



Implementation of Urban Farming at P4S Kalpataru Sanur Kaja Village, South Denpasar District - Denpasar

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ABSTRACT

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implemented at P4S Kalpataru with the title "Implementation of Urban Farming at P4S Kalpataru, Sanur Kaja Village, South Denpasar District, Denpasar. Urban agriculture has the potential to become a necessary part of a more resilient and sustainable food system. Urban farming can be embraced by the community as a productive activity to empower and support the local economy. The potential for urban farming is significant and can be developed alongside a healthy lifestyle. Urban farming can create a comfortable and healthy environment with planting systems such as hydroponics, aquaponics, vertical farming, and others. Technology transfer at P4S Kalpataru involves partner groups and members understanding and implementing urban farming techniques using aquaponics, combining catfish with kale and mustard greens.

INTRODUCTION

The development of the agricultural sector in urban areas differs from that in rural areas. Urban areas generally lack agricultural land because it is used for buildings, structures, or roads. Urban agriculture is a form of commercial or non-commercial activity or business related to the production, distribution, and consumption of food or other agricultural products aimed at producing food, recreation, and relaxation (Anonymous, 2024). Rapid economic growth in urban areas is not commensurate with the increase in nutritional intake of urban residents, especially for low-income residents who are vulnerable to meeting their food security. The FAO states that food security conditions must meet 4 (four) components, namely: 1. Adequate availability of food, 2. Stable availability of food without fluctuations from season to season or from year to year, 3. Accessibility/affordability of food, and 4. Quality/safety of the food used (FAO.202). Food security is a multidisciplinary concept, and therefore requires comprehensive collaboration and synergy across sectors to prevent food insecurity in the community. Urban food system governance can thus be understood as a process and mechanism in urban and suburban areas that is broadly linked and interconnected with the agriculture, food, ecosystem, and health sectors (Mahra and Adi Nugraha, 2022). Food security is a multidisciplinary concept, and therefore requires comprehensive collaboration and synergy across sectors to prevent food insecurity in the community. Urban food system governance can thus be understood as a process and mechanism in urban and suburban areas that is broadly linked and interconnected with the agriculture, food, ecosystem, and health sectors (Mahra and Adi Nugraha, 2022). In many regions around the world, sustainable urban agriculture strategies through urban farming have been adopted. Various actors in Indonesia, including the government, the commercial sector, and community groups, have pioneered the idea of urban farming. The goal is to meet the very high food needs of urban communities when there is a scarcity of land for food production. Subsystem-based urban farming, namely urban farming, is utilized to increase food security in the household sphere. Providing food for urban residents is one of the tasks of urban agriculture (Agus Danugroho. 2022).

Urban farming is an effort to utilize limited space in urban areas to produce food. Urban farming is a form of agricultural cultivation in the broad sense that combines agriculture, fisheries, and/or animal husbandry (integrated farming) or agricultural activities in the narrow sense (agriculture farming). This activity can be a solution to meet food needs. Urban farming activities are carried out using a concept of using a small area of land, using polybags or vertical farming (Fanny Septya et. al., 2022). Community preferences for urban farming activities vary. Some people want their produce to be sold (economic function) to support household needs, for personal consumption, or as ornamental plants. Urban farming activities can be carried out on private or communal land, with crops such as food crops, vegetables, or herbs cultivated using hydroponic, polybag, or vertical farming techniques (Fanny Septya et al., 2022; Wijaya, K et al., 2020).

The Kalpataru Self-Help Agricultural and Rural Training Center (P4S) is located on Jalan Sedap Malam, Belong Hamlet, Sanur Kaja Village, South Denpasar District, which is defined as an Agricultural Institution built, owned and managed by farmers, both individuals and groups, and is a real form of active participation in the agricultural development process through increasing the spirit and entrepreneurial spirit of agribusiness. P4S Kalpataru is a self-help agricultural training program established by several organic farming activists and community leaders in Sanur village to create a platform or place for collaborative learning about farming in harmony with nature. It aims to accelerate access to and application of technological information and utilize the ease of learning for farmers/breeders and their families. Farmers are expected to be able to solve the problems they face and help themselves increase productivity, income, and well-being (Anonymous, 2020). Initially a simple organic vegetable garden, the Kalpataru Organic Garden has evolved into a uniquely designed garden, inspired by ideas and discussions from organic farming enthusiasts. Furthermore, the eco-agriculture concept has fostered the concept of integrated organic farming management.

P4S Kalpataru is located in the urban area of Belong Hamlet, Sanur Kaja Village, South Denpasar District. South Denpasar has 816 hectares of rice fields, 183 hectares of non-rice fields, and 4,000 hectares of non-agricultural land, such as roads, residential areas, offices, hotels, shopping centers, rivers, and others. Consisting of 6 villages and 4 sub-districts. Meanwhile, the total area of Sanur Kaja Village is 269 hectares, most of which is a residential area and a tourism and trade area consisting of 7 hamlets/banjars, one of which is Belong Hamlet. (Central Statistics Agency of Denpasar City. 2023. South Denpasar District in figures; 2023; Anonymous. 2020).

Problems associated with urban life include the decreasing availability of agricultural land. Increasing food security at the household level in urban communities is being pursued through urban farming practices involving many households. Utilizing household yard space to grow various crops, or combining it with livestock and fish farming, can ensure a continuous supply of diverse food sources to meet family nutritional needs and reduce household consumption costs for fresh food (Yussi Pratiwi, et al., 2021). Urban agriculture has significant potential for development as a healthy lifestyle, thanks to the adoption of organic farming systems. Urban farming can create a comfortable and healthy environment through various planting systems, such as hydroponics, aquaponics, vertical farming, and rooftop gardens, as sustainable alternatives to increase food production in urban environments (Wiratenaya and Yuliarmi, 2022).

With increasingly advanced technology, urban agriculture has the potential to become a necessary part of a more resilient and sustainable food system. Urban farming can be embraced by communities as a productive activity to empower and support the local economy. Social relations can grow by strengthening a sense of togetherness and creating a culture of mutual cooperation in urban communities. If urban agriculture continues to develop, it is projected to contribute to food availability and food security in urban areas.

The ability to meet food needs independently will reduce the barriers to food distribution to urban areas (Wiratenaya and Yuliarmi, 2022; Marni Putri Gea., 2025). Vegetable plants are an option for urban farming activities, considering that vegetable plants are needed by families and are plants that are easy to cultivate. Besides that, it does not require a large area of land and can be planted in various media other than soil, making it suitable as a commodity of choice for urban communities who practice urban farming (Fanny Septya et. al., 2022; Wiratenaya, and Yuliarmi, 2022).

The Community Partnership Empowerment (PKM) program, in partnership with P4S Kalpataru, is aimed at implementing urban farming systems in urban areas. Training will be provided on how to implement urban farming using an aquaponics system combining catfish and vegetables.

IMPLEMENTATION AND METHODS

The Community Partnership Empowerment (PKM) program, in partnership with P4S Kalpataru, is aimed at implementing urban farming systems in urban areas. Training will be provided on how to implement urban farming using an aquaponics system combining catfish and vegetables :

1. Interview and discussion methods to identify problems faced by partners.
2. Direct face-to-face outreach to provide partners with knowledge about the application of urban farming technology.
3. Handing over materials and tools that can be used as examples in implementing urban farming technology to partners, accompanied by members, who will then implement it at the household level
4. Direct field practice, starting with the creation of the aquaponics system, followed by planting and releasing the catfish.
5. Monitoring, mentoring, and evaluation: The Community Service team conducts regular monitoring and mentoring to ensure the success of the aquaponics system. Furthermore, an analysis is conducted to identify potential issues arising from the partners.

The following stages are used based on the method used:

1. Exploration of partner group extension and practice locations.
2. Socialization of the activities to be implemented within the group by explaining the implementation.
3. Counseling, handover of materials and tools, and aquaponics practice.
4. Mentoring, monitoring, and evaluation of implemented activities.

RESULTS AND DISCUSSION

The Community-Based Empowerment Program (PBM), namely Community Partnership Empowerment (PKM) through community service activities, is one of the Tridharma activities of Warmadewa University which encourages its academic community to assist the community. The Community Partnership Development Program (PKM) can motivate community groups in P4S Kalpataru and maximize activities that involve all members actively and creatively in urban agricultural extension, namely the application of urban farming. The outreach program involved transferring technology for creating an

aquaponics system, combining catfish with kale and mustard greens, and motivating group/community members to build it themselves. This was evident in the partner group's enthusiasm for the project (Figure below).



Figure 1. Making an Aquaponic System



Figure 2. Counseling and Delivery of Materials and Tools



Figure 3. Field practice of Planting in an Aquaponic System



Figure 4. Results During Monitoring

With increasingly advanced technology, urban agriculture has the potential to become a necessary part of a more resilient food system by optimizing the use of limited land in urban areas for productive activities. Urban farming is a strategic solution to address food security challenges in urban areas. The technology transfer program at P4S Kalpataru focuses on urban farming, targeting urban communities. This can increase household demand for fresh food and reduce expenses, ultimately supporting food security.

P4S Kalpataru is a self-help training program in the agricultural sector formed by several organic farming activists and community leaders in Sanur village to create a forum or place for learning together about farming in harmony with nature; it aims to accelerate access to and application of technological information and its utilization. So it is necessary to organize the organization and strengthen partners among members so that the target is to be able to develop urban communities as pioneers and continue and can motivate members/urban communities within the partner scope to implement the aquaponic system on an urban household scale.

The availability of materials and equipment used in urban farming systems determines their success. P4S Kalpataru requires materials and equipment that are more representative of urban farming practices, such as an aquaponics system, which will later be developed in urban communities. Materials and equipment have been provided to partners for use in building aquaponics systems. These systems can be built independently by households, family planning groups, or urban communities.

The touch of technology has increased the knowledge and skills of P4S Kalpataru partners and their members in implementing the urban farming system, namely the aquaponics system. The Aquaponics system implemented is an innovative agricultural technology that is very suitable for urban farming, because it is efficient in terms of land and water, and environmentally friendly. This system combines aquaculture (fish farming) and hydroponics (soil-less plant cultivation) into a single integrated ecosystem that can be implemented at the household level in urban areas. It helps ensure the availability of fresh, healthy food, encourages family self-sufficiency in meeting some of their food needs, and creates a comfortable environment.

The Partnership Empowerment Program can motivate P4S Kalpataru partners to make maximum use of all activities. The aquaponic urban farming system is very useful as a sustainable urban food solution, which has an economic impact in the form of savings on food consumption costs; households can grow their own vegetables and raise their own fish and reduce daily/weekly shopping; and produce fresh, healthy food without having to buy it at the market. The social impact is that urban communities can be more independent in terms of food production and increase awareness of the importance of local food security, and urban farming activities create new green spaces that are cool and healthy, help reduce stress and strengthen social interactions in the environment.

CONCLUSIONS AND RECOMMENDATIONS

P4S Kalpataru Partners in Sanur Kaja Village, South Denpasar, have successfully adopted all the materials provided through community service through community partnership empowerment. This can be demonstrated by, among other things:

1. The partner group has demonstrated commitment to participating in outreach, interacting during outreach, field practice, and mentoring.
2. The partner group is motivated to engage in more active activities
3. Assistance with materials and tools in the urban farming system can support group activities in urban farming to provide fresh food on a household scale.
4. Reduce daily household expenses by providing fresh food. Partner groups understand the importance of implementing urban farming on a household scale to provide fresh food, reduce household costs, and create a comfortable environment.

Several recommendations for sustainability are:

1. Partner groups and their members, who act as cadres in villages and sub-districts, should continue to promote the positive contribution of aquaponic urban farming systems and other systems to urban communities.
2. More materials and equipment are needed to support the sustainable implementation of this system in every urban household.

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