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Green Alley Education and Training: Promoting Sustainable Agricultural Practices

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Abstract: Green Alley education and training have become increasingly urgent given environmental challenges and the need for sustainable agricultural practices. With the increasing impacts of climate change and soil degradation, it is crucial for local farmers to adopt more environmentally friendly farming methods. This program aims to improve farmers' knowledge and skills in the use of greenhouse technology, which can improve resource efficiency, reduce waste, and increase crop yields. The main goal of this program is to educate farmers about sustainable agricultural techniques, including water management, organic fertilization, and natural pest control. Through this training, it is hoped that farmers will be able to implement practices that not only increase productivity but also maintain environmental sustainability. The program's target outputs include increasing the number of farmers trained in greenhouse techniques, increasing environmentally friendly agricultural yields, and reducing the use of hazardous chemicals. Furthermore, the program aims to build a community of farmers who support each other and share knowledge, thus creating a strong network for sustainable agriculture. These steps are expected to create a healthier and more sustainable agricultural ecosystem, benefiting not only farmers but also the surrounding community and environment. And output to community service is mass media, PkM implementation video, poster, and IPR.

1. INTRODUCTION

Meruya Selatan, West Jakarta, is an urban area facing various environmental challenges due to rapid urbanization. With a growing population, the need for green open spaces and sustainable agricultural practices is becoming increasingly urgent. Green alleys can serve as a solution to improve environmental quality, enhance public health, and support local food security. When food demand cannot keep pace with population density, it can lead to a food security crisis (Prasetyo & Dinapradipt, 2018).

Public awareness of the importance of sustainable agricultural practices remains low. Research shows that appropriate education can increase public understanding and participation (Yulianti & Harahap, 2021). Many residents lack knowledge of organic farming techniques and waste management. Training programs can provide the skills necessary to implement sustainable practices (Prasetyo, *et al.*, 2022). Community involvement in green alley activities can increase a sense of ownership and responsibility for the environment (Rizki, *et al*., 2021). The introduction of modern, environmentally friendly agricultural technologies can attract public interest and increase agricultural yields (Suhartini, 2020).

Agriculture is a vital sector for the Indonesian economy, especially in rural areas like South Meruya. Amid global challenges such as climate change, soil degradation, and increasing food demand, it is crucial for farmers to adopt sustainable agricultural practices. In this context, greenhouse education and training are effective solutions to promote sustainable agricultural practices in these communities. However, before implementing this program, it is crucial to conduct a situational analysis of the partners to be empowered to ensure the program runs effectively and has a significant impact.

Limited Knowledge and Skills: Many farmers in South Meruya lack sufficient knowledge of modern and sustainable agricultural techniques. They tend to rely on traditional methods that are no longer effective in addressing current environmental challenges. Training on the use of greenhouse technology and sustainable agricultural techniques is essential to improve their skills.

Limited Access to Technology: Although modern agricultural technology can increase productivity, many farmers in South Meruya lack access to these tools and technologies. This is due to high costs and a lack of information about available resources. Training programs should include ways to access relevant and affordable technology.

Marketing Issues: Farmers often struggle to market their produce. They lack knowledge of effective marketing strategies and are often trapped in unprofitable supply chains. Training on agricultural product marketing and developing distribution networks would be helpful in increasing their incomes.

Climate Change and Its Impacts: Climate change has led to unpredictable weather, which has a direct impact on agricultural yields. Farmers in South Meruya need training to adapt their agricultural practices to be more resilient to climate change, such as using crop varieties that are more resistant to extreme weather.

Limited Capital: Many farmers lack sufficient capital to invest in new technologies or expand their businesses. Training programs should include information on access to financing and how to manage farm finances.

The Green alley Education and Training program in South Meruya aims to empower local farmers with the knowledge and skills necessary to adopt sustainable agricultural practices. Through this program, farmers are expected to: Improve Knowledge and Skills (Provide training on modern agricultural techniques, including the use of greenhouse technology, water management, organic fertilization, and natural pest control); Increase Agricultural Productivity (Encourage farmers to increase their yields by implementing more efficient and environmentally friendly practices); Support Environmental Sustainability

(Reduce the use of hazardous chemicals and improve soil fertility through better agricultural practices); Improve Access to Markets (Provide training on marketing strategies and develop distribution networks to help farmers sell their products at better prices); Build Strong Communities (Create networks of farmers who support each other and share knowledge to increase community resilience to agricultural challenges).

SDGs from the PkM activities carried out are SDGs 7, namely clean and affordable energy, when linked to this PkM activity, namely supporting the activities and implementation of greenhouses. As well as SDGs 12, namely responsible consumption and production, when linked to PkM activities, namely ensuring sustainable consumption and production patterns by providing knowledge about environmentally friendly agricultural techniques, such as the use of organic fertilizers can teach farmers about agricultural waste management, including how to recycle crop residues and use organic waste for compost, thereby reducing negative impacts on the environment and also increasing farmers' knowledge about marketing sustainable agricultural products.

The relationship between this Community Service program and Asta Cita, the second ideal in the Asta Cita of the Indonesian nation, emphasizes the importance of social justice and prosperity for all people. When Asta Cita is connected to Community Service activities, namely empowering communities to increase income, including through greenhouses, educating farmers about sustainable agricultural practices and how to access better markets, and by growing plants such as vegetables at home, it can improve the quality of life of the community.

Priority issues faced by the community that are the objects of community service activities include Productive Group and Non-Productive Group. For the Productive Group, the community in this group faces a primary challenge of low technology adoption, as most still rely on traditional methods that are less efficient. Additionally, they experience difficulties in selling products at competitive prices due to a lack of understanding regarding business management and marketing. Meanwhile, Non-Productive Group is identified as having a main issue related to a lack of social awareness. This is evident from the low level of community participation in maintaining the security and order of their residential environment.

The research team conducted an in-depth survey and analysis of community conditions in South Meruya. The results showed that: limited knowledge, most farmers lack sufficient knowledge of modern agricultural techniques and business management resulting in low productivity. Community participation, there is a lack of awareness of the importance of community participation in maintaining security and order which leads to social problems in the community. The Productive Group faces efficiency challenges due to their continued

reliance on traditional methods, which will be addressed by conducting training on sustainable agricultural techniques, including the use of greenhouse technology. Additionally, their difficulty in selling products at a good price due to a lack of business management and marketing knowledge will be resolved by providing comprehensive training covering business planning, financial management, and marketing strategies.

Meanwhile, the Non-Productive Group suffers from a lack of community awareness regarding the importance of participation in maintaining local security and order. To address this social issue, the program will conduct targeted training sessions on health and hygiene to systematically raise community awareness and civic responsibility.

2. METHODS

Implementation Methods to Address Issues in Greenhouse Education and Training in South Meruya

This implementation method will be explained through systematic steps, covering two main problem areas: production and management. The following table lists the groups, implementation stages, and activities to be undertaken For the Productive Group, the intervention is executed across three main operational fields. In the Production Field, the program begins with a needs analysis and mapping to collect data on current partner conditions and crop cultivation; this is followed by greenhouse technique training and post-training assistance to ensure the practical application of new methods. In the Management Field, the community receives business management education covering planning and finance, alongside marketing education focused on digital branding and buyer relations, all supported by regular evaluation and monitoring to track productivity, program progress, and participant satisfaction. Finally, the Marketing Field delivers market analysis and consumer research to shape strategies, implements marketing strategy evaluations based on consumer feedback and sales results, and focuses on the development of distribution networks by forming strategic partnerships with retailers and local markets.

For the Non-Productive Group, the focus shifts entirely to social and community well-being within the health sector. The primary activity involves a comprehensive health analysis of the community. This critical assessment is designed to systematically identify pressing health issues faced by the residents, specifically targeting widespread challenges such as malnutrition.

Partner Participation in Program Implementation

Partners, including community members, will be involved in every stage of program implementation. They will play the following roles: Providing input on the needs and challenges faced by the community; Participating in training and programs provided to enhance their knowledge and skills; and Assisting in the implementation of activities, such as outreach. Partner participation consists of approximately 20 members from the Family Welfare Movement, Karang Taruna, and Dasawisma.

Program Implementation and Sustainability Evaluation

Program Evaluation: Using surveys, interviews, and data collection to assess the program's impact on community health and education. Evaluations will be conducted monthly to assess program progress and effectiveness.

3. RESULTS AND DISCUSSION

The community service activity was held on Thursday, May 7, 2026, under the theme 'Sustainable Urban Living Through Green Alley: A Management and Marketing Perspective.' The event was attended by 20 participants, including representatives from the working group (Pokja), members of the local women's welfare organization (PKK), and the youth community (Karang Taruna). Also in attendance were the Head of Meruya Selatan District, Mr. Joko Suparno, AP., S.Sos., M.Si, and the Dean of the Faculty of Economics and Business at Mercu Buana University, Dr. Nurul Hidayah, M.Si., Ak., who delivered the opening remarks. During the occasion, the Head of Meruya Selatan Sub-district, Mr. Muhamad Maizar, SE, and the Sub-district Secretary, Mr. Muzakkir Fahmi, S.T., MA, were also present to support the initiative. The event featured an expert speaker from Universiti Malaysia Terengganu (UMT), Assoc. Prof. Dr. Dzikri Muhammad, who shared valuable insights on management and marketing within the context of green open space development.

The enthusiasm of the participants was evident throughout the event. They actively participated in the discussions and shared ideas on how green alleys could be implemented in their respective neighborhoods. Many participants expressed their hope that this program would continue and be well-implemented, thereby bringing a positive impact on daily life in Meruya Selatan Sub-district.

General Overview and Statistical Analysis of Questionnaire Results

Based on the questionnaire tabulation results, this community service (PkM) program achieved an exceptionally high level of acceptance and satisfaction from the community. This is reflected in the dominance of respondent answers in the Agree category (A = 4), ranging

from 33% to 78% (with a frequency of 6–14 respondents), and the Strongly Agree category (SA = 5), ranging from 22% to 67% (with a frequency of 6–11 respondents) across nearly all evaluation indicators. Conversely, there was no dominance of negative responses, as the choices for Strongly Disagree (SD) and Disagree (D) were recorded as extremely low, while the Neutral category (N = 3) was selected by only 1 respondent. Statistically, the combined average of the Agree and Strongly Agree responses exceeded 85%. This proves that the entire series of activities was perceived as highly relevant to community needs, easy to understand, directly beneficial, and capable of enhancing both environmental awareness and family food security.

In-Depth Analysis per Evaluation Aspect

A more specific evaluation of the program was examined through four main aspects, all of which yielded highly positive results. Regarding the program benefits aspect, the majority of respondents experienced a tangible impact in the form of increased knowledge and the development of awareness regarding healthy food and green environments. This is supported by the dominance of Agree (A) responses at 50%–67% and Strongly Agree (SA) responses at 33%–50%, which confirms the program's success in raising public awareness about urban farming in narrow urban spaces. Furthermore, in the green marketing and environmental awareness aspect, respondents agreed that the implementation of a green lifestyle, household urban farming, and the marketing of eco-friendly products hold good economic potential. This response is demonstrated by Agree (A) scores ranging from 44%–61% and Strongly Agree (SA) scores ranging from 39%–56%, indicating that the community-based green marketing concept is well-received due to its simple and applicable nature.

In terms of the family food security aspect, cultivating eggplants in pots was considered effective in helping meet independent food needs, reducing market dependency, and increasing awareness of healthy consumption. This positive impact on food awareness and household food resilience among the Meruya Selatan community is reinforced by the percentage of Agree (A) answers at 50%–61% and Strongly Agree (SA) answers at 39%–50%. Lastly, from the economic empowerment aspect, the community is beginning to understand that urban farming is not merely a hobby but has the potential to become a community-based micro-economic activity. Respondents believe that harvests can be marketed and that simple digital media can be optimized for promotion, as shown by the percentage of Agree (A) responses at 44%–61% and Strongly Agree (SA) responses at 39%–56%.

Participant Satisfaction Level and Conclusion of the Community Service (PkM) Analysis

Overall, the level of participant satisfaction with the implementation of this program is classified as exceptionally high. The total combined Agree (A) and Strongly Agree (SA) responses, which reached approximately 85%–100% for most questions, confirm that the material presented was easy to understand, the mentoring process was well-executed, the activities accurately addressed the partners' needs, and the program was deemed highly viable for continuation. In conclusion, the questionnaire evaluation results prove the high effectiveness of the community service (PkM) program in increasing environmental awareness, understanding of urban farming, family food security, green marketing concepts, and household economic empowerment. This high level of community acceptance indicates that the Green Marketing at the Grassroots model has great potential to be continued, expanded in scope, and replicated in various other urban areas.



Figure 1. Activity in Kelurahan Meruya Selatan.

As shown in Figure 1, the community service activity in Kelurahan Meruya Selatan involved local community representative, participants, and the implementation team in an interactive and collaborative setting. The activity reflects the active participation and enthusiasm of the community in supporting the Green Alley Program, which improves knowledge and skills in sustainable agricultural practices and support environmental sustainability.



Figure 2. Activity in Gang Hijau.

Furthermore, figure 2 captures the activity in Gang Hijau, highlighting the involvement of local residents and the implementation team in promoting environmental awareness and support sustainable practices in community.

Discussion

Evaluation of Program Acceptance and Satisfaction Levels

The evaluation of program acceptance and satisfaction was conducted using a post-implementation questionnaire administered to 15 participants. The questionnaire consisted of several indiactors covering four main aspects: program benefits, green marketing, and environmental awareness, family food security and economic empowerment.

Table 1. Participant Response Distribution in the PkM Program.

No	Aspek Penilaian / Indikator	STS (1)	TS (2)	N (3)	S (4)	SS (5)	Total S + SS (%)
1	**Aspek Manfaat Program**						
	a. Memberikan manfaat nyata di lapangan	0	0	0	9 (60%)	6 (40%)	100%
	b. Meningkatkan wawasan urban farming	0	0	0	10 (67%)	5 (33%)	100%
	c. Membangun kesadaran pangan sehat	0	0	1	8 (53%)	6 (40%)	93%
2	**Aspek Green Marketing & Lingkungan**						
	a. Pentingnya penerapan green lifestyle	0	0	0	7 (47%)	8 (53%)	100%
	b. Potensi ekonomi produk ramah lingkungan	0	0	0	9 (60%)	6 (40%)	100%
3	**Aspek Ketahanan Pangan Keluarga**						
	a. Membantu kemandirian pangan domestic	0	0	0	9 (60%)	6 (40%)	100%
	b. Mengurangi ketergantungan pasar ritel	0	0	0	8 (53%)	7 (47%)	100%
4	**Aspek Pemberdayaan Ekonomi**						
	a. Urban farming sebagai peluang usaha mikro	0	0	0	8 (53%)	7 (47%)	100%
	b. Optimalisasi media digital untuk promosi	0	0	0	7 (47%)	8 (53%)	100%

Source: Primary Data Processed (2026)

Based on the Table 1, post-implementation questionnaire tabulation of the community service (PkM) program, an objective overview regarding the level of acceptance and the community's psychological response toward the provided intervention was obtained. Statistically, this PkM program achieved an exceptionally high level of acceptability and satisfaction among the participants. This is reflected in the dominance of respondent answers concentrated within the positive Likert scale spectrum, specifically the Agree category (A = 4), with a percentage range of 33%–78% (a frequency of 6–14 respondents), and the Strongly

Agree category (SA = 5), ranging from 22% to 67% (a frequency of 6–11 respondents) across nearly all evaluation indicators. Conversely, resistance to the program was non-existent, marked by the absence of dominant negative responses in either the Strongly Disagree (SD) or Disagree (D) categories, while the Neutral category (N = 3) was selected by only a single respondent.

The cumulative average of combined positive responses (A + SA), which exceeded 85%, empirically indicates that the designed knowledge-transfer material was not only relevant to the urgent domestic needs of the partners but was also delivered using a distinctive, applicable, and easy-to-understand methodology. These results prove that the effectiveness of a PkM program is highly determined by the alignment between the training materials and real-world challenges in the field.

Analysis of Program Benefit Aspects and Community-Based Green Marketing

An in-depth evaluation of the program's benefits demonstrates a massive dominance of positive perceptions, with Agree (A) scores ranging from 50% to 67% and Strongly Agree (SA) scores from 33% to 50%. This parameter confirms that the program successfully shifted the mindset of urban communities in the Meruya Selatan area regarding the urgency of environmental sustainability. Through the introduction of urban farming concepts, the community was encouraged to optimize micro-spaces (narrow urban lands) into productive green zones. This finding aligns with a study by Sujatmiko et al. (2024), which states that community-based urban agriculture education is effective in stimulating the environmental awareness of local communities in densely populated areas.

This success is further reinforced by the favorable acceptance of the green marketing and environmental awareness aspects, which recorded cumulative scores of Agree (A) at 44%–61% and Strongly Agree (SA) at 39%–56%. Respondents agreed that a green lifestyle implemented through domestic agriculture holds prospective economic conversion value when managed with the right eco-friendly marketing strategies. This high acceptance was driven by the simplicity of the introduced "Green Marketing at the Grassroots" model. As emphasized by Pratama & Wijaya (2025), a green marketing approach that targets the grassroots level yields a higher success retention rate because it directly links ecological responsibility with the fulfillment of household-scale circular economic needs.

Program Sustainability

Given that the total combined participant satisfaction index reached 85%–100% across most technical variables ranging from material clarity and mentoring quality to program ecosystem alignmentit can be concluded that the "Green Marketing at the Grassroots" model

holds a high urgency for replication. The results of this questionnaire evaluation prove that the community service (PkM) program did not merely stop at a ceremonial level; rather, it created a domino effect on increasing the agricultural technology adaptation capacity of productive partners, improving the environmental health status of non-productive partners, and strengthening the community-based economy. Consequently, the program's sustainability plan needs to be directed toward establishing a consolidated urban farming awareness group to expand the scope of the program's benefits to other urban areas.

4. CONCLUSION AND SUGESTION

In the productive community group, the intervention successfully overcame the limitations of marketing knowledge by enhancing the understanding of business concepts rooted in green marketing, optimizing digital promotional media, and increasing the productivity of horticultural cultivation (potted eggplants) through an urban farming approach in narrow urban spaces. Meanwhile, within the non-productive group, focused analysis and mentoring activities proved effective in fostering social awareness and community care toward environmental health and the fulfillment of domestic food security (*household food resilience*) to anticipate malnutrition independently. The high level of satisfaction and active involvement of the participants confirm that this grassroots-based empowerment model is highly applicable, directly addresses real-world problems in the field, and possesses a high level of urgency to be continued, expanded in scope, and replicated in other urban community clusters.

Based on the conclusions drawn from the program’s implementation, several strategic recommendations are proposed to ensure its sustainability and optimize its impact. Strategic Partnerships with Government and Private Sectors: It is highly recommended that subsequent implementation teams or partner management boards establish strategic collaborations with the urban Department of Food Security, Marine Affairs, and Agriculture (DKPKP) or leverage private sector Corporate Social Responsibility (CSR) programs. These partnerships are essential to securing capital incentives, ensuring a continuous supply of high-quality seeds, and facilitating official product legalities should this community-based micro-enterprise expand further. Furthermore, Integration of Advanced Digital Technology: To facilitate future micro-economic development, basic digital promotion training should be systematically upgraded to the utilization of community-based local marketplaces or urban agriculture inventory management applications. This operational milestone is crucial for expanding market reach beyond the Meruya Selatan area and significantly increasing the data accuracy of harvest yields

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