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Socialization and Training on Processing Organic Waste into Ecoenzymes

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Abstract: Organic waste is waste that comes from the remains of living things that are easily decomposed naturally without the process of human intervention to decompose. A more effective management of organic waste is by turning it into Eco-enzyme. The purpose of this community service carried out by the Muria Kudus University KKN team is to utilize eco-enzyme liquid as a multipurpose daily liquid and benefit the community. This service was carried out in Sadang Village, Jekulo District. The eco-enzyme that was prepared was a scale, 1.5-liter bottle, bucket, knife, organic waste (household waste), brown sugar (coconut sugar), and water. The method of community service activities uses the lecture method. In the preparation stage, the KKN team conducted a survey, determined the location and target, prepared training materials in the form of guideline brochures and PowerPoint slides. The results showed that the community gained knowledge and understanding about the utilization of organic waste in versatile products. Thus, the community can practice directly making eco-enzymes in their respective homes.

Keywords: Organic Waste, Eco-enzyme, Socialization

1. Introduction

Community Service Program (KKN) is one of the programs in higher education at Universitas Muria Kudus (UMK). UMK is one of the private higher education institutions located in the Kudus Regency area, has an obligation to actively participate in regional development in the fields of health, education, economy, and regional development. One of these active roles is the holding of a Community Service Course as a Community Empowerment in Supporting Regional Development organized by the Community Service Research Institute (LPPM).

This Real Work Lecture was carried out in one of the villages in Kudus Regency, Jekulo District, precisely in Sadang Village. Sadang Village is a village with a majority of the population who work as farmers and factory workers. The residents of Sadang Village are still very difficult with the current waste management, especially organic waste. Waste management must be done comprehensively. Waste handling must be carried out by the entire community by viewing waste as a resource that has benefits.

Organic waste can be said to be environmentally friendly waste, even waste can be processed back into something useful if managed properly. 70% of the waste disposed of in landfills is organic waste (Yanti & Awalina, 2021).

A more effective management of organic waste is by making it into Eco-enzymes. Eco-enzyme is the result of research discovered by Dr. Rasukon Poompanvong from Thailand. More than 30 years ago Dr. Rasukon actively researched how to process kitchen scraps or useless organic waste into environmentally friendly enzymes that are very useful. Eco-enzyme is also a complex solution produced and fermented from fresh organic waste (fresh fruits and vegetables), brown sugar or molasses and water (Dewi, 2021).

Eco-enzyme is the result of fermentation of organic kitchen waste such as fresh fruit and vegetable pulp mixed with sugar (molasses, brown sugar, palm sugar) and water. Eco-enzyme has a dark brown color and a strong sweet and sour aroma like tape (Hidayat et al., 2023). To manage enzymes from organic waste that is usually discarded to be used as an organic cleaner. Eco-enzyme liquid is natural, free of chemicals, easily biodegradable and gentle on hands and the environment. Eco-enzymes can also decompose and destroy microorganisms harmful to the human body. In addition, eco-enzymes have a decomposition function, and in their utilization can achieve zero pollution (Tangapo & Febby, 2021).

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The benefits of eco-enzymes include in agriculture as a fertilizer additive that is useful for improving crop quality. Animal husbandry which can eliminate fishy odors in aquariums while nourishing fish. Households can used to wash fruit from pesticide residues, clean house floors, etc. Health is used for relaxation by soaking feet in warm water that has been mixed with eco-enzymes, purifying the air in the room, cleaning the body, mouthwash, natural hand sanitizer, etc.), and there are many other benefits of eco-enzymes (Nurfajriah et al., 2021).
Until now, waste continues to be an environmental problem that never seems to end. In Sadang Village, many people do not understand how to process organic waste properly, so that it accumulates and becomes waste without any function. In addition, the community still adheres to waste management that is not environmentally friendly. Based on this description, this activity aims to utilize eco-enzyme liquid as a multipurpose daily liquid and benefit the community in Sadang Village, Jekulo District.

2. Research Method

The method used in this activity is to provide socialization and training in making eco-enzymes to members of IPNU and IPPNU Sadang Village, Jekulo Kab. Kudus. After providing training, IPNU and IPPNU members are guided to apply the results of the training in their daily lives to overcome problems related to organic waste (domestic waste) and process organic waste into useful products. The stages of this community service consist of preparation and implementation stages. In the preparation stage, the team conducted research, identified locations and targets, prepared training materials in the form of brochures and power point slides as well as tools and materials to demonstrate eco-enzyme production. At the training implementation stage, the team presented and demonstrated how to make eco-enzymes. In the presentation of the material, the team also conveyed the importance and benefits of eco-enzymes. The tools and materials needed in the eco-enzyme production training are scales, 1.5-liter bottles, buckets, knives, organic waste (domestic waste), brown sugar (coconut sugar), and water.

3. Findings

The socialization and training activities on making eco-enzymes from organic waste were carried out by the UMK KKN team on Sunday, September 3, 2023, in Sadang Village (Fig. 1.). This activity began with location observation as well as discussions between the team and partners. The targets of this service activity are members of IPNU and IPPNU Sadang Village, Jekulo District, Kudus. Together with the team, they discussed the schedule of activities and preparations that would be made by the team in making eco-enzymes. Furthermore, socialization was delivered by displaying power point slides containing the definition of eco-enzyme, why it is necessary to utilize organic waste into eco-enzyme, the process of making eco-enzyme, the benefits of eco-enzyme products, and how to make product composition.

Figure. 1 Socialization and training on processing organic waste into eco-enzymes

After socialization and discussion, it was continued with training on how to make eco-enzyme. The tools and materials prepared were scales, 1.5-liter bottles, basins, knives, organic waste (vegetables and fruit peels), brown sugar (coconut sugar), and water (Fig. 2.). The steps in making eco-enzymes are as follows:

1. Prepare the required material tools.
2. Cut small pieces of kitchen waste in the form of vegetables and fruit.
3. Slice the brown sugar so that it becomes smooth.
4. Weigh brown sugar and kitchen waste to obtain a ratio of 3: 1: 10, namely 300 grams of fruit and vegetable

peel waste, 100 grams of brown sugar and 1000 mL of mineral water which is put in a bottle of mineral water.

5. red and 1000 mL of mineral water put into a 1.5-liter mineral water bottle
6. Put the kitchen waste into the brown sugar solution.
7. Leave a little space in the container and close the plastic container tightly.
8. Store the container in a safe place.
9. Open the bottle cap once a day to release the gas to explode.
10. Let stand for 90 days (3 months) then filter the eco-enzyme and it is ready for use.

Figure. 2 Brochure for socialization and training on processing organic waste into eco-enzymes

In this activity, the Muria Kudus University KKN team also provided brochures to members of the partner community so that they could make their own eco-enzymes at home. The community was very enthusiastic about this socialization. This was shown by their enthusiasm in actively participating in the discussion forum. From the residents who attended, some residents asked questions as a form of interest in the socialization material presented. There was an increase in knowledge and skills of partner participants about eco-enzyme after attending the socialization and training. In this training activity, participants can see and apply directly the making of eco-enzymes, so they are involved in it and gain knowledge. This is very effective to teach something new and the first time for partners.

4. Discussion

This service activity is motivated by the large amount of family waste in Sadang Village that is not utilized by the local community. Waste is an important problem that needs serious handling because the presence of large amounts of waste can damage the balance of the environmental ecosystem (Vergara & Tchobanoglous, 2012). This can increase the amount of waste. Another impact is that unpleasant odors arise and can pollute the environment (Shusterman, 1992). The solution to this problem is to utilize vegetable and fruit waste into eco-enzymes (Susanti & Triyanti, 2022). According to Imron (2020), eco-enzyme is the result of fermentation of organic waste such as fruit and vegetable peels, sugar (brown sugar, palm sugar and molasses), and water. The color is dark brown and has a strong sweet and sour smell.

Making eco-enzymes from organic materials is one of the efforts to increase public awareness directly to recycle waste. With this activity, training in making eco-enzyme fermentation is considered very helpful for the people of Sadang Village to know how to process organic waste, especially those from household waste and can increase knowledge and awareness of the community in processing household organic waste. This eco-enzyme fermentation innovation is environmentally friendly and very easy to do by all communities. The advantage of managing organic waste into eco-enzymes is that it can be used as a hand sanitizer, as a cleaning liquid for household appliances and disinfectants and also as a planting material so as to reduce the amount of waste wasted so as to create cleaner, more comfortable and tidy environmental conditions (Nurhidayanti et al., 2023). Eco-enzyme products also have the potential to be sold, because

considering a lot of waste that has not been utilized. There needs to be support and monitoring from village officials to mobilize the community (Tangapo & Febby, 2021).

Figure. 3 Documentation of the implementation team Socialization and training on processing organic waste into eco-enzymes.

5. Conclusion

Based on the implementation of community service activities by the Muria Kudus University KKN team in Sadang village, Jekulo sub-district, it can be concluded the community partners gained new knowledge and understanding about the benefits of eco-enzymes and their uses. Community partners have the skills to process household organic waste (vegetables and fruits) into more useful ones.

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Conflict of Interest

The authors declare no conflicts of interest.

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