

A Short Survey of Integrating Urban Agriculture and Environmental Planning

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Abstract—The growth of the agricultural sector is known as an essential way to achieve development goals in developing countries. Urban agriculture is a way to reduce the vulnerability of urban populations of the world toward global environmental change. It is a sustainable and efficient system to respond to the environmental, social and economic needs of the city, which leads to urban sustainability. Today, many local and national governments are developing urban agriculture as an effective tool in responding to challenges such as poverty, food security, and environmental problems. In this study, we follow a perspective based on urban agriculture literature in order to indicate the urban agriculture's benefits in environmental planning strategies in non-western countries like Iran. The methodological approach adopted is based on qualitative approach and documentary studies. A total of 35 articles (mixed quantitative and qualitative methods studies) were studied in final analysis, which are published in relevant journals that focus on this subject. Studies show the wide range of positive benefits of urban agriculture on food security, nutrition outcomes, health outcomes, environmental outcomes, and social capital. However, there was no definitive conclusion about the negative effects of urban agriculture. This paper provides a conceptual and theoretical basis to know about urban agriculture and its roles in environmental planning, and also conclude the benefits of urban agriculture for researchers, practitioners, and policymakers who seek to create spaces in cities for implementation urban agriculture in future.

Keywords—Urban agriculture, environmental planning, urban planning, literature.

I. INTRODUCTION

MANY researches are carried out about environmental planning among the scholars for years. The environmental planning can specify the relationship between global policy-level commitments, regional assessments and plans [1]. Moreover, urban agriculture is an industry which produces food to respond the daily demands of people in a city [2]. Due to increasing the importance of urban agriculture subject, understanding the concept of it has not only been the top aim, but also has drawn the interests of scholars in this field who have investigate in this research over the last decade.

Despite the concept of urban agriculture in lines of research, literature review shows the benefits of this subject in environmental planning. Methodologically, there is a lack of urban agriculture strategies in environmental planning of non-

western countries like Iran. In fact, environmental planning can support the urban agriculture benefits in a community, despite some limitations in implementation of urban agriculture in these countries.

The paper is organized as follows. Section II includes literature reviews and short survey of the environmental planning and urban agriculture which shows the theorist's researches related to urban agriculture concepts, Section III includes the methodology, Section IV shows discussion and results and Section V includes conclusions.

II. LITERATURE REVIEW

A. Urban Agriculture Literature

Urban agriculture is the act of cultivating, processing, and distributing crops and animals within or around a village, or a city. In other words, urban agriculture is a complementary strategy to reduce urban poverty and increase food security and improve environmental and landscape quality [3].

In the following, the lists of theorists which have studied on urban agriculture are shown. The concepts of their papers are summarized to be more useful in future researches.

Contessea et al. review about policies on urban agricultural growth. They believe that urban agriculture can be an opportunity to increase the access of public to urban green space [4]. Cina et al. discuss about the importance of the role of urban agriculture in food security system [2]. Oyuela & Van Der Valkshow that the urban agriculture could be useful to enhance food security and nutrition, community structure, education, employment and environmental management in the cities [5]. RUAF emphasizes on new products as urban agriculture rather than food preparations [6]. Cina & Dansero achieve to the relationship between local urban food policy and rural implementation. They also suggest using more urban green land by returning urban agriculture to rural areas [7]. Eisazadeh et al. discuss about the role and importance of urban agriculture in creating urban entrepreneurship and creating employment [8]. De Haan mentions to urban agriculture definitions. He also examines urban agriculture in different scales social, economic and introduces examples of different types of urban agriculture [9]. Subramani & Selvan conclude that urban agricultural system could be useful in providing food security [10]. McClintock & Simpson provide the definitions of commercial agriculture and suggest creating urban agriculture on multiple scales [11]. Gabriel mentions to the need of social innovation to solve problems in communities as food security and sustainability [12]. Cina achieves to the history of urban agriculture, developing urban agriculture in the present and providing policies for the future

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[3]. Roemers emphasizes on public participation and the role of local governments for promoting urban agriculture [13]. Indraprastha achieves to the problem of food security, especially in poor areas and urban agriculture as a mean to contribute to urban sustainability [14]. Specht et al. mention future urban agriculture as activities on rooftops, inside buildings and vertically in buildings [15]. Corrado introduces new forms of producer-consumer collaboration and analysis the park to have the potential for urban agriculture in southern Milan [16]. Cisneros evaluates and compares new models for small and large scales of urban agriculture and presents their advantages and disadvantages [17]. Ackerman et al. emphasize on the role of urban agriculture in growing capacity, food security and green infrastructure [18]. Lovell achieves to this issue that urban food productions depends on weather conditions, cultural settings and available technologies [19]. FAO achieves to social, economic and environmental sustainability by integrating agricultural activities into urban development [20].

B. Concept of Urban Agriculture in Environmental Planning

Urban agriculture can help urban planners to achieve their goals such as sustainable urban form, urban environmental management and urban development. The lack of responsibility for urban agriculture and ignoring it in planning strategies and resource policy are recognized as key issues raised by planning agencies. Possible responses to these constraints include: assigning responsibility or clarifying the scope of urban agriculture, increasing resources allocated to urban agriculture, having a mechanism for distributing these resources, implementing policy and strategies, and organizing clear records on the status of urban agriculture [21].

A lack of specific responsibility in environmental planning for urban agriculture sector causes to inconsistent policies by different government departments. Creating a dependent department to urban agriculture and defining clear responsibility can be a solution for this issue. This responsible

sector could include representation from different levels of government to practice or implement urban agriculture [22], [23].

Based on researches, environmental planning policies can be promoted by implementing urban agriculture policies. Environmental planning is an integrated approach to protect the environment and ensure the long-term goals of environmental sustainability [24]. On the other hand, urban agriculture also has the ability to contribute to urban sustainability. Environmental planning goals are intended for sustainable and sustainable development [25]. The goals of environmental planning are intended for sustainable development. In such planning, the main development policies are aimed to face with the basic needs of society, especially the weakest part [26]. In fact, the main goals of environmental planning include conserving resources, developing built-up spaces, promoting environmental quality, social equality, and democratic and political participation [27]. The concept of urban agriculture also includes issues of urban rehabilitation, sustainable development, health, and access to healthy food, water and waste management, social stability, better integration of generations and cultures, urban flexibility as well as new forms of economic interaction [25]. Urban agriculture is a sustainable and efficient system which responds to the ecological and economic needs of the city and prevents agricultural landscapes [28]. The general goal of urban agriculture is respecting the potential of healthy living and nature in the city. To achieve this, three goals are considered which include improving and preserving the ecological structure of the land, strengthening the cultural and historical location through community recreation and social and urban economy participation [29]. Also, from perspective of planning, urban agriculture causes to more participation in the city. Indeed, urban agriculture is a multidimensional action which enhances food security and nutrition, community structure, education, employment and environmental management [30].

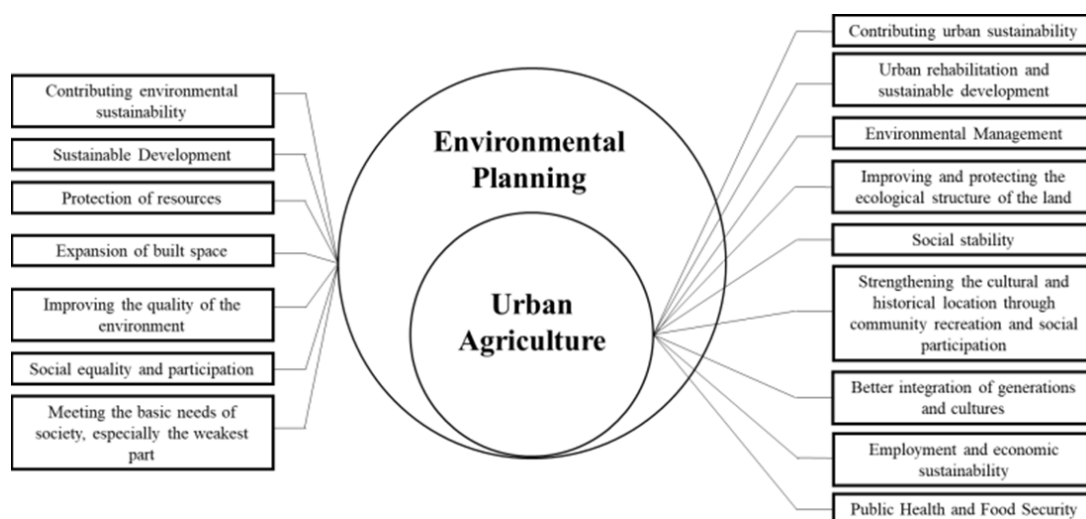


Fig. 1 Concepts of urban agriculture in environmental planning

A. Types of the Benefits of Urban Agriculture

Urban agriculture can have benefits in the socio-economic and environmental contexts. In the following, a review of each benefit has been mentioned.

From the social aspect:

- Urban agriculture can have effect on improving public participation and communication.
- Today, due to the nature of urban life, inactivity and its consequences have become one of the problems of urban communities. Since urban agriculture is a physical activity, it can make people more motivated and reduce some of the problems mentioned, in addition to creating vitality and rejuvenation.
- Urban agriculture can improve citizen's health. Therefore, green spaces and vegetation have many positive psychological effects such as faster healing of illnesses, creating vitality, eliminating negative, reducing stress, providing food security and accessing to healthier and fresh food.
- Studies show that in cities with more vegetation and greenery, crime rates have been decreased. These places also provide safe environments for leisure and entertainment, especially for children [31]. Therefore, urban agriculture has an important role in social security.
- Urban agriculture creates recreational and green spaces and makes cities more beautiful and livable.
- Green spaces, with accessible and convenient locations for teaching concepts, are intended for scientific and educational use. In this context, urban agriculture plays an important role in spreading information to different people [31].

From the environmental aspect; most cities face many environmental problems such as warming and air pollution, water and soil resources pollution, greenhouse gas emissions, and so on. The environmental benefits of urban agriculture can be included managing rainfall by absorbing rainfalls, reducing the effects of urban heat island by absorbing a significant percentage of air heat and modulating air, biodiversity by producing diverse products and reducing noise pollution by creating sound insulation by plants [32].

From the economic aspect;

- Since urban agriculture includes a complex system with a wide range of processes of production, distribution, marketing, supplying, consumption, etc., it has many economic benefits. One of its benefits is to provide economic activity for women and also poor community alongside their other roles, as well as empowering them society [33].
- Urban agriculture can develop tourism industry. The private space of urban agriculture, especially green yards, can help attract tourists [34].
- Urban agriculture can reduce poverty in society and provide urban sustainability by creating jobs and new jobs as well as accessing cheaper food [35].

III. METHODOLOGY

In this study, the data were collected through documentary study and it is based on qualitative approach. However, a total of 35 articles (mixed quantitative and qualitative methods studies) were studied in final analysis, which published in relevant journals that focus on this subject. These data include of theories of urban agriculture during the years.

IV. DISCUSSION & RESULTS

According to the literature review, the significant policies for urban agricultural development can be summarized as follows:

- 1) Increasing physical capacities and infrastructures: By creating parks, designing private and semi-private areas for optimal use of available energy sources and ensuring high quality pollution-free soil for agriculture, developing greenhouses to create green space, creating green spaces in schools, supervision programs to establish and align the equipment and facilities of buildings to cultivate plants and etc.
- 2) Developing urban agriculture in commercial and private centers: By establishing local organizations to manage public gardens to improve and ensure community health, legal support for private and semi-private companies, encouraging to create an environment for food productions, increasing the resources information and providing specialized guidance to create suitable spaces for food production, education and promotion of urban agriculture, applying appropriate policies in the field of market management and profitability of manufactured products.
- 3) Increasing Organic Food Production: Applying appropriate management practices to promote the cultivation of organic food.
- 4) Developing the infrastructure needed to process and transform food to added value.
- 5) Encouraging citizens to implement urban agriculture as a suitable environmental strategic.
- 6) The need of existing specialists in urban agriculture field to provide technical capacities, skills and knowledge of different parts of society.
- 7) Encouraging top producers in urban agriculture.
- 8) Conducting study programs to identify appropriate ways and products to grow in the urban environment.

V. CONCLUSIONS

This paper has shown that prior researches about Urban Agriculture lead to different concepts of this subject. By gathering these proposals together, there are basic implications for both research and practice.

Based on the results, urban agriculture can be leaded to environmental planning for urban lands. The concept of Urban Agriculture, which includes the important issues such as sustainable development, ensures the long-term goals of environmental sustainability leads to environmental planning.

Urban agriculture is a sustainable and efficient system to

respond the ecological and economic needs of the society. Also, from a planning perspective, urban agriculture causes more participation in the city. Indeed, urban agriculture is a multidimensional action that enhances food security and nutrition, community structure, education, employment, and environmental management.

This paper provides a conceptual and theoretical basic to know about urban agriculture and its roles in environmental planning. It is clear that identifying different concepts of urban agriculture among the literatures will show a new discussion on urban agriculture which contributes to the field of environmental planning. In terms of practice, this strategy provides a framework for urban planner in non-western countries like Iran to understand their current situation toward urban agriculture and how they can pursue it.

REFERENCES

- [1] A. Jaeckel (2015). An environmental management strategy for the international seabed authority? The legal basis Int. J. Mar. Coast. Law, pp. 93-119.
- [2] Cinà, Giuseppe, Khatami, Fahimeh (2017). Integrating urban agriculture and urban planning in Mashhad, Iran; a short survey of current status and constraints, *Agro ecology and Sustainable Food Systems Journal*.
- [3] Cinà, Giuseppe (2014). Urban agriculture, a challenge for a more liveable city, 2014 Erasmus Intensive Programme - CITYGRENING Seminar: Urban and periurban agriculture. European issues and local practices" Politecnico di Torino - Dipartimento DIST.
- [4] Contessea, Maria, van. Vliet, Bas J.M., Lenhart, Jennifer (2018). Is urban agriculture urban green space? A comparison of policy arrangements for urban green space and urban agriculture in Santiago de Chile, *Journal of land use policy*, Volume 71, Pages 566-577.
- [5] Oyuela, Andrea, Van Der Valk, Arnold (2017). Collaborative planning via urban agriculture: The case of Tegucigalpa, Honduras, *Agroecology and Sustainable Food Systems*, 41:8, 988-1008.
- [6] RUAF (2015). Urban Agriculture: what and why?, RUAF Foundation resource centres on urban agriculture & food security.
- [7] Cina, Giuseppe, Dansero, Egidio (2015). Localizing urban food strategies, Farming cities and performing rurality, 7th Sustainable food planning Conference, Torino.
- [8] Eisazadeh, Saeid, Naghdi, Asadollah, Nemati, Asiye (2015). Urban Agriculture as an Entrepreneurship Opportunity: Its Opportunities and Challenges, *Research Journal of Fisheries and Hydrobiology*.
- [9] De Haan, Maureen (2015). Urban Agriculture 'hype or reality?', Master thesis Economic Geography.
- [10] T.Subramani, R.Selvan (2014). Developing a Planning Framework for Accessible and Sustained Urban Agriculture, *Journal of Engineering research and applications*, Vol. 4, Issue 6, pp. 180-190.
- [11] McClintock, Nathan. Simpson, Micheal (2014). A Survey of Urban Agriculture Organizations and Businesses in the US and Canada: Preliminary Results, Portland State University, Toulon School of Urban Studies and Planning, Portland.
- [12] Gabriel, Madeleine (2014). Making it big strategies for scaling social innovations, report of Nesta the UK's innovation foundation.
- [13] Roemers, G. (2014). Addressing Diversity in Urban Agriculture: How Picking the Right Policies and Choosing the Correct Locations Can Contribute to Viable Urban Food Systems, Master thesis, Faculty of Geosciences Theses.
- [14] Syahbana Indraprahastaa, Galuh (2013). The potential of urban agriculture development in Jakarta, the third International Conference on Sustainable Future for Human Security.
- [15] Specht, Kathrin, Siebert, Rosemarie, Optiz, Ina, Freisinger, Ulf B. (2013). Urban agriculture of the future: An overview of sustainability aspects of food production in and on buildings, *Journal of Agriculture and Human Values* 31(1), pp. 33-51.
- [16] Corrado, Alessandra (2013). Alternative Food Systems and Peri-Urban Agriculture in Milan, Italy, *Habitat and Society* (issn 2173-125X), No. 6, pp. 65-83.
- [17] Girard Cisneros, Marion (2012). Assessment the potential of small-scale urban agriculture in Havana, Master's thesis in the program International Development Studies, university of Amsterdam.
- [18] Ackerman, K., Pluza, Richard, Conard, M., Katz, R. (2011). The Potential for Urban Agriculture in New York City: growing capacity, food security & green infrastructure, DOI: 10.13140/2.1.4748.7683.
- [19] Lovell, Sarah Taylor (2010). Multifunctional Urban Agriculture for Sustainable Land Use Planning in the United States, *Journal of Sustainability*.
- [20] FAO (2010). Addressing food security concerns in Asia and Pacific region, Food and Agriculture Organization of the United Nations.
- [21] Quon, Soonya (1999). Planning for Urban Agriculture: A Review of Tools and Strategies for Urban Planners, International Development Research Centre, Cities Feeding People Series, Report 28.
- [22] Nelliah, Vasanthi. (1999). Modèle Théorique d'Intervention Visant l'Intégration des Pratiques d'Agriculture Urbaine au Pratiques Municipales de Planification Urbaine. Unpublished manuscript, IDRC. +12pp.
- [23] Smith, Herbert H. (1993). The Citizen's Guide to Planning (3rd ed.) Chicago: American Planning Association. +267pp.
- [24] A.R. Sadeghi, M. Khakzand (2016). Environmental planning and management of urban natural landscapes, *Int. J. Hum. Capital Urban Manage*, 1(3): 209-220, summer.
- [25] Cinà, Giuseppe, Di Iacovo, Francesco (2015). Integrating top down policies and bottom up practices in Urban and Periurban Agriculture: an Italian dilemma, *Future of Food: Journal on Food, Agriculture and Society*, 3(1), summer.
- [26] Bahrani Soltani, K., (2008). Environmental Urbanization Planning Methods, Vol. 1 and 2, Shahidi publication, Iran. (In Persian)
- [27] Abdi Daneshpour, Z., (2008). An introduction to planning theories with special reference to urban planning theories. Shahid Beheshti University Publication, Tehran. (In Persian)
- [28] FAO (2015). The State of Food and Agriculture, Food and Agriculture Organization of the United Nations.
- [29] FAO (2015). France and FAO renew partnership on sustainable agriculture and climate change, Food and Agriculture Organization of the United Nations.
- [30] Oyuela, Andrea, Van Der Valk, Arnold (2017). Collaborative planning via urban agriculture: The case of Tegucigalpa, Honduras, *Agroecology and Sustainable Food Systems*, 41:8, 988-1008.
- [31] FAO (2007). Profitability and sustainability of urban and peri-urban agriculture.
- [32] Mazereeuw, B. (2005). Urban Agriculture Report, Region of Waterloo.
- [33] Butler, L., & Moronek, D.M. (2002). Urban and Agriculture Communities: Opportunities for Common Ground, Council for Agricultural Science and Technology, Ames Iowa.
- [34] Sutic, N. (2003). How green roofs can improve the urban environmental in uptown Waterloo, University of Waterloo, Environmental Studies, Waterloo, ON.
- [35] FAO (2017). France and FAO renew partnership on sustainable agriculture and climate change, Food and Agriculture Organization of the United Nations.