



Strengthening the Ecovillage Concept Through the KOMPAK Program Based on Organic Waste Processing into Compost Fertilizer in Segorogunung Village

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ABSTRACT

Segorogunung Village is one of the villages in Ngargoyoso District with considerable plantation potential. Plantation activities generate abundant organic waste; however, most residents still manage waste through open burning. This practice may cause negative environmental and health impacts, thus requiring more sustainable waste management alternatives. This community service program aimed to improve community understanding of organic waste management through the KOMPAK Program (Kompos Organik Masyarakat Produktif dan Berkelanjutan) as an effort to strengthen the ecovillage concept in Segorogunung Village. The activity was conducted on April 20, 2026, at the Segorogunung Village Hall involving local residents, Geography Education students of Universitas Sebelas Maret, the Segorogunung Village Government, and the Environmental Agency of Karanganyar Regency. The methods employed included observation, lectures, discussions, and compost-making demonstrations. Observation results indicated that plantation land use dominates the village economy and produces a significant amount of organic waste. Through socialization and practical composting activities, participants gained knowledge regarding the utilization of organic waste as useful compost fertilizer. The KOMPAK Program represents a community-based environmental management initiative that contributes not only to waste reduction but also to the sustainability of agricultural and plantation activities in Segorogunung Village.

Desa Segorogunung merupakan salah satu desa di Kecamatan Ngargoyoso yang memiliki potensi perkebunan cukup besar. Aktivitas perkebunan menghasilkan limbah organik yang melimpah, namun sebagian besar masyarakat masih mengelola sampah dengan cara dibakar. Praktik pembakaran sampah dapat menimbulkan dampak negatif terhadap lingkungan dan kesehatan masyarakat sehingga diperlukan alternatif pengelolaan sampah yang lebih ramah lingkungan. Kegiatan pengabdian masyarakat ini bertujuan untuk meningkatkan pemahaman masyarakat mengenai pengelolaan sampah organik melalui Program KOMPAK (Kompos Organik Masyarakat Produktif dan Berkelanjutan) sebagai upaya penguatan



konsep ecovillage di Desa Segorogunung. Kegiatan dilaksanakan pada tanggal 20 April 2026 di Aula Desa Segorogunung dengan melibatkan masyarakat setempat, mahasiswa Pendidikan Geografi FKIP Universitas Sebelas Maret, Pemerintah Desa Segorogunung, dan Dinas Lingkungan Hidup Kabupaten Karanganyar. Metode yang digunakan meliputi observasi, ceramah, diskusi, dan demonstrasi pembuatan pupuk kompos. Hasil observasi menunjukkan bahwa penggunaan lahan ekonomis yang dominan di Desa Segorogunung adalah perkebunan yang menghasilkan limbah organik dalam jumlah cukup besar. Melalui kegiatan sosialisasi dan praktik pembuatan kompos, masyarakat memperoleh pemahaman mengenai pemanfaatan sampah organik sebagai pupuk yang bernilai guna. Program KOMPAK menjadi salah satu bentuk pengelolaan lingkungan berbasis masyarakat yang tidak hanya berkontribusi terhadap pengurangan sampah, tetapi juga mendukung keberlanjutan sektor pertanian dan perkebunan di Desa Segorogunung.

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A. INTRODUCTION

Waste remains one of the environmental issues commonly faced by both rural and urban communities in Indonesia (Hasbiyah et al., 2026). As human activities continue to increase, the volume of waste generated also continues to rise (Darmin et al., 2026). Based on data from the Ministry of Environment and Forestry, approximately 60% of waste generated in Indonesia consists of organic waste, including food scraps, fruit peels, rotten fruits and vegetables, and dry leaves. If not properly managed, such waste can lead to various environmental problems.

One of the waste management practices still widely carried out by communities is open burning (Pramudya & Gusri, 2025). This method is often considered an easy and quick way to reduce waste volume. However, waste burning produces gas emissions and particulate matter that may negatively affect human health and environmental quality (Dujana et al., 2025). Therefore, environmentally friendly and sustainable waste management efforts are necessary.

In this context, the KOMPAK (Kompos Organik Masyarakat Produktif dan Berkelanjutan) Program offers a practical and community-based solution for organic waste management. Unlike conventional waste management activities that mainly focus on waste collection or disposal, the KOMPAK Program integrates environmental education, hands-on composting training, and multi-stakeholder collaboration involving universities, local government, the Environmental Agency, and the local community. This integrated approach not only reduces organic waste through compost production but also strengthens community participation, improves environmental awareness, supports sustainable agricultural practices, and contributes to the implementation of the ecovillage concept in Segorogunung Village.

Segorogunung Village, located in Ngargoyoso District, Karanganyar Regency, is an area with considerable plantation potential. Based on field observations conducted by the community service team, the dominant economic land use in the village is plantation land. The land use distribution in Segorogunung Village is presented in Figure 1.

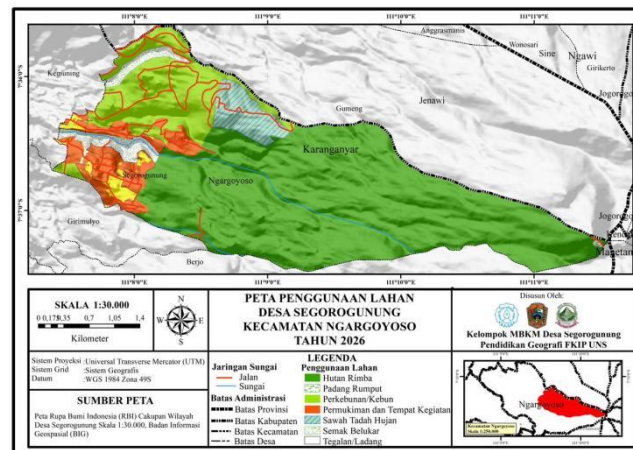


Figure 1. Land Use Map of Segorogunung Village

(Source: Personal Analysis)

Plantation activities generate various types of organic waste, such as leaves, branches, crop residues, and fruits that are no longer suitable for consumption (Holimah et al., 2024). Despite their potential for reuse, most of this organic waste has not been optimally managed and is often disposed of through open burning.

The ecovillage concept represents one approach that can be implemented to promote sustainable rural development. An ecovillage is a community-based development concept that emphasizes a balance between environmental, social, and economic aspects (Wulan, 2025). In the context of waste management, one implementation of the ecovillage concept is the utilization of organic waste as compost fertilizer that can be reused on agricultural and plantation land.

Compost is the product of organic matter decomposition by microorganisms and can be utilized as an organic fertilizer (Saidah et al., 2024). The use of compost not only helps reduce the volume of waste disposed into the environment but also improves the physical, chemical, and biological properties of soil (Mursida et al., 2024). Furthermore, compost utilization can reduce community dependence on chemical fertilizers, thereby providing potential economic benefits. Based on these conditions, the MBKM Team from the Geography Education Study Program, Faculty of Teacher Training and Education, Sebelas Maret University, collaborated with the Segorogunung Village Government and the Environmental Agency of Karanganyar Regency to implement the KOMPAK Program (Kompos Organik Masyarakat Produktif dan Berkelanjutan). This program aimed to provide education and practical skills to the community regarding the management of organic waste into compost fertilizer as an effort to strengthen the ecovillage concept in Segorogunung Village.

B. METHODS

The KOMPAK Program was conducted on April 20, 2026, at the Segorogunung Village Hall, Ngargoyoso District, Karanganyar Regency. The activity involved local residents, the majority of whom work as farmers. The methods employed in this community service program included observation, lectures, discussions, and demonstrations. The observation method was used to identify environmental conditions, dominant land-use types, and waste management practices carried out by the local community. The observation results revealed that plantation land constituted the dominant economic land use in the village and that a considerable proportion of residents still managed waste through open burning.



The success indicators of the KOMPAK Program were determined based on the achievement of both process and outcome aspects. Process indicators included the participation of community members in the socialization, discussion, and composting demonstration activities. Outcome indicators included participants understanding of the importance of organic waste management, their ability to explain the basic composting process, and their understanding of the potential use of compost fertilizer for agricultural and plantation activities. These indicators were assessed through direct observation of participant involvement during the activities and interactive question-and-answer sessions conducted throughout the program.

The lecture method was applied to provide participants with an understanding of the importance of organic waste management, the environmental impacts of waste burning, and the benefits of compost fertilizer for agricultural and plantation activities. Subsequently, the discussion method was utilized to encourage participants to share their experiences, concerns, and challenges related to waste management practices. The activity was then followed by a demonstration of compost production using an aerobic composting method based on organic waste materials readily available in the surrounding environment. During the demonstration, the Environmental Agency of Karanganyar Regency also introduced the use of activators and maggot-based decomposition techniques as alternative approaches to accelerate the decomposition process of organic waste.

C. RESULTS AND DISCUSSION

Segorogunung Village is one of the villages in Ngargoyoso District with considerable plantation potential. Based on observations conducted by the community service team, plantation land represents the dominant economic land use in the village, generating various types of organic waste such as leaves, branches, crop residues, and fruits that are no longer suitable for consumption. The utilization of organic waste as compost fertilizer represents an alternative waste management approach that can support environmental sustainability while simultaneously providing benefits for agricultural and plantation activities.

1.1. Identification of Environmental Potential and Challenges in Segorogunung Village

The observation results indicated that the dominant economic land use in Segorogunung Village is plantation land. This condition generates a considerable amount of organic waste, including leaves, branches, crop residues, and fruits that are no longer suitable for consumption. In fact, this organic waste has the potential to be reutilized as organic fertilizer. One example of such organic waste is presented in Figure 2.



Figure 2. An Example of Organic Waste

(Source: Personal Documentation)

On the other hand, some community members still manage waste through open burning. This practice is often chosen because it is considered simple and does not require additional costs. However, waste burning has the potential to cause air pollution and reduce opportunities for reusing organic materials that still possess economic and environmental value. Based on these conditions, a program is needed to transform organic waste into a useful product that can benefit the community.

1.2. Implementation of the KOMPAK Program

The KOMPAK Program was implemented on April 20, 2026, at the Segorogunung Village Hall. The activity was carried out through collaboration among university students, the Environmental Agency of Karanganyar Regency, the Segorogunung Village Government, and local community members.

The program began with opening remarks delivered by the Head of Segorogunung Village, Mr. Tri Harjono, who emphasized the importance of community-based waste management as an effort to preserve the village environment. The next speech was delivered by Aiyuhan Sorin, the Executive Head of the MBKM Program in Segorogunung Village, who explained the objectives and expected outcomes of the KOMPAK Program.



Figure 3. Opening by the Head of Segorogunung Village and the Program Coordinator

(Source: Personal Documentation)

Following the opening session, the Environmental Agency of Karanganyar Regency conducted a socialization session on the importance of organic waste management. The materials presented included the environmental impacts of waste burning, the benefits of composting, the basic principles of sustainable waste management, and the potential utilization of compost fertilizer to support the agricultural and plantation sectors. The community's enthusiasm was reflected in the high level of participation during the discussion session. Participants actively raised questions regarding the composting process, decomposition duration, and the utilization of compost fertilizer for plantation crops.



Figure 4. Socialization and Discussion Activities

(Source: Personal Documentation)

The activity continued with a hands-on demonstration of compost fertilizer production using organic waste. The demonstration employed a simple aerobic composting method that can be easily adopted by the community. Organic waste was selected because it is abundantly available in the surrounding environment and can naturally decompose. The Environmental Agency team also explained that the use of activators or Black Soldier Fly maggots can be applied to accelerate the decomposition process when necessary.



Figure 5. Compost Fertilizer Production Demonstration

(Source: Personal Documentation)

1.3. The Distinctive Features of the KOMPAK Program

The KOMPAK Program possesses several characteristics that distinguish it from environmental conservation activities in general. The program was designed based on observations of environmental conditions and land use in Segorogunung Village. The selection of the program was carried out by considering the village's characteristics, which are dominated by plantation activities, resulting in a substantial amount of organic waste. Through this approach, the KOMPAK Program integrates the concept of waste management with the strengthening of the ecovillage concept. Organic waste, which was previously regarded as waste material, is transformed into a resource that can be reused to support the agricultural and plantation activities of the community (Haryanti et al., 2025).

In addition to focusing on environmental aspects, the KOMPAK Program also involves multi-stakeholder collaboration among higher education institutions, the Segorogunung Village Government, the Environmental Agency of Karanganyar Regency, and the local community. This collaboration enables more effective knowledge and experience transfer in organic waste management. The utilization of compost produced from organic waste processing not only contributes to reducing waste generation but also provides potential economic benefits by reducing the need to purchase fertilizers (Sahri et al., 2025). The name KOMPAK, which stands for Kompos Organik Masyarakat Produktif dan Berkelanjutan, reflects the expectation that the community will be able to manage waste independently and



sustainably while making environmental conservation an integral part of daily life in realizing a more sustainable Segorogunung Village.

D. CONCLUSION

The KOMPAK Program (Kompos Organik Masyarakat Produktif dan Berkelanjutan) represents an effort to strengthen the ecovillage concept through the utilization of organic waste as compost fertilizer in Segorogunung Village. Based on the observation results, the dominant economic land use in the village is plantation land, which generates organic waste with the potential to be utilized as raw material for compost production. The implementation of the program, which included socialization, discussions, and compost-making demonstrations, received positive responses from the community. The program enhanced community understanding of the importance of environmentally friendly organic waste management while encouraging the utilization of organic waste as compost fertilizer to support the agricultural and plantation sectors. Through the KOMPAK Program, it is expected that the community will be able to implement sustainable organic waste management practices to support the realization of a more sustainable Segorogunung Village.

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F. AUTHOR CONTRIBUTIONS

The contributions of each author to the community service activities and the preparation of this article are as follows: Activity supervision and feedback: RN; Activity coordination and field management: AS; Field observation and data collection: ZN, RAR; Administrative preparation and activity permits: DNA, PA, IOW; Participant assistance during the activity: NNS, PH; Activity documentation: AH.

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