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URBAN AGRICULTURE ACTIVITIES SCENARIO IN RELATION TO FOOD SECURITY: DELVE INTO URBAN FARMING PRACTICE

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Abstract

Urban agriculture is an alternative source of food for the urban population to achieve food security. The Department of Agriculture (DOA) Malaysia under the Community Agricultural Development Program targeted 8,800 metric tonnes of urban agriculture products by the year 2025. To understand the current state, this research aims to investigate the urban agricultural activities scenario in Malaysia through the role and responsibilities carried out by the government agencies to facilitate urban farmers and increase agricultural productivity. A qualitative approach was adopted by means of a desktop study to review journals and reports, as well as content analysis on multilevel government policies, and acts related to urban agriculture. Also conducted were in-depth interviews with government agencies officials and farmers, and a fieldwork. The findings indicate that (1) all three-tier governments have specific roles and responsibilities in facilitating urban agriculture through policies, instruments, incentives, and monitoring that cascade down from the federal to the local level; and (2) the need to improve coordination between agencies to optimise resources and monitoring. In conclusion, coordination between related government agencies and farmers is the key enabler to ensure food security for the urban population.

Keywords: Food Security, Urban Agriculture, Government Agency's Roles and Responsibilities

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INTRODUCTION

There will be a gap between the supply and demand of food due to the exponential growth of the human population, which is expected to reach 9 billion people by 2050 (Zaman et al., 2018). The demand for food production rises along with population expansion, placing more strain on food quality and availability. Nearly 9 percent of people worldwide suffer from hunger, and by 2030, 840 million people are expected to experience food insecurity, according to the United Nations. In recent years, the topic of food security has gained significant attention at both national and international levels. There is more to food security than just having enough to eat; it also has to do with the food's quality and the dependability of international supply chains. In the year 2023, Malaysia ranked 41st in the Global Food Security Index with an overall score of only 69.9 (The Economic Group, 2024), and remains vulnerable to food insecurity due to being reliant on imports for maintaining its food supply, particularly for rice. Imports account for about 25% of Malaysia's food supply, and almost two-thirds of common ingredients like chilli (commonly used in most Malaysian dishes) are imported from Thailand. The value of food imports is predicted to increase this year and surpass the record of RM63 billion in 2021 (Ministry of Agriculture and Food Industries, 2021).

Households are estimated to spend nearly 70% of their budgets on food, which means that a systematic approach is required to ensure the population's food needs are met (Ahmad et al., 2020; Kh'ng et al., 2022). Producing food while maintaining its quality becomes more challenging due to frequent disaster events such as floods, which highly impact agricultural activities (Joakim & Wismer, 2015; Lindell & Prater, 2003). Natural disasters, drought, floods, pest attacks, plant disease, and changes in the time crop cycle have adversely impacted Malaysia's agriculture and its productivity (Md. Mahmudul Alam et.al., 2011).

Urban agriculture is an alternative food source that contributes to the food security of a country (Hafizah Binti Yusoff et al., 2017; Ramaloo et al., 2018). In Malaysia, the urban farming programme has been implemented for almost a decade, starting in 2014 and was initiated by the DOA (Chandra & Diehl, 2019; Nowysz et al., 2022; Rozhan Abu Dardhak & Rasmuna Mazwan Muhammad, 2021a).

LITERATURE REVIEW

Urban Farming Activities and Food Security Policy in Malaysia

Malaysia rectified Sustainable Development Goals (Goals 2 Zero Hunger and Goal 12 Responsible Consumption and Production) and New Urban Agenda—the two policies targeting for sustainable future where everyone will have equal benefits and access to stable and secure food resources. The Ministry of Agriculture and Food Security has launched Dasar Agromakanan Negara 2021–2030 (DAN2.0) and National Food Security Action Plan 2021–2025, which

outlines the initiatives towards a sustainable food system that focuses on availability, access, consumption, and stability. DOA Malaysia is the leading government agency in implementing the policy and overseeing the technical aspects of agriculture (planting method and training), including urban agriculture. The Community Agricultural Development Program has identified urban farming as an alternative food source that can also benefit farmers by reducing the cost of living from RM1,296.00 in 2021 to RM1,680.00 in 2025 (Department of Agriculture, 2024). However, the DOA is concerned with the urban land required to be allocated for urban agriculture and the policies and legal matters in spatial planning to support urban agriculture (Rozhan Abu Dardhak & Rasmuna Mazwan Muhammad, 2021).

From the spatial/physical planning perspective, food security matters have been highlighted in National Physical Plan 4 launched in 2021 but is not focused on urban agriculture. Back in 2012, the Department of Town and Country Planning launched the Green Neighbourhood Guidelines and community farming is one of the two elements of a green environment. The areas allowed for community farming are reserve land and open space, or Tenaga Nasional Berhad (TNB) leased land only (Jabatan Perancangan Bandar dan Desa Semenanjung Malaysia., 2012).

Urban Farming Contribution to Food Security in Malaysia

Urban agriculture has the potential to contribute towards urban food security in Malaysia in terms of availability, accessibility, utilisation, affordability and stability of the food system (Lang & Barling, 2012; The Economic Group, 2024). In terms of availability, urban agriculture may not be able to fully fulfil the demand for food in Malaysia but is still valuable in terms of fulfilling perishable food production (Orsini et al., 2013). This type of production is highly encouraged as perishable fruits and vegetables that come from rural areas may lose their freshness along the way, hence lowering their nutritional value (Kader, 2005; Moustier and Danso, 2006). Therefore, the production of perishable goods locally is beneficial as the quality of produce can be preserved and the price can be lowered. For the farmers, accessibility to food can be assumed to be increased through the increase in the proximity of agricultural fields (as food-producing sources) to their homes. For the city, urban farming also increases access to local production of food, thus saving costs and transport time. The costs of supplying and distributing food from rural areas to urban areas, or importing food from overseas, are rising continuously, and distribution within the cities is uneven. Without local production of food, urban food insecurity will increase (Chandra & Diehl, 2019). Regarding utilisation, most of the produce, such as vegetables and fruits, can provide only part of a complete diet whenever self-consumed. There is also a focus on growing or rearing crops and animals which require only small spaces (Chandra & Diehl, 2019). The final benefit is

affordability and stability: urban farming generates significant income for the practitioners (Rozhan Abu Dardhak & Rasmuna Mazwan Muhammad, 2021), which allows the farmers to purchase other types of food to complement the lack of other nutrition values. Based on the supply and utilisation account selected agricultural commodities year 2018–2022, Malaysia achieved SSR for 23 selected agricultural items, which surpassed 100 per cent. As shown in Table 1, the following six (6) items required further strategies and action to increase their SSR value and thus provide enough for the country: (1) mutton; (2) beef; (3) ginger; (4) chilli; (5) mango; and (6) round cabbage.

Table 1: Self-Sufficiency Ration (SSR) year 2022

| Commodities | SSR percentage (%) | | |
|-------------------------------|------------------------|--------------------|-----------|
| <i>Less than 50 per cent</i> | | | |
| Round Cabbage (45.6) | Ginger (15.9) | | |
| Mango (32.0) | Beef (14.7) | | |
| Chilli (29.7) | Mutton (8.7) | | |
| <i>50 to 99.99 per cent</i> | | | |
| Fresh Milk (57.3) | Torpedo scads (91.6) | | |
| Rice (62.6) | Chicken Meat (93.3) | | |
| Coconut (71.6) | Mustard (95.9) | | |
| Sardine (72.1) | Shrimp (96.5) | | |
| Sweet Potato (73.5) | Rambutan (96.6) | | |
| Cuttlefish (73.6) | Tilapia (97.3) | | |
| Lime (75.9) | Crab (97.8) | | |
| Mackerel (78.2) | Guava (98.0) | | |
| Stingray (79.7) | Banana (99.3) | | |
| Pork (84.6) | Threadfin Bream (99.3) | | |
| Mangosteen (90.5) | | | |
| <i>100 per cent and above</i> | | | |
| Sugar Cane | Papaya | Watermelon | Duck Meat |
| Starfruit | Tomato | Seabass | Jackfruit |
| Cucumber | Spinach | Chicken/Duck Egg | Durian |
| Sweet Corn | Lettuce | Long Bean | Brinjal |
| Lady's Finger | Pineapple | Freshwater Catfish | Langsat |
| Tuna | Cassava | River Catfish | |

Source: DOSM, 2023

Initiative and incentive under Department of agricultural Malaysia, Ministry of Agriculture and Food Security for urban farming activities

DOA under the Ministry of Agriculture and Food Security launched the *Garis Panduan Pelaksanaan Program Pembangunan Pertanian Komuniti (PPPK)* in the year 2022 (Department of Agriculture, 2022). The document provides details on the project implementation concept, project implementation mechanism, monitoring and reporting and termination of the project. As shown in Table 2,

four (4) groups were targeted in the implementation of the urban farming and incentives fund for project start-up.

Table 2: Project Category and Incentive for Project Start-Up (RM)

| Category | Incentives (RM) |
|-----------------|------------------------|
| Individual | 500.00/person |
| Community | 20,000.00 |
| School | 20,000.00 |
| Institution | 10,000.00 |

Source: Division of Urban Farming, Department of Agriculture, 2023

Urban Area Land Use Zoning according to District Local Plan

As reinforced by Amat Jani, N.H. (2020) and Wahab et.al. (2018), urban growth has hindered the development of agricultural activity in urban areas and increased the dependency towards food sources and agricultural products from the rural area. The Ministry of Agriculture and Food Security sees the integration of agriculture in urban planning and development as important for the sustainable development of various aspects of life and the needs of urban life, including food supply, environmental greening, urban waste and waste management, education and leisure (Amat Janji, 2020). Despite, urban farming is still a potential initiative due to the existence of idle lands in urban areas is alarming. MBSA is very proactive in promoting urban farming activities by allowing the activity under the open space and recreation land use in the MBSA Local Plan 2035 (Shah Alam City Council, 2023).

RESEARCH METHODOLOGY

An inductive approach was adopted towards achieving the following research objectives: (1) to investigate the current policies and practices of the government agencies related to urban farming activities; and (2) to identify the role and responsibilities of the government agencies in facilitating urban farmers. The flow of the data collection is as follows:

Content Analysis

Extract the content from all documents related to urban farming policy and guidelines from national, state, and local authority levels, including the provision acts and guidelines.

Face-to-face semi-structured interview

Interviews were carried out with the urban farmers and government officials to confirm/validate the related policies and to gather input. The government agencies including DOA, PLANMalaysia, MBSA, MBPJ, Petaling District Land

Office, and ten (10) farmers (urban farming that is still active within MBSA jurisdiction).

Fieldwork

SWMMaps is a GIS mobile mapping app used for fieldwork data collection in urban farming areas under MBSA. Meanwhile, the fieldwork is also supported with a checklist of inventory forms for site verification and commodities. The direction to the urban farming location was prepared in the form of a QR code for easy observation of the actual practice and experience on site.

URBAN FARMING ACTIVITIES SCENARIO MALAYSIA HIGHLY POPULATED URBAN AREA

Urban activities such as commercial, housing, industry, and transportation have taken up land in urban areas and there is no more land allocated to agriculture in the local plan (Diehl et al., 2020; Wahab et al., 2018). In that sense, town planners shall find ways to accommodate urban farming activities to achieve 8,800 metric tonnes of urban farming production by the year 2025, as targeted by DOA. A review of the urban farming project provided by the DOA indicates a long list of projects all over Malaysia's urban area. A discussion was held between researchers and officials in DOA and based on the data recorded since the implementation of community farming back in 2008. The experience among DOA officials and three (3) states/federal territories have been identified to have the highest number of urban farming project, namely (i) Selangor, (ii) Federal Territory of Kuala Lumpur, and (iii) Federal Territory of Putrajaya.

Figure 3 shows the total number of community farming projects in the three chosen states of Selangor, the Federal Territory of Kuala Lumpur and the Federal Territory of Putrajaya. Although the data for the year 2023 is only up until Mac 2023(1st quarter), it shows that the number has the potential to surpass the total number of projects in the previous year. This indicates that urban farming has become urban dwellers' strategy and practice to produce their own need for vegetables.

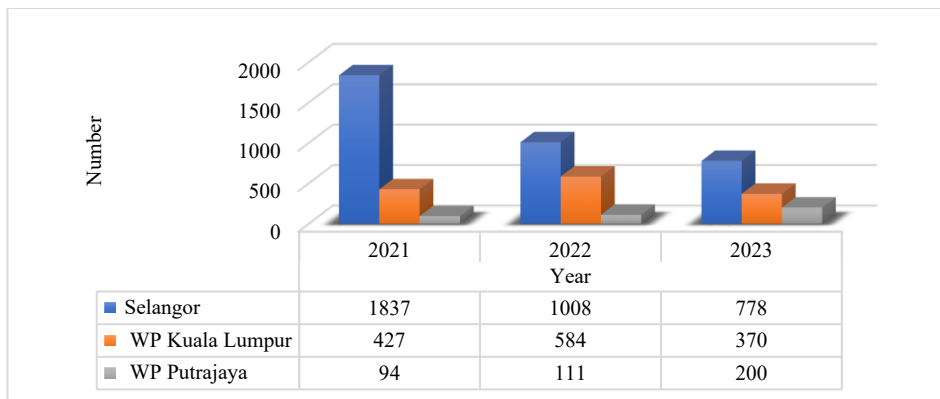


Figure 1: Total number of urban farming projects in the State of Selangor, Federal Territory of Kuala Lumpur and Federal Territory of Putrajaya in the year 2021 to 2023 (as of March 2023).

Source: DOA, 2023

Based on the four (4) categories of urban farming by the Department of Agricultural Malaysia, the community category has the highest number of 2,434 in total compared to the school category of 2,303 and the institution of 713 (see Figure 4). School and institution urban farming activities Therefore, this study will focus on community urban farming.

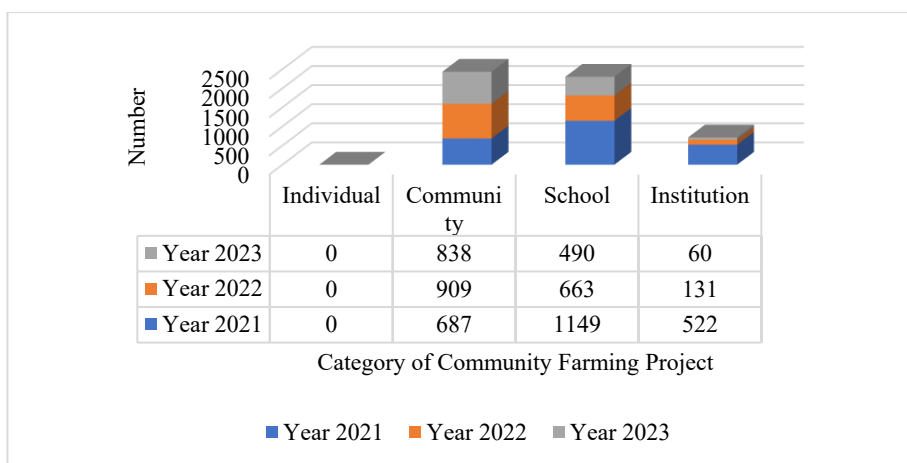


Figure 2: Total number of urban farming projects in the State of Selangor in the year 2021 to 2023 (as of March 2023).

Source: DOA, 2023

Further study on the location of the highest urban farming activities in Selangor indicates that Petaling District has the highest number of 427 between the year 2021 and 2023 (March) (Table 3):

Table 3: Urban Community Farming Activity in the State of Selangor based on District in the year 2021 – 2023.

| District | Year | | Total | Unit |
|--------------------|------------|------------|------------|------------|
| | 2021 | 2022 | 2023 | |
| 1. Petaling | 107 | 112 | 208 | 427 |
| 2. Hulu Langat | 164 | 10 | 60 | 234 |
| 3. Klang | 50 | 50 | 97 | 197 |
| 4. Gombak | 10 | 126 | 40 | 176 |
| 5. Kuala Langat | 50 | 70 | 53 | 173 |
| 6. Sepang | 20 | 40 | 20 | 80 |
| 7. Kuala Selangor | - | 60 | 50 | 110 |
| 8. Hulu Selangor | 100 | 50 | 60 | 210 |
| 9. Sabak Bernam | - | 50 | 60 | 110 |

Source: Division of Urban Farming, Department of Agriculture, 2023

Petaling District is administrated by 3 local authorities, namely (1) Petaling Jaya City Council (MBPJ); (2) Subang Jaya City Council (MBSJ); and (3) Shah Alam City Council (MBSA). However, for this research, the case study area included only the areas under MBSA and MBPJ jurisdictions due to a lack of data from MBSJ.

Preliminary data collection on the approval granted for urban farming activities in these three (3) local authorities. Three (3) different processes and procedures for urban farming activities were identified: (1) Community urban farming activities approved by the Department of Landscape; (2) Commercialise urban farming activities approved by the Department of Planning; and (3) City Food Valley Program under the Selangor State Agricultural Development Corporation (PKPS) and MBPJ.

ANALYSIS AND DISCUSSION

The analysis focuses only on (1) the community urban farming activities approved by the Department of Landscape, MBSA; and (2) the City Food Valley Program due to the available complete data provided by MBSA and MBPJ. However, the City Food Valley Program is still in progress and yet to be finalised and executed including the appointment of farmers, the analysis focusing on the land use zoning, and the execution plan by PKPS. As for commercialise urban farming activities that need to acquire planning permission approval by MBPJ under the Town and Country Planning Act 1976 (Act 172) will not be further analysed and discussed due to the lack of data such as the number of applications and approval, type of crops cultivation and production.

Overlapping urban farming activity with the current land use

There are 33 community urban farming that have been approved by MBSA in Year 2021 up until 2023 (March). The fieldwork revealed that only ten (10) sites

remain active and producing crops for local consumption. The boundaries of all ten (10) community urban farming sites were carefully marked using SW Maps. GIS overlaying analysis shows that the current urban farming activities are being carried out on various land uses (Table 4).

Table 4: The list of 33 community urban farming sites approved by MBSA within the Jurisdiction Area.

| NO | SECTION | LOCATION | LAND STATUS | AREA (acre) | LAND USE |
|----|-------------|-------------------------------|-------------------|-------------|-----------------------------------|
| 1 | Section 7 | Jalan Jasper 7/15 | Kawasan Hijau | 3.0 | Recreational Areas and Open Space |
| 2 | Section 8 | Jalan Jaluran 8/3 (Fasa 2) | TNB | 5.0 | Infrastructure and Utility |
| 3 | Section 8 | Jalan Jaluran 8/3 (Fasa 2) | TNB | 5.0 | Infrastructure and Utility |
| 4 | Section 16 | Jalan Mat Raji, Padang Jawa | Recreational Area | 0.4 | Commercial, Vacant Lot |
| 5 | Section 20 | Jln Tuntung Satu 20/11A | MBSA | 2.0 | Vacant Lot |
| 6 | Section 24 | Jln Kangkung Puteri 24/7 | Buffer Zone | 0.3 | Recreational Areas and Open Space |
| 7 | Section 27 | Flat Proton | Buffer Zone | 0.3 | Recreational Areas and Open Space |
| 8 | Section U11 | Rezab JPS | JPS Reserve | 1.0 | Infrastructure and Utility |
| 9 | Section U11 | Mosque Site Perumahan Farnese | Mosque Site | 0.5 | Vacant Lot |
| 10 | Section U16 | Pangsapuri Melati | Buffer Zone | 0.6 | Housing |

Source: MBSA and Fieldwork, 2023

Referring to the Green Neighbourhood Guidelines and community farming, the area that allows for community farming is reserve land and open space or Tenaga Nasional Berhad (TNB) leased land only. Despite all ten (10) community urban farming sites carried out on various land uses such as commercial and infrastructure and utility (not only TNB), fieldwork also found that the activities do not cause nuisance to neighbouring lots and activities in terms of traffic and environmental.

Type of agriculture crops produce by urban farming

The surveys each of the urban farming sites indicate that there are no other livestock or fisheries on the farm due to restrictions imposed by the local authority to ensure the cleanliness and welfare of the surrounding area. Only vegetables and fruits are allowed, as shown in Table 5.

Table 5: Type of Crops according to Farms

| NO | SECTION | LOCATION | TYPE OF CROPS |
|----|-------------|--------------------------------|--|
| 1 | Section 7 | Jalan Jasper 7/15 | Chilli , Mustard, Long Bean |
| 2 | Section 7 | Jalan Lekuk Keluli | Banana, Herbs, Flowers |
| 3 | Section 8 | Jalan Jaluran 8/3 (Fasa 2) | Mustard, Spinach, Water Spinach, Flower, Long Bean |
| 4 | Section 17 | Jalan Mat Raji, Padang Jawa | Chilli , Spinach, Long Bean, Herbs |
| 5 | Section 20 | Jln Tuntung Satu 20/11A | Chilli , Eggplant, Spinach, Turmeric, Cucumber |
| 6 | Section 24 | Jln Kangkung Puteri 24/7 | Mustard, Spinach, Long Bean |
| 7 | Section 27 | Flat Proton | Chilli , Mustard, Banana |
| 8 | Section U11 | Rezab JPS | Chilli, Ginger , Corn, Turmeric, Long Bean, Cucumber, Lady Finger, Lettuce, Mustard, Banana, Papaya, Bitter Gourd |
| 9 | Section U11 | Tapak Masjid Perumahan Farnese | Eggplant, Spinach, Water Spinach, Mustard |
| 10 | Section U16 | Pangsapuri Melatih | Chilli , Banana, Papaya, Lemongrass, Tapioca |

Source: Fieldwork, 2023

As for the type of crop to cultivate, farmers are to decide based on the market price (the higher the price, the more income can be generated by the farmers) and short-cycle crops (to harvest in less than a month). There are no restrictions or guidelines by the authority to control and ensure the contribution towards food security.

Referring back to the Self Sufficiency Ratio (SSR), the six (6) items with the lowest SSR are (1) mutton (8.7); (2) beef (14.7); (3) ginger (15.9); (4) chilli (29.7); (5) mango (32.0); and (6) round cabbage (45.6). As highlighted in Table 5, the current urban farming activities do contribute to the SSR in terms of producing chilli and ginger for the local market. However, no amount of produce was recorded in each of the cases studied. The produce of vegetables and fruits is only for the local market, and all of the produce is sold weekly to the local communities.

City Food Valley Program

The City Food Valley Program was initiated by the Ministry of Economics at the federal level, the Selangor State Agricultural Development Corporation (PKPS) at the state level, and the Petaling Jaya City Council (MBPJ). A total of 80 acres of land (located under the TNB transmission line) was identified by MBPJ. This project targeted to involve 40 farmers (among B40) for the first 10 acres in Phase 1 to produce 25,600kg of chilli a year (Ministry of Economic, 2023; Petaling Jaya City Council, 2023). This project is still under approval and implementation and is yet to contribute to the urban agricultural yield. Analysis of the project plan and implementation showed that this project does not involve DOA for any technical aspect such as planting method and training. As DOA has the technical resources that can optimise agricultural production, there is a need for coordination among agencies.

CONCLUSION AND RECOMMENDATIONS

In conclusion, three (3) categories of urban farming have been practiced under MBSA and MBPJ jurisdiction, namely (1) community urban farming activities, which are under the responsibilities of the Department of Landscape; (2) commercial urban farming, which is under the Department of Town Planning; and (3) Urban Farming (Food Valley), which is under the Department of Town Planning and collaboration with other agencies, such as the state corporation and federal ministry.

The current practices also show that the community urban farmers are to decide the type of crops for cultivation, and the production was not recorded to contribute to the 8,800 metric tonnes of urban farming produced by the year 2025. This shortcoming necessitates coordination between DOA and the local authorities to carry out monitoring measures. Meanwhile, for the City Food Valley programme which was initiated by the government, a more holistic approach in engaging with related agencies must be carried out to ensure the optimisation of government resources in policy, initiative, and programme implementation.

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