SNCSR: Siber Nusansara of Community Service Review
E-ISSN: 3089-0969
+62 822 1012 3600 https://research.e-siber.org/SNCSR siberpublisher.info@gmail.com
DOI: https://doi.org/10.38035/sncsr.v2i2
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Received: 05 Mei 2026 |Revised: 15 Mei 2026|Accepted: 23-Mei 2026

Community Empowerment through Layering Method Compost Making Training as an Effort to Sustainable Organic Waste Management

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Abstract: Household organic waste is an environmental problem that is still often not managed optimally, so it has the potential to cause pollution. This Community Service Activity (PKM) aims to improve community knowledge and skills in managing organic waste through training on making compost layering method in Nanggeleng Village, Citamiang District, Sukabumi City. The method used is Participatory Action Research (PAR) with the stages of problem identification, socialization, practical training, and monitoring and evaluation. The training was carried out by utilizing household organic waste which was arranged in layers between green materials and brown materials to support the decomposition process. The results of the activity showed an increase in public understanding, skills, and awareness in organic waste management as well as the ability to practice composting independently. This program contributes to reducing the volume of household waste and supports the creation of a clean, healthy, and sustainable environment.

Keyword: Community Empowerment, Organic Waste, Compost, Layering Method.

INTRODUCTION

The problem of household organic waste is still a serious challenge in environmental management, especially in urban areas with high levels of domestic activity. Organic waste such as food scraps, leaves, and kitchen waste dominates the composition of household waste and if not managed properly, can cause environmental pollution, bad odors, and become a

source of disease development. In Indonesia, source-based waste management is still an important focus in realizing sustainable environmental development, especially through reducing the volume of waste disposed of in landfills.

One of the areas that faces this problem is Nanggeleng Village, Citamiang District, Sukabumi City, which has quite high household activities and produces a significant amount of organic waste every day. Based on the results of initial observations, most people still manage waste in a conventional pattern, namely throwing it directly into temporary landfills or burning waste. This condition shows that the use of organic waste as a productive resource is still not optimal.

Processing organic waste into compost is one of the effective solutions in reducing the volume of waste while producing products that are beneficial to the environment and household agriculture. According to Purba et al. (2023), processing organic waste into compost can be a strategic step in preserving the environment because it can reduce pollution while increasing public awareness of the importance of waste management. Compost produced from organic waste also has ecological benefits in improving soil quality and supporting plant growth.

The success of organic waste management is highly dependent on the active involvement of the community. Nasution and Nasution (2025) explained that community empowerment in organic waste management is an effective approach to increase community capacity, knowledge, and skills in processing waste into compost. Through a participatory approach, the community can become the main actor in household-based waste management, so that the sustainability of the program is more guaranteed.

Practice-based training is also an important factor in improving composting success. Saputra et al. (2025) stated that the community training model in organic waste processing has a positive impact on improving technical skills and community understanding of the composting process. This is reinforced by Wahyudin et al. (2023) who stated that organic waste processing workshops are able to increase community participation and encourage behavioral changes in household waste management.

One of the simple and easy to apply composting techniques by the community is the layering method, which is a technique of layering organic matter between green material and brown material to create a balance of carbon and nitrogen in the decomposition process. This method is effectively applied at the household level because it is easy to do, low cost, and the raw materials are easy to obtain. Istighfaroh et al. (2024) emphasized that innovations in simple composting methods based on household organic matter can increase the effectiveness of waste management while producing quality compost.

Based on these conditions, Community Service (PKM) activities through layering method compost making training in Nanggeleng Village are a strategic step in increasing community awareness, knowledge, and skills in managing organic waste independently. This activity is expected to be able to reduce the volume of household waste, increase the use of compost for household needs and urban farming, and create a cleaner, healthier, and more sustainable environment. Thus, this training is not only a technical solution in organic waste management, but also an instrument for community empowerment in supporting sustainable environmental development.

METHOD

This Community Service (PKM) activity was carried out in Nangeleng Village, Citamiang District, Sukabumi City, with the main target of household communities as domestic organic waste producers. The method of implementing activities uses a participatory action research (PAR) approach, which is an approach that emphasizes the active involvement of the community in all stages of activities starting from problem identification, implementation of actions, to evaluation of results. This approach is considered effective in community

empowerment programs because it is able to build participation, awareness, and sustainability of the program through the direct involvement of participants in the learning process and practice. The participatory empowerment model in organic waste management has been proven to be able to increase public understanding and skills in managing household waste into products with useful value (Wahyuni et al., 2024; Ferbriani et al., 2022).

The implementation of activities is carried out in four main stages, namely problem identification, socialization and education, training in composting practices, and monitoring and evaluation. The first stage was carried out through field observation and group discussions (Focus Group Discussion/FGD) with the local community to identify household waste management patterns, community knowledge levels, and potential use of organic waste. This identification stage is important to ensure that the program is implemented in accordance with the needs of the community and the local environmental conditions. According to Nurjazuli et al. (2022), identifying community needs is the first step that determines the success of environmental empowerment programs.

The second stage is in the form of socialization and education about the importance of organic waste management, the negative impact of unmanaged waste disposal, and the benefits of composting in supporting a sustainable environment. At this stage, participants were given an understanding of the basic concepts of composting, the types of organic materials that can be processed, and the principle of carbon and nitrogen balance in the decomposition process. Environmental education is an important step in building changes in community behavior towards household waste management (Ferbriani et al., 2022).

The third stage is the core of the activity, namely training in composting practices using the layering method. This method is carried out by arranging organic matter in layers, starting from brown material such as dry leaves and paper as a source of carbon, then continued with green material such as vegetable waste and food waste as a source of nitrogen. Each layer is given a compost activator or a solution of microorganisms to speed up the decomposition process. The layering technique was chosen because it is simple, easy to apply by the community, and effective in producing quality compost on a household scale (Baharuddin et al., 2023; Azteria et al., 2025).

The last stage is monitoring and evaluation carried out to assess the level of understanding of participants, the success of composting practices, and changes in community behavior in organic waste management after the training. Evaluation was carried out through interviews, observation of composting results, and filling out a simple questionnaire regarding the satisfaction and sustainability of composting practices in households. According to Wahyuni et al. (2024), monitoring and evaluation are an important part of ensuring the effectiveness of community empowerment programs and the sustainability of implementation in the field.

Through this participatory and applicable implementation method, PKM activities are expected to be able to increase the knowledge, skills, and awareness of the people of Nanggeleng Village in managing organic waste independently, so that they can support the creation of a clean, healthy, and sustainable environment..

RESULTS AND DISCUSSION

The implementation of Community Service (PKM) activities in Nanggeleng Village, Citamiang District, Sukabumi City showed positive results in improving community knowledge and skills related to organic waste management. The activity began with field observations and Focus Group Discussions (FGD) which showed that most people still manage organic waste by mixing it with inorganic waste, throwing it in temporary shelters, or burning waste. This condition shows that the use of organic waste as a productive resource is still not optimal. This finding is in line with research by Ferbriani et al. (2022) which states that low

public knowledge is one of the main factors in the lack of optimal source-based household waste management.

In the early stages of the activity, the implementation team conducted counseling and education to the community about the importance of proper organic waste management. The material presented included the negative impact of organic waste accumulation on the environment, such as the occurrence of bad odors, environmental pollution, and the potential for various diseases. In addition, the public is also given an understanding of the benefits of composting as one of the environmentally friendly and sustainable waste management solutions.

The results of the activity showed an increase in participants' understanding of the importance of organic and inorganic waste sorting. Participants began to understand that organic waste has the potential to be processed into compost that is beneficial to plants and the environment. This strengthens the findings of Wahyuni et al. (2024) that environmental education contributes significantly to changes in people's mindsets and behaviors in household waste management.

In addition to increasing knowledge, socialization activities also foster public awareness to start implementing the habit of sorting waste from their respective households. The enthusiasm of the participants can be seen from the active discussions and questions asked during the activity, especially related to how to make compost that is easy to apply in the home environment. With this activity, the community is expected to be able to implement organic waste management practices independently so that they can reduce the volume of waste disposed of in landfills and create a cleaner and healthier environment.



Figure 1. Socialization and Forum Group Discussion with the Community

At the practical training stage, the community directly practices composting using the layering method by utilizing household organic materials such as vegetable residues, fruit peels, dry leaves, and grass. The layering process is carried out by alternating brown material and green material and adding compost activators to accelerate decomposition. The results of the practice showed that participants were able to understand the stages of composting and apply it independently. This technique is considered effective because it is easy to do and the raw materials are available in the surrounding environment. This finding is in line with Baharuddin et al. (2023) who explained that simple household-based composting methods can increase community independence in organic waste management.

In addition to improving technical skills, this activity also resulted in a change in people's attitudes towards organic waste. Before the activity, waste is considered waste that must be disposed of, while after the training, the community begins to understand that organic waste can be converted into products of use value. This change in perspective is an indicator of the success of community empowerment programs. According to Nurjazuli et al. (2022), the success of waste management programs is not only measured by physical results in the form of compost, but also by changes in people's behavior and environmental awareness.



Figure 2. Compost Making Training

In terms of product yield, the compost produced shows good initial characteristics, such as a darker color change, a more crumbly texture, and a reduction in pungent odor after the decomposition process is carried out. This shows that the layering method is able to create conditions that support the activity of microorganisms in decomposing organic matter. Azteria et al. (2025) stated that the balance of carbon and nitrogen materials in the layering technique is the main factor in the success of the composting process.



Figure 3. Compost Fertilizer Training Products

In general, this PKM activity has a positive impact on increasing community capacity in household-based organic waste management. The success of the activity can be seen from the high participation of the community, the increase in knowledge and skills, and the emergence of a commitment to implement composting sustainably in their respective home environments. However, there are several challenges, such as limited mentoring time and community consistency in caring for compost until it is fully ripe.

The results of this activity confirm that the layering method composting training can be an effective model of community empowerment in supporting sustainable organic waste management. In addition to contributing to reducing the volume of household waste, this activity also has the potential to support urban farming practices and environmental greening in Nanggeleng Village. With continuous assistance and support from the village government, this program can be developed into a broader community-based environmental movement.

CONCLUSION

Community Service Activities (PKM) through layering method compost making training in Nanggeleng Village, Citamiang District, Sukabumi City have had a positive impact in increasing public knowledge, skills, and awareness of household organic waste management. Through a participatory approach, the community not only gains an understanding of the importance of sustainable waste management, but is also able to directly practice composting techniques using the layering method using organic materials available in the surrounding environment.

The results of the activity show that there is a change in the community's mindset towards organic waste, from what was previously considered waste to a resource that can be reused as compost with value for use. In addition, the layering method has proven to be a simple, easy-

to-apply, and effective composting technique in supporting the reduction of the volume of organic waste at the household level.

Overall, this program has succeeded in strengthening community capacity in organic waste management and encouraging the formation of sustainable environmentally friendly behaviors. Therefore, further assistance and support from the local government are needed so that composting practices can continue to run consistently and develop into a collective movement in creating a clean, healthy, and sustainable environment in Nanggeleng Village..

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