

## Empowerment of the Community Through the Utilization of Yard in Narrow Areas of My Village, Gajah District, Darul Imarah Sub-district, Aceh Besar Regency

<sup>1</sup>Mujiburrahmad\*, <sup>1</sup>Elly Kesumawati, <sup>1</sup>Kurnia Saputra

<sup>1</sup>Universitas Syiah Kuala, Indonesia

\*Corresponding author

Email: [mujiburrahmad@unsyiah.ac.id](mailto:mujiburrahmad@unsyiah.ac.id)

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### Abstract

**Purpose:** This study explores the underutilization of backyard land in Gajah Village for horticultural cultivation, focusing on vertical farming techniques. It addresses knowledge gaps in optimizing backyard space and producing organic fertilizers and pesticides from household waste.

**Method:** The research adopts a participatory approach, involving coordination, socialization, surveys, interviews, and practical training sessions. Counseling on vertical farming, Liquid Organic Fertilizer (LOF) production, and botanical pesticides is provided.

**Practical Applications:** The study's findings empower the community to enhance food security, income, and environmental sustainability through sustainable vegetable production. It informs policy interventions for promoting grassroots-level sustainable agriculture.

**Conclusion:** This research emphasizes community empowerment and skill-building to address agricultural challenges. By optimizing backyard land and promoting organic farming practices, it contributes to resilient and sustainable agriculture, leveraging local resources for improved livelihoods.



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## Introduction

Gue Gajah Village is one of the villages in the Darul Imarah Sub-district, which has land and house yards suitable for seasonal vegetable cultivation. Observations by the proposing team in Gue Gajah Village, Darul Imarah Sub-district, Aceh Besar Regency, found that most households have backyard space of less than 70 m<sup>2</sup> in the front and 50-70 m<sup>2</sup> in the rear. If this backyard land were utilized for horticulture, it could serve as a source of food and increase community income (Abdullah & Pratiwi, 2021; Martina et al., 2021). This community service activity will be conducted for housewives who are members of the PKK (Family Welfare Movement), totaling 48 individuals.

The aim of this community empowerment program is to enhance the knowledge, attitudes, and skills of PKK mothers in Gue Gajah Village regarding vertical farming techniques, producing Liquid Organic Fertilizer (LOF) from household waste, and manufacturing botanical pesticides. The main issues faced by partners are (1) Lack of knowledge, attitudes, and skills in optimizing backyard land. (2) Not understanding how to produce Liquid Organic Fertilizer (LOF) using raw materials from household waste.

Figure 1. Backyard Land Owned by the Community of Gue Gajah Village



The optimization of backyard land in Gue Gajah Village is necessary to provide knowledge and encourage the community, especially women or PKK mothers, to optimize the function of their backyard space. The purpose of this activity is to promote and socialize the benefits of backyard land to enhance economic value and family-scale food resilience. It is hoped that women or PKK mothers will understand and be willing to optimize their backyard space by cultivating various types of organic vegetables. Organic vegetable cultivation activities will support the availability of ingredients and provide healthy and nutritious food for their families (Trihastuti et al., 2022; Yunindanova et al., 2020). The challenge for every housewife to obtain healthy, pesticide-free vegetables is significant, as vegetables in the market come from non-organic farming that uses pesticides in their cultivation process (Raya et al., 2021; Yahya et al., 2023). Addressing this issue, this service activity aims to increase knowledge about organic vegetable cultivation using vertical farming techniques. The community's lack of understanding of organic vegetable cultivation in backyard land with vertical farming systems is a hurdle (Adeniyi, 2021; Prihatiningsih et al., 2020).

This prompted our attention to engage in service activities in Gue Gajah Village, Darul Imarah Sub-district, Aceh Besar Regency, during the Covid pandemic. With knowledge and experience from our team, we aim to share knowledge and assist the groups of women in Gue Gajah Village. Through these efforts, we hope that the women in Gue Gajah Village can utilize their backyard spaces for horticulture, which can be utilized and sold to increase their income during the pandemic.

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## Method

This service is carried out in Gue Gajah Village. The subjects of this service are the PKK (Family Welfare Movement) groups of Gue Gajah Village, totaling 40 individuals. The community service activities are conducted from August to October 2022. Referring to the analysis of the situation and potential of Gue Gajah Village, strengthened by the knowledge and experience of our team, we offer solutions that are easy, inexpensive, and sustainable. The implementation activities will begin with coordination and socialization with partners for activity execution, followed by Training on Vertical Farming, Demonstration of Liquid Organic Fertilizer (LOF) Production using household waste, Production of botanical pesticides, Activity Evaluation, and Reporting. The sequence of steps for implementation can be seen in Figure 2.



## Result

The results of this community service consist of several activities, including Assembly of vertical farming racks, training on vertical farming systems, Training on Liquid Organic Fertilizer (LOF) Production using household waste, training on Production of botanical pesticides. The community-based product-focused service activities have generated several solutions as per the predetermined objectives.

The first activity conducted was training on the vertical farming system. This activity is crucial to provide understanding and knowledge to the PKK (Family Welfare Movement) mothers of Gue Gajah Village, Darul Imarah Sub-district, Aceh Besar Regency, regarding vertical farming systems. The materials covered include the definition of vertical farming, various vertical farming systems, advantages and disadvantages of vertical farming, vertical farming plant containers, and types of vertical farming racks.

The implementation of the first training session began with administering a pretest to the PKK mothers of Gue Gajah Village to assess their existing knowledge of vertical farming systems. After the pretest, the training commenced by delivering interactive content to the participants about vertical farming systems. Upon the completion of the content delivery, the service team engaged in a question-and-answer session with the participants. The participants showed enthusiasm throughout the training, as evidenced by their focused attention and active participation in the question-and-answer session, indicating their keen interest in learning. The presence of participants from the beginning to the end of the training further indicates their commitment to fully engaging in the training. The facilitators noted that the participants had minimal knowledge about vertical farming, as reflected in their questions and statements during the session. Overall, the training materials successfully transformed the participants' knowledge about vertical farming. Participants began to realize the feasibility of vertical farming even in limited spaces.



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Figure 3. Documentation of Training Activities with Partners (a) and (b) Enthusiastic Participants Listening to the Material. (c) and (d) Material Presentation by the Team.



The second activity in this community service is Training on Liquid Organic Fertilizer (LOF) Production using household waste, and training on Production of botanical pesticides. In this activity, participants begin to realize how easy it is to produce Liquid Organic Fertilizer (LOF) and botanical pesticides using locally available materials. Furthermore, participants start to understand that using Liquid Organic Fertilizer (LOF) and botanical pesticides will save production costs. Until now, they have been using expensive Liquid Organic Fertilizer (LOF) and botanical pesticides purchased from agricultural supply stores. During the session, explanations were also provided about the use of fertilizer to promote plant growth. The function of the organic fertilizer used as the base fertilizer was also explained. It was also conveyed that women can make their own fertilizer from kitchen waste, eliminating the need to buy organic fertilizer from agricultural supply stores. To protect plants from pests and diseases, the PKM (Community Service Team) recommends making botanical pesticides (Savitri & Sutrisni, 2022; Susanti et al., 2023).

Figure 4. Documentation of Training on Liquid Organic Fertilizer (LOF) Production using household waste, and training on Production of botanical pesticides.



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Figure 5. Training on Liquid Organic Fertilizer (LOF) Production



The partner's contribution or role in the community service activities in Gue Gajah Village, Darul Imarah Sub-district, Aceh Besar Regency, is in-kind. This contribution is provided through several program activities that have been implemented. In the first activity, the partner contributed by providing venue and other supporting equipment for the vertical farming training program. Furthermore, in the training activities for Liquid Organic Fertilizer (LOF) Production and Production of botanical pesticides, the partner contributed by providing venue and supporting equipment for the activities. There were no significant obstacles in implementing the community service activities for the PKK (Family Welfare Movement) women in Gue Gajah Village, Darul Imarah Sub-district, Aceh Besar Regency. However, regarding the scheduling of field meetings, it had to be agreed upon with the beneficiary partners. This was because the partners had other routine activities as housewives and other jobs.

## Discussion

The village of Gue Gajah is a part of the Darul Imarah District, Aceh Besar Regency, with an area of 0.57 square kilometers. Geographically, Gue Gajah Village is situated at an elevation of 80 – 100 meters above sea level. The population of Gue Gajah Village is dispersed across 5 hamlets: Meusara Agung, Ja Imeum, Cot Rangkang, Aron, and Guesyriek. According to the 2021 data, the total population of Gue Gajah Village is 3,577 individuals with 1,238 households. The community engages in various livelihoods, including housewives (60%), laborers (25%), civil servants (12%), and traders (3%). Our observation and focus are on the presence of unemployed individuals who have leisure time that could be utilized to generate income or provide food sources for their families.

One way to utilize the leisure time of unemployed housewives is by optimizing backyard spaces to provide food for the family. Backyard land can serve as a source of food and nutrition for families. Backyard land in Gue Gajah Village is relatively smaller compared to other villages in Aceh Besar Regency. Most houses in Gue Gajah Village have unused backyard land. Backyards play a significant role in the socio-economic life of households. Even small backyard land can be optimized for horticultural cultivation (Othman et al., 2020). Vertical farming techniques can be employed to utilize backyard land efficiently (Li et al., 2020). Vertical farming involves planting vertically or in tiered systems, which is suitable for urban or limited space areas (Indrawati, 2018; Permana et al., 2020). Vertical farming benefits both in terms of space utilization and optimal yields.

The sustainability of community service programs will be pursued as follows: (1) Continuing vertical farming for food security and improving the economic status of partner families; (2) Continuing the use of liquid organic fertilizers and botanical pesticides for horticultural cultivation sustainably; (3) Directing partner groups to engage in sustainable horticultural business practices. Additionally, existing programs will be continued by encouraging community participation and involvement of local authorities to promote horticultural cultivation. Long-term planning for vertical horticultural cultivation technology and

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the use of liquid organic fertilizers and botanical pesticides will be conducted participatively. These activities are expected to serve as a model for the development of vertical horticultural cultivation, the use of liquid organic fertilizers, and botanical pesticides in Aceh Besar Regency.

The sustainability of these programs can also be achieved by establishing village partnerships or foster villages for the University of Syiah Kuala's Institute for Research and Community Service (LPPM) to serve as field laboratories to support teaching and learning processes and as research centers for both faculty members and students. The Aceh Besar Regency government can adopt this mentoring model for other areas and use it as a model for sustainable development in vertical horticultural cultivation, the use of liquid organic fertilizers, and botanical pesticides. Furthermore, banks such as Bank Aceh and BSI Syariah can provide credit or capital for targeted group businesses. This financial support will facilitate partners in developing and enhancing vertical horticultural cultivation with the use of organic fertilizers and botanical pesticides.

### **Conclusion**

Based on the results of the Community Empowerment activities with PKK (Family Welfare Movement) mothers in Gue Gajah Village, Darul Imarah District, Aceh Besar Regency, it can be concluded that the partners have improved their knowledge and skills in enhancing vertical horticultural cultivation using environmentally friendly organic fertilizers and botanical pesticides, which have economic value and can be utilized for vegetable cultivation. There were no significant obstacles in implementing the empowerment activities with the PKK mothers in Gue Gajah Village, Darul Imarah District, Aceh Besar Regency. However, regarding the scheduling of field meetings, it should be agreed upon with the beneficiary partners, as they have other routine activities as housewives and other occupations. Long-term planning includes the use of android marketing applications to enhance vegetable sales. This application is expected to become a model tool for marketing vegetable products in Banda Aceh and Aceh Besar. The sustainability of this program can also be achieved by forming partnerships or internship partners for existing Study Programs within the environment of Syiah Kuala University to support the Independent Learning Campus (MBKM) program. Students will undergo internships with mutually agreed-upon conditions.

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