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ENHANCING COMMUNITY NUTRITIONAL SUFFICIENCY THROUGH HOME VEGETABLE GARDENING WITH PHYTOHORMONE-ENRICHED LIQUID ORGANIC FERTILIZER: A CASE STUDY OF CIBEBER II VILLAGE, BOGOR REGENCY, WEST JAVA PROVINCE

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Abstract

The community service project is located in Cibeber II Village, Bogor Regency, with easy access to the sub-district capital of Leuwiliang. Cibeber II Village is predominantly characterized by extensive agricultural and plantation land; however, much of this land remains underutilized and lacks sustainable productivity. The community engagement method includes discussions and hands-on activities with local farmer groups, represented by housewives, focusing on the importance of organic vegetable cultivation techniques, the production of phytohormone-enriched liquid organic fertilizer, and simple methods for home vegetable gardening. The activities related to home vegetable gardening and the production of liquid organic fertilizer from household onion waste in Cibeber II Village received an overwhelmingly positive response from the community. This program not only enhances household food security and nutritional quality but also helps reduce household expenses.

Keyword: Organic Vegetables, Resident's Yards, Quality Family Nutrition

INTRODUCTION

Adequate nutrition is one of the basic elements for improving people's health and quality of life, especially in rural areas which have limited access to nutritious food. Based on data from the Ministry of Health of the Republic of Indonesia, the prevalence of malnutrition in rural communities is still a serious problem, especially in the children and elderly age groups (Kementerian Kesehatan, 2021). This issue may stem from limited access to fresh food, a lack of education on the importance of balanced nutrition, and scarce resources for improving food production quality (Rusdiyanto and Munawir, 2024). One viable solution to increase access to nutritious food sources is optimizing home gardens as spaces for vegetable cultivation. Properly utilized home gardens hold significant potential to become sustainable food sources, supporting household food security and enhancing community nutrition quality (Rifin et al., 2020). Home gardening can be carried out in various ways, one of which involves using liquid organic fertilizers enriched with phytohormones (Munawir et al., 2024).

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Liquid organic fertilizer enriched with phytohormones has been shown to increase plant productivity by accelerating root, leaf, and fruit growth in vegetable crops, which significantly enhances harvests in both quantity and quality (Rusdiyanto et al., 2023; Munawir et al., 2024). Phytohormones, or natural plant hormones such as auxins, cytokinins, and gibberellins, present in this liquid fertilizer, stimulate optimal plant growth, even in limited spaces like home gardens (Marpaung et al., 2020).

Cibeber II Village is located in the Leuwiliang sub-district of Bogor Regency, with easy access to the sub-district capital. This village is largely comprised of agricultural and plantation land; however, much of this land remains underutilized and lacks sustainable productivity. In terms of employment, most residents of Cibeber II Village are either homemakers without other employment or small-scale entrepreneurs. The typically spacious home gardens in Cibeber II Village present a valuable opportunity for vegetable cultivation, including crops like spinach, water spinach, bok choy, choy sum, lettuce, and celery. Empowering the villagers of Cibeber II through home garden vegetable cultivation is essential to provide residents with fresh produce for their own consumption, reducing the need for purchasing vegetables.

The selection of vegetable crops for cultivation in home gardens is ideally focused on those with a short growth cycle, that are locally popular, and have economic value. Optimizing home garden use for vegetable cultivation has the potential to enhance household nutritional intake for Cibeber II residents in Leuwiliang sub-district, Bogor Regency. This program not only strengthens food security but also decreases dependency on local markets for produce, which ultimately helps reduce household expenses (Rusdiyanto and Munawir, 2023; Munawir et al., 2022a). Thus, this initiative aims to improve the effectiveness of home garden utilization for vegetable farming with phytohormone-enriched organic liquid fertilizers in Cibeber II Village as a means to boost community nutritional sufficiency.

IMPLEMENTATION METHOD

The community service method used is Active and Participatory Learning (Nursyamsu, 2018). This approach involves group discussions with farmer groups, represented by housewives, on the importance of organic vegetable cultivation techniques, the production of phytohormone-enriched liquid organic fertilizer, and organic vegetable gardening. The main objective is to strengthen community policy support (Munawir et al., 2021). The target participants for this community service activity are the local Farmer Group, residents, and housewives of Cibeber II Village, Leuwiliang District, Bogor Regency, with a minimum of 50 participants expected. This community service activity consists of three stages:

1. **Invitation Distribution** – Invitations are sent to all farmer group members, providing information on the theme, time, and location of the activity.
2. **Presentation of Material** – This includes instruction on organic vegetable cultivation techniques and the benefits of using liquid organic fertilizers around the home by utilizing kitchen waste, particularly onion skins.
3. **Practical Application** – Participants engage in hands-on practice of making phytohormone-enriched liquid organic fertilizer and techniques for planting organic vegetables in home gardens.

RESULTS AND DISCUSSION

The community service activities to increase nutritional adequacy in the community by planting vegetables in the yard using liquid organic fertilizer containing phytohormones for residents of Cibeber II Village, Lewiliang District, Bogor Regency as a form of economic empowerment for farmers, housewives and residents can be carried out well. The training participants were attended by 40 members of farmer groups and housewives from 50 invitations distributed, this shows that cocoa farmers are very enthusiastic about taking part in this training

Plant Growth

This community service project was conducted over three months, involving 40 families in Cibeber II Village. Each family was provided with vegetable seedlings, such as spinach, pak choi, water spinach, and chili, along with liquid organic fertilizer containing phytohormones to stimulate plant growth. The fertilizer was applied weekly to the plants in their home gardens. After three months, measurements indicated that plants treated with the phytohormone-enriched organic fertilizer showed significantly better growth compared to control plants (those not treated with phytohormone fertilizer). On average, plant height and leaf count were 30-40% higher in the treated plants. These findings align with previous community projects, which demonstrated that phytohormones can effectively stimulate leaf, flower, and fruit growth in vegetable crops (Rinzani et al., 2020).

Figure 1. Joint Production of Phytohormonal Fertilizer from Household Red Onion Waste

The advantages of liquid organic fertilizer enriched with phytohormones derived from red onions are relatively low-cost, as it is produced from kitchen waste, primarily red onions, and is environmentally friendly. The use of kitchen waste as the main ingredient makes this fertilizer highly affordable and reduces organic waste. The application of liquid organic fertilizer enriched with phytohormones can accelerate root growth due to the auxin content in red onions, which stimulates root development—crucial for better nutrient absorption (Yolanda et al., 2019; Roidah, 2013). This liquid organic fertilizer also supports plants, as those treated with phytohormone-enriched fertilizers exhibit better resilience to environmental

stress and greater fertility, providing sufficient nutritional value for communities and families in farmer groups (Noviansyah and Chalimah, 2015).

Utilization of Home Yards

The use of home gardens for vegetable cultivation has proven to be an effective solution in supporting food security and improving the quality of life for the community in Cibeber II Village. By utilizing liquid organic fertilizer enriched with phytohormones, the quality of vegetable harvests improves, and limited garden space can be maximized. The phytohormones in the liquid fertilizer enhance plant growth by stimulating natural growth hormones such as auxins and cytokinins, which are essential for tissue formation and the enlargement of fruits and leaves.

Moreover, easy access to fresh vegetables in home gardens makes vegetable consumption more practical, significantly supporting efforts to improve nutritional adequacy. This is particularly relevant for rural communities that often face limited access to high-nutrient food sources. In addition to increasing nutritional intake, this program, according to Munawir et al. (2023), can reduce dependence on markets for vegetables, thereby saving household expenditures and enhancing food sovereignty. Another important aspect is the development of community institutional elements to support sustainable programs (Munawir et al., 2022b).

Overall, this initiative demonstrates that the approach of cultivating home gardens using liquid organic fertilizer enriched with phytohormones can serve as a sustainable solution to nutritional deficiencies and food security issues in rural communities (Alif, 2017; Izhar et al., 2016). The use of organic fertilizers is beneficial in preventing erosion of the topsoil, which is rich in essential nutrients (Diwanti, 2018; Danfar, 2009). Additionally, organic fertilizers play a crucial role in maintaining soil fertility, especially in areas that have experienced excessive fertilization with inorganic or chemical fertilizers (Roidah, 2013; Rusdiyanto and Munawir, 2024).

Figure 2. Organic Vegetable Cultivation Training and Discussion between Farmer Groups and Cibeber II Residents

The enthusiasm of the farmer groups and residents of Cibeber II Village for the vegetable planting program in home gardens and the practice of making liquid organic fertilizer enriched with phytohormones from red onion waste has been very positive. This program has received a warm welcome as it aligns with the community's need to enhance food access, ensure better nutrition, and support family economies. The community is highly interested in this initiative, actively participating in all activities related to vegetable planting in home gardens, as it provides easy access to fresh vegetables. With gardens planted with vegetables such as spinach, water spinach, and chili, residents no longer have to rely on markets to meet their daily vegetable needs.

This program has a direct impact on monthly savings for purchasing vegetables, with many families reporting a reduction in their vegetable expenditures by about 20-30%. Additionally, the consumption of fresh vegetables from home gardens helps improve daily nutritional intake. Many residents feel more motivated to regularly consume vegetables, which overall enhances family health. The home gardening and liquid organic fertilizer production program has sparked interest in sustainable farming practices among the community. Residents have begun to explore planting methods that not only yield crops but also maintain soil fertility without using harmful chemicals. They have observed firsthand how liquid organic fertilizer made from red onions can enhance soil fertility and plant quality. This opens up opportunities for implementing sustainable agricultural practices in the long term.

Figure 3. Organic Plant Growth Around the Yard

Through the training provided, residents not only learned about planting vegetables but also gained knowledge about how to make liquid fertilizer that can be applied to various types of plants. This knowledge increases residents' confidence in managing their own gardens and makes them feel more independent in meeting their food needs. This activity also creates an atmosphere of mutual cooperation among residents. The process of making liquid fertilizer together, both through training activities and direct practice, fosters a spirit of togetherness. Residents gather, discuss, and provide input to each other to improve the effectiveness of their yard farming.

CONCLUSION

The community service activities of the vegetable planting program in home gardens and the production of liquid organic fertilizer enriched with phytohormones from red onion waste in Cibeber II Village have received very positive responses from the community. This program not only enhances food security and the nutritional quality of families but also helps reduce household expenses. Through collaborative training, residents have acquired new skills in waste management to create beneficial fertilizers, increasing environmental awareness while fostering a spirit of mutual cooperation and promoting sustainable agricultural practices, particularly organic vegetable farming.

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