

**MANAGEMENT OF ORGANIC WASTE INTO COMPOST FERTILIZER
PLANTING MEDIA IN TALANG BULUH DISTRICT, BANYUASIN
REGENCY**

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ABSTRACT

This journal discusses the management of organic waste which is converted into compost planting media in a short time, only in one second at the Buddhi Gardens of the New Culture Center, Talang Buluh, Banyuasin Regency. This study aims to explain the process of processing household waste into compost and used as a planting medium that is useful for life, as well as reducing waste generation, especially in Palembang City. The research method applied is a qualitative method with a case study and descriptive approach. The research instruments used included interviews, direct observation, documentation, and researchers as the main instruments. The data source used is the results of interviews with the founder, admin, and workers of Kebun Buddhi. The results of the study show that the waste problem is still an unresolved issue in Indonesia and the world, especially in the city of Palembang which produces around 1,180 tons of waste per day. Kebun Buddhi is here as an innovation to overcome this problem by managing organic waste to become a compost planting medium in a short time which is useful to improve the quality of plants and reduce the negative impact of organic waste on the environment and health. Apart from that, Kebun Buddhi also plays a role in educating the public about managing organic waste to become compost planting media, as part of efforts to support sustainable and environmentally friendly waste management programs.

Keywords: *Compost, Environment, Organic Waste, Waste Management*

INTRODUCTION

Environmental problems are widespread issues in various regions (Swain, 1996). Although not new, environmental problems have existed since humans

lived in the world (Hardoy et al., 2013, 2024; Kopnina, 2018). Human existence is one of the main factors that cause environmental problems. This occurs due to a lack of understanding of environmental ecology, so it is important to gain an initial understanding of environmental ecology to avoid the emergence of environmental problems (Phelia et al., 2021). In 1869, a German biologist named Ernest Haeckel discovered the concept of ecology. According to him, ecology is a science that studies the interaction between organisms and their environment (Bidin A, 2017).

Situations involving humans and the environment are issues that constantly require attention every day. One of them is the waste produced by humans in significant quantities every day. Waste management is still a major concern in Indonesia due to low public awareness of the importance of environmental conservation and waste reduction (Fitria & Prena, 2021). Waste is solid material produced by daily activities that has been discarded (Sulistiyorini, 2005). Waste, which is a type of solid waste, can come from various sources, such as households, markets, factories, or industries. According to Article 18 of the Waste Management Act of 2008, waste refers to solid residues formed as a result of human activities (Novita & Damanhuri, 2010).

Indonesia currently ranks fourth among the most populous countries, with 276.36 million people (Rismayanis et al., 2022). The large population leads to a high amount of waste generated by the Indonesian people. Unfortunately, there are still many Indonesians who do not take care of their environment, and dispose of waste out of place. Some household waste is even thrown into the river or left on the side of the road. These actions can damage the environment and potentially cause disasters for the community. With the population growing every year, the amount of waste generated also continues to increase.

Based on data from the Ministry of Environment and Forestry's National Waste Management Information System (SIPSN), by 2022 Indonesia will produce 18.9 million tons of waste, down from the previous year's 31.2 million tons. In 2021 the amount of waste generated per day was 85,000 tons, while in 2022 it decreased to 52,000 tons. This figure is related to the contribution of waste from various provinces in Indonesia, including South Sumatra which ranks as the sixth

largest waste producer in Indonesia, after Riau. South Sumatra produced 886,000 tons of waste in 2022, with a daily output of 2,400 tons of waste (Ghaffar et al., 2021). Palembang City in South Sumatra is the largest waste generator, producing a total of 1,180 tons of waste daily in 2022, totaling almost 430,000 tons of waste (Novita & Damanhuri, 2010). In 2022, Banyuasin Regency in South Sumatra was also the largest contributor of waste with 211,000 tons of waste (Tata et al., 2017).

The total amount of waste generated in Indonesia is very high, and most of it comes from household waste, reaching 39.63% in 2022. Food waste is the most common type of waste generated, reaching 41.55% in that year (Lia et al., 2023). As a result, Indonesia ranks as the second-largest food waste producer in the world in 2021 (Hapsari, 2024). To reduce the amount of waste disposed of in landfills, waste should be reprocessed so that it can be reused and reduce the negative impact on the environment.

In general, waste management with the 3R concept is an effort to reduce waste disposal through Reuse, Reduce, and Recycle programs (Damayanti, 2017). By applying the 3R principle, the amount of waste generated from the beginning to the end of the process can be reduced. It is important to implement effective waste management to prevent waste generated from becoming a burden to the environment and avoid environmental problems that may arise. Thus, organic waste management must be done properly, so that it can be recycled into planting media or compost. In this way, organic waste from households can benefit the environment. Given the above problems, it is clear that waste will never go away. Therefore, Indonesians can manage their waste to reduce the amount of waste generated in the country. For example, Ivonne Setiawati (Founder of Kebun Buddhi) in Banyuasin Regency developed an innovation by utilizing household waste as compost media for home planting. To manage waste, she opened a plantation called Kebun Buddhi Pusat Budaya Baru in Banyuasin Regency. The purpose of creating this garden is to reduce household waste and utilize it as a planting medium and fertilizer that can benefit the environment.

Kebun Buddhi is a garden that aims to provide quality and healthy food solutions. By providing vegetables and other garden products to the people who already understand that health is very important for the future, especially the

people of Palembang City and Banyuasin Regency (Sihotang, 2024). To produce quality fertilizer, he developed the idea of making promic biowash which is beneficial for the environment, especially in making compost or organic fertilizer. Compost made from promic bio-wash from organic waste can be produced in just one second.

Several researchers have researched how to convert organic waste into compost (Roma et al., 2023). Who have researched various methods to convert organic waste from household kitchen waste into compost in various regions. Based on these studies, it is clear that many researchers are interested in managing household organic waste through composting. However, the organic composting technique used is still old and takes a long time. Therefore, the purpose of this research is to find out how the process of making household waste (organic) into compost growing media. By using Biowash Promic which is managed at Buddha Garden Palembang City, the process of making organic compost fertilizer will be faster and more efficient.

RESEARCH METHODS

This research uses a qualitative method approach. According to Creswell & Creswell (2017), qualitative method is a research approach that aims to study and understand phenomena in depth. To understand this phenomenon, researchers conducted interviews with research participants using broad general questions. The information obtained is collected, and analyzed, and the results are summarized or described in a written report. Therefore, the researcher needs to have the necessary perspective and knowledge to obtain information from the subject under study, so that a more detailed investigation of the object of observation can be carried out. In research, more attention should be paid to the content and quality of what is relevant to the research. In this research, a case study approach is used, which according to Yin, the case study approach is an evidence-based method of investigation to study phenomena that occur in real life (Mandasari et al., 2024). Thus, this research emphasizes the importance of understanding the problems that arise in the social environment and presenting them in detail. Data collection techniques in qualitative research such as

interviews, direct observation, and documentation are used to obtain comprehensive data, which will then be analyzed. Research on the management of organic waste into planting media and fertilizer in one second at Kebun Buddhi uses a descriptive and case study approach with qualitative explanations.

RESULTS AND DISCUSSION

Waste banks are expected to become a community movement to manage waste, starting from the household, the potential for waste generation can be reduced. By using the basic principles of waste banks in the form of 3 R activities (reduce, reuse, recycle i.e. limit waste, reuse waste, recycle waste). The role of the government is needed in accommodating this problem by providing incentive assistance to waste collectors and sorters, this strategy is expected to motivate residents to care about waste management (Rahayu et al., 2023). Solutions are sought to foster the spirit of entrepreneurship for partners. As stated, entrepreneurship is a science that studies the values, abilities and behaviors in creating something new (business). This requires the implementation of creative and innovative ideas to obtain added value. Creativity means producing something that has never existed, while innovation modifies or develops something that already exists (Samtono et al., 2022). Product quality is maintained, product variety increases and product marketing is effective. Partners have a good understanding of organic waste processing and have successfully developed valuable new products.

One such urban area is the Surabaya area, which is increasingly dense with the challenge of integrating technology that can improve the quality of life of citizens. Rapid technological advances in the smart city concept require integrated technology that can be used to handle urban planning (Amifia et al., 2024). In this organic waste management process using a shredder, where training is needed on how to operate and maintain it properly and correctly (Mohamad Anas Sobarnas et al., 2024). Sustainable waste management is a form of responsibility for consumption and production that has been carried out, this is by the 12th goal of the Sustainable Development Goals (SDGs) (Handayani et al., 2021). The community sorts their waste at their respective homes, the sorted waste is then

transported to the processing site, then re-selection is carried out to ensure that there is no inorganic waste left, and then processed with Black Soldier Fly (Zahra et al., 2023). The burning of synthetic chemical waste (plastic, rubber, and styrofoam), produces toxic gases that worsen the quality of the air environment and endanger human fitness or health (Priyadi et al., 2023).

Good waste management can improve the quality of the boarding school environment. Recycling both organic and non-organic waste can increase the skills of students and make an economic contribution (Zulfa et al., 2022). Waste is an object and a substance that comes from the results of human activities, such as household activities, trade activities, office activities, industrial activities, and other activities (Evitasari et al., 2023). This counseling and training is expected to be the first step in pioneering household-scale businesses that depart from their respective household waste to strengthen the household economy (Sutarno et al., 2023). This waste comes from non-renewable natural resources. The types of inorganic waste are plastic bottles, used cans, glass or glass, newsprint, and styrofoam. From a biological point of view, this waste is difficult to destroy and requires a long time to be destroyed compared to organic waste (Sulistiyorini, 2005).

Naturally, organic materials in nature will undergo a decomposition process with the help of microbes and biota in the soil. Ecoenzyme is one way to convert organic materials into a solution that is environmentally friendly but has great benefits. Ecoenzyme was first introduced by Dr. Rosukon Poompanvong who is the founder of the Thai Organic Farming Association (Nurliah et al., 2022). The handling and management of home-grown organic waste has been well understood by residents. Apart from being intended for gardenization, residents also hope that the liquid fertilizer products can be of economic value and can be sold to increase family income (Juwariyah et al., 2021). The low level of awareness of residents of the existence of this waste will cause environmental problems, both directly and indirectly, which can threaten the health of the residents who live there.

Analyzing the composition and volume of waste generated is necessary before implementing a waste management strategy. The authors aim to develop

alternative waste management strategies and reduce the burden of existing waste accumulation (Idris & Aceh, 2018). Waste can be a problem if not managed, otherwise, it can be useful and economically valuable if you understand how to manage it (Yani et al., 2021). Waste is a problem in Indonesia and the presence of unorganized waste will cause adverse effects such as environmental pollution that damages the ecosystem (Ferronato & Torretta, 2019; Saha et al., 2021). Greening the environment is beneficial for life in the future. However, it is still often ignored by many people because there is no habit from an early age to do greening, such as getting used to planting tree seedlings on vacant land (Kariyasa & Suryana, 2016). Waste can cause losses because it will cause flooding, increase climate warming, cause foul odors, disturb beauty, worsen environmental sanitation, and threaten to increase various kinds of diseases (Yudhistirani et al., 2016).

Indonesia has a large population and the population continues to increase every year. This is why Indonesia is ranked as the fourth most populous country in the world. Based on data from the Central Statistics Agency, Indonesia's population is projected to be 265.77 million in 2022, an increase of 1.13% from the previous year's population of 272.68 million, one of which is South Sumatra Province.

Indonesia is ranked 10th in the world for having the largest population. The high population in a country can cause several problems, one of which is waste production and management. According to data from the Ministry of Environment and Forestry, waste production in Indonesia reaches 175,000 tons every day. On average, each individual in Indonesia produces 0.7 kg of waste per day. If calculated annually, Indonesia produces 64 million tons of waste, an astonishing amount that cannot be proud of. Moreover, 69% of waste in Indonesia is only disposed of in landfills, so the pile of garbage in the country is almost as high as the Borobudur temple. Household waste dominates national waste, as is the case in Palembang.

Palembang is a large city in Indonesia with an area of 400.61 square kilometers and a population of more than 1.7 million in 2022. Palembang is the second largest and most populous city in Sumatra, the city consists of 18 sub-

districts and 107 villages. It will produce a lot of waste with a high population density. DLHK Palembang City stated although waste production in the region exceeds 1,180 tons per day, only around 800-900 tons are successfully transported to the landfill every day. The amount of waste in Palembang City continues to increase over time, but the current waste transportation capacity is insufficient and completely inappropriate. The Sukawinatan Landfill (TPA) is also getting smaller, mainly because the amount of household waste is increasing every year. However, the volume of waste from households exceeds the daily average by about 1,200 tons. One resident of Palembang City established a Buddhi Garden in Talang Buluh Village, Banyuasin Regency, in response to the large amount of waste in the city.

Buddhi Garden New Culture Center

Kebun Buddhi is a facility that offers high-quality, nutritious, and healthy food sources. It is located in Talang Buluh Village, Banyuasin Regency, South Sumatra Province. With no urea, pesticides, herbicides, insecticides, or other chemical fertilizers, the garden provides a chemical-free food source. It typically uses waste products as its main resource, mainly household waste or waste from restaurants and hotels. The sorting and processing of these wastes allows them to be turned into compost and biowash, two growing media that help produce healthy, high-quality food. Biowash is an all-purpose liquid made to handle residue from food waste. Based on research conducted at Kebun Buddhi at the New Culture Center, researchers obtained data and the results of interviews with the founder of Kebun Buddhi on March 21, 2023, Ivonne Setiawati said:

"The idea of utilizing household waste as planting media such as biowash and compost was obtained after traveling around Indonesia. It turns out that people are reluctant to sort and process their waste, especially organic waste. This is because organic waste smells, takes a long time, is troublesome, and requires a lot of space to wait for the composting process. Therefore, Biowash Promic was created which is instant or super fast, odorless, easy to use, and can be used immediately".

From the interview, it can be said that Ivonne Setiawati is the manager of Kebun Buddhi who introduced the Biowash-Promic method in 2020. She then developed the idea by opening Kebun Buddhi which has been cultivated since June 2021. The purpose of this garden is to be an educational and demonstration tool for the surrounding community so that they can see first-hand the process and results that can be used as a natural and healthier food source. The surrounding community has responded positively and welcomed the Buddhi Garden.

Kebun Buddhi - The New Cultural Center was established because of a sense of concern for the importance of healthy food, especially in the city of Palembang. Indonesia at large is still not getting enough attention. Consumers tend to choose cheap and good-looking vegetables as their food source, without knowing the manufacturing process. Likely, these cheap and good-looking vegetables are still grown using chemical fertilizers and pesticides such as Urea. Therefore, it is important to increase understanding and educate the public about the origins of the food we consume daily.

Kebun Buddhi - Center for New Cultures is committed to providing quality, healthy, and sustainable food sources. Food is an important source of nutrition for the community, especially the younger generation. In addition, the community can also grow their healthy food sources by composting their organic waste and food scraps. Kebun Buddhi is also a processing site for organic waste and food waste from restaurants and households that cannot be processed by themselves. Kebun Buddhi was established with a vision and mission to raise awareness and concern among the community and the younger generation about the amount of waste they produce every day and the importance of consuming healthy and toxin-free food. The establishment of Kebun Buddhi did not receive any donations from the government. In an interview with Nita who is the admin of Kebun Buddhi on March 21, 2023, she said:

"The application of Biowash Promic allows Kebun Buddhi to turn waste into a source of nutritious food. Biowash Promic converts organic waste into a growing substrate and nutrients that are useful for plants. Besides being a source of healthy food, Kebun Buddhi is also an educational space. Visitors to Kebun Buddhi receive education on waste management, learn how to use

Biowash Promic to convert waste into growing media in just one second, and gain practical experience in the principles of nursery, planting, harvesting vegetables, and more".

Based on the responses given, Kebun Buddhi cultivates not only vegetables but also a liquid that helps healthy plant growth called promic biowash. Promic is a fruit fermented by a special technique and can also be processed into juice (juspro). The promic will then be mixed with organic waste to become Biowash Promic, and the compost produced at Kebun Buddhi does not use chemicals but uses materials made from household waste. Kebun Buddhi has a unique way of processing waste: "Olah Sampah 1 Detik" (One Second Waste Processing).

Kebun Buddhi aims to educate the community, including neighborhood residents, groups and schools. By conducting education and socialization efforts aimed at raising awareness about the adverse effects of waste on the environment, and demonstrating that waste can be turned into planting media in just one second using Biowash Promic. Kebun Buddhi also emphasizes the importance of waste segregation before being processed into planting media. Then, the harvest from Kebun Buddhi is marketed to the surrounding community, restaurants, and supermarkets.

Managing Organic Waste into

At Kebun Buddhi, the composting process utilizes an efficient organic waste treatment method using Promic's Biowash. Unlike the conventional composition method that requires heat to produce a usable composition or finished product, the current procedure produces no heat, making it environmentally friendly. Besides the extremely fast time, the use of Promic's Biowash on organic waste also reduces odor and avoids the arrival of Diptera flies. Although the possibility of fruit flies (Tephritidae) and BSF flies (*Hermetia illucens*) remains. Here's how to process waste in 1 second:



Figure 1. One Second Waste Management with Promic Biowash

Source: kausalestari.com

Biowash is a natural cleaner from organic waste but not oily organic waste, such as food waste, rice, tofu, tempeh and the like. Besides being used as a substitute for chemical cleaners, and can be a planting medium, promic biowash also has many benefits, namely, to compress (eyes, burns, pain, swelling, etc.), can also be used to brush teeth, if warmed for mouthwash for toothache or canker sores and if watered into ditches or ponds or rivers, to neutralize water and the environment (contribute to nature). As said by a Buddhi Garden worker on March 21, 2023, named Joko, he said:

"Biowash has no expiration date or lasts forever".

Promic can also be drunk directly and used as a starter to make Promic fermented drinks (Juspro) according to family health needs. Promic is a fermented fruit juice that has a consortium of good microbes (probiotics) that complement our body's microbiome. Promic has also been registered by BPOM so we can be sure that all the ingredients used in it use good and safe ingredients. Promic is also 20 years of natural development. No sugar or chemical additives or cultures, vegan, and certainly halal. How to make promic juice, namely:



Figure 2. How to make Promic Juice

Source: kausalestari.com

There are several ways to consume juspro according to the tastes and abilities of each person who consumes, namely by: every morning and night drink 100-200ml of juspro, can be mixed into smoothies, juices, coffee or tea, can be drunk cold or hot / warm, to lose can to lose and gain weight, and can be consumed by pregnant and lactating women. In addition, it can also be consumed by babies 0-6 months to seniors.

The steps in making the mulch/planting media include: spreading and arranging all the waste into mulch/planting media, sprinkling cow dung on top of the waste (either new or old), sprinkling lime on top of the cow dung layer, sprinkling burnt husks on top of the lime layer, watering with diluted Biowash. At this stage, watering should be done evenly and thoroughly to the surface litter layer. If the watering is uneven and not thorough, it may cause failure or trigger the occurrence of heat that can lead to plant death. After that, the seedlings can be transplanted or planted immediately (in an instant, 1 second).

The composting process without Biowash Promic or conventional composting techniques can also turn organic waste into compost soil. There are

various composting techniques that already exist but without Biowash Promic the composted waste will still go through a process where the waste releases heat or methane gas. This process is inevitable because the high temperature of methane gas produced by organic waste aims to sterilize weeds, kill pathogens and pests in organic waste so that it takes a long time until the process is complete and then decomposing animals can work to break down the organic waste. With Biowash Promic waste does not go through this stage, when organic waste is watered with Biowash, the microbes in Biowash will immediately kill pathogens in organic waste and decomposing animals can immediately work to decompose.

With Biowash, organic waste can decompose faster than conventional composting techniques in general, this happens because when we discuss waste with Biowash, the waste will not emit heat or methane gas, this makes decomposers such as ants, worms, maggots and others can immediately work to decompose waste. If in general. The way Biowash Promic works is not to change the form of waste immediately into compost soil but with Biowash Promic organic waste changes function, instantly (1 second) it can become nutrients for plants without causing odor and heat so that it can speed up the decomposition process.

The stages in making fertilizer or planting media for commercial purposes or packaging and sales are as follows: Organic waste is crushed using a shredding machine, ensuring that organic waste enters the machine smoothly, watering with diluted biowash, the planting medium is ready for use after two days and resembles months of compost. Then, mixing cow dung, lime, and stirring it with the diluted biowash, it is ready for packaging and marketing. Using this method, dry and hard soil can be turned into fertile soil within 1-3 months. Promic biowash with a 1-second waste treatment process can restore soil and increase soil nutrient content. As shown below:



Figure 3. Soil difference before and after using Promic Biowash liquid

Source: Kausalestari.com

As said by the Admin of Kebun Buddhi, sister Nita, she said that Kebun Buddhi also held a PIL PANIK Movement (Sort Organic Waste), where Kebun Buddhi invited restaurant or household managers to classify waste. Waste is divided into organic and non-organic. The Kebun Buddhi team will pick up the separated organic waste. Buddhi Garden provides a bucket as a replacement container that will be exchanged for a bucket that has been filled with organic waste. Organic waste that can be processed at Kebun Buddhi are:



Figure 4. Segregated Organic Waste

Source: Kausalestari.com

The waste collection schedule is 3 times a week, every Tuesday, Thursday, and Saturday. 15 places donate their waste to the buddhi garden. On every pick-up day, there is about \pm 1 ton of waste generated from all places, such as restaurants, restaurants, and hotels. From October 2021 - to December 6, 2022, Kebun Buddhi managed 70,027kg of waste or around 70 tons of waste that has become fertilizer and planting media. Therefore, the existence of this buddhi garden can help reduce waste in Palembang City.

CONCLUSION

This waste production problem is particularly acute in metropolitan cities such as Palembang City. With a high population density, it faces significant waste management issues, with an estimated 1,180 tons of waste generated daily, yet only 800-900 tons are successfully transported to the landfill. The situation is exacerbated by the fact that the landfill is already overcapacity. Kebun Buddhi is the solution to this problem, providing a new cultural center in Talang Buluh Village, Banyuasin Regency, which focuses on producing high-quality, nutritious, and chemical-free food sources by utilizing waste, especially household and restaurant/hotel waste, as its main material source. This is done by converting waste into compost and other growing media to create healthy food sources.

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