

**UTILIZATION OF WASTE RECYCLING, COMPOSTING, AND FAMILY
MEDICINAL PLANTS (TOGA) AS A MEDIUM FOR COMMUNITY
EMPOWERMENT IN MANTREN VILLAGE, KARANGREJO,
MAGETAN, EAST JAVA**

Raja Ra'id Damanhuri¹, Az Zahra Zain Widodo², Muhammad Diqna Asa Reynandra³,
Zainul Akmal Terigas⁴, Muhammad Fauzi Al Fariza⁵, Rausyanfikroh Auliya
Achmad⁶, Aprilia Fitri Komalasari⁷, Naylunnajati Faizunnur⁸, Lukluk Nur
Imamah⁹, Muhammad Haikal Aufan¹⁰

UIN Sunan Kalijaga, Yogyakarta
2110803040115@student.uin-suka.ac.id

***Abstract** - Living in a clean and beautiful environment is certainly something everyone wants. Because that makes life more comfortable and enjoyable. However, in reality there are still some people who are not aware of making their environment clean and beautiful. Seeing the environment where there is often rubbish left scattered around that is not utilized or processed properly and several corners of the village that are not maintained and are only overgrown with wild plants that have no benefit, like what we discovered during our service in the Mantren village of Magetan, East Java. By looking at conditions like this, community service to KKN 114 Uin Sunan Kalijaga with creative and educational methods is suitable to be applied in conditions like this. Utilizing used bottles as a medium painting then painting with the children, then making compost from goat dung, then planting it with medicinal plants. The aim of these three activities is to form community gardens that are useful for survival in the hope of making people aware and understanding of the potential of the surrounding environment which has many benefits.*

***Keywords:** Trash, Compost, Plants, Environment.*

1. INTRODUCTION

In the midst of increasing public awareness about the importance of sustainability and waste management, the use of used bottles as pots of medicinal plants is an innovative and environmentally friendly solution. Used bottles, which are usually considered waste, can be converted into a functional and aesthetic growing medium (Aulia, et al., 2023). With a little creativity and skill by involving children, used bottles can be used as a painting medium to make it easier to also educate children, plastic bottles can be used to grow various medicinal plants, such as ginger, turmeric, or aloe vera. In addition to reducing the amount of waste, this activity also allows us to take advantage of limited space, especially in areas that are already crowded with houses, while enjoying the health benefits of self-grown medicinal plants.

An innovative and sustainable approach is needed to overcome this problem, one of which is through the use of recycled waste and composting that can provide added value to the community. This program not only provides solutions to environmental problems, but also opens up opportunities for people to improve their skills and income. Inorganic waste, such as plastic and paper, is reprocessed into handicraft products that are worth selling, while organic waste is converted into compost that is useful for agriculture and plantations. In addition, planting TOGA in the yard of the house provides easy access for the community to get safe and affordable herbal medicines (Azmi, F. H., & Rahadian. R, 2024).

This activity not only stops at the stage of painting and planting, but also makes planting media from goat manure in the houses of residents who raise goats. With this composting, residents who raise livestock, especially goats and cows, are not confused about where to throw their livestock manure and can even make their livestock manure have economic value. The making of this compost does not only use livestock manure but there is a mixture of sawdust from tree cutting. That way, this activity can be an alternative to reduce the remains of livestock manure waste and sawdust waste. This compost is very beneficial for planting media because it can fertilize various plants at a low cost (Jayanti, et al., 2023).

This Citizen Hope Pot has a big impact on the environment because a series of processes have their own benefits such as the use of used bottles that are scattered a lot, painting bottles can be used as a means of recreation and education for children in the village, making compost from waste in residents' houses which can reduce the volume of waste in the village, and planting medicinal plants that can be used for residents' daily lives so that they do not depend on medicines Manufacturing. This article will discuss effective ways to convert used gallons into potted medicinal plants, as well as the benefits that can be obtained from this method, both for the environment and personal health.

2. METHOD

This study uses a qualitative approach with a descriptive type of research. The purpose of this study is to optimize the development of village potential in the field

of environmental sustainability, how to use waste into valuable goods, especially from inorganic waste or single-use waste such as gallons of Le minerals that are recycled into plant media, namely residents' hope pots (Setiasih, H., Angelia, K., & Maulidya, A. D, 2023). This research also seeks to explore the perceptions, motivations, and experiences of the community in Mantren Village, Karangrejo, Magetan, East Java in utilizing these resources to improve welfare in the local environment. After identifying the condition of the village, community service in KKN 114 Group 270 of Uin Sunan Kalijaga applies creative and educational methods that are suitable for implementation. The use of used gallons as a painting medium then involves interaction with children as a learning medium to paint pots from gallons made of inorganic waste that has been cleaned and cut like containers or plant media around the yard. The KKN Group 270 activity in community service encourages residents' awareness to utilize single-use plastic waste, especially Le Mineral gallons as a plant pot medium through the concept of managing and recycling inorganic waste that has been cleaned and cut such as containers or plant media around the yard.

The Citizen Hope Pot that has been painted by the children is then given compost fertilizer that has been processed at the polling station for approximately 3 to 4 weeks. The process of making this compost fertilizer from livestock manure, namely goats, where there is also a mixture of sawdust from tree cutting, as well as molasses as a fertilizer for bacteria in the decomposition process to produce organic fertilizer (Saputra, A. D., Sulastris, F., & Anwar, A. S, 2024). Every week, the process of decomposition of compost fertilizer every 2 days is routinely watered with molasses and stirred evenly so that the compost fertilizer produced will make the plants fertile later. After the compost is finished and ready to be put into sacks to be transferred to recycling pots that have been painted by children. The next process is the planting of Family Medicinal Plants that are suitable according to the climate and conditions in Mantren Village, Karangrejo, Magetan, East Java.

a. Tools and Materials :

The following are the tools and materials used to make pots from gallons of water:

1. Gallons of used Le Mineral brand drinking water packaging
2. Knife/Cutter
3. Watercolor/Oil Paint
4. Soldering (punching tool)
5. Bucket and Soap to clean gallons
6. Mats as a base for painting
7. Hoe or shovel

To facilitate the implementation of the real work lecture program for UIN Sunan Kalijaga Yogyakarta students, a structured implementation method is needed. The following is the method of implementing the 270 group work program:

1. Coordination with DPL and Community Leaders

At this early stage, the KKN 270 group Batch 114 of UIN Sunan Kalijaga Yogyakarta conducted discussions and introductions and regular KKN briefings with field supervisors, the 2nd discussion discussed the work program of the 270 group and then we conducted a field visit to find out the situation, circumstances, and data needed from the KKN location to carry out program planning. Several work programs implemented are made and determined based on the needs of the KKN location. Then a discussion with the Head of Mantren Village, RT, RW, and several communities which were used as a guide in the implementation of the 270 KKN group work program of UIN Sunan Kalijaga Yogyakarta.



Figure 1. Discussion with DPL

2. Identify problems

To determine the problems in Mantren Village, we discussed with the Head of Mantren Village to find out the source of the problems that have occurred so far to determine the next work program.

From the discussion activities with village officials, we can conclude that the problems related to waste in Mantren Village, Karangrejo, Magetan, East Java, are as follows:

1. Lack of education and knowledge related to waste recycling and waste management in the community.
2. Depends on the TPS in Mantren village, which already has a landfill in the village itself so that a lot of garbage accumulates.
3. Villagers prefer to burn garbage rather than recycle their waste.
4. People tend to prefer to buy finished goods rather than process recycled waste.



Figure 2. Identify the problem

3. Program Implementation

The implementation of KKN 114 UIN Sunan Kalijaga Yogyakarta in Mantren Village lasted for 45 days in the period of July 10 – August 23, 2024. The method of implementing the regular KKN student work program for group 270 is as follows:

- a. Survey the location of the place where the work program is carried out and see the condition of the waste disposal site (TPS) as a land for making compost and the search for inorganic waste materials, especially gallons of Le Mineral water
- b. The search for livestock manure, such as goat manure to be used as compost which is processed for 3-4 weeks to produce perfect compost mixed with molasses and stirred regularly every 2 days.
- c. Retrieval or transportation of gallons of Le Mineral water from landfills.
- d. Cleaning and washing of gallons of Le Mineral water.
- e. Drying of gallons of Le Mineral water and Cutting using a knife or cutter according to the size of the pot in general.
- f. Give a hole to the bottom of the gallon of Le Mineral water.
- g. Socialization and Education painted pots of hope for residents in the surrounding environment where the participants were children.
- h. Painting pots by the children of the mantren village and providing compost.
- i. The last step is to plant Family Medicinal Plants (TOGA).



Figure 3. Program Implementation

3. RESULTS AND DISCUSSION

The "Citizen Hope Pot" Real Work Lecture Work Program has great benefits and impacts on the utilization of waste in villages that have not been properly managed. Because with the activity of making this Citizen Hope Pot, there are several stages of activities that have several benefits at their stages.

a. Utilization of Livestock Waste in the Making of Planting Media

Many residents of Mantren Village, Karangrejo, Magetan work as breeders, namely cattle and goat breeders where the use of animal manure waste has not

been properly utilized. Animal manure waste that has not been used is then collected at the Ponco Lawas TPS to be used as compost.

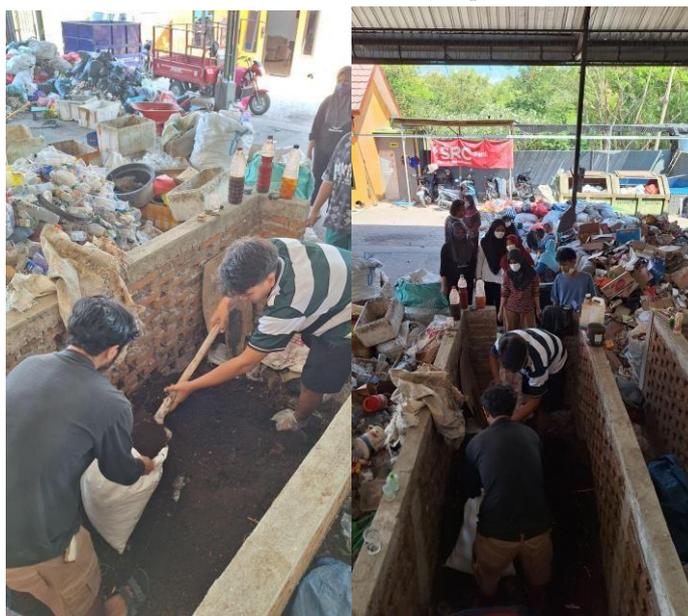


Figure 4. Extraction of goat manure waste and composting

The compost making process is carried out by mixing goat manure with coconut scrap waste and then mixed with molasses molasses liquid which has a sucrose content of 48-55%. Molasses also contains essential minerals such as cobalt, boron, iodine, copper, manganese, zinc, which function as a source of energy and fertilizer for bacteria in the decomposition process to produce organic fertilizers (Lepongbulan et al., 2017).

b. Utilization of Le Minerale Gallon Waste

The use of Le Minerale gallon waste as plant pots colored by children is one of the creative and educational efforts in reducing plastic waste. Le Minerale gallons, which are made from PET (Polyethylene Terephthalate) plastic, are usually only single-use and often end up as garbage. However, these used gallons can actually be reused as plant pots that are durable and easy to find in households.

The process of making pots from used gallons is very simple and can be a fun and educational activity for children. First, used gallons are collected and cleaned. After that, the top of the gallon is cut using scissors or cutters to make a pot from the bottom of the gallon. Small holes are made in the bottom of the gallon so that water does not pool in the pot. Furthermore, children can color the pots with acrylic paint or spray paint, according to their imagination and creativity. After the paint dries, the pot is ready to be filled with soil and planted with ornamental plants or small vegetables.

This activity not only helps reduce plastic waste, but also has many educational benefits for children. By engaging in this process, children learn about the importance of recycling and caring for the environment. They also

develop their creativity through coloring activities, as well as learning about plant growth and how to care for it. In addition, this activity can also be a fun alternative to spend time with family, while being creative and learning. Through this activity, we not only recycle used goods, but also teach the younger generation to care more about the environment.

c. Painting Le Minerale Gallons By Children

Painting used Le Minerale gallons can be a creative and educational way for children to express themselves while learning about the importance of caring for the environment. This activity helps develop their creativity by utilizing an unusual medium, namely plastic gallons, which provides a different challenge and experience than painting on paper. In addition to improving fine motor skills, painting on gallon curved surfaces also trains children's patience and focus. Not only as a means of art, the use of used gallons teaches children about recycling and how materials that would normally be thrown away can be turned into beautiful and useful works of art, such as decorations or multipurpose containers. Thus, this activity is not only entertaining, but also has a positive impact on children's understanding of art and the environment.



Figure 5. Painting Flower Pots by children in Mantren Village (Source: Personal Document)

d. Planting of Family Medicinal Plants and Ornamental Plants

In Mantren Village, the use of used gallons of Le Minerale as pots to grow family medicinal plants has become a useful and environmentally friendly practice. Villagers plant various types of medicinal plants such as ginger, turmeric, aloe vera, and sambiloto, which can be used as natural remedies for various daily health purposes. By using compost from goat manure waste, the soil in the pot becomes more fertile and supports the optimal growth of medicinal plants. This practice not only helps reduce plastic and organic waste, but also provides an easily accessible source of medicinal plants for families, supporting the health and independence of herbs in daily life in Mantren Village.

4. CONCLUSION

UINSUKA KKN 114 students need to educate the people of Mantren Village, Karangrejo, Magetan, East Java about the importance of sorting organic and inorganic waste, as well as provide training on recycling inorganic waste into handicraft products that have a selling value. Students and local residents can also initiate or strengthen composting programs to utilize organic waste, both as fertilizer for TOGA gardens and as animal feed. In addition, pilot projects that utilize organic and inorganic waste, such as the creation of village parks or green areas, can be undertaken to demonstrate the tangible benefits of effective waste management.

Village officials have an important role in supporting waste management by establishing policies that require waste separation at the source, as well as providing adequate infrastructure at polling stations. All community agencies must actively support the KKN program by providing the necessary access and information, as well as involving the community in these activities. In addition, village officials also need to monitor and evaluate programs periodically, as well as assist in the development of businesses based on waste recycling products through training, capital assistance, and market access.

The author in this study highlights community empowerment efforts in Mantren Village, Karangrejo, Magetan, East Java through the use of recycled waste, composting, and planting Family Medicinal Plants (TOGA). This program aims to increase public awareness of the importance of waste management and the environment, as well as provide economic benefits through the results of compost and TOGA. The success of this program is shown by the active participation of the community in these activities and the improvement of their knowledge and skills in managing the environment independently. Furthermore, village officials develop product innovations from waste recycling and plant preservation (TOGA) products that have a higher selling value, such as environmentally friendly or health products, can be the focus of further development.

REFERENCE

- Amalia, K. N., Manggala, F. P., Nugrahani, T. A., Putri, E. Y., Wahyulillah, S., & Nisava, C. (2024). Community empowerment to explore local potential through the manufacture of compost fertilizer by KKN UMD UNEJ. *PROFICIO*, 5(1), 374-381.
- Aulia, F. B., Pungkasto, C., Fitriani, Y., Asih, E. W., Mukholifah, U., Prasetyo, R. B., ... & Fidada, Y. A. (2023). Community empowerment through the use of organic and inorganic waste in Kedungpring Hamlet, Giripeni, Kulon Progo, Yogyakarta. *J-MAS: Journal of Community Service*, 1(5), 599-608.
- Azmi, F. H., & Rahadian, R. (2024). Eco-Crafters as a means of utilizing used goods for students. *Abdima Journal of Student Service*, 3(1), 1019-1025.
- Jayanti, N. K. O., Meyrandari, N. K., & Firmansyah, L. (2023). The Role of Grassroots Communities in Dealing with the Problem of Single-Use Gallon Waste. *Brawijaya Journal of Social Science*, 2(2).

- Kusuma, S. D., & Junainah, E. J. J. (2023). Exploration of Straw Waste and Dredge Bark Waste as a New Innovation to Become Compost and Pesticide Fertilizer by Applying the 3R Environmental Management Principles (Reduce, Reuse, Recycle) in Jorong Banda Raik. *BANTENESE: JOURNAL OF COMMUNITY SERVICE*, 5(2), 288-300.
- Saputra, A. D., Sulastri, F., & Anwar, A. S. (2024). Socialization of Recycling Used Le-Mineral Gallon Plastic Waste into Pot Crafts in Mekarjati Village. *Abdima Journal of Student Service*, 3(1), 2404-2409.
- Setiasih, H., Angelia, K., & Maulidya, A. D. (2023). The use of plastic waste to increase community income in Karangpilang Village, Surabaya City. *Journal of Abdi Bhayangkara*, 5(02), 17331740.
- Subekti, S., Sasmito, A., Lestari, S. P., Agustin, N. C., & Nizar, F. (2023). Community empowerment in the use of household waste into compost for medicinal plant fertilizer in Bandungrejo Mranggen Demak Village. *Merdeka Indonesia International Journal*, 3(1), 1-8.
- Susanti, A. A., Antika, A. A., Pratama, R., Pradana, F. G., Handayani, S., & Sutaryono, S. (2022). Implementation and Development of the Climate Village Excellence Program (Proklim) in Kertonatan Village. *Education KKN Bulletin*, 4(1), 58-68.
- Susanti, L. D., Azzahra, N. S., Ansanika, A., Larasati, E. T., Triliyani, I., Khoiriyah, M., ... & Ilmi, U. (2024). Family Medicinal Plant Cultivation as a Community Empowerment Effort in Tanggulangin Village. *DEDICATION: Journal of Community Service*, 6(2), 145-160.