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COMMUNITY EMPOWERMENT THROUGH THE DEVELOPMENT OF COLLECTIVE AEROFARM-BASED VEGETABLE CULTIVATION IN CISAUK VILLAGE

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Abstract

Aeroponics is a method of cultivating plants without using soil. Aeroponics is generally used for cultivating vegetable types. Community service in the form of counseling on the development of AeroFarms vegetable cultivation and the manufacture of aeroponic plants in Pabuaran village, Cisauk sub-district, Tangerang district, Banten province, is motivated by the lack of use of technology as a means that can help fulfill daily needs even as employment and community economic improvement. This activity aims to provide knowledge about environmentally friendly technology that is easy for the residents, namely the development of aeroponic plant cultivation, and provide knowledge about creativity in farming to the community and utilizing natural resources around. The material contains an understanding of aeroponics, the history of aeroponics, various aeroponic methods, stages of aeroponic planting, and the advantages of using aeroponic methods. The implementation of AeroFarms-based collective vegetable cultivation development activities can create community creativity, become a solution for the conversion of agricultural land and can maintain and improve household food security.

Keywords: Aeroponics, Food Security, Vegetable Cultivation.

INTRODUCTION

Pabuaran village, Cisauk sub-district, Tangerang district is located in the west of the Cisauk sub-district with an area of 27.77 km2 in the Cisauk sub-district. Currently, there is a lot of land use change, from widespread rice fields to housing and office buildings, making it difficult for farmers to grow crops. In addition to the converted land, the remaining land becomes less fertile due to waste from the cement factory and residential waste that is not treated properly and correctly. The people of Pabuaran Village, whose daily lives are involved in the agricultural business world, still quite difficult to achieve family welfare because they have not been able to implement adequate business rules, the fact is that the management of Integrated Crops (PTT) for lowland rice has not been carried out by farmers and all business transactions for buying and selling agricultural products are dominated by farmers. by the power of the owners of capital.

The role of the agricultural sector in the urban economic structure is relatively small and tends to decline every year because the government's attention is more directed toward pursuing

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economic growth in industry and trade. Various strategic environmental changes that have occurred in the last decade have turned this attention towards matters related to poverty alleviation and improving the quality of life. The lack of land availability due to a large number of land conversions is one of the factors of social inequality that occurs in the community, especially for business actors in the agricultural sector, so with the existence of vegetable cultivation on a collective basis, it is hoped that it can overcome the existing problems. Responding to problems related to the narrowness and even loss of urban agricultural land that occurred in Indonesia, especially in the Cisauk Village area, the author has an idea, namely by realizing future urban agricultural technology. Aerofarms-based collective technology, namely agricultural techniques by cultivating more than one type of plant, then using less space, low water quantity, and not using pesticides (Subandi & Widodo, 2019). This technique allows crops, especially vegetables, to be grown at room temperature in homes in urban environments. As a growing medium, soil can be replaced with a cloth or other media, and business land can be made stratified (Safrimawan & Futra, 2019).

Aeroponics is a way of growing vegetables in the air without using soil, nutrients are sprayed on plant roots, and water containing a nutrient solution or nutrients is sprayed in the form of mist to hit plant roots. The roots of plants that are planted hanging will absorb the nutrient solution. Water and nutrients are sprayed using sprinkler irrigation. This method uses less than 95% of the water requirement compared to traditional farming methods, and less than 40% of the water requirement in the hydroponic method, this innovative technology can be an appropriate technology that is environmentally friendly as a medium for people's creativity to meet their daily needs

However, due to the lack of knowledge and skills of the surrounding community, the community does not know more about the application of the use of aeroponic agricultural techniques. The purpose of developing vegetable cultivation using the aeroponic method is to create community creativity in Pabuaran village, Cisauk sub-district, to keep the agricultural sector in Pabuaran village available, and to become a source of supply for the urban food system and become one of the options for food security for households. In addition, it can provide knowledge to the public about aeroponic farming techniques which have many benefits and are easy to do with household equipment.

The advantages that can be obtained from the use of this aeroponic method are that it can provide controlled nutrients, allow pesticide-free production because the growth cycle can be shortened by controlling nutrients, simplify the harvest process, and land efficiency because it can be planted on a narrow land. Aeroponics is an alternative method of plant cultivation that is suitable for overcoming the problem of land conversion or the use of unused building land in Pabuaran village, Cisauk sub-district, Tangerang district. aeroponics and the implementation of its manufacture.

IMPLEMENTATION METHOD

The stages of implementing this Community Service (PKM) activity consist of data collection, extension activities, and evaluation of program implementation after the extension activities are carried out.

1. Data Collection

The technique or method of data collection carried out on the object of PKM is observation and interview techniques. The interview technique is carried out in conversations with resource persons or people who are directly involved with the system in the Pabuaran village environment. These interviews were conducted both formally and informally. Interviews were conducted informally to create a comfortable and relaxed atmosphere so that they could understand each other's needs in the field. While the observation technique is done by observing objects in the community both near and far. The details of the activities carried out using this observation technique include seeing firsthand the field conditions.

2. Implementation of Extension

Extension activities begin with coordination with the village head regarding the time and place of implementation, implementation system, target of extension participants, extension materials, and implementation of activities. The implementation of the extension consisted of socialization about knowledge of AeroFarms vegetable cultivation, the introduction of aeroponic techniques, and socialization of how to make AeroFarms. The implementation of service activities is arranged in Table 1.

Table 1. Activities of the Aerofarm-Based Collective-Based Vegetable Cultivation Service Program Activities.

Description of activities	Destination	Target
Socialization with the local village and sub-district	To obtain accurate information and data in connection with service activities	Agencies related to UPTD Sub-districts and Villages in the Cisauk Village environment
Counseling and implementation of aeroponics pembuatan	Providing knowledge to the public regarding the aeroponic method that will be made and practicing it using household appliances	Pabuatan village community
Community assistance and empowerment	To facilitate the transfer of technology to the community or target groups provided through counseling	Pabuatan village community and assisted cadres of each neighborhood unit (RT)

3. Program Evaluation

Program evaluation is carried out by monitoring the implementation of AeroFarms vegetable cultivation development activities through the head of the local RT and the village head.

RESULTS AND DISCUSSION

Community empowerment activities through the development of AeroFarms-based collective vegetable cultivation have been carried out in Pabuaran Village, Cisauk District. The first activity carried out was data collection using field observations by going directly to the community and by interviewing community shops. Then socialization was carried out which

explained the purpose of the service activities which included counseling and the practice of making aeroponics. Documentation of data collection activities until socialization is shown in Figure 1 and Figure 2.

Figure 1. Collecting data by interviewing residents

Figure 2. Socialization to sub-district officials

The implementation of service by conducting counseling activities and making aeroponic vegetable cultivation which aims to provide knowledge and technology to the community that can be used at least to meet daily needs. Extension activities for making aeroponics can be seen in Figure 3, with extension materials that will be used in the practice of making aeroponics shown in Figure 4.

Figure 3. Extension materials for planting stages using the aeroponic method

Figure 4. Aeroponics method extension flyer

Figure 3 shows the process of aeroponic stages, in extension activities, carried out online to provide basic knowledge about the aeroponic method that will be practiced. The material contains an understanding of aeroponics, the history of aeroponics, various aeroponic methods, stages of aeroponic planting, and the advantages of using aeroponic methods. After the outreach activities have been completed, then the aeroponics making is carried out at the Pabuaran Village Development Center together with the local community accompanied by the assisted cadres of each RT representative. The implementation of making aeroponics can be seen in Figure 5.

Figure 5. The process of making aeroponics

Community empowerment through aero farm-based collective vegetable cultivation continues to provide guidance and assistance to the community to transfer knowledge and technology related to the aeroponic method that has been carried out. From the implementation of these activities, it is hoped that there will be motivation to expand the development of aeroponic vegetable cultivation so that it can create community creativity in Pabuaran village, Cisauk sub-district and keep the agricultural sector in Pabuaran village available and become one of the sources of supply for the urban food system. The development of vegetable cultivation using the aeroponic method is expected to be at least one option for food security for households.

CONCLUSION

The conclusions that can be drawn from the implementation of this activity are:

1. Implementation of AeroFarms-based collective vegetable cultivation development activities can create community creativity.
2. The implementation of aeroponic manufacturing activities can maintain and improve the food security of the community's households.
3. The aeroponic method used can be a solution to the conversion of agricultural land and become a source of supply for the food system for the community, especially farmers in Pabuaran Village, Cisauk sub-district.

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