KHADIMUL UMMAH
Journal of Social Dedication

e-ISSN: 2599-1000
ISSN: 2599-0713

DOI: http://dx.doi.org/10.21111/ku.v3i1. 2640

COMMUNITY PARTNERSHIP PROGRAM: DISSEMINATION OF URBAN FARMING TECHNOLOGY FOR COMMUNITY OF JATINEGARA WEST FLATS

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ABSTRACT

The world population in 2050 is predicted to reach more than 9 billion and 66% of the population lives in urban areas. This can lead to competition in getting a lot of food. Therefore, food security in urban areas is a big challenge. Mitigation to face the challenge has been done by city government in Indonesia. For example, the province of DKI Jakarta, where the provincial government has programmed to carry out urban farming activities as an effort to bring food sources near to the community as well as reforestation for the city. To support the program, Trilogy University through Community Partnership Program, has disseminated the technology of urban agriculture and empowered the people residing in the area of West Jatinegara Flats, Jakarta. Since 2016 the methods of partnership activities include analysis of partner problems, interviews with partners, program socialization, trainning on cultivation techniques on smallholdings, and demonstrations of agricultural technology for urban areas. The implemented activities were vertical farming training, composting, and community empowerment in the utilization of open land around the Flats. These activities had an impact among others; people become familiar with urban farming technology, open space utilization, and hydroponics technology for net house of flats. This partnership program was supported by the Ministry of Technology and Higher Education Research in collaboration with the Department of Maritime Agriculture and Food Security, DsKI Jakarta Province.

Keywords: community partnership; food accessibility; urban farming; Jatinegara Barat Flats

INTRODUCTION

The world population is expected to reach 9.6 billion by 2050. The population spreads from rural to urban areas. The World Economic Forum (2017) estimated that 66% of the population was in urban areas and another 34% in rural areas. The rapid rate of population growth in both urban and rural areas will cause environmental problems from land conversion to environmental degradation due to pollution and waste. If the population growth conditions are greater than the rate of food production, there will be food crisis. Insufficient quantities of food had an impact on the dependence of a region / region on another region. This was especially true for urban areas of developing countries, where the region increasingly become a center of population as well as settlements and a collection of people with ethnic diversity (Jalil, 2005). The Indonesian Central Bureau of Statistics (BPS) reported that within 20 years (1994-2014) there was a shift in the rural and

urban population. The population of Java island in 1994, as many as 70% of the population living in the countryside and 30% in the city. However, the population was inversely proportional to 2014, where 40% of the population lived in sub urban and 60% of the population lived in the city. This condition encouraged both the government and the people in urban areas to start trying to near the accesibility their own food needs independently (Noorsya and Kustiwan, 2013) and improved the environment to create a healthy and quality environment.

Jakarta is one example of the city with the densest population in Indonesia and in the world. Data from the World Economic Forum in 2017 showed that the density of Jakarta reached 9,600 residents per km^2 or the 9th most populous city in the world. The large population is a challenge for the Jakarta Provincial Government in providing the food needs for its population. Assisting communities to get access the provincial government has programmed urban farming activities aimed at bringing communities near food sources. The urban farming program has been included in the spatial plan of Jakarta (RTRW) 2010-2030 (Pemprov DKI Jakarta, 2011) and reinforced by the instruction of Jakarta Governor number 91 year 2016 about the guidance and assistance of the location of village climate program 2016 in the special province of Jakarta (Pemprov DKI Jakarta, 2011b). In addition, urban farming activities are also a form of land use and adaptation efforts to global climate change. The provincial government facilitates residents, especially the residents of flats to run urban farming activities by providing open land and building net houses for food production with hydroponics technology. To support the success of urban farming program, dissemination of knowledge and urban farming technology to the citizens is necessary. One approach is through the pattern of partnerships between citizens with various parties who wrestle urban farming, with one of the universities.

Trilogy University as one of the universities in DKI Jakarta Province strives to contribute in the success of urban farming program, which developes partnership program with urban community in order to disseminate science and technology about urban farming. This partnership program is a concept of cooperation between university to overcome the problems faced by the community through community empowerment by applying science and technology owned by universities. One of the partners targeted by the dissemination is a community of residents in the West Jatinegara Flats, South Jakarta. The partnership program has been conducted with youth group (karang taruna) empowerment and family welfare (PKK) community in Jatinegara Barat since 2016. This partnership program is expected to increase the understanding of flat community about urban farming and to improve the community skills of flat people applying technology for urban farming.

West Jatinegara flats are provided by Jakarta Provincial Government to accommodate residents in flood prone areas in Kampung Pulo area. West Jatinegara flats were built on an area of 0.74 Ha (Directorate General Cipta Karya *et al*, 2013). The flats were built on the land of the Provincial Government of DKI Jakarta, with the state budget funds through Ministry of Public Works and Public Housing. The Jatinegara Barat flat consists of two towers, 16 floors, with a capacity of 520 units. Facilities provided on the first floor is a flat tower for people with disabilities, lobby, health posts and administration room. While on the second floor, there are areas prepared for PAUD schools, food center (Pujasera) or Food court. Also on the second floor there are control rooms, generators and panel rooms. In the control room there are 8 screens to monitor 54 CCTV.

This paper describes and reviews the dissemination activities of science and technology of urban farming practices and empowerment of community of Jatinegara West Flats in urban farming activities. It also includes the activities undertaken as well as the parties involved in this partnership program.

METHODOLOGY

Preparation

The first stage of this partnership program is to need assessment with identify partner problems. The identification process was conducted through interviews with the destination partners, including apartment managers, youth coordinators, and PKK coordinators and field surveys. From the interviews, several problems related to the environment and urban farming activities such as management of the yard and the open spaces, the management of household waste, and the existence of net house which has not been utilized optimally could be identified. Thus, the needs of the community and the programs be held could be planned as well.

The second stage was to create an action plan based on the community needs assessment. This plan was further discussed with the apartment management to be mutually agreed upon. The agreed action plans were as follows: 1) education of Youth Group Empowerment and Family Welfare Community about urban farming and environmental management; 2) training on the application of urban farming and composting technology; 3) revitalization of net house and hydroponic installation repairs.

The third stage was to coordinate with the relevant agencies. This was done to synergize the prepared programs and action plans. Support from the government was needed for the smooth implementation of the partnership program. This coordination was conducted periodically at the beginning, middle, and end of the partnership program.

Method of Implementation

Figure 1. Stage of Community Partnership Program Implementation

Socialization of action plan. The partnership program proposed has been started since 2016. The team initiated with the partners through several meetings. Some of the parties came from the Flat Management of the Provincial Government, Assistant residents, Chairman and RW flat, and the coordinator of the flat.

Implementation. This stage was an action in the dissemination of science and technology. The target of this dissemination target was the group of Youth Group Empowerment and Family Welfare Community. Both groups were provided with trainning on cultivation techniques on smallholdings, and demonstrations of agricultural technology for urban areas, household waste management, and discussions on net house revitalization. Each group was represented by at least 3 members. To evaluate the program, the discussion was held with the participants to get inputs on the expected

activities and to follow-up actions at the end of the activity. The vertical farming's model was used model which developed by Trilogy University was used.

Development of partners cooperation. This activity was a form of facilitation of community cooperation with several relevant houses such as office and gardening community in Jakarta. Development of this cooperation as an effort to maintain the sustainability of urban farming activities in the apartment.

Evaluation and follow up. The evaluation was conducted by holding a focus group discussion with the apartment managers and the representative of the Youth Group Empowerment and Family Welfare Community. This evaluation included the effectiveness of the implementation of activities, community expectations, constraints faced, and follow-up of these constraints. This evaluation was done at the end of the activity. The partnership program has run from May 2016 to October 2017.

RESULTS AND DISCUSSIONS

Before each activity was carried out, the team and its partners coordinated. Coordination was undertaken during the preparation and implementation of the partnership activities. Coordination was conducted among team members as well as partners on partners' readyness in the of activities implemented. All members of team coordinated intensively to evaluate the results of the activities and to plan the next partnership. The results of this evaluation were construction as a material improvement in the implementation of the next activity.

Table 1. Activity of urban farming technology dissemination

Activity	Time of execution	Result of Activity	Follow up
Cooperation with partners	May 2016	Document of partnership	Compiling of activity proposal
Formulation of activity proposal	July-September 2016	- Identify of Partner Problem - Activity program - Activity Timeline	Submission of Activity Proposal
Sosialization of activity program	March 2017	Socialization of program activities to Youth Group Empowerment and Family Welfare Community	Preparation of activity program
Dissemination of Urban Farming Technology through seminar and training consist of: 1. Cultivation of Vegetable crops plant in yard 2. Vertical farming cultivation technique 3. Utilization of used goods as container planting	April-May 2017	- Presented by activist of Youth Group Empowerment and Family Welfare Community - Increasing the knowledge of partners about urban farming implementation of urban farming technology by communities - The hydroponic system has been not done. Due to renovation of net house finish	Mentoring and focus discussion about optimalization of net house and hydroponic instalation

Activity	Time of execution	Result of Activity	Follow up
4. Composting from household organic waste with composter 5. Introducing cultivation of hydroponic system			
Mentoring	May-September 2017	- Forming responsible groups for managers of green open space and net house - There was a siteplan for green open space management	Partnership initiation with another partner consisting of agency and same community
Partnership initiation with agency and Indonesia garden community	September 2017	- Coordinating with agency and Jabotabek Gardening Community	Following up of partnership
Net house revitalization	October 2017	- Renovation of Net house	Repairing hydroponic installation

Activity introducing and training of agricultural technology on smallholdings was a collaboration among University of Indonesia students, Trilogy University students, and Agroecotechnology lecturer team, Faculty of Bioindustry, Trilogy University in which the members of Family Welfare Community are invited to know about the green environment function and agricultural technology applied to limited lands. The participants were enthusiastic enough to join the forum. Technology dissemination given was the introduction of vertical farming model and its application, as well as models of utilization of used goods (reuse concept) as planting box. This activity also demonstrated waste management using simple composter. It took place with the aim at providing the following benefits : 1) providing one of the alternative solutions for food security in Indonesia; 2) Increasing public enthusiasm especially in West Jatinegara Flats to apply urban farming; 3) Enhancing community empowerment in Jatinegara West Flats through organic farming 4) Increasing public awareness for the utilization of waste into reusable goods; 5) Providing productive activities and economic benefits through social entrepreneurship.

The activity was attanded by 10 members of Family Welfare Community activist and 3 members of Youth Group Empowerment. The participants enthusiastically followed this activity. From this activity 84.6% of the participants stated the activity was useful and 69.2% of them expected follow-up activity because it could help them to get additional source of community food. Some participant stated that they were interested in urban farming activity for greening and added value in open space. They informed that they have already heard about urban farming, but they did not practice. After the activity had been agreed, open space organizers functioned as a place of production of vegetable crops and medicines.

Focus group discussion was held not only the group discussion but also community activist related to net house revitalization and hydroponics installation as well as open space utilization

planning as a place for vegetable production activities. The results of the discussions were approved for the improvement of the net house together with the existing hydroponics installation. They have also been preparing to make lay out available for open land uses. The sharing of available open spaces is divided into four categories based on their function :

1. Net house functioned to produce vegetables using hydroponic system
2. Open space for family medicinal plants
3. Open space in park from used as a gathering place
4. Limited vacant land area used as a place to plant chili and fruit crops

Jatinegara Barat Flats also has a net house equipped with hydroponics installation. However, the utilization has not been optimal due to lack of knowledge and experience owned by hydroponic related communities and at least the members of the flats interested in managing the net house. Lack of optimization caused serious damage to some parts of the net hause and hydroponic installations became non-functional. Furthermore, the apartment management unit (the housing agency) and Youth Group Empowerment activists agreed with revitalizing the net house and hydroponics installation in order to be re-functionalized. As long as this article is written, net house renovations and hydroponics installations were still ongoing.

Pertnership Initiation with Relevant Agency and Communities

Implementation of partnership programs became more effective due to the support of various interested parties. One the of activities in to get the support was initiating cooperation with relevant agencies and communities. Some offices initiated to cooperate were the Jakarta Maritime, Agriculture, and Food Security Agency (DKPKP).

Cooperative initiation was also done with the community engaged with development of urban farming practices in Indonesia, namely Urban Farming community in Indonesia (Komunitas Indonesia Berkebun). This community was a community engaged to develope urban agriculture. The community also had a network in Indonesia, especially in big cities, including Jakarta. The purpose of this collaboration with the government and community agencies was to equally empower the community and to facilitate the community, primarily to the residents of the flat, for sharing experiences and knowledge related to agricultural practice on limited land.

Challenges Faced

Constraint faced during the implementation of the program was the less enthusiasm and active role of residents towers. Only some Family Welfare Community activists and Youth Group Empowerment were active in this program. Most of the residents were workers or employees in various companies so that their time to play an active role was very limited. In addition, the policy of the provincial government to encourage the economic activities of the community and to create an original open space for the green open space was used as a place to relocate the traders around the towers. As a result, the remaining green open space was located in front of the tower.

Less attentive of community members of farmer groups causes one of the net house infrastructure was not optimized properly. Whereas in the net house there was a set of equipment actually used to produce some horticultural commodities with hydroponics system. However, lack of hydroponic

management and the limited hydroponic facilities and infrastructure caused the existing net house dormant and switch function.

CONCLUSIONS

This partnership the community program are a program which can synergize the expertise possessed by educational institutions with the needs of the community. The implemented program is to overcome the food security. One aspect of food security is the accessibility of the community to access food sources. Thus, efforts are needed to bring food resources to the community, especially the urban community. One of its efforts is the dissemination of technology and food cultivation through urban farming activities. One the other hand, partnership activities did not go smoothly. One of the obstacles is lack of citizens' participation in environment-based activities.

RECOMMENDATION

Urbanization is a consequence of socio-economic development in many developing countries, including Indonesia. The flow of urbanization will affect the food production and consumption which will ultimately influence food security. Urban communities rely heavily on the food availability in the market and sometimes it reaches high prices. For the poor population it will be a problem because they are unable to obtain foodstuffs, so there will be food insecurity problems. One of the main factors determining the affordability of urban society to food is urban agriculture. This urban farming enables urban communities to reduce their spending food by self-production (Armar-klemesu, 2000). Therefore, some recommendations for the following partnership pattern of urban agriculture are as follows:

1. Developing cooperation with the industrial sector in order to improve economies of scale for urban agriculture activities on flat residents.
2. Increasing the participation of flat citizens by involving residents towers in urban agriculture activities
3. Urban farming practices are applied with sustainable and environmental concepts. Thus, this concept is expected to create healthy, safe, comfortable, and clean environment(Fauzi *et al*, 2016).

ACKNOWLEDGE

Acknowledgments are addressed to the Ministry of Technology and Higher Education Research (Kemenristek DIKTI) which has financed all these partnership activities. Thank you also to the Agency of Maritime, Agriculture and Food Security as well as the apartment managers of Housing Management Unit (UPRS), Agency of the Housing and Government Building of DKI Jakarta Province for their cooperation and support.

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