

TRAINING ON MAKING ORGANIC COMPOST IN THE COMPOST BAG METHOD AS A SOLUTION FOR WASTE HANDLING IN URBAN ENVIRONMENTS

Diah Arum Kusumajati ^{1*}, Laela Nur Raichana¹, Salma Faiqah Anggraeni¹, Rizqi Alya
Ma'arifah¹, Doni Nur Rohman¹

¹ UIN Sunan Kalijaga, Yogyakarta
*20103050052@student.uin-suka.ac.id

Abstract - *One of the biggest waste contributors to the environment is household waste. The easiest way to deal with household waste is by separating organic waste from inorganic waste. Organic waste such as vegetable waste, seasoning waste, and fruit waste can be useful if processed properly by processing them into fertilizer. Besides being able to meet the needs of nutrients in plants, the activity of managing organic waste into compost can reduce the amount of waste in the environment. This composting training activity was carried out in Kandang Sapi RW 32 Hamlet. The purpose of this activity is to provide information to the public about household waste and the management of organic waste into compost. This real work lecture activity was carried out by holding a socialization which took place in the Krida Sana Warga building which was a meeting place for residents with 27 participants. This activity began with a presentation of material by KKN students then continued with a question and answer session and discussion and ended with a demonstration of the practice of making compost.*

Keywords: *Household Waste, Organic Waste, Waste Management*

1. INTRODUCTION

Based on data compiled from the National Waste Management Information System of the Ministry of Environment and Forestry in 2022, the highest percentage of waste generation in terms of type is food waste, which reached 40.8%. Meanwhile, from the source, household waste is 38.4%. Both food waste and household waste are included in organic waste, which comes from biological materials that can be decomposed by microorganisms. This can also include other waste such as vegetable waste, fruits, and leaves. Organic waste can be useful if managed properly, thus reducing the amount of waste in the environment. Although, organic waste is readily available both in the kitchen and around the house, but the knowledge of the community in managing waste is still minimal. To overcome this, a training activity on waste management is needed, with one of the techniques being the making of organic compost.

Some of the research that has been done is research on composting. (Sutrisno & Bagus Priyambada, 2019), has made solid compost fertilizer made from cow dung with a fermentation method using a bioactivator. Lukhi, et al. (2021), have conducted training research on making compost using organic waste from leftover vegetables, fruits, dried leaves, onion skins, garlic, and EM-4 solution as a bioactivator using a 20 L composter, making organic compost with the materials used, one of which is rice husks with the result that the speed of composting depends on the size of the organic material used with bioactivators and the homogeneity of the material which is a consideration in making compost (Ningsih et al., 2021).

Making organic fertilizer can be done using simple composting methods and tools. Organic waste processing tools are known as composters (Wardianti & Krisnawati, 2020). One of the simple composters, especially in urban areas with minimal land to dig holes in the ground, can use a bag composter that is simple and easy to find. Composting using this composter can be used in processing household organic waste which can later produce fertilizer and has a selling value (Ariandani et al., 2022).

Kandangapi RW 32, Jebres, Surakarta became the place for Group 252 KKN UIN Sunan Kalijaga Yogyakarta to carry out the flagship program, because based on field observations, the problem faced is that there is no independent organic waste management so that people dispose of household waste in temporary disposal sites, if no one manages and is left to accumulate it can become a problem and have a negative impact on health and disrupt the cleanliness of the area. Where the population increases, it will be directly proportional to the amount of waste (Miswar et al., 2021).

Given its importance in ensuring environmental and public health, it is necessary to control the production of a lot of waste (Arum et al., 2017). Not only to maintain health but compost is also important in improving soil structure, so it needs a creative idea to make compost in a simple way and can be done on a household scale (Cundari et al., 2019). So it is necessary to conduct training on making organic compost using the Compost Bag Method as a solution to handling waste in urban environments.

2. METHOD

In this study, a qualitative descriptive method is employed as an approach to address research questions related to general data such as interview results, observations, or narratives from the authors (Mulia Shitophyta et al., 2021). This method focuses on simple qualitative analysis with an inductive approach that commences with explanatory processes or events, ultimately leading to generalizations as conclusions from these processes or events (Wiwin Yuliani, 2018). This qualitative method aims to gain a deep understanding of the research object.

In this research, we will elucidate the implementation of a compost fertilizer production program, which is a part of the Real Work Experience (Kuliah Kerja Nyata) activities for students (Sukamara et al., n.d.). The researchers will delineate the entire process, starting from the initial stages to the final outcomes of this program, along with the impacts it generates. Data collection techniques employed in this study encompass various methods, including the collection of primary data through observation, interviews, documentation, and fieldwork, as well as the collection of secondary data through a review of relevant literature and previous research studies related to compost fertilizer production.

In this demonstration activity, the following tools and materials are required:

1. Tools needed:
 1. Ladle and bucket
 2. Gloves
 3. Composter
 4. Shovel
2. Materials needed:
 1. EM4 (Effective Microorganisms 4)
 2. Water
 3. Molasses
 4. Manure
 5. Soil
 6. Dry organic waste (dry leaves, wood powder, cardboard pieces)
 7. Wet organic waste (food scraps, vegetables, rice, fruit peels)

3. RESULTS AND DISCUSSION

The activity took place on Saturday, August 19, 2023, at 2:00 PM, starting with a briefing. It involved providing explanations to the participants about the knowledge or theory related to composting, offering them a simple guide on compost production, and then conducting a demonstration.



Figure 1. Documentation of compost-making training activity

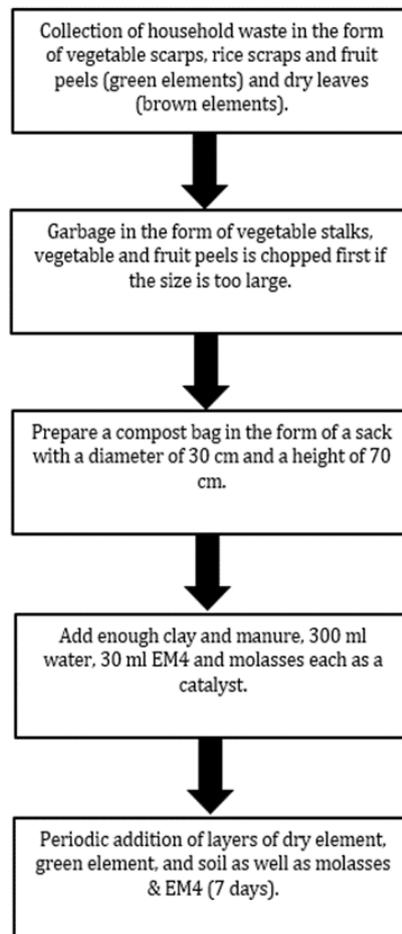


Figure 2. Composting Stages

The materials used in compost production are EM4 bioactivator (effective microorganism), water, stale rice, leftover vegetables, and fruit peels from households' kitchens. Based on the composting process outlined in the diagram, it is as follows:

1. Leftover vegetables, fruit peels, eggshells, tea grounds, and coffee grounds are separated from plastics and contaminants such as oil/fat, fish bones, meat scraps, and dairy products. These organic materials serve as the green component.
2. Dry leaves, wood powder, and cardboard pieces are prepared as the brown component.
3. If the organic waste from both the green and brown components is too large in size, it can be chopped or cut into smaller pieces to expedite composting.
4. Prepare soil mixed with manure, Em4, and molasses as a catalyst, along with water. The ratio of Em4, molasses, and water is 1:1:10, respectively.
5. Prepare compost bags as the medium for composting.
6. Place the organic waste, consisting of green and brown components in a 1:2 ratio, into the compost bag.
7. After adding the organic waste, mix it with a combination of clayey soil, EM4, molasses solution, and water.
8. Seal the composting container tightly and periodically add organic waste.
9. Ensure that the composting container is not contaminated by rainwater and is not placed in a damp location exposed to direct sunlight.
10. The results of this composting process can be harvested after 2-3 months.

Presentation of material regarding organic waste processing is provided through outreach carried out by students. In the presentation of the material, a general overview of organic waste, types of organic waste, a general overview of compost and stages of processing organic waste into compost fertilizer are explained. The tools and materials used to make compost fertilizer were also presented in this activity.

Delivery of organic waste processing techniques is carried out through direct training in making solid compost fertilizer using a composter (compost bag). The stages of making compost are in accordance with the manufacturing process described above. From the several stages of composting, it is important to know that cutting organic waste by chopping aims to reduce the particle size which affects the activity of microorganisms. The small particle size will increase the surface area, thereby increasing contact between microorganisms and organic materials and speeding up the decomposition process. The use of type microorganisms (EM4) as decomposing bacteria plays a role in decomposing organic matter. *Effective Microorganism 4* (EM4) contains around 80 fermentation microorganisms, including photosynthetic bacteria, *Lactobacillus* sp., *Streptomyces* sp., *Actinomycetes* sp., and yeast. The use of em4 as an inoculant aims to increase the diversity and population of microorganisms in soil and plants, which in turn can improve health, growth, and the quality and quantity of plant production, especially on a household scale. (Wididana, 1994).

During the presentation, many participants asked questions. This indicated the high interest of the participants in knowing how to make compost using organic waste and dry waste owned by local residents. The results of this socialization and training activity were that all participants were interested and enthusiastic in listening to and listening to material about compost and participating directly in training on

composting. Participants also actively asked questions related to organic waste processing materials. The achievement of the implementation of this activity is shown in the figure 3.

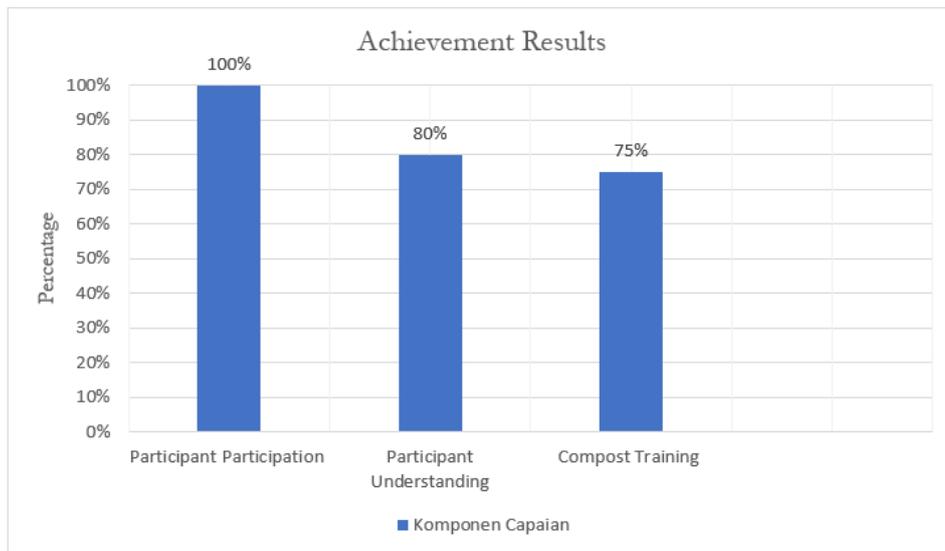


Figure 3. Results of composting training activities

In figure 3 it can be seen that the participation of the participants who attended the socialization and training on making compost reached 100%. This is in accordance with the target number of participants planned with participants attending, namely 30 people. The level of achievement of understanding the material is good, namely as much as 80%. This can be seen from the results of the post test given and filled out by the participants. From the post test, participants understood organic waste in general, types of compost and how to make compost so that there was an increase in understanding and knowledge received by participants regarding making compost. The results of the composting training were also categorized as good, reaching 75%. From this compost making training, participants already understand the materials and tools needed as well as the stages and how to make compost in a composter. The training achievements have not reached 100% because during the training the fertilizer results could not be seen directly and had to wait 2 months to be harvested. This made it difficult for the participants to ensure when the fertilizer was harvested and when the composting process ended.

The activity ended with the distribution of complete compost packages in the form of Em4 fertilizer, liquid molasses (sugar water), manure and soil mixed with compost that is ready to be composted. This program can be said to have been able to increase the knowledge and skills of the people of RW 32 Dusun Kandang Sapi Kelurahan Jebres, especially in processing organic waste into compost as a new product that is useful and increases sales value as well as a solution for waste management in urban environments. It is hoped that from this activity the residents of RW 32 Dusun Kandang Sapi can make their own compost from organic materials around them. This is also in order to achieve community self-sufficiency in utilizing the potential that

exists around it as a raw material for organic fertilizer to support food security, among others through the use of yards with vegetable plants.

4. CONCLUSION

Based on the results of the socialization activities for making compost, it can be concluded that the activities carried out in Kandang Sapi Hamlet, precisely in the Krida Sana Warga building, can provide skills and insight to the community about managing organic waste into compost and can increase public awareness to be able to protect the surrounding environment. It should be noted that these activities do not just stop on that day, but can be implemented at a later date.

REFERENCE

- Ariandani, N., Ermanda, S., & Fatmawati, B. (2022). Pelatihan Pembuatan Pupuk Kompos Dengan Memanfaatkan Limbah Rumah Tangga Di Lingkungan Bagik Longgek. *Absyara: Jurnal Pengabdian Pada Masyarakat*, 3(1), 137–143. <https://doi.org/10.29408/Ab.V3i1.5276>
- Arum,), Suhastyo, A., Program,), Agroteknologi, S., Banjarnegara, P., Raya, J., Km, M., Banjarnegara, K., & Tengah, J. (2017). *Pemberdayaan Masyarakat Melalui Pelatihan Pembuatan Pupuk Kompos Community Empowerment Through Composting Training*.
- Cundari, L., Arita, S., Nurul Komariah, L., Emilia Agustina, T., Bahrin, D., Raya Palembang -Prabumulih Km, J., & Selatan, S. (2019). Pelatihan Dan Pendampingan Pengolahan Sampah Organik Menjadi Pupuk Kompos Di Desa Burai. In *Jurnal Teknik Kimia No. 1* (Vol. 25). www.bps.go.id
- Miswar, D., Bernando, S., Prayoga, A., Ayu Wulandari, N., Eka Yasami, I., Mila Prambudiningtyas, D., Agung Laksono, K., & Albertine Hutauruk, G. (2021). *Pembuatan Pupuk Kompos Dari Limbah Organik Rumah Tangga Di Desa Gedung Harapan, Kecamatan Jati Agung, Lampung Selatan* (Vol. 1).
- Mulia Shitophyta, L., Amelia, S., & Jamilatun, S. (2021). Pelatihan Pembuatan Pupuk Kompos Dari Sampah Organik Di Ranting Muhammadiyah Tirtonirmolo, Kasihan, Yogyakarta. *Communnity Development Journal*, 2(1), 136–140.
- Ningsih, A. T. R., Surtinah, S., & Siswati, L. (2021). Tranformasi Koran Bekas Menjadi Bentuk Yang Bernilai Estetika Di Kelurahan Kedungsari Kecamatan Sukajadi Pekanbaru. *Dinamisia: Jurnal Pengabdian Kepada Masyarakat*, 5(4). <https://doi.org/10.31849/Dinamisia.V5i4.2265>
- Sukamara, D. K., Tengah, K., Anang, M., Peneliti, F., Pengkajian, D. B., Pertanian, T., Obos Km, J. G., & Raya, P. (N.D.). *Pelatihan Petani Plasma Kelapa Sawit Teknik Pembuatan Kompos 1*.
- Sutrisno, E., & Bagus Priyambada, I. (2019). Pembuatan Pupuk Kompos Padat Limbah Kotoran Sapi Dengan Metoda Fermentasi Menggunakan Bioaktivator Starbio Di Desa Ujung-Ujung Kecamatan Pabelan Kabupaten Semarang. In *Jurnal Pasopati* (Vol. 1, Issue 2). <http://ejournal2.undip.ac.id/index.php/pasopati>

Wardianti, Y., & Krisnawati, Y. (2020). Pelatihan Pembuatan Kompos Dari Sampah Organik Rumahtangga Dengan Metode Takakura. *Jurnal Cemerlang : Pengabdian Pada Masyarakat*, 3(1), 1-11. <https://doi.org/10.31540/jpm.V3i1.845>