

# Community Empowerment: Processing Household Organic Waste into Compost Using the Takakura Technique

**Pemberdayaan Masyarakat: Mengolah Sampah Organik Rumah Tangga Menjadi Pupuk Kompos dengan Teknik Takakura**

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## Abstract:

Household organic waste is produced from household activities every day. This garbage contains high water and rotten youth. High volume causes a buildup that pollutes the environment and becomes a disease outbreak. Improper management techniques can have negative impacts on health and the environment. An alternative to processing organic waste generated from household activities is composting, which turns household waste into compost. The process of composting can be done with the Takakura technique. The activities aimed to increase community knowledge in household organic waste management and provide skills in utilizing organic waste into compost using the Takakura method for one week. The methods used were education, training, and assistance in making compost using the Takakura method to residents and health cadres of RW 06 Sutorejo Village, Mulyorejo, Surabaya, totaling 14 people. The activity results showed that community and health volunteers could understand household organic waste and composters and could make compost from household organic waste using the Takakura method. This change in knowledge is evidenced by the increase in before and after education and the increase in participants' skills in making compost. Making compost from organic waste with the Takakura method is economical for every citizen and does not require high costs. Based on this service activity, continuous socialization and assistance are needed for residents to utilize household organic waste.

**Keywords:** household organic waste; Takakura method; health education; training

## Abstrak:

Sampah organik rumah tangga merupakan sampah yang dihasilkan dari aktifitas rumah tangga setiap hari. Sampah ini mengandung kadar air yang tinggi dan mudah busuk. Tingginya volume menyebabkan terjadinya penumpukan sehingga mencemari lingkungan dan menjadi wabah penyakit. Teknik pengelolaan yang tidak tepat dapat menimbulkan dampak negatif terhadap kesehatan dan lingkungan. Alternatif pengolahan sampah organik, yang dihasilkan dari sisa kegiatan rumah tangga adalah pengomposan, dimana membuat sampah hasil kegiatan rumah tangga menjadi kompos. Proses mengomposkan salah satunya dapat dilakukan dengan tehnik Takakura. Tujuan pengabdian masyarakat ini adalah meningkatkan pengetahuan masyarakat dalam pengelolaan sampah organik rumah tangga, dan memberikan keterampilan dalam memanfaatkan sampah organik menjadi pupuk kompos dengan metode Takakura selama 1 minggu. Metode yang digunakan adalah edukasi, pelatihan dan pendampingan pembuatan kompos dengan metode Takakura kepada warga dan kader Kesehatan RW 06 Kelurahan Sutorejo, Mulyorejo, Surabaya yang berjumlah 14 orang. Hasil kegiatan menunjukkan warga dan kader Kesehatan dapat memahami tentang sampah organik rumah tangga dan komposter, dan mampu membuat kompos dari sampah organik rumah tangga dengan menggunakan metode Takakura. perubahan pengetahuan ini terbukti dengan adanya peningkatan sebelum dan sesudah edukasi, serta peningkatan keterampilan peserta dalam membuat kompos. Pembuatan pupuk kompos dari sampah organik dengan metode Takakura ini mudah dilakukan oleh setiap warga, ekonomis serta tidak membutuhkan biaya yang besar. Berdasarkan kegiatan pengabdian ini maka diperlukan sosialisasi dan pendampingan yang berkesinambungan kepada warga untuk memanfaatkan limbah organik rumah tangga.

**Kata Kunci:** sampah organik; metode Takakura; edukasi; pelatihan

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## INTRODUCTION

Population growth, changes in food consumption patterns, and people's lifestyles impact the amount of waste generation, types, and diversity of waste characteristics. This condition is exacerbated by increasing population growth. The effect of increasing garbage accumulation every day causes water pollution, flooding, and hot temperatures (Putra et al., 2021). In addition to causing pollution, waste can cause socioeconomic disruptions and health problems. Therefore, the problem of increasing the volume of waste requires more serious handling, one of which is using environmentally friendly waste management (eco-friendly). Waste management that does not use environmentally friendly management methods and techniques can have a negative impact on health and interfere with the sustainability of environmental functions (Marliani, 2015). The most common type of waste produced is household waste (Subandriyo et al., 2012).

Community empowerment in managing waste is very important. Good management can create a clean and healthy environment and improve the community's economy. So far, waste management has yet to be optimal and still requires further education for the public. This phenomenon shows that many people need to learn how to manage waste in an environmentally friendly manner and how to use it. Some people handle waste by collecting, transporting, throwing away, or burning it in their yards without any sustainable action. Those activities will be new problems at the environment, including water, soil, and air pollution (Lestari & Fathurahman, 2021).

Surabaya is a big city, where in 2021 produced 578.169 tons of domestic and non-domestic waste per year or 1.585 tons per day (DLH, 2022). Seventy percent comes from household waste. Surabaya city government have been made a policy to handle the volume of waste produced, but the community does not understand how to manage waste properly. It has happened to residents of RW 6 Sutorejo who still manage their household waste by throwing it into the river, burning it, and throwing it in the rubbish bin.

Several activities to prevent and reduce garbage accumulation, 1) Reuse: reuse items that are generally only disposable; 2) Recycle: recycle waste; 3) Refuse and reduce: refuse the use of disposable items to reduce landfill; and 4) Repair: repair damaged items so that they can be reused (Taryono et al., 2021). The community must participate in the decision-making, management, and supervision of waste management. Community participation in waste management can consider each area Field's characteristics and socio-cultural order (Marliani, 2015).

Technology development encourages creativity in managing waste by utilizing nature and natural resources that are a product of great economic value and benefit (Jumiarni et al., 2020). Household waste is processed into compost or organic fertilizer. Composting can be used as an appropriate alternative to address the waste problems, because it is easy to make, cheap, and does not cause pollution (Rosmala et al., 2020). The advantage of organic fertilizers is that they are eco-

friendly and contain important ingredients in soil fertility for physical, chemical, and biological. In addition, it is an important nutrient for soil and plants (Puspadewi et al., 2016).

One of the composting techniques is Takakura Home Method Composting. This method is composting to recycle household waste. Takakura's composting method has advantages: 1. Practical because it is very suitable for homes with narrow land. The Wastebasket can be placed anywhere according to the needs and availability of land. 2. It's easy to put households into wastebaskets daily without special treatment, such as adding liquids or other additives. 3. It doesn't smell because it is a fermentation process, not a decay (Rezagama & Samudro, 2015).

The purpose of this community service is to increase community knowledge in managing household organic waste into compost using the Takakura method and teaching how to make compost using the Takakura method to improve skills and change the mindset of an environmentally conscious community for residents of RW 06, Sutorejo Village, Mulyorejo, Surabaya.

## IMPLEMENTATION METHOD

This community service was held from 20 to 26 June 2022 in RW 06, Dukuh Sutorejo Village, Mulyorejo District, Surabaya. The method used is education, role play, and demonstration. The stages of implementing community service include the first stage of conducting situation analysis, the second stage of planning a problem-solving with the residents of RW 06 Sutorejo, and the third, implementation.

### 1. Preparation stage

The implementation of the service began with a situation analysis by conducting interviews with healthy volunteers and giving questionnaires about the use of organic waste in the community. After obtaining the data, the coordinated program made a program agreement with the head citizens Association (RW) and Health volunteers, with solutions: first, increasing community understanding about the introduction of organic waste, how to sort waste, and how to use organic waste to become compost fertilizer. Second, training on making compost fertilizer.

The next step is to make media for health education, such as power points about organic waste management materials into compost, pre-post questionnaires for each activity, observation sheets, tools, and materials used for making compost.

### 2. Implementation stage

The service begins with providing health education about organic waste, how to sort waste, and how to use organic waste to become composter fertilizer. Before the presentation of the materials, participants are given a pre-test questionnaire containing about participants'

understanding of organic waste management. After the presentation material, a question-and-answer session and a post-test were conducted using the same questionnaire as the pre-test. These activities were carried out for 1.5 hours.

The second activity is training on making compost fertilizer and assisting in sorting household organic waste. This activity presented the material for twenty minutes, followed by questions and answers. The next activity was a demonstration about how to sort waste and make composters from organic waste. This activity was carried out for two hours. Participants were allowed to try making compost with assistance from devotees. The mentoring process after training is carried out online.

### RESULT AND DISCUSSION

Community groups involved in this service are health volunteers and community members in RW 06 Sutorejo, Mulyorejo, and Surabaya. Activities carried out are as follows.

#### 1. Education about composters

Educational about making compost fertilizer was done on June 20, 2022, attended by 14 people consisting of residents (PKK mothers) and health volunteers. The servant provides education about making compost, including the meaning of fertilizer, its benefits, and how to make it. The output of this activity is that residents and health volunteers can understand household organic waste and its management. Before the education, participants were asked questions about respondents' understanding of Takakura organic composters. The results of the knowledge of residents (PKK mothers) and health volunteers can be seen in the following table.

Table 1. Respondent's Understanding of the Composter

Knowledge	Before	After
	Frequency (%)	Frequency (%)
Good	4 (28.5)	10(71.5)
Enough	3 (21.5)	4 (28.5)
Less	7 (50)	0 (0)

Health education results show an increase in the understanding of residents (PKK mothers) and health cadres about organic composters. They can get new information from the learning process followed by (Lewin, 1999). By learning, individuals can explore what is hidden in them. So he can think and free himself from his ignorance (Notoatmodjo, 2012).



Figure 1. Educational activities about composters

In health educational activities, participants seemed very attentive to the material given. They said that all this time, household organic waste had been disposed of with other household waste.

## 2. Compost-making training

In this community service activity, the service team also provided a demonstration to the community about the procedures for making compost with the Takakura method. This activity was held on June 22, 2022, and attended by fourth peoples consisting of residents (PKK mothers) and health volunteers at Balai RW 6 Sutorejo Surabaya Village. The output from this activity is that residents and health volunteers can use compost Takakura from household organic waste independently.

The community servant explained the tools and materials prepared and the steps for making the Takakura composter (figure 2). Tools and materials needed include two laundry baskets with lids, used cardboard to taste, tile and black cloth to taste, seven packs of husks, one sack of compost pup, EM4 10 ml, and household organic waste to taste (Yulinda et al., 2021). Composting uses EM4 as a bio activator for the fermentation process more quickly.



Figure 2. Tools: Takakura composter materials

The steps for the demonstration of making compost using the Takakura method are as follows: after the tools and materials are prepared, mix the organic waste with the finished compost, and add EM4 as much as 10 ml (so that the composting process runs faster), then stir the mixture until smooth. The next step is to put the mixture into a basket with an arrangement from bottom to the top of husks, organic waste mixed with finished compost and EM4, cardboard, husks, and cloth covers, and then close it with a basket. The Compost can be used after 2-3 weeks of fermentation (Yulinda et al., 2021).

Compost can be harvested as much as 1/3 of the amount produced, while the rest can be used as a starter to mix the next organic waste, which will be processed into compost.



Figure 3. Takakura composting training

The results of this training were that all participants were interested and enthusiastic in listening to material about waste and participating directly in composting training. Participants also actively asked questions related to organic waste processing materials.

### CONCLUSION AND SUGGESTION

Based on community service activities, it can be concluded that residents and health volunteers of RW 06 Sutoreja, Mulyorejo, Surabaya have understood and can manage household organic waste using the Takakura method. This achievement can be seen based on the assessment results of increased participant understanding from 28.5% to 71.5% of participants in the good category. While measuring participants, all participants were interested and enthusiastic in listening to material about waste and participating directly in composting training. Community servant hopes that the community can independently process household organic waste with the Takakura method, which they can use and be developed into items of economic value.

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