

Utilization of Plastic Waste as Planting Media in Efforts to Handle Inorganic Waste

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Utilization of Plastic Waste as Planting Media in Efforts to Handle Inorganic Waste

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ABSTRACT

Plastic waste is one of the wastes generated from human activities and is classified as inorganic waste. Inorganic waste is difficult or cannot be decomposed, especially if the plastic is made of non-biodegradable materials. The increase in plastic waste is one of the problems faced by all parties and can threaten environmental sustainability. Efforts that can be made to minimize plastic waste are to recycle plastic waste into valuable products, such as planting media. The purpose of this community service activity is to manage plastic waste into planting media. This aims to minimize environmental pollution due to plastic waste, especially plastics that are classified as non-biodegradable. The methods used in this activity are lectures and demonstrations. The activity was attended by 37 people consisting of village officials, PKK mothers, and Karang Taurna of Blimbing Village, Kediri Regency. In this PKM activity, the participants seemed enthusiastic about participating in a series of activities from waste management education and also demonstrations in making planting media. In this activity, it is known that there is an increase in participants' knowledge about good waste management. As a follow-up effort, similar and relevant activities are needed so that public knowledge and awareness of the importance of good and correct waste management will increase, so as to create a healthy and sustainable environment.

Keywords: Education; Growing Media; Plastic Waste; Performance; Nonbiodegradable

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1. Introduction

Waste is the result of natural and human activities that have no or no economic value, tends to be waste that can pollute the environment, so it can become a big problem if not handled properly (Apriyani, 2020; Hamdani, 2022; Darmastuti, 2020). Waste is classified into two types, namely organic waste and inorganic waste (Astuti, 2022; Mulyani, 2022). Management of non-hazardous organic and inorganic waste can be done through community empowerment by processing waste into useful and economically valuable products. Plastic is one material that is widely used in the manufacture of household appliances, food containers, automotive, and so on. This is because the price and costs incurred are relatively cheaper than using other materials (Septiani, 2019). The use of plastic in daily activities has increased the production of plastic waste. This is a new problem for environmental cleanliness and needs to be done waste management, especially good plastic waste. This is because most of the plastic waste produced is non-biodegradable (Septiani, 2019).

Waste management includes collection, transportation, recovery, and disposal of waste, as well as supervision of operations and maintenance after disposal sites (Maria, 2020; Kurniawan, 2020; Damanhuri 2010). Waste management requires strategic planning that can

prevent environmental pollution and conservative resources, minimize the amount and toxicity of waste creation, choose the best waste management with regard to applicable laws, and make decisions with the least effect and consequences (Ferdous, 2021; Ps, 2008). Turning waste into valuable and economical materials involves a number of waste management measures that can be applied (Suraji, 2018; Pranata, 2021). Plastic waste recycling is one of the community empowerment efforts aimed at maintaining environmental cleanliness (Nadjib, 2022). One of the efforts to reuse plastic waste is to utilize plastic container waste into planting media. The utilization of plastic waste into planting media is very easy and can be done by anyone and anywhere.

Blimbing Village is one of the villages located in Mojo sub-district, Kediri district, East Java province, located under the slopes of Mount Wilis with an area of approximately 152.29 ha (Prasaja, 2022; Prodyanatasari, 2023). Based on the demographics of the hilly Blimbing Village area, the road access to the village is slightly constrained. This is one of the factors in the significant difference between Blimbing Village and the village directly adjacent to Blimbing Village, Kraton Village. The majority of people in Blimbing Village work as farmers and cattle breeders and have an average education of junior high school graduates, which inhibits the village's progress (Prodyanatasari, 2023). In Blimbing Village, there are still people who are illiterate. In addition to education problems, Blimbing Village still lacks knowledge about environmental health, including proper waste disposal. The majority of villagers dispose of garbage in the river. This results in environmental pollution and water pollution. In addition to dumping in the river, residents are also accustomed to burning garbage, which can pollute the air and cause respiratory problems due to carbon monoxide gas produced from the combustion process. Inappropriate waste disposal is carried out by residents because there are no or limited landfill facilities and waste transporters. This is because the terrain to Blimbing Village is quite far and difficult to reach. Efforts to minimize improper waste disposal require education and good waste management. One of the waste management efforts that can be carried out by the people of Blimbing Village is the utilization of plastic waste into planting media.

2. Method

Community Service activities (PkM) were carried out in April 2023 in Blimbing Village, District, Kediri Regency. PkM activities are carried out through 4 (four) stages, namely: (1) licensing, (2) initial survey, (3) implementation of activities, (4) monitoring and evaluation. In the first stage, permission was given to the Blimbing Village apparatus regarding the PkM activity plan to be implemented as well as permission to conduct an initial survey. After the first stage obtained permission from the village head, then the second stage will be carried out, namely the initial survey. This initial survey includes: (1) observation of the situation and condition of the Blimbing Village community and (2) interviews with random villagers. In this survey activity, information was obtained related to the level of knowledge, health, and public awareness of environmental hygiene, one of which is the habit of disposing of garbage. In the third stage, the implementation of PkM took place at the house of the Head of Sanan Sub-Village, Blimbing Village. The implementation of the Mini PkM activity was divided into two sessions, namely: (1) waste sorting education delivered by giving lectures and (2) demonstration of making planting media from household plastic waste. The target of this activity was the entire Blimbing Village Community, where the activity was attended by village officials, PKK women, and youth organizations with a total of 37 participants.

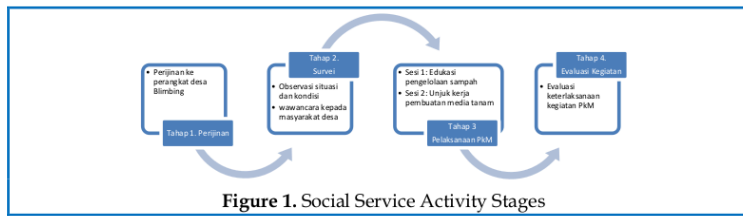


Figure 1. Social Service Activity Stages

3. Result and Discussion

The PKM activity with the title **Utilization of Plastic Waste as Planting Media in Efforts to Handle Inorganic Waste** is one of the simple efforts that can be done by each individual in minimizing plastic waste, so as to prevent the environment from the dangers of plastic waste pollution, the majority of which cannot be biodegradable. The implementation of this PKM activity was carried out through two sessions, namely: (1) session 1 which contains waste management education and (2) demonstration of plastic waste management into planting media. In session 1, the speaker who was the activity implementation team conveyed information related to various categories of waste, including: based on the type there is organic waste and inorganic waste, based on the form there is liquid and solid waste. Every human and natural activity must produce waste, one of which is household activity, which will produce waste in the form of both solid and liquid waste, as well as organic and inorganic waste. The majority of village communities directly dispose of waste generated from household activities without sorting and managing waste. However, what is very unfortunate is that the waste disposal has not been done properly. This is because many people still throw garbage in the river, polluting the river and causing unpleasant odors. In addition, some people burn garbage, so that this burning activity produces carbon monoxide gas which can pollute the air and can cause respiratory problems and respiratory infections. In session 1, the community was given education about waste management that can be done to minimize the negative impact of the waste. In this session 1, after the education was carried out, it was continued with questions and answers. In the question and answer process, participants seemed enthusiastic about asking questions and listening to answers from the resource person, and residents also understood the importance of good waste management. It is hoped that the activities in session 1 can increase the awareness of the Blimbing Village community to maintain cleanliness and environmental sustainability, especially in managing household waste properly.

The end of session 1 in this PKM activity was followed by session 2, which was a demonstration of planting vegetable seeds by utilizing plastic waste. In this session, the demonstration was carried out with the participants of the activity who were the youth organization of Blimbing village. The activity began by preparing the tools and materials needed in the demonstration, including: (1) plastic waste that has been cleaned (can be mineral glass bottles, cooking oil containers, food wrappers, etc.), (2) scissors, (3) solder, (4) shovels, (5) soil, (6) firewood, and (7) vegetable seeds (such as chili, tomato, and eggplant). Next, the used bottles and plastic containers that have been cleaned are cut in half in a 3:1 ratio, and the bottom of the container is perforated using solder. This is to serve as a drainage hole and prevent the accumulation of minerals that are not needed by the plants, such as salt.



Figure 2. Cutting and perforating plastic containers (Source: dokpri)

The next step is to prepare the planting media by mixing soil and burnt husk with a composition of 1: 2 and the planting media is ready for use. Then after the planting media is ready, put the planting media into a plastic container that has been perforated with a height close to the top end of the container.



Figure 3. Mixing soil and burnt husk, and putting it into a plastic container (Source: dokpri)

After all the containers have been filled with a mixture of soil and firecracker husks, then each container is randomly given vegetable seeds. The vegetable seeds that have been prepared are chili, tomato, and eggplant seeds. Then each container was watered sufficiently. After all series of activities from sessions 1 and 2 were completed, at the final stage of the whole activity an evaluation of the activity was carried out by the implementation team and the results obtained that this activity as a whole went well and smoothly, and other relevant activities were needed as an effort to optimize household waste management in order to minimize environmental pollution due to improper waste disposal.

4. Conclusion

The utilization of plastic waste as planting media in an effort to handle inorganic waste can be an alternative in minimizing inorganic waste, especially non-biodegradable plastic waste and can reduce the level of environmental pollution due to plastic waste. Similar and relevant activities need to be carried out in an effort to increase public awareness of the importance of good and correct waste management in order to create a healthy and sustainable environment, such as managing household organic waste into valuable products, such as liquid fertilizer, solid fertilizer, and ecoenzymes. In addition, similar activities need to be carried out in an effort to manage inorganic waste classified as hazardous and toxic materials (B3).

5. Acknowledgement

Thank you to the Blimbing Village Officials, the community and the Karang Taruna of Blimbing Village Youth Organization who have facilitated, helped and played an active role in this PkM activity so that this activity can take place smoothly and can be one of the options in efforts to maintain environmental cleanliness and can improve the green economy of the village community.

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