Urban farming activity towards sustainable wellbeing of urban dwellers

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Abstract. In Malaysia, urban farming is viewed as a catalyst towards achieving the well-being of urban dwellers and natural environment. Urban farming is a strategy for Malaysia’s food and economic security, and as one of the foci in the agriculture transformation whereby urban dwellers are encouraged to participate in this activity. Previous study proved that urban farming can help to address social problems of food security, urban poverty and high living cost, also provides leisure and recreation among urban dwellers. Thus, this study investigates the best urban farming practices suitable for urban setting, environment and culture of urban dwellers. Data collection was done via questionnaire survey to urban farmers of a selected community garden in Subang Jaya, Selangor. Meanwhile, on-site observations were carried out on gardening activities and the gardens’ physical attributes. The study sample encompasses of 131 urban farmers of 22 community gardens in Subang Jaya. It was found that most of the community gardens practiced crops planting on the ground or soil base planting and dwellers in the lower income group with monthly low household income constitutes the majority (83.2%) of the respondents. Social and health benefits are the highest motivating factors for urban farmers. This study provides unprecedented insights on urban farming practices and motivations in a Malaysian setting.

1. Introduction

Food production and urbanization are two complementary mechanisms to the dynamic growth of cities. Global urban population expansion will lead to greater pressures on resources from increased competition, environment degradation and food insecurity, thus making it more difficult to sustain the environment and social relationships over time [1]. Recently, food scarcity is one of the global concerns where it is a basic need for human survival, important factor for community progression and crucial element of a nation’s security and safety [2]. Lower food production and disturbance to food distribution chains in a country has resulted in rising food prices. Food becomes unaffordable to the public especially the lower income and underprivileged groups in urban areas. Their daily diet are affected and led to malnutrition and hunger. A global food crisis is expected in the year 2050. Hence, domestic production of foods is a strategic approach to reduce Malaysia’s dependency for imported
foods [3]. Urban farming is a prevalent movement worldwide and increasingly widespread in Malaysia. Although urban farming still at the infancy stage, Malaysia’s government view this activity as a catalyst towards achieving the well-being of urban dwellers and natural environment. Urban farming was implemented in Malaysia since 1990’s and somehow increasingly popular since 2011. However, there is still lack of knowledge about urban farming because newly exposure [4]. Urban farming is a strategy for Malaysia’s food and economic security. It is also one of the foci in her agriculture transformation whereby urban and sub-urban populations are encouraged to grow vegetables and other crops to increase households’ food security [3].

2. Literature Review

Rapid economic development over the past three decades has resulted in changes in food intake and growth in demand growth for agricultural products [5]. In Malaysia, smallholder farmers dominated vegetable cultivation at the urban fringes [6]. In National Agro-food Policy 2011 showed that Malaysia is a net food despite being blessed with fertile soil, abundant rainfall and suitable climate for producing food items [7]. Thus, urban farming can help address the problems of food security, urban poverty and high living cost among urban dwellers. It is among the peoples’ initiatives to cope with living costs by reducing household expenditure. Urban farming also provides leisure and recreation through activities of crop growing and maintenance by the urban community for self-consumption and income generation [8, 9]. Illegal urban commercial agriculture farms and recreational urban farming have created conflicts between the farmers, residents and local government [6, 10]. Yet, urban farming can produce food for the urban growers and surplus produce can be supplied to local food banks [11]. Theoretically, urban farming had substantial impacts on urban system such as urban food security and poverty, ecology and health impacts.

Best practices are techniques, procedures or methods used to achieve desired goals that had consistently show superior results. Policy makers and practitioners use best practices as exemplary effective guides for policy making and practice improvement [12]. Best practices are also used as benchmarks to manage practice performance. The Department of Agriculture and Department of Standard Malaysia have produced a standard on agriculture practices namely Malaysian Standard MS 1784:2005 Crop Commodities – Good Agriculture Practice (GAP). This standard can be as suitable guide for urban farming best practices [13]. GAP described good agriculture practice for crop is sustainable crop production that is legally compliant, environmentally sound, socially acceptable and economically viable to ensure quality produce that is safe and suitable for utilization and consumption. The Guideline on Implementation of Green Neighbourhood Development Initiatives by the Department of Town and Country Planning Peninsular Malaysia can also be used as a guide for urban farming planning [14]. Producing better quality and affordable food is the aim of National Agro-Food Policy 2011-2020 [15]. Programs introduced under this policy intend to increase food production through optimization and sustainable land management, developing and upgrading agriculture infrastructure, and increasing the food quality and safety through the expansion and compliance of related standards.

However, in order to encourage people to do the best with excellent results requires identifying the motivational force, and understanding how the motivational forces behave with such concepts, goals and needs [16]. Practicing urban farming has been found to benefit the community, locality and country in many ways lead to increase the motivation of urban dwellers in urban farming participation. Urban farming can offer economic, environmental and health advantages that make it an appealing movement [17]. Furthermore, urban farming has potential to help in the economic revitalization of city through used of vacant land for economic opportunities [10].

3. Research Methodology

To ensure the objectives of the research can be achieved, the researcher conducted a mixed method approaches in data collection. The study population encompasses the practitioners of community gardens in Subang Jaya. The selection of study areas define based on the local authority initiatives, gardening program, strong community engagement and future land use in the community garden. Figure 1 shows a flow chart of the research method. Data collection was via questionnaire survey that collected among 131 respondents of urban farmers. The questionnaire explored on current practices of urban farming, knowledge in urban farming, access to resources, good agricultural practices,
motivating factors and impacts of urban farming towards urban dwellers. Prior to the survey, a pilot study was conducted to improve the validity and reliability of the survey questions. The research also used on-site observations of the study areas, i.e. the current urban farming practices and physical condition of the study areas. The observation data were field notes and site photos. This method aimed to identify and understand any relevant significant elements which may not be captured in the questionnaires. The use of questionnaire survey and observations provide for more reliable and valid findings. Descriptive statistics were used to analyse the survey data while critical characteristics description analysis was used for observation data.

![Figure 1. Research Methodology](image)

4. Findings
4.1. Observation Survey
Observation was carried out using non-participant observation. The observation was done by looking at gardening activities up close and the gardens’ physical attributes within 22 community garden areas in Subang Jaya. The garden setting in community garden was either within existing open spaces in neighbourhood areas, or within green spaces such as buffer zones and reserved land under the jurisdiction of the Subang Jaya local authority. The authority regulates the community garden projects through comprehensive rules and regulations regarding the gardens’ development, operation and maintenance. It was found that most of the community gardens practiced crops planting on the ground or soil base planting. Vegetables planting pots were usually constructed using wood planks. Some of community gardens used raised beds in planting their crops. The plants were also sometimes grown in polybags and recycle containers. Some practitioners planted leafy vegetables in hydroponic units. The plant irrigation at community garden located in neighbourhood parks or green spaces that quite far away from residential areas are treated by water supply, rainwater or water from a nearby river. Polyculture was practiced in Subang Jaya community garden, whereby varieties of crops are planted in the same space. Varieties of leafy and fruity vegetables, root crops, herbs and fruit trees are planted. Generally, the gardens and surrounding area are clean. The existence of community garden added value to the open and green spaces by enhancing the landscape character, increasing the frequency and duration of the people visits, and creating a diversity of flora and fauna.
4.2. Questionnaire Survey

4.2.1. Socio-demographic Characteristics. The respondent demography is shown in Table 1. The respondents consist of 79 males and 52 females with the percentage of 60.3% and 39.7% respectively. The result also indicates that urban dwellers in the lower income group with monthly household income below RM5000.00 per month constitutes to majority (83.2%) of the respondents. This finding implies support for a previous research finding [9] showed the urban poor mostly benefitting from urban farming through increased access to food, stabilizing household food security and malnutrition prevention.

| Characteristics | f  | Percentage (%) |
|-----------------|----|----------------|
| Gender          |    |                |
| Male            | 79 | 60.3           |
| Female          | 52 | 39.7           |
| Age             |    |                |
| 18-30           | 11 | 8.4            |
| 31-50           | 58 | 44.3           |
| 51-60           | 44 | 33.6           |
| >60             | 18 | 13.7           |
| Race            |    |                |
| Malay           | 100| 76.3           |
| Chinese         | 18 | 13.7           |
| Indian          | 9  | 6.9            |
| Other           | 4  | 3.1            |
| Household Income|    |                |
| <RM3000        | 61 | 46.6           |
| RM3001-RM5000  | 48 | 36.6           |
| RM5001-RM10000 | 14 | 10.7           |
| >RM10000       | 8  | 6.1            |

Table 2 shows the findings regarding the Subang Jaya community garden practitioners’ opinion about their motivations for and perceived impacts from urban farming participating. Social and health benefits are the two top motivating factors.

| Motivating Factors | Mean |
|--------------------|------|
| For a healthy lifestyle, leisure and recreation. | 4.27 |
| Enhance social bonding within the community. | 4.24 |
| The needs for fresh and healthy foods. | 4.22 |
| Supplement foods supply for the family. | 4.15 |
| Reduce the household financial burden on foods supply. | 3.90 |
| Enhance the image and aesthetic value of the neighbourhood. | 3.90 |
| One of the approaches in a sustainable urban environment. | 3.86 |
| Bring in cash income. | 3.39 |

4.2.2. Best Practices of Urban Farming. This study also investigated the perception and understanding of practitioners of community garden regarding best practices of urban farming (aspects of urban farming planning, urban farming knowledge, access to knowledge and GAP). Parameters developed under this segment were to capture practitioner perception, opinion and understanding of urban farming practices that are sustainable and suitable for urban setting, environment and culture of urban people. The findings are given in Table 3. The urban farmers’ access to resources and good agricultural practices were deemed to be good urban farming practices.
Table 3. Best Practices Analysis
(1=Strongly disagree, 2=Disagree, 3=Agree, 4=Agree, 5=Strongly Agree)

| Parameter                                | Mean | Finding  |
|------------------------------------------|------|----------|
| Urban Farming Planning                   |      |          |
| 1 Local authority has a clear policy on urban farming. | 2.91 | Disagree |
| 2 Easy access to local plan (land use zoning, green space, availability of vacant land, regulatory information, etc.). | 2.75 | Disagree |
| 3 Public owned vacant land easily access for gardening. | 2.57 | Disagree |
| Urban Farming Knowledge                  |      |          |
| 4 Authority or NGO’s give technical support to improve knowledge. | 3.07 | Agree   |
| 5 Local urban farming information easily access on line. | 3.00 | Do not know |
| 6 Easy to get training, consultation and extension services from relevant agencies. | 2.96 | Disagree |
| 7 Enough awareness and promotion program to the community. | 2.83 | Disagree |
| Access to Resources                      |      |          |
| 8 Tenure and security of land is the key issue for practitioner. | 3.74 | Agree   |
| 9 Access to water is a major problem for farm management. | 3.68 | Agree   |
| 10 Access to input and material is a big concern for urban grower. | 3.63 | Agree   |
| 11 Government provides financial resources and/or others assistant with urban farming start-up, management and expansion. | 3.34 | Agree   |
| Good Agriculture Practices               |      |          |
| 12 Fungicide and insecticide being used to protect crops. | 3.42 | Agree   |
| 13 Applied precaution measure to avoid environmental degradation such as contamination of water resources with production inputs and soil erosion. | 3.41 | Agree   |
| 14 Integrated Pest Management (IPM) has been practice to control pest and diseases. | 3.38 | Agree   |
| 15 Synthetic fertilizers widely use to increase production as compare to organic fertilizer and compost. | 3.37 | Agree   |

5. Discussions and Findings
From demographic characteristics analysis, urban dwellers in the lower income group with monthly household income below RM5000.00 per month constitute the majority (83.2 %) of the respondents. Analysis on household income in motivating factors, urban farmers in Subang Jaya motivated in participated urban farming activity for social and health benefits. This finding is congruent with previous research that found urban farming helping to improve the diet quality of people and in fostering community social bonding and empowerment [18, 19]. Yet these findings contradict with a previous research finding [20] where the most common motivation factor for beginner cultivation was a need for food, means to access food without cash due to the needs for fresh and healthy foods. Two factors may contribute the findings contradiction. First, the implementation of the Subang Jaya community garden projects was in stages starting 2013 thus showing just three (3) years of operation. This short duration cannot prove the long term financial benefits of urban farming. Second, the average size of individual plots for planting is too small (4.0m²) for significant financial crop outcomes. Our study also showed that best urban farming practices were the availability of resources and good agricultural practices. Hence, there are better financial benefits and motivations if the Subang Jaya local authority were to provide more garden space and resources for the urban farmers so that they can have more surplus produce to sell.

6. Conclusions and Recommendations
The findings indicate that social and health benefits are the major motivating factors urban farming practitioners. It was also found that the local authority had put several fundamental initiatives through green initiatives and community gardening program to encourage urban dwellers to produce own food in community garden sites within the administrative boundary. Best practices are the availability of resources and good agricultural practices. Increased financial benefits to urban farmers can be obtained if the local authority increases the availability of more garden space and resources for urban farming. Further research may explore on the review of policy, guidelines or ordinance in authority that might impede the development and growth of urban farming. Besides that, providing infrastructure in community gardens leads to enhancing the participation of urban farming among urban dwellers.
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