



Implementation of Urban Agriculture Plan (green garden) in Razi University of Kermanshah and its Effects on Sustainable Development

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Abstract. Urban agriculture with the aim of completing urban food needs, providing ecosystem and environmental services, has multidimensional effects in any society in increasing cultural and social values and even increasing economic resilience. The present study was conducted on the implementation of urban agriculture plan (green garden) in Razi University of Kermanshah and investigated the effects of urban agriculture on sustainable development. Therefore, it will provide the conditions for strengthening social interaction and economical and environmental. as well as will pave the way for culture-building commensurate with the development of urban agriculture and the results obtained from it can be used in the process of planning and macro-agricultural policies in the different places.

Keyword:

green spaces, pandemic, social relationships, Covid-19

1. Introduction

For the first time in history, the population of cities exceeded the population of villages in 2008, and since then, urban agriculture, which is one of the agricultural forms, has been considered. This urbanization process caused a change in agricultural methods, one of the most important of which is the forms and methods of urban agriculture [1]. Thus, during

World War II, urban agriculture played an important role in increasing food security and strengthening national spirit in Britain and the United States [2]. In addition, food production in cities through urban agriculture can be considered as a nature-based solution in recent years, which is an important response to climate change and other urban challenges and more importantly to fight the epidemic COVID-19 [3]. In addition, the dependence of most cities on global resources has made them highly vulnerable to shocks that could disrupt existing supply systems, following the recent outbreak of the epidemic, their fragility became apparent [4]. This is often due to the multipurpose nature of urban agricultural performance, which leads to the use of multiple locations for a variety of reasons [5]. Its capacity includes helping to prepare home-cooked food by increasing food diversity and reducing vulnerability to seasonal food shortages, waste recycling, and improving urban green space in Africa [6]. Petit-Boix and Apul [7] also believe that urban agriculture has significant social benefits. From this perspective, urban agriculture is recognized as a significant tool for improving social capital in communities [8].

On the other hand, the prevalence of coronavirus (Covid-19) in addition to the prevalence of the disease and its strong impact on human mortality, increasingly affected human and cultural status, political and cultural status. The critical situation due to the outbreak of Coronavirus and Covid 19 disease in our country has led to the emergence of various actions and reactions spontaneously or systematically. Being in quarantine will naturally bring with it multiple mental, psychological and physical consequences at both the individual and social levels. As the results of surveys in the country show that 63% of people have consciously reduced their interactions with others [9]. More than 16% [10, 11] to 28% [12] of the population reported stress in the relationship of family members. 58% of the mentioned individuals reported tension in the relationship between spouses and 42% increase in tension in the relationship between parents and children [11]. Therefore, in such circumstances, creating an environment that can positively affect the social interactions of family members and other members of a community (such as a university) will be very important.

2. Implementation of urban agriculture plan (green garden) in Razi University for the first time in the country's universities

2.1. Scope of the plan

Kermanshah province in the westernmost part of Iran, has an internal border with Lorestan, Kurdistan, Ilam and Hamedan provinces on three sides and has an international border with Iraq on one side. According to the history of the province to geological periods and having the mountains of the Middle Zagros, the outcrop of the province with mountainous structures with special natural features, the presence of high mountains with a maximum of 3390 meters, deep valleys, plains, has caused low plains with a maximum height of 180 meters. This province with an area of 2,463,600 hectares has 800,000 hectares of forest cover and 933,091 hectares of agricultural lands (Figure 1). Kermanshah is the agricultural center of Iran and most of the economic income of the people in this province is from agriculture. According to the report, there are 60 active higher education centers in Kermanshah province, which have 93,795 students. This figure is equal to 1.2 percent of all students in Iran and ranks 18th among the provinces of Iran in terms of student admission in four levels of associate, bachelor, master and doctorate with about

1224 faculty members. Razi University is the most important higher education center in Kermanshah province, which has been implementing the Green Garden project in the form of urban agriculture.



Figure 1. Location of Kermanshah province in Iran (Kermanshah governorate, 2019)

The Green Garden project was implemented as one of the urban agricultural projects with an area of 6000 square meters in Razi University of Kermanshah. This project has 150 plots with an area of 50 square meters, which has been assigned to 150 families of university employees (faculty member and non-faculty member) annually with a rent of 200,000 Tomans (Figure 2). After the necessary training (through virtual classes and practical workshops), the families cultivate vegetables and summer crops by experts in these lands, and the condition for using these lands is not to use chemical fertilizers, pesticides as well as the use of natural fertilizers to produce organic and natural products.



Figure 2. View of the cultivated plots in the Green Garden project - Razi University of Kermanshah (Ebadi and Mohebi, 2021)

3. The effects of the project on stakeholder social capital in the Corona pandemic

Urban agriculture, in addition to providing a basis for social cohesion among farmers, has created interaction between family members and thus strengthened family relationships [13, 14]. This is important because some of the crises imposed on today's society, including the ubiquity and prevalence of the coronavirus (Covid-19), in addition to the prevalence of the disease and the severe impact on human mortality, it has had an increasing impact on the political, social, economic, cultural and environmental situation of human beings and one of the areas affected by this phenomenon has been the society, especially the social and family relations. In a study conducted by Ebadi and Mohebbi [15] on the Green Garden project in 2021, the results showed that 88.8% of the respondents referred to the urban agriculture project as a family and 11.2% as an individual. The implementation of this plan with a coefficient of 0.521 at the level of 99% confidence, has a positive and significant effect on the social capital of stakeholders. The findings also indicate that all dimensions of social cohesion, social interaction, social awareness, social trust and social participation had a positive effect on the social capital of stakeholders at the level of 99% confidence. Thus, the dimension of "social participation" with a path coefficient of 0.825 has the most significant impact on the social capital of the studied individuals (Table 1).

Table 1. The effect of urban agriculture on the social capital of stakeholders based on the values of path and t coefficients values [15]

Relationships/path	Path coefficient	t-Value	Significance level
Urban agriculture- social capital	0.521	16.119	0.00
interaction- social capital	0.710	5.168	0.00
integration- social capital	0.644	4.752	0.00
trust- social capital	0.781	5.220	0.00
awareness- social capital	0.599	3.350	0.00
participation- social capital	0.825	9.101	0.00

Therefore, in a corona pandemic, creating an environment that can positively affect the social interactions of family members and other members of a community (such as a university) will be very important.

4. Effect of urban agriculture on environmental issues

Many developed countries of the world use urban agriculture as a potential method in comprehensive and operational plans aimed at achieving sustainable development and environmental issues. Due to the increasing population of cities and the decrease of rural population, the destruction of agricultural lands and the manifestation of the severity of the destructive environmental consequences of urban growth, managers and urban planners are looking for new solutions to solve urban crises. [16]. Wastfelt and Zhang [17] and Peng et al. [18] believe that agriculture in the vicinity of urban areas is economically, socially as well as ecologically effective. In their study, Caputo et al. [19] have stated that agriculture on a small

scale has significant effects not only on food security, but also has considerable social and economic impacts. The results obtained from the study of Davari Nezhad and Ebadi [20] show that green roofs with an urban farm approach can play an important role in achieving health planning and achieving a healthy city and development of health policies, improving the quality of life of residents, preserving public green spaces, reducing environmental pollution and reuse of municipal water and wastes.

5. Effect of urban agriculture on environmental issues

In general, urban agriculture with the aim of meeting urban food needs, providing ecosystem and environmental services, increasing cultural and social values and even increasing economic resilience is a necessity in the world [21]. Because the existence of urban agriculture can have opportunities and positive consequences in various dimensions [17] and its effects are multidimensional and multiple [19]. One of the important and key effects of urban agriculture is on social networks, relationships and interactions, which can be referred to as social capital. Another effect is on environmental issues that can provide solutions to a healthy life in nutrition and waste management. These characteristics can play a positive and serious role, especially in critical situations of society, including the coronavirus epidemic, in various aspects of urban life. The purpose of implementing the Green Garden project in Razi University of Kermanshah was to achieve the goals of sustainable development in the critical conditions of society. According to the results, this project has been able to achieve its goals to a large extent.

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