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Community Service for Making Ecoenzymes for Fruit Traders in RT 006 Benda Baru Village

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ABSTRACT

Eco enzyme is a multifunctional liquid produced from a 3-month fermentation process with simple ingredients, brown sugar / molasses, waste or organic waste using a composition of 1: 3: 10. During this eco enzyme fermentation process, it will produce ozone and oxygen, this is equivalent to that produced by 10 trees. Some of the benefits of Eco enzyme are that it can clean polluted rivers, such as antiseptics, fertilize the soil and substitute daily household chemical products. The objectives of this community service activity are: 1) to introduce an organic waste management program into an eco enzyme. 2) Community Service Activities to Provide Education on Ecoenzyme Sales in E-Commers.

INTRODUCTION

Kuliah Kerja Nyata (KKN) is a form of community service carried out by students in an interdisciplinary, institutional, and partnership manner as a manifestation of the Chess Dharma of Muhamamdiyah universities. UMJ KKN target communities can be rural communities, urban communities, schools, industrial communities, or other community groups deemed worthy of KKN-UMJ targets.

The community service team in response to the KKN programme took the initiative to organise a training on making ecoenzyme that can be marketed on e-commers. This training was carried out in benda baru village, Pamulang, South Tangerang. This location was chosen because based on the situation analysis it is an area that consumes a lot of fruit and many fruit ice traders.

The maintenance of the environment is an obligation for all mankind. In the natural resources and environment sector, it is necessary to pay attention to efforts to preserve and use wisely so that future generations can also feel it (Gischa, 2021). Environmental management includes prevention, overcoming damage and pollution and restoring the quality of resources that have been exploited exhaustively (Listiyani, 2017). Environmental management is an effort to preserve the function of the environment which includes various policies in it such as environmental structuring, utilisation of natural resources, resource development, maintenance of resources and the surrounding environment, restoration of biological and animal diversity, and environmental control. All of this relates to living things around resources including humans and also all types of behaviour that have an impact on the environment (Clourisa et al., 2021; Endah, 2015).

This waste treatment system was first invented in 2003, when a doctor from Thailand received an award from the FAO (the UN food agency) Regional Thailand for his invention

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called eco-enzyme. This invention was an effort made by Dr Rosukon Poompanvong for the environment by helping local farmers to obtain better crop yields while being environmentally friendly (Megah, et al: 2018). It was later widely introduced by Dr Joean Oon. He is a researcher from Penang, Malaysia who works under Naturophaty (Sasetyaningtyas, 2018).

Dewasa ini, pengelolaan sampah di society still relies on the end-of-pipe approach, where waste is collected, transported, and disposed of at the final processing site. This is despite the fact that large volumes of waste in landfill sites have the potential to release methane gas, which can increase greenhouse gas emissions and contribute to global warming. The decomposition of waste through natural processes requires a long time and costly handling. It is time to abandon the paradigm of waste management that relies on the final approach and replace it with a new paradigm of waste management. The new paradigm views waste as a resource that has economic value and can be utilised, for example for energy, compost, fertiliser or industrial raw materials. Waste management is carried out with a comprehensive approach from upstream, since before a product is produced that has the potential to become waste, to downstream, namely in the phase when the product has been used so that it becomes waste which is then returned to the environmental media safely (Prabekti, 2020).

The principle of the process of making eco enzyme is 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. The speciality of this eco enzyme is that it does not require a large area for the fermentation process as in composting, even this product does not require a composter tub with certain specifications. Used bottles of mineral water or other products that are no longer used can be reused as fermentation tanks. This also supports the concept of reuse in saving the environment. Eco enzyme has many benefits such as being used as a plant growth factor, a mixture of floor cleaning detergents, pesticide residue cleaners, descaling and reducing car radiator temperatures (Astuti et al., n.d., 2020).

The enzyme is produced by fermenting a mixture of brown sugar, kitchen wastewater or fresh vegetable and fruit wastes. According to Tang and Tong (in Astuti et al., n.d., 2020)

Table 1.Roadmap of service programme

No	Service Method	Activities	Purpose	Output
1	Socialisation on the production and benefits of ecoenzymes	Traders and residents of the area	Provide direction regarding the manufacture of ecoenzyme	Ecoenzyme production
2	Support for eco-enzymes	Traders and residents of the area	A mixture of molasses, fruit/vegetable pieces and water ready for fermentation.	Ecoenzyme production

The process took 3 months. The application of waste enzymes to various wastewater characteristics has been demonstrated in recent years. Waste enzymes play an important role in achieving degradation similar to the performance of commercial enzymes.

During fermentation, carbohydrates are converted into volatile acids and, in addition, organic acids present in the waste material are also released into the fermentation solution, as the pH of the waste enzymes is acidic in nature. Waste enzymes have the greatest power to reduce or inhibit pathogens because the acidic nature of waste enzymes helps to extract extracellular enzymes from organic waste into the solution during fermentation. The fermentation process breaks down glucose to produce pyruvic acid. Pyruvic acid is broken down under anaerobic conditions by pyruvate decarbosylase to ethanol and carbon dioxide, where Acetobacter bacteria convert alcohol to

acetaldehyde and water, which is then converted to astetic acid (Astuti et al., n.d., 2020).

EXPERIMENTAL METHOD

The method of approach used in the implementation of this Community Service Programme (KKN) goes through several stages, starting with preparation, implementation and evaluation.

A. Preparation

Starting with the preparation method, i.e. the approval process with the partners and the discussion of related problems among the partners so that an appropriate work programme can be planned.

1) Observation

According to Morris (1973: 906) observation is the activity of recording a symptom by means of instruments and recording it for scientific or other purposes. It is also said that observation is a collection of impressions about the surrounding world based on all the capabilities of the human senses. In this stage of observation, we went to the field to see the condition of the partner site.

2) Interview

According to Nazir (1988), an interview is the process of obtaining information for research purposes through question and answer in a face-to-face meeting between the interviewer and the respondent. The interview we discussed with Mira was about advanced organic waste management by traders.

B. Implementation

After observations and interviews, results were obtained in relation to the problems that exist in the partners. The following is the implementation method that we have done:

1) Providing ecoenzyme training facilities such as palm sugar, water, containers, training places and guidebooks for ecoenzyme production.

C. Evaluation

The evaluation of the Community Service Programme (KKN) was carried out using a qualitative method by looking at the input, process and output aspects during the activity.

RESULTS AND DISCUSSION

Real Work Lecture (KKN) activities based on the results of observations and interviews that we conducted were Counseling on Clean and Healthy Living Behaviour (PHBS) in Kampung Pemulung Rawa Limbah, Ciputat which was held on 8 August 2022.

a. Permit

Requesting permission from the partner Head of Rt 006 Benda Baru Village. This implementation was carried out on Friday, 18 August 2023 for one day. Together with the head of rt 006 kelurahan benda baru. This activity includes introducing group members 24 at the house of the chairman of rt 006. In addition to introductions, students also explained about eco-enzyme counselling activities.

Fig 1. Permit at the house of neighbourhood leader 006 new object

b. Providing packaging to the partners concerned and learning the process of making eco enzymes.

Provided packaging to partners on 23 August 2023 to support KKN 2023. Packaging is in the form of a 1 litre jerigan.

Furthermore, the manufacture of eco-enzymes uses orange, pineapple, papaya, and dragon fruit waste that has been cleaned. The next step, the fruit peel was measured in a ratio of 3 (fruit peel waste) : 1 (powdered sugar): 10 (clean water).

c. Packaged the eco-enzyme products and gave them as gifts to conclude KKN 2023.

The packaging process was done on 23 August 2023 using 1 litre jerry cans. The members also handed over a gift as a token of gratitude to the partner, the headman of RT 006 Benda Baru Village.

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Results of the implementation evaluation

Evaluation of the implementation of the Community Service Programme is a standard measure to determine the extent to which the programme is being implemented. During the implementation of activities, there must be a possibility of discrepancies and imperfections in the execution of activities, therefore several evaluations are carried out. The following is an evaluation of the ecoenzyme production activity

Table 1. Evaluation of the ecoenzyme production activities

Input	Man- Each member carried out their respective duties in organising this activity.
	Money- The source of funds coming from the group's cash is able to meet the needs during the activity.
	Methods- The method used in the training through presentations with and assistance in making ecoenzyme
	Machine- The material presented is light because the target is fruit traders so that it can be easily accepted as seen from the enthusiastic and active in every question and answer given.
	Material- The size of the bottle is only 1 litre with 300 grams of fruit raw material so that only a little can be produced.
Process	During the activity, traders and residents seemed enthusiastic about listening and carrying it out, but there were too many questions that were not in accordance with the material.
Output	Traders and residents can re-practice the material that has been delivered at the time of implementation

CONCLUSION

The KKN activities in 2023 are basically made up of several work programmes such as direct field work and reporting through www.kkn.umj.ac.id and other supporting work programmes. There are joys and sorrows from the various programmes implemented during this KKN. Therefore, this KKN activity can be a benchmark in practising the Chess Dharma of Higher Education at Muhammadiyah University Jakarta.

After conducting the KKN, the location was RT 006 Benda Baru Village, South Tangerang. Together with the headmaster of RT 006 as a KKN partner, the author can convey the following conclusions: KKN as a means to apply the knowledge that students have gained from their learning at the University of Muhammadiyah Jakarta, this is a real form of meaningful experience for students in life directly into the community. KKN partners and the community where KKN takes place are very supportive. KKN's partners and the community where KKN takes place are very supportive of the presence of KKN students and the implementation of the programmes we have in place. The main programmes we have put together are running well and smoothly.

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