels. Furthermore, urban agriculture gardens can serve as research or experimental areas for individuals and communities seeking alternative methods and techniques in cultivation.

Apart from meeting the community's food needs at the local level, urban agriculture has various dimensions of impact, such as environmental sustainability, health, nutrition, and social interaction. Additionally, it provides job opportunities related to local food production activities, supporting economic development, social participation, integration, and empowerment (Rasouli, 2012). With increasing implementation examples worldwide and in our country, it has become a field that addresses various agricultural practices.

4. Conclusion and Suggestions

Turkey has a rich agricultural potential and biological diversity in terms of agricultural product variety and patterns based on different climates and ecological regions. From traditional agricultural techniques to technology, a wide range of agricultural practices have been implemented in our country, becoming part of our social, cultural, and economic life. It is necessary to ensure the continuation of all these agricultural practices in a blended form with the social and cultural dimensions of the region, preserve them, and pass them on to future generations to ensure their sustainability.

When it comes to the multifaceted benefits of promoting urban farming gardens in the region and city, they go beyond increasing food stock in urban areas. They also contribute to improving the urban climate and providing additional benefits in terms of healing, therapy, social renewal, and cultural enrichment for the urban population (Metin & Türker, 2023). Therefore, these areas within the city should not be converted into built-up spaces, and efforts should be made to preserve and maintain the aforementioned benefits;

- Establishing apricot orchards as a focal point and urban emphasis within the city.
- Allocating agricultural areas to support local producers near the city to cultivate specific crops.
- Creating small-scale agricultural production and vegetable gardens in limited spaces such as apartment complexes, residential areas with gardens, rooftops, public buildings, and private sector premises.
- Developing programs for growing vegetable and fruit gardens in city parks, supported by various products throughout the year, in collaboration with park and garden authorities.
- Prioritizing research focused on supporting local products by research institutes, universities, and other research institutions, including establishing an apricot museum and research institute.
- Organizing fairs, exhibitions, and festivals to promote and market local products, along with various activities (poetry, painting, music, composition, etc.) and competitions involving primary, middle, and high school students.
- Planning to establish sales and promotional outlets serving local and international tourists, contributing to the local economy.

- Incorporating fruit tree plantations instead of forest trees as part of agricultural forestry activities in reforestation efforts conducted by the General Directorate of Forestry.
- Implementing artistic projects (sculptures, murals, flooring elements, etc.) throughout all residential areas of the city to represent the language and characteristics of agricultural products.
- Establishing an agricultural, industrial zone, and fruit/vegetable wholesale market to facilitate integration between the agricultural and industrial sectors and enable processing of plant-based and animal-based products.

The critical steps to be taken in the agricultural-focused enrichment of Iğdır City are considered as follows according to stakeholders' opinions.

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Author Contribution and Conflict of Interest Declaration Information

All authors contributed equally to the article. There is no conflict of interest.

References

- Aksoy, Y., Savaş, D. & Dursun, S. (2012). Iğdır İlinin Mekânsal Analiz Raporu. Iğdır Çevre ve Şehircilik İl Müdürlüğü. Access Address (23.05.2023): https://webdosya.csb.gov.tr/db/kentges/editordosya/kiu_igdir_mekansal_analiz.pdf/
- Altunışık, R., Coşkun, R., Bayraktaroğlu, S. & Yıldırım, E. (2012). Sosyal Bilimlerde Araştırma Yöntemleri SPSS Uygulamalı. Adapazarı/Sakarya: Sakarya Yayıncılık.
- Clinton, N., Stuhlmacher, M., Miles, A., Uludere Aragon, N., Wagner, M., Georgescu, M., Herwig, C. & Gong, P. (2018). A global geospatial ecosystem services estimate of urban agriculture. *Earth's Future*, 6(1), 40-60. <https://doi.org/10.1002/2017EF000536>.
- Cohen, N. & Reynolds, K. (2014). Urban agriculture policy making in New York's "New Political Spaces" Strategizing for a Participatory and Representative System. *J Plan Educ Res*. 34(2), 221–234. doi:10.1177/0739456X14526453.
- Cook, J., Oviatt, K., Main, D. S., Kaur, H. & Brett, J. (2015). Reconceptualizing urban agriculture: an exploration of farming along the banks of the Yamuna River in Delhi, India. *Agric Human Values*, 32(2), 265–279. doi:10.1007/s10460-014-9545-z.
- Delgado, C. (2018). Contrasting practices and perceptions of urban agriculture in Portugal. *International Journal of Urban Sustainable Development*. 10(2), 170–185. doi:10.1080/19463138.2018.1481069.
- Diehl, J. A. (2020). Growing for Sydney: exploring the urban food system through farmers' social networks. *Sustainability*. 12(8), 3346. doi:10.3390/su12083346.
- Gianluca, F., Kathrin, S. & Cesare, Z. (2021). Assessing motivations and perceptions of stakeholders in urban agriculture: a review and analytical framework. *International Journal of Urban Sustainable Development*, 13(2), 351-367, DOI: 10.1080/19463138.2021.1904247.
- Gül, A. (2022). Urban Agroforestry Systems in Urban Agriculture. In H. B. Türker, & A. Gül. (Eds.) *Architectural Sciences and Urban Agriculture* (26-68). ISBN:978-625-8213-84-3. Ankara: Iksad Publications. <https://iksadyayinevi.com/wp-content/uploads/2022/11/Architectural-Sciences-and-Urban-Agriculture.pdf>
- Hara, Y., Murakami, A., Tsuchiya, K., Palijon, A. M. & Yokohari, M. (2013). A quantitative assessment of vegetable farming on vacant lots in an urban fringe area in Metro Manila: can it sustain

- long-term local vegetable demand? *Appl Geogr.* (41), 195–206. doi:10.1016/j.apgeog.2013.04.003.
- Hodgson, K., Campbell, M. C. & Bailkey, M. (2011). Urban agriculture: Growing Healthy, Sustainable Places. APA Planning Advisory Service Reports. 1-145.
- Lohrberg, F., Licka, L., Scazzosi, L. & Timpe, A. (2015). Urban Agriculture Europe. Pub. Jovis, Editor: Frank Lohrberg, Lilli Licka, Lionella Scazzosi, Axel Timpe ISBN: 978-3-86859-371-6.
- Merriam, S. B. (2018). Nitel Araştırma Desen ve Uygulama İçin Bir Rehber (3. Basımdan Çeviri). (S. Turan, Çeviren) Ankara: Nobel Akademik Yayıncılık.
- Metin, A. E. & Türker, H. B. (2023). Exploring the Synergy between Urban Agriculture and Ecotherapy. In Türker, H. B. & Bolat, F. (Eds.). *Architectural Sciences and Ecological Approaches*. 2023, Chapter: 3, 78-88. ISBN: 978-625-367-073-3. Iksad Publications. (PDF) *Exploring the Synergy between Urban Agriculture and Ecotherapy*. Available from: https://www.researchgate.net/publication/370985736_Exploring_the_Synergy_between_Urban_Agriculture_and_Ecotherapy [accessed Jul 30 2023].
- Nadal Fuentes, A. (2015). Urban agriculture in the framework of sustainable Urbanism. *Temas De Disseny*, (31)1, 92-103. Access Address (18.04.2023): <https://raco.cat/index.php/Temas/article/view/299595/>
- Nadal, A., Cerón-Palma, I., García-Gómez, C., Pérez-Sánchez, M., Rodríguez-Labajos, B., Cuerva, E. & Rieradevall, J. (2018). Social perception of urban agriculture in Latin-America. A case study in Mexican social housing. *Land Use Policy*, (76), 719–734. doi:10.1016/j.landusepol.2018.02.055.
- Orsini, F., Kahane, R., Nono-Womdim, R. & Gianquinto, G. (2013). Urban agriculture in the developing world: A review. *Agronomy Sustainable*, 4(3), 695–720.
- Paddeu F. (2017). Legalising urban agriculture in Detroit: a contested way of planning for decline. *Town Planning Review*. 88(1), 109–129. doi:10.3828/tpr.2017.9.
- Philips, A. (2013). *Designing Urban Agriculture, A Complete Guide to The Planning, Design, Construction, Maintenance, and Management of Edible Landscapes*. Published by John Wiley & Sons, Inc., Hoboken, New Jersey, Canada, 163.
- Prové, C., Kemper, D., Loudiyi, S., Mumenthaler, C. & Nikolaidou, S. (2016). Governance of urban agriculture initiatives: insights drawn from European case studies. In: Lohrberg F, Scazzosi L, Licka L, Timpe A, editors. *Urban agriculture Europe*. Berlin: Jovis; p. 64–69.
- Provincial Directorate of Agriculture and Forestry. (2019). Access Address (02.06.2023): https://webdosya.csb.gov.tr/db/ced/icerikler/igd-r_-cdr2018-20190930172121.pdf
- Ramaloo, P., Liong, C. Y., Siwar, C. & Isahak, A. (2018). Perception of community residents on supporting urban agriculture in Malaysian City: case study at Bukit Mertajam. *Journal Pengurusan (UKM Journal of Management)*. Vol. 53.
- Rasouli, S. (2012). Sürdürülebilir Kentsel Tasarımda Kentsel Tarımın Rolü, “İstanbul Örneği”. Master's Thesis, Istanbul Technical University, Institute of Science, İstanbul. 15.
- Rogerson, C. M. (2011). Urban agriculture and public administration: institutional context and local response in Gauteng. In: Zarina Patel, Bradley Rink, editors. *Urban Forum*. 22(2), 183–198.
- Sanyé-Mengual, E., Anguelovski, I., Oliver-Solà, J., Montero, J. I. & Rieradevall, J. (2016). Resolving differing stakeholder perceptions of urban rooftop farming in Mediterranean cities: promoting food production as a driver for innovative forms of urban agriculture. *Agric Human Values*. 33(1), 101–120. doi:10.1007/s10460-015-9594-y.
- Sanyé-Mengual, E., Specht, K., Krikser, T., Vanni, C., Pennisi, G., Orsini, F. & Gianquinto, G. P. (2018). Social acceptance and perceived ecosystem services of urban agriculture in Southern Europe: the case of Bologna, Italy. *PLOS One*. 13(9), 1–21. doi: 10.1371/journal.pone.0200993.

- Şimşek, O. (2018). İğdır İlinin nüfus özellikleri. *Akademik Tarih ve Düşünce Dergisi*, 5(14), 180-210. <https://dergipark.org.tr/tr/pub/atdd/issue/37307/431120/>
- Specht, K. & Sanyé-Mengual, E. (2017). Risks in urban rooftop agriculture: assessing stakeholders' perceptions to ensure efficient policymaking. *Environ Sci Policy*. (69), 13–21. doi:10.1016/j.envsci.2016.12.001.
- Specht, K., Siebert, R. & Thomaier, S. (2016). Perception and acceptance of agricultural production in and on urban buildings (ZFarming): a qualitative study from Berlin, Germany. *Agric Human Values*, 33(4), 753–769. doi:10.1007/s10460-015-9658-z.
- TÜİK. (2022). Türkiye İstatistik Kurumu. Nüfus Sayım Verileri Access Address (16.05.2023): <https://data.tuik.gov.tr/Kategori/GetKategori?p=Nufus-ve-Demografi-109/>
- Türker, H. B. & Anaç, İ. (2022). Analyze of academic researches on urban agriculture in Turkey. *Journal of Architectural Sciences and Applications*, 7(1), 383-404.
- Türker, H. B. & Akten, M. (2020). A Productive Land Use: Urban Agriculture. *Journal of Strategic Research in Social Science*, 6 (1), 11-24.
- Türker, H. B. & Akten, M. (2021). Uşak Kent Halkının Kentsel Tarıma Yönelik Kullanım Düzeyi ve Bakış Açısı. *Mimarlık Planlama ve Tasarım Alanında Araştırma ve Değerlendirmeler-II*, 1-30.
- Türker, H. B. (2021). Protection and Sustainability of Urban Agriculture Areas. Atila Gül and Mert Çakır (Eds.). *Architectural Sciences and Protection & Conservation & Preservation*. 2021, Volume:1, 595-622. ISBN: 978-625-8061-45-1. Iksad Publications. <https://iksadyayinevi.com/home/architectural-sciences-and-protection-conservation-preservation/>
- Türker, B., Gül, A., Anaç, İ. & Gül, H. E. (2021). The role of urban agriculture in adapting to climate change for sustainable cities. 2nd International City and Ecology Congress Within The Framework of Sustainable Urban Development. (CEDESU 2021). *Proceedings Book*. p. 247-252. December 2-3, 2021, Trabzon, Turkey. https://kongre.akademikiletisim.com//files/cedesu2021/cedesu_tam_metin.pdf
- Türker H. B. & Akten, M. (2022). A Comprehensive Review on Urban Agriculture. In H. B. Türker, & A. Gül (Eds.) *Architectural Sciences and Urban Agriculture* (01-25). ISBN:978-625-8213-84-3. Ankara: Iksad Publications. <https://iksadyayinevi.com/home/architectural-sciences-and-urban-agriculture/>
- Türker, H. B. & Akten, M. (2023). Harvesting the hidden value of vacant lands: a GIS-based approach to urban agriculture. *Journal of Architectural Sciences and Applications*, 8 (1), 422-437. DOI: <https://doi.org/10.30785/mbud.1292693>
- Türkoğlu, M. (2018). İğdır'ın İlk Biyoçeşitliliği ve Doğadaki Besin Zinciri. T.C. Orman ve Su İşleri Bakanlığı Doğa Koruma ve Milli Parklar Genel Müdürlüğü.
- Türkoğlu, M. & Şekercioğlu, H. Ş. (2017). İğdır'ın Kuşları. T.C. Orman ve Su İşleri Bakanlığı Doğa Koruma ve Milli Parklar Genel Müdürlüğü, ISBN: 978-605-9550-01-7.
- UNDP. (1996). Human Development Report 1996, *United Nations Development Programme*. Access Address (16.04.2023): <https://hdr.undp.org/system/files/documents/hdr1996encompletenostatpdf.pdf/>
- Vásquez, R., Cofie, O., Drechsel, P. & Mensa-Bonsu, I. F. (2002). Linking urban agriculture with urban management: a challenge for policy makers and planners. *WIT Trans Ecol Environ*. 54. 925-934.

