

MANAGEMENT OF ORGANIC WASTE INTO ECO ENZYME IN ULAKAN TAPAKIS PADANG PARIAMAN - INDONESIA

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ABSTRACT: his article aims to increase the knowledge of mothers and young women in processing organic waste into useful goods and increase the understanding and ability of the community in terms of waste sorting and management. The visible aspects of the process of sorting organic and non-organic waste. This activity was carried out in Nagari Ulakan, Ulaakan Tapakis District, Padang Pariaman Regency. The participants involved were housewives and young women who were represented by 17 people. The form of activity is conducting training related to waste sorting and conducting training related to managing organic waste into eco enzymes. The implementation stage begins with the preparation stage, stage, and ends at the monitoring and evaluation stage. The results of the training carried out in Nagari Ulakan, Padang Pariaman Regency in the form of environmentally friendly enzymes that can be used in everyday life, such as for house cleaning, fruit and also as fertilizer. From this training, the community understands the benefits generated from organic waste that does not need to be disposed of but can be reused, this can also reduce the amount of waste that is thrown into the landfill every day. Cutting the flow of waste distribution to landfill and waste management is an effective solution and accelerates the processing of waste into more useful products.

Keywords: Organic waste, Eco Enzim



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1. INTRODUCTION

Garbage is solid waste material from household activities, markets, offices, lodging houses, hotels, restaurants, industry, or other human activities. Even garbage can come from the rubble of building materials and scrap metal used by motorized vehicles. Garbage is a by-product of human activities that is no longer used.

Waste based on its source can be grouped into domestic waste and non-domestic waste. Domestic waste is waste generated from household activities or environment, while non-domestic waste is waste originating from commercial waste, industrial waste, building waste, municipal service waste, processing plant sludge and other residues, and agricultural waste. Garbage that is not managed properly will cause various problems such as aesthetic problems, disease vectors, and the emergence of groundwater pollution. To prevent this, it is necessary to design a solid waste management system [1].

The problem of waste management is the

biggest challenge for the authorities of small and large cities in developing countries. This is mainly due to the increase in the generation of such waste and the burden on the city budget. In addition to the high cost, solid waste management is also associated with a lack of understanding of the various factors that affect the overall treatment system. Analysis of the literature and reports related to waste management in developing countries, shows that there is little quantitative information [2]. Garbage is a problem that we must solve as early as possible. Waste is a product that cannot be avoided by society. Solid waste consists of all waste that originates from human and animal activities and is disposed of as useless or unwanted [3]. The increase in household waste production is one of the impacts of population growth, increasing standard of living of urbanization.

Around 70% of municipal waste in Indonesia comes from residential areas. The volume of waste to the landfill will be greatly reduced if households use organic waste to make fertilizer

because 70% of household waste is organic and 30% non-organic [4]. If the 3R Program is successful, it will create better environmental sanitation [5].

Garbage and its management is now an increasingly urgent problem in cities and villages in Indonesia, because if it is not handled properly it will result in changes in the environmental balance that are detrimental or unexpected so that it can pollute the environment, both on land, water and air. Therefore, to overcome the problem of pollution, it is necessary to handle and control waste. Handling and control will become more complex and complicated with the increasing complexity of the type and composition of waste in line with the advancement of culture [6].

Padang Pariaman Regency is a medium area with a population in 2015 of 406,076 people. Padang Pariaman Regency is not free from waste problems. Padang Pariaman Regency has a strategic location because directly adjacent to the city of Padang as the capital of the province of West Sumatra and is passed by the Sumatran route. This makes the problem of solid waste in Padang Pariaman district in the spotlight. Currently, the stakeholders in the solid waste sector in Padang Pariaman Regency are the Department of Environment, Housing, Settlement and Defense of Padang Pariaman Regency in the field of waste management (DLH). The amount of waste generated in Padang Pariaman Regency is 3,087 liters/person/day.

Currently, the Padang Pariaman Regency Government has not prioritized solid waste management. There are still a number of industries, factories on several river sections and on the coast which can cause pollution, this happens because the activities to protect the environment from the industrial world in Padang Pariaman Regency are also still not as expected. Beaches and rivers are also still used as a place for dumping various domestic wastes that come from people who do not understand the importance of environmental cleanliness. All of these activities tend to increase every year. So that the problem of environmental pollution is still an environmental issue. This can be seen from the very limited service/transportation of domestic waste to the Padang Pariaman Regency Final Processing Site (TPA), namely Padang Olo TPA and Ladang Laweh TPA. The generation of waste transported to the TPA is 1.35% of the total waste generation of Padang Pariaman Regency. In addition, the infrastructure and facilities for waste management are inadequate. The local government has not provided communal housing, less than half of the

sub-districts in the district have collection facilities, the collection facilities are only able to collect a third of market waste in some sub-districts, the condition of the Temporary Collection Places (TPS) is not proper, transportation facilities are only able to transport a quarter of market waste to the TPA, there is no waste processing at the TPA and the TPA still uses an open dumping system. The absence of a planning document for the implementation of waste management in Padang Pariaman Regency also makes the waste conditions not well coordinated [7].

Based on data from the Environmental Office of Padang Pariaman Regency in 2016 in Ulakan Tapakis sub-district there were no TPS (Temporary Shelters). So far, the management of household waste has generally only been collected, pitted and burned. The problem in the field of waste management in Ulakan Tapakis District, Padang Pariaman Regency, is the lack of waste management that meets environmental health requirements. Based on data from the Ulakan Health Center in 2016 it showed that 490 households (11%) had carried out waste management that met the health requirements of 4453 households. Waste management is carried out by making holes and dumping it (11%), burning (62%), and throwing it carelessly (27%). Waste that is not managed properly will affect the surrounding environment. Piles of household waste that are left alone will cause flies to breed and produce methane gas for naturally fermented organic waste.

Pollution due to waste is still a major problem that must be considered and watched out for. The Padang Pariaman Regency Government with its policies together with the community is expected to make improvements both in terms of handling, improving facilities and infrastructure as well as increasing public awareness of the importance of cleanliness and health and environmental sustainability. To avoid the negative impact of waste, the community can do waste prevention. Waste prevention means eliminating or reducing the amount and/or toxicity of waste, including recycling [3]. Activities on waste sources such as sorting, recycling, reuse, composting will be able to reduce the amount of waste that must be managed. Meanwhile, the destruction of food waste and organic waste and channeled into sewerage will increase the burden of wastewater treatment

2. RESEARCH METHODS

The activity was carried out in Nagari Ulakan, Padang Pariaman Regency. With the Covid-19 Pandemic and the appeal from the government to comply with health protocols by checking temperature, washing hands, using hand sanitizer, maintaining distance, wearing masks, this activity is carried out with limited participants, so that the transmission of Covid-19 does not become the newest cluster in Indonesia. activity place. Activities are carried out by complying with health protocols and applying all the previously stated regulations. The participants involved in this service activity are the community/adolescent girls and housewives who are members of the PKK and youth groups which are approximately 17 people.

The activity stage is to implement the solution to problem 1 and problem 2

1. Stages of activity

The Community Partnership Program Implementation Activities are divided into three stages, namely preparation, implementation, and monitoring stages. The following are the details of each stage that will be carried out:

1) Preparation Stage

a. Preparation of counseling and training work programs

Preparation of counseling programs and work training programs so that the activities carried out become more organized and directed. This program covers all matters of a technical, managerial and scheduling nature (time schedule).

b. Preparation of training modules

The training module covers organic waste collection techniques, materials, tools used, steps to make eco enzyme and monitoring the fermentation of organic waste into eco enzyme.

c. Preparation of training facilities and infrastructure.

Preparation of training facilities and infrastructure. This preparation includes the provision of facilities and infrastructure for training and counseling.

2) Implementation Stage

a. General description of the types of waste
 b. Introduction to organic waste management methods

c. Eco-enzyme making demo

d. Exposure to the benefits of eco-enzymes in various fields

3) Monitoring Phase

The making of Eco Enzyme takes about three months from the beginning of manufacture. Therefore, it is necessary to monitor and evaluate so that the process of making eco enzyme runs smoothly.

4) Evaluation Stage

Evaluation so that if there is a problem it will be resolved immediately. Provide guidance to partners to remain consistent in making eco enzyme until it becomes a ready-to-use liquid [10].

The implementation plan could be seen in the following Table 1.

3. RESULTS AND DISCUSSION

Table 1 Plan for the implementation of activities

No	Problem	Solution to problem	Activity
1.	There are no TPS or lack of (Temporary Shelter) in Nagari Ulakan, Ulakan Tapakis District, Padang Pariaman Regency, West Sumatra	increase knowledge about sorting organic and non-organic waste	Conducting training for the community/mothers who are members of the PKK and youth groups to separate organic and non-organic waste. Non-organic waste can be given to scavengers and organic waste can be processed. So reduce the pile of garbage.
2.	The low management of organic waste that meets environmental health requirements	increase knowledge about organic waste processing by making eco-enzymes	Conduct training on organic waste processing by making eco-enzymes

In accordance with the purpose of implementing this community service activity, after the implementation of the activity, it is expected that mothers and young women have

increased abilities in sorting and managing organic waste from their respective homes. Then it can also improve the understanding/ability of mothers

and young women in terms of understanding aspects of making Eco Enzymes.

After all the community service preparations have been completed, the team will then complete the preparation and prepare the materials for the process of making Eco Enzymes at Ulakan Tapakis, Padang Pariaman Regency. The following is a list of tools and materials used for manufacturing.

This Eco Enzyme was first introduced by Dr. Rosukon Poompanvong who is the founder of the Thai Organic Farming Association. The idea of this project is to process enzymes from organic waste that we usually throw in the trash as organic cleaners. Eco enzyme is a liquid extract produced from the fermentation of vegetable and fruit residues with brown sugar as a substrate. The principle of the process of making eco enzyme itself is actually similar to the process of making compost, but water is added as a growth medium so that the final product obtained is a liquid which is preferred because it is easier to use.

Eco Enzyme can be a multipurpose liquid and its applications include households, agriculture and livestock. Basically, eco enzyme accelerates bio-geochemical reactions in nature to produce useful enzymes using fruit or vegetable waste. This training activity on waste processing and making Eco Enzymes was carried out in Nagari Ulakan Tapakis, Padang Pariaman Regency. The time for the activity is Tuesday, August 31, 2021 at Ulakan Tapakis, Padang Pariaman Regency, 08.00 WIB - 11.00 WIB. It was carried out in a kindergarten classroom, which acted as training instructors were Amanda Elza Pratiwi (Biology), Dra. Rahmanelli, M.Pd (Geography), Dr. Desri Nora, M.Pd (Sociology) who was accompanied by a team of Widya Prarikeslan, M.si, Rendi Prayoga and Habiburrahman. This training, which was attended by 17 participants, was attended with great enthusiasm by mothers and young women in Ulakan Tapakis. The following is a photo of the activity:



Fig.1 Opening of training making and Explanation process Eco Enzyme .



Fig 2. Process of making Eco Enzyme



Fig 3. Proses of making Eco Enzyme



Fig 4. Results of the Eco Enzyme

The implementation of community service with the title Organic Waste Management Training for Housewives and Young Women in Ulakan Tapakis, Padang Pariaman Regency is based on the awareness of the service team about the importance of helping the community to really have the ability to process organic waste generated from households. So that garbage does not accumulate and can save expenses from Eco Enzymes which can be used for many benefits, one of which is floor cleaning.

The enthusiasm and enthusiasm of the participants in the activity by being directly

involved in the practice of processing household waste in the form of organic waste generated from their respective activities. These PKK women will hold a group to collect organic waste from their respective homes to be put together and then processed into Eco Enzymes

This community service has been carried out by Ulakan Tapakis, Padang Pariaman Regency using the 2021 UNP PNBPF funds which in general have been very well implemented. In the implementation, mothers and young women are very enthusiastic and happy with this kind of training.

4. CONCLUSION

1. The community will benefit greatly from this service. This was revealed from the service team's interviews with the participants. the community is very enthusiastic about participating in this training because they have not been able to process waste into goods that are very useful for their daily needs. Usually the waste is immediately thrown away and becomes a pile of garbage.

2. Training on making Eco Enzymes does not require time and effort in the process of making it. So that it will not interfere with community activities. The benefits of Eco Enzymes will be greater that the public is not aware of such as: house cleaning, vegetable and fruit cleaners, mouthwash, watering flowers, fertilizing plants and many other benefits.

3. Ways of waste management that utilize kitchen scraps for something very useful. This liquid can be used as a house cleaner, as well as an effective natural fertilizer and pesticide. From the first day the Eco Enzyme fermentation process will release ozone gas (O₃). O₃ can reduce carbon

dioxide (CO₂) in the atmosphere which traps heat in the clouds. So it will reduce the greenhouse effect and global warming. Enzymes convert ammonia into nitrate (NO₃), a natural hormone and nutrient for plants. Meanwhile it converts CO₂ into carbonate (CO₃) which is beneficial for marine plants and marine life.

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