



BERBAKTI: Jurnal Pengabdian Kepada Masyarakat

Vol. 4 No. 2, Sep 2026, pp. 195–201

e-ISSN 2987-033X, <https://doi.org/10.30822/5802>

Open Access: <https://journal.unwira.ac.id/index.php/BERBAKTI>

Optimizing Household Organic Waste Management through the Implementation of Bag Composters in Teluk Pucung Village, North Bekasi

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ARTICLE INFO

Article history:

Received: August 05, 2026

Revised: August 22, 2026

Accepted: August 31, 2026

Keywords: compost bag;
community service; food waste;
household waste management;
organic waste



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ABSTRACT

Food waste and inadequate household organic waste management remain significant challenges in Teluk Pucung Village, North Bekasi. Most households have not implemented waste segregation or organic waste processing practices, resulting in food waste being directly discarded and potentially causing environmental and public health problems. This community service program aimed to enhance the knowledge and skills of housewives in managing organic waste through the implementation of a composting bag (komposter bag). The program targeted members of Posyandu Mawar II and employed several approaches, including socialization, education, training, demonstrations, hands-on composting practices, and assistance in the use of composting bags. The results indicated an improvement in participant' understanding of waste segregation, food waste reduction, and the conversion of organic waste into compost. Participants were also able to apply the composting bag technology as a simple and practical solution suitable for household settings. The program contributed to increasing community awareness of environmentally friendly waste management practices, reducing the volume of organic waste disposed of, and encouraging the utilization of compost for household needs. Therefore, the implementation of composting bags can serves as an effective and sustainable alternative for community-based organic waste management.

INTRODUCTION

The issue of waste remains a major challenge in urban environmental management in Indonesia. One of the largest components of household waste in Indonesia is food scraps, which are a type of organic waste. Low public awareness, a growing population, and changing consumption patterns have led to a continuous increase in the amount of waste disposed of in landfills (Azteria, 2021). As a result, various forms of environmental and soil pollution have occurred, such as unpleasant odors, increased greenhouse gas emissions, and a proliferation of disease vectors, leading to a rise in the incidence of disease (Ferdinan, 2024).

Food waste is a global issue that not only leads to a loss of food resources for communities but also impacts environmental sustainability. At the household level, the practice of discarding food scraps without processing them remains common. This situation is also evident in the Teluk

Pucung neighborhood of North Bekasi, where the vast majority of residents have not yet begun sorting organic and inorganic waste on their own (Purwadi et al., 2025). As a result, organic waste is disposed of directly along with other types of waste, thereby increasing the burden of waste transportation and management on local governments (Rahman et al., 2024).

Various studies indicate that regular guidance and education are widely used strategies to improve household waste management practices (Azteria et al., 2025). Implementing waste management practices at the source can reduce the volume of waste generated at its source. In addition, the application of composting technology in households can produce compost that can be utilized by the community (Priya Gill, 2024). Community service activities have shown that ongoing guidance plays a crucial role in maintaining sustainable waste management practices (Manurung et al., 2024).

Although various programs have been implemented, most activities still focus on outreach or the use of relatively large composters that require dedicated space. In densely populated residential areas, limited land is often a barrier to the implementation of organic waste treatment technologies. There is a need for simple innovations, using inexpensive and practical materials, that can be applied in urban households (Thwaites et al., 2025). The use of compost bags as a medium for processing household organic waste, combined with a participatory educational approach and direct guidance for groups of homemakers, is one such innovation that can be implemented (Celestino et al., 2025). Compost bags feature a more flexible design, are easy to move, and can be used independently since they do not require a large area (Bryson et al., 2024). This approach focuses not only on increasing knowledge but also on encouraging the community to actively promote behavioral change from an early stage (Matthews et al., 2025). To address these issues, this community service project was carried out through outreach, education, and hands-on composting training including guidance on using bag composters for the Mawar II Posyandu group in Teluk Pucung, North Bekasi. It is hoped that these activities will improve the management of organic waste, starting at the household level, to create a healthier and cleaner environment (Hajam et al., 2023).

METHOD

The methods used to carry out this community service activity included lectures, self-directed training, and demonstrations for the women of the Mawar II Posyandu, accompanied by guidance from the team. These methods were implemented based on the needs of the partners, who required not only increased knowledge about organic waste management but also practical skills in processing food waste into compost that they could apply independently at home. This activity was carried out with the target audience being the women members of the Mawar II Posyandu residing in Teluk Pucung Village, North Bekasi Subdistrict, Bekasi City. There were 25 participants selected based on their strategic role as the primary managers of household activities, including the management of domestic waste and food scraps. This group was chosen because initial observations indicated that most participants had not yet been sorting and processing organic waste on their own, thus requiring improved knowledge and skills related to *food waste* management.

This activity took place in Teluk Pucung Village, North Bekasi Subdistrict, on Saturday, July 26, 2025. The event involved a team of faculty members and students as facilitators, as well as the Mawar II Posyandu committee as partners in coordinating and mobilizing participants. The materials used included organic waste consisting of fruit peels, vegetables, and dry leaves, as well as compost activator and water. The tools and equipment used included compost bags, gloves, a small shovel, a bucket, a trash scale, educational leaflets, posters, evaluation forms, writing utensils, a camera, and a cell phone.

The implementation of the activity was carried out in several stages. The first stage involved identifying issues through field observations and informal discussions with the core members of the Mawar II Posyandu management team to assess the status of household waste management and the community's needs regarding food waste reduction. The second stage was program planning, which included developing educational materials, procuring tools and supplies,

designing evaluation instruments, and setting the activity schedule. The third stage involved coordinating with partners to agree on the timing, location, implementation mechanisms, and division of roles during the activities. The fourth stage focused on the implementation mechanisms and division of roles, beginning with a presentation on the environmental and health impacts of food waste, the importance of sorting organic waste, and the benefits of composting for households. This is followed by a demonstration of how to use the composting bag and hands-on practice by the participants. At this stage, participants are given the opportunity to try the composting process, starting from sorting organic materials, simple shredding, mixing the materials, adding an activator, to placing the materials into the composting bag. The fifth stage involves follow-up support after the training to ensure participants are able to apply composting techniques independently at home. This follow-up support is carried out through field visits and regular communication to monitor the progress of compost bag usage, identify challenges faced by participants, and provide solutions to problems that arise during the composting process.

The methods used to collect data included observation, questionnaires, and documentation. Observations were conducted to assess the participants' ability to use the compost bag. Questionnaires were used to measure the participants' level of knowledge through pre-test and post-test surveys. The evaluation instruments used included observation sheets for participants' skills and questionnaires on knowledge of organic waste and food waste management. The data obtained were then analyzed using a quantitative descriptive approach.

RESULTS AND DISCUSSION

The activity began with coordination with partners to identify environmental issues, particularly regarding organic waste management in households. The results of the observations indicated that residents still lack the necessary skills for managing organic waste. Therefore, the activity focused on education regarding food waste reduction and training on the use of compost bags as a simple technology for managing household organic waste (Nguyen et al., 2022). The activities included presentations on the environmental and health impacts of food waste, an introduction to the concept of organic waste management, and a demonstration of how to use compost bags (De Boni et al., 2022). All participants actively engaged in the activities, from the educational sessions through to the hands-on field practice.

Table 1. Characteristics and Participation of Activity Participants

Characteristics	Number (n)	Percentage (%)
Number of Participants	25	100
Attended the entire event	23	92
Participated in Composting Workshop	25	100
Active participation in asking questions and discussions	20	80
Willing to use the Komposter Bag at home	22	88



Figure 1. Outreach and Presentation of Materials Related to Composting

Table 1 and Figure 1 show an increase in participant engagement in this community service program. Most participants took part in the entire series of activities and demonstrated high enthusiasm throughout the educational process and practical training on using the bag composters. One indicator of the program's success is the increase in participants' knowledge regarding food waste, waste sorting, and organic waste processing. Participants then completed questionnaires before and after the activities took place.

Table 2. Pre-test and Post-test Results on Participants' Knowledge

Indicator	Pre-Test Score	Post-Test Score	Increase (%)
Knowledge of Food Waste	58	86	48.3
Knowledge of Waste Sorting	62	89	43.5
Knowledge of Composting	55	88	60
Average	58.3	87.7	50.4

Based on the results in Table 2, it can be seen that participants' knowledge increased from 58.3 to 87.7, representing a 50.4% increase. These percentage results indicate an improvement in participants' understanding of organic waste management and food waste reduction. In addition to increasing knowledge, this activity also aimed to improve participants' skills in processing household organic waste.



Figure 2. Composting practice conducted with the participants

The results of the hands-on session (Figure 2) show that nearly all participants were able to follow the steps successfully after receiving a demonstration and guidance. Participants also noted that the composter is easy to use because it does not require a large area and can be placed in a limited space around the house. Based on the results, 100% of the participants were able to follow the steps successfully after receiving guidance and were able to compost on their own.

The results of the study show that the use of compost bags, combined with education, training, and mentoring, can improve knowledge and skills in processing organic waste into compost at the household level (Riesnawa et al., 2025). A 50.4% increase in knowledge scores indicates a greater understanding of the impacts of food waste and the benefits of composting for both the environment and households. In line with the findings of the study (Manzoor et al., 2024), reducing food waste is one of the key efforts in supporting the achievement of sustainable development goals. One of the efforts needed to encourage behavioral change among the public is continuous education (Riesnawa et al., 2025). In line with the study (Farahdiba et al., 2023), composting-based food waste processing technology is the most suitable approach to be implemented on a household scale in Indonesia.

The participants' high level of proficiency in using compost bags indicates that this technology has a high level of acceptance among the public (De Feo, 2025). Compared to

conventional composting methods, compost bags are more flexible, easier to move, and do not require a large area. These factors are major advantages for urban communities with limited space. Research findings [Manea et al. \(2024\)](#) indicate that simple composting technology can be one solution for reducing household waste, particularly organic waste. From an environmental perspective, the expected positive impact is an increase in efforts to reduce waste at the source ([Abubakar et al., 2022](#)). Inadequate and improper waste management can lead to pollution and increase health risks for the community ([Abubakar et al., 2022](#)). Thus, reducing food waste through household composting can serve as a preventive strategy to optimize environmental quality in the community ([Schulte et al., 2020](#)). The success of the program was supported by high participant engagement, partner support, the use of easily understandable educational materials, and hands-on methods that allowed participants to gain real-world experience. A limitation of this community service initiative was the lack of ongoing monitoring of the community. It is hoped that collaboration with partners can become an integral part of long-term evaluation and monitoring ([Lim et al., 2026](#)).

Based on the overall results, it can be concluded that this community service program has successfully enhanced the community's knowledge and awareness regarding waste management ([Marodiyah et al., 2023](#)). This program can serve as a role model for other areas in urban regions with similar characteristics. This community service initiative aligns with Sustainable Development Goal 11 (Sustainable Cities and Communities), which supports the achievement of sustainable development (sustainable cities and settlements) ([Guo, 2025](#)).

According to a study at [Sinha et al. \(2024\)](#), food waste management practices support the sustainability of the food system and the efficient use of resources. The use of compost bags at the household level is a concrete step toward converting organic waste into compost ([Azteria, 2023](#)). The benefits of this community service activity are not only felt directly by the participants but also contribute to improving environmental quality ([Sattayapanich et al., 2022](#)).

CONCLUSION

Efforts to increase public knowledge and awareness regarding organic waste management have been successfully implemented; 100% of participants were able to follow the steps properly after receiving guidance and are now composting independently. The use of bag composters has proven to be a simple, practical technological alternative well-suited to urban residential areas with limited land availability. This initiative has had a positive impact by increasing the public's knowledge of managing organic waste into compost, the results of which are highly valuable. An effective solution that can be implemented to improve environmental quality is the use of the komposter bag method. Moving forward, regular guidance and monitoring are needed to ensure the sustainable use of komposter bags at the household level and to expand the program's reach to other community groups so that the benefits of the initiative can be fully realized and effectively implemented.

ACKNOWLEDGMENTS

The author would like to thank the Research and Community Service Institute of Esa Unggul University and the volunteers at the Mawar II Posyandu in Teluk Pucung, North Bekasi, for their contributions to the internal grant, which enabled this project to be successfully carried out.

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