

# Socialization of Utilization of Kitchen Organic Waste into Eco-enzyme in Pladen Village

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**Abstract:** Eco-enzyme is a multipurpose liquid produced from fermentation of kitchen waste for 3 months with brown sugar or molasses or molasses liquid with organic kitchen waste such as fruit and vegetable peels with a composition of 1:3:10. The purpose of this service activity is to reduce odor-causing organic waste produced by the kitchen which becomes pollution in the Pladen Village environment and help the community to process organic waste or kitchen waste in Pladen Village easily. The benefits of eco-enzyme liquid are for cleaning floors, for disinfecting and fertilizing plants.

**Keywords:** Eco-enzyme, Organic Waste Management, Community.

## 1. Introduction

Real Work Lecture or KKN is a compulsory course charged to all final semester students at Universitas Muria Kudus. This Community Service Program is a medium for students to show a form of social care in community life. Education, research and community service are the Tri Dharma of Higher Education which is an inseparable whole. Thus, community service is a form of implementation of the Tri Dharma of Higher Education, especially community service and the application of student knowledge obtained during lectures (Bagas and Wicaksono, 2022).

In the implementation of community service, one of the students of KKN Muria Kudus University held a socialization on the utilization of organic waste into eco-enzyme to the people of Pladen Village, Jekulo District, Kudus Regency. Household waste generated by the people of Pladen Village is divided into two types, namely organic waste and inorganic waste. In households, organic waste can be divided into two types, namely wet and dry waste. Wet organic waste comes from leftover fruits, namely fruit peels, leftover vegetables that are not used for cooking. Meanwhile, dry leaves, twigs, paper are dry organic waste. The increase in the amount of waste per day causes various diseases that will have a more dangerous health impact on both humans and the environment for the next generation (Pranata et al., 2021). In realizing the work program and processing organic waste in order to overcome waste waste that emits an unpleasant odor, it is used as an ingredient in making eco-enzyme, namely wet organic waste from the kitchen such as fruit peels and vegetable scraps that are still in fresh and good condition.

Eco-enzyme is an all-purpose natural liquid, which is fermented from sugar, fruit or vegetable residues, and water. Eco-enzyme was first introduced by Dr. Rosukon Poompanvong who is the founder of the Thai Organic Farming Association (Chemical Today Magazine, 2016). Eco-enzyme can be a liquid that provides many benefits for households, agriculture and livestock. Basically, eco-enzyme accelerates biochemical reactions in nature to produce useful enzymes using fruit or vegetable waste. This enzyme from "waste" is one way of waste management that utilizes kitchen scraps for something very useful (Saifuddin et al., 2021).

The characteristics of eco-enzyme are that it has a strong sweet and sour fermentation aroma and a dark brown color. Eco-enzyme liquid is starting to be used as a way to clean rivers in Indonesia from household waste to industrial waste. Eco-enzyme is believed to be able to break down waste that adversely affects the sustainability of life in the river. Eco-enzyme liquid is also able to suppress the development of E.coli in waterways (Ginting, Hasnudi, & Yunilas, 2021). Eco-enzyme liquid can be used as a substitute for detergent, soap, shampoo, floor cleaning liquid as well as organic fertilizer (Kurniawan, 2020). Every household can contribute to reducing environmental pollution by making eco-enzyme from residual household organic materials. In addition, the use of household organic materials can reduce household expenses because they can produce their own fertilizer (Pakki et al., 2021).

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The people of Pladen Village have a problem, namely the lack of knowledge about processing wet organic waste, which can be reused into environmentally friendly products so as to reduce the causes of environmental pollution around the house.

## 2. Method

The activity of socializing the utilization of kitchen organic waste into eco-enzyme:

1. Making eco-enzyme and packing organic seed and fertilizer packages were carried out by the KKN team as samples to be distributed.
2. Socialization  
The target of this activity is the women's group of jam'iyah yasinan Al-Islam, Pladen Village, Jekulo District, Kudus Regency. The socialization of this activity was carried out through the distribution of brochures.

Previously, the implementation of community service was carried out in Pladen Village on August 30, 2023 at the home of Mrs. Lastri. KKN students asked permission from the head of the jam'iyah to provide socialization on the utilization of organic kitchen waste into eco-enzyme. KKN students educate jam'iyah mothers with the method of activities carried out is the presentation of material and distributing brochures on how to make the eco-enzyme liquid and what materials and tools are used in making the liquid as presented in Fig. 1.

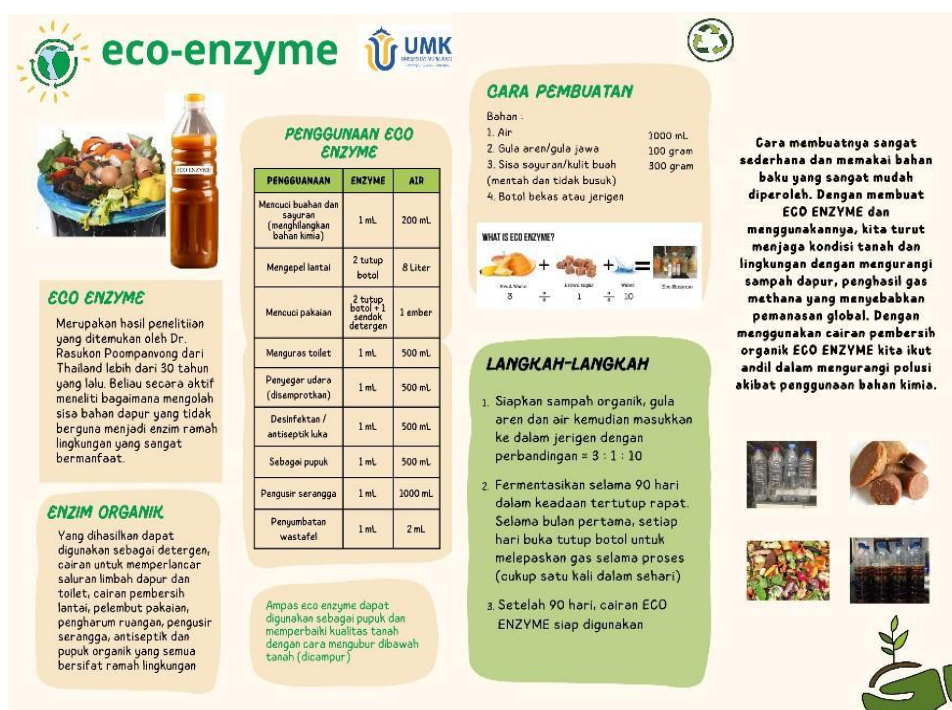


Figure 1. Overview of brochures distributed to targets

## 3. Results

The socialization activity that was carried out was attended by 22 jam'iyah yasinan women in Pladen Village on Wednesday, 30 August 2023. Pladen Village on Wednesday, August 30, 2023. In the first stage, one of the KKN-UMK students gave material about the meaning of eco-enzyme liquid which can be made using vegetable and fruit scraps (organic waste) by putting organic waste into a plastic container in a package, then given brown sugar and water in a ratio of 1: 3: 10. Example of dosing 1 kg of sugar: 3 kg organic waste: 10 kg of water. Similar to soap, eco-enzyme products also cannot be used directly during the manufacturing practice because they can only be harvested after 3 months. Within the 3-month period, every week open the bottle cap for about 10 seconds to remove carbon dioxide and methane gas, then after 3 months the pulp is filtered. The dregs can be used as a starter for further production by adding to the initial composition or can also be composted (Jelita, 2022).

In the second stage, KKN-UMK students presented material about the benefits of eco-enzyme liquid to local jam'iyah women. The benefits of eco-enzyme liquid can be used for natural fertilizers, effective pesticides, can help organic plant growth, help livestock stay healthy, clean drains, purify water, reduce waste, can be used as dish soap and so on (Yanti and Awalina, 2021). After explaining the benefits of eco-enzyme, students explained what tools and

materials need to be prepared in making eco-enzyme. The tools and materials in making eco-enzyme liquid are: used plastic bottles/jerry cans, water, coconut sugar/aren/molasses and organic waste (from leftover fresh vegetables and fruit peels).

The steps in making eco-enzyme liquid are as follows:

1. Pouring water into a jerry can/used plastic bottle with a ratio of 10/1 liter/1000 ml.
2. Adding coconut sugar/aren/molasses as much as 100 grams.
3. After the sugar is added, stir it until it dissolves into the water.
4. Then put in the fruit skins and the remaining fresh vegetables that have been cut into small pieces.
5. After the ingredients are mixed, close the jerry can/used plastic bottle so that air does not enter.
6. The liquid is stored in a shady place and not exposed to direct sunlight.
7. The liquid can be stored for up to 3 months for the fermentation process, tightly closed. During the first month, open the cap every day to release the gas during the fermentation process (just once a day).
8. The liquid that has been successful and is ready for use will be brownish-brown in color and have a fresh smell.

From the explanation of KKN-UMK students about the utilization of organic waste into eco-enzyme to jam'iyah women, it is hoped that it can be understood and applied to reduce organic waste from the kitchen, especially in Pladen Village. According to Mrs. Maslikah as the head of the jam'iyah group, the socialization held can provide new knowledge for mothers who are not familiar with the benefits of eco-enzyme and in the future it is hoped that all housewives in Pladen Village can utilize organic waste that was originally discarded to be processed into eco-enzyme products.

#### 4. Conclusion

The socialization of the utilization of organic waste into eco-enzyme, it can provide benefits for Pladen Village residents to overcome the problem of organic waste that is not utilized and can cause odors around the house. This activity was carried out based on the flagship program of KKN-UMK students, namely ProKlim (Climate Village Program) which was welcomed by the mothers of the jam'iyah yasinan Al-Islam group in Pladen Village. It can be concluded that the presence of KKN-UMK students is quite helpful and provides new knowledge for the group.

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#### Conflict of Interest

The authors declare no conflicts of interest.

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