

Valuation of Multi-functionality of Urban Agriculture

by Seoul Citizens

Heo, J. & Kim, T.¹

Introduction

The growing income of urban dwellers and the growing desire for leisure activities and experiences lead more people to be involved in agriculture. Consequently, urban agriculture has been developing into various forms including industrial agriculture that provides fresh agricultural products to urban dwellers, hands-on, experiential agriculture such as vegetable garden farms, agriculture tourism farms, home vegetable farms, balcony farms, and rooftop farms.

Meanwhile, industrial agriculture is facing several challenges including higher prices of land and diversion of farmland due to urbanization, poor profitability due to rental costs, higher production costs, and limited agricultural management attributable to environmental regulations. In addition, the hands-on, urban agriculture which enjoys a soaring popularity among urban dwellers, has problems of its own, such as insufficient supply of vegetable farmland and lack of facilities such as washrooms, rest areas, parking lots, etc.

This research study is aimed at evaluating the values of multi-functionality of urban agriculture from the viewpoint of urban dwellers, in order to overcome the crisis where urban agriculture is diminishing due to the actual limitations caused by urban development or industrialization, and to provide a basis for support for the vitalization of urban agriculture.

Methods and materials

1. Forms of urban agriculture and multi-functions

Urban agriculture has been developing into various forms such as industrial agriculture, experiential agriculture, learning agriculture, exchanging agriculture, and circulative agriculture, etc. The most basic form of urban agriculture is agriculture as an industry that supplies fresh and safe agricultural products to urban dwellers. The second form is experiential agriculture that allows urban dwellers to experience and enjoy agriculture. Third, learning agriculture that emphasizes the learning aspects of the multi-functionality of agriculture. Fourth, exchanging agriculture, whereby there are exchanges between urban and rural communities for farming experience or trade of agricultural products, and between urban consumers. Fifth, circulative agriculture which refers to the agriculture that controls CO₂ emissions and conserves resources in the process of agricultural production, amid growing social concerns over global warming.

2. Valuation of multi-functionality of urban agriculture

This research evaluated the consumer values of the maintenance of multi-functionality of urban agriculture, using dichotomous choice contingent valuation. The parametric method used maximum likelihood estimation to analyze random variables that affect willingness to pay, and estimated the linear logit model. The explanatory variables used to estimate the additional willingness-to-pay to maintain the multi-functionality of

¹ Heo, J., Research Associate, Korea Rural Economic Institute. E-mail knuhjn@krei.re.kr
Kim, T., Senior Research Fellow, Korea Rural Economic Institute.

urban agriculture are the amount per household for an urban agriculture maintenance fund, income levels of individual respondents and interest in the maintenance and vitalization of urban agriculture.

Respondents were divided into users of vegetable gardens and general consumers for valuation of multi-functions. The per household willingness-to-pay for a period of one year for the maintenance fund for the multi-functionality of urban agriculture was estimated. 333 respondents or 61.9% turned out to be willing to pay for the maintenance fund.

3. Valuation amount

The willingness-to-pay for the maintenance fund was categorized into vegetable garden users, general consumers, and all respondents, for analysis.

The estimation results for the valuation of multi-functionality were KRW 18,535 to KRW 20,155 per household for general consumers; KRW 22,668 to KRW 27,262 for vegetable garden users; and KRW 21,046 to KRW 24,816 for all respondents (Tab. 1). According to the statistics from Seoul Metropolitan Government, the total number of households in 2009 was 3.525 million. Thus, the average willingness-to-pay for a year multiplied by the total number of households in Seoul equals KRW 74.2 to 87.5 billion. The most preferred function was food supply, accounting for 32.9% of all responses, followed by environment protection, educational, cultural functions, and community building, accounting for 27.3%, 24.2% and 15.6% respectively.

When the total willingness-to-pay is allocated to each function, the food supply function gets KRW 24.4 to 28.8 billion; the environment protection function gets KRW 20.3 to 23.9 billion; the educational/cultural function gets KRW 18 to 21.2 billion, with the community building function accounting for KRW 11.5 to 13.6 billion.

Tab. 1: Valuation amount for the multi-functionality of urban agriculture

Classification	Unit: KRW		
	Vegetable garden users	General consumers	Total
Parametric method	27,262	20,155	24,816
Non-parametric method	22,668	18,535	21,046

Note: General consumers are customers of the Hanaro wholesale store in Yangae and Changdong, and the total includes vegetable garden users and general consumers.

Source: Urban Agriculture Survey, KREI, September, 2010.

Conclusions

The valuation results, from the viewpoint of urban dwellers, of various functions provided by urban agriculture, could be used as the basis to overcome the crisis where urban agriculture is diminishing due to impediments such as urban development or industrialization, and to draw up policies to provide support for the revitalization of urban agriculture.

As the direction of agricultural policy is shifting from a consumer-burden type such as a farm-price-support system, to a taxpayer-burden type such as a direct payment system, the financial resources from the direct payment system could be used for urban agriculture.

In order to resolve the issue of insufficient supply of vegetable garden farms and lack of convenience facilities, it is necessary for local governments to assess the possibility of renting a farmland complex and adding convenience facilities, and then renting the farmland for vegetable gardens to users. Various uses of vegetable gardens will allow

urban dwellers to better understand agriculture and to better recognize the value of multi-functionality as well as of the maintenance and sustainability of agriculture, and furthermore to expand direct dealings and exchanges.

References

- Kim, T. (October 2010): Vision and multi-functions of urban agriculture. Cities embrace agriculture! Urban agriculture vitalization symposium materials. KREI, Urban Agriculture Forum.
- Oh, D., et. al. (2006):Urban Agriculture.