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Socialization of Self-Watering Pots from Gallon Waste for Sustainable Waste Management: Collaboration with PKK Mungkung Village, Nganjuk Regency

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A B S T R A C T

Community service activities carried out in Mungkung Village on May 15 2024 took the form of socialization and practice of decorating self-watering pots which was attended by Mungkung Village PKK women. Group 01 KKNT MBKM led this activity to educate the public about the benefits and how to make self-watering pots from used gallons, in line with the principles of Sustainable Development (SDGs), especially SDGs 12 and 15. The results of this activity show that the use of waste gallons of Self-watering pots is effective in providing water automatically to plants, improving the quality of plant growth, and reducing plastic waste. The discussion also includes challenges that may be faced such as arranging drainage and monitoring potted plant nutrition. The practice of decorating self-watering pots involves creative decoration techniques, strengthens community participation in sustainable activities, and inspires creativity in efforts to protect the environment. This activity not only provides practical solutions for waste management but also raises awareness of the importance of contributing to sustainable development through simple local innovations.

1. INTRODUCTION

1.1. Background

Human population growth and urbanization have increased water consumption and waste production, especially plastic waste. Efforts to reduce the negative impact of plastic waste on the environment have become a major focus in various countries. Waste management is a major challenge in maintaining the sustainability of the surrounding environment. In terms of the global context, the SDGs emphasize the importance of effective and environmentally friendly plastic waste management. There is a separate impact on the use of plastic that exceeds the maximum capacity. Excessive use of plastic will increase the amount of plastic waste around the environment. can increase the volume of plastic waste in the area where we live. Plastic waste is one type of waste that is difficult to recycle naturally, therefore one of the steps that can be taken in dealing with excess plastic waste is by making several countermeasures [1].

Several factors contribute to the increase in the volume of environmental pollution, for example, a large human population will lead to a level of waste that is wasted. In this case, there is a worst case with not enough landfills, people do not know completely how to manage and benefit from waste so people think they don't want to reuse plastic waste because they are considered dirty [3].

One of the strategies implemented to support the utilization of waste as the main raw material to become a useful and sustainable product is the Self Watering Pot which uses mineral water gallon waste. Self-Watering Pot is a planting medium designed to water plants effectively and automatically, thus reducing the need for human intervention in watering. In media like this not only as a watering efficiency but is useful for mobility for plant care for households and farmers. This innovation is important for public awareness of the importance of sustainable practices in everyday life.

Waste has become a pressing global issue in recent years. According to data from the Plastic Pollution Alliance, there are around 300 million tons of plastic produced annually, which becomes a significant amount of waste. Some people don't understand that mineral water gallons are made from polyethylene terephthalate plastic (PET), which is a significant source of plastic waste, meaning that if not managed properly, the waste can contaminate soil and water and can harm wildlife.

Self-Watering Pot made from waste gallons is an innovative solution that combines the principles of reduce, reuse, and recycle. By using used gallons, we can reduce the amount of waste disposed to the environment, reduce the need for new raw materials, and reduce carbon emissions due to the production process of new plastics.

The implementation of this work program aims to explore the effectiveness of a self-watering pot made from waste mineral water gallons to support the advancement of technology in Mungkung Village sustainably as the management of infrastructure facilities supported by improving the quality in Mungkung Village [2]. It will also evaluate the environmental impact of using gallon waste as the main raw material, as well as the potential water savings that can be achieved through the application of this self-watering technology [4]. This implementation is expected to contribute significantly to contribute significantly to SDGs-based waste management efforts and encourage the adoption of sustainable practices in the community. With increased community awareness and involvement, it is hoped that initiatives like this can be expanded more widely and have a more positive impact on the environment and the welfare of future generations.

1.2. Literature Review

The utilization of gallon waste as raw material for making a watering Pot is an example of an initiative for SDGs-based waste management. Gallons of mineral water in everyday life, which often become useless waste, are now valuable items, even becoming useful and environmentally friendly products. Therefore, the initiative is not only to reduce plastic waste but to support the achievement of several SDG targets, such as SDGs point 15 (Land Ecosystems). In addition, the main benefit of the Self Watering Pot is that there is no need to bother watering the plants every day. Self-watering pots have been around for a long time. People in the interior landscaping industry started using them in the 1980s [5].

1.3. Research Objective

The main objective of this service is to encourage the community to manage gallon plastic waste wisely and sustainably, by turning the waste into useful self-watering pots. Provide creative alternatives for the community in utilizing unused gallon plastic waste, by turning it into self-watering pots that can be used to grow plants efficiently. Stimulate the creativity and innovation of the community in managing gallon plastic waste, to create products that have positive economic and environmental value.

1.4. Research Objective

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2. MATERIALS AND METHODS

The method of implementing socialization activities and the practice of decorating self-watering pots is a collaboration of two parties who work together to help improve the SDGs of Mungkung village. The first party is KKNT UPN "Veteran" East Java students as initiators and implementers of socialization activities in Mungkung Village, Rejoso District, Nganjuk Regency. The second party is the PKK women of Mungkung Village the target party of the activity who participated in this activity. This activity was held at the Mungkung Village Hall Office, Rejoso Sub-district, Nganjuk District. It was held on Wednesday, May 15, 2024.

Participants who participated in this activity were PKK mothers in Mungkung Village with a total of approximately 30 people. The implementation method carried out in this service is in the form of socialization/counseling, discussion sessions, and pot decorating practices. The first activity carried out was socialization/counseling to provide a deeper understanding of the concept of sustainable development (SDGs), the benefits, and how important it is to manage resources wisely. Then followed by a discussion session containing question-and-answer activities so that participants better understand the benefits of self-watering pots. After that, the activity continued to decorate the pot according to the creativity of the PKK women

3. RESULT AND DISCUSSION

3.1. The Result

Community service activities took place in Mungkung Village, Rejoso District, Nganjuk Regency, on May 15, 2024, in the form of socialization and practice of decorating self-watering pots with the venue at the Mungkung village hall. The meeting was attended by PKK mothers as well as shallot farmers with a total of approximately 30 people. Group 01 KKNT MBKM has conducted socialization and practice of decorating self-watering pots so that the community can utilize unused bottles to be used as self-watering pots. This is in line with the Sustainable Development Goals (SDGs) which prioritize the use of resources wisely and environmentally friendly, considering that most of the people of Mungkung Village Utilization of onion skin waste to make pesticides is an effort of Sustainable Development (SDGs), namely on SDG 12 on "Responsible Production and Consumption", because the activity involves efficient waste management and sustainable use of resources. The processing of onion skin waste is also an effort under SDG 15 on "Land Life", as it is a form of effort to reduce organic waste that can contribute to land and environmental degradation. This utilization helps achieve sustainable development goals by reducing waste and creating sustainable solutions in agriculture. Self-watering pots made from gallon waste proved effective in providing water without the need for regular manual watering. Plants grown in these pots show healthy and productive growth. In addition, the use of gallon waste reduces the amount of plastic waste entering the environment and increases awareness of the importance of

recycling. The application of self-watering pots using gallon waste as an SDGs-based solution can be a model to inspire people to manage waste creatively and sustainably. The potential use of this technology not only improves the environment but also produces economically beneficial products.

The Working Principle of a Self-Watering Pot is how this pot can provide water automatically to plants without the need for regular watering. Planting media used must have a good ability to absorb and store water without causing too much moisture that can damage plant roots by using a drainage system (channels used to channel excess water using patchwork as a wick from the water container to the roots of the plant so that the plant still gets enough water nutrition. Advantages of Using Self-Watering Pots. The main benefit of using self-watering pots is that it brings its own benefits such as saving water, time, and energy in plant care. Self-watering pots can improve plant health by providing consistent moisture, moisture will affect the photosynthesis and transpiration process for plants. Adequate humidity levels can help prevent the spread of airborne viruses and bacteria, reducing the risk of respiratory infections.

The application of self-watering pots in daily life can be applied in various contexts, ranging from household use to commercial scale. Self-watering pots for households can be placed in the living room, front yard or backyard to add aesthetic value and fresh air into the house so that it makes the house more comfortable and fresh. Commercially, self-watering pots can be sold as a substitute for the usual pot media to attract customers to buy self-watering pots instead of ordinary pots. Self-watering pots can be applied in planting vegetable plants, ornamental plants, or other indoor plants, but not all plants are suitable for planting in self-watering pots. Some plants may be more sensitive to excessive or insufficient moisture, so it is necessary to choose carefully so that the selection of plants for self-watering pots can be precise.

Challenges may be faced in using self-watering pots, such as the need to adjust to certain types of plants or different environmental conditions. Such challenges can be considered such as drainage control, although self-watering pots are designed to provide water automatically, good drainage is still important so that the roots are not stagnant and the plants do not suffer from root rot. Water Level Maintenance is designed to regulate water flow automatically, sometimes it is necessary to monitor and adjust the water level according to plant needs and environmental conditions. Plant Nutrient Monitoring Plants in self-watering pots may require further monitoring of nutrients as constantly available water may reduce the plant's ability to take up nutrients from the growing medium. Cleaning and maintenance The self-watering pot system needs to be kept clean and functioning optimally. This includes cleaning the water container and ensuring all components are working properly. With these challenges in mind, the use of self-watering pots can be an effective solution to ease plant care in confined spaces or when access to water is routinely limited.

Presents tips or strategies to optimize the use of self-watering pots according to the specific needs of the user.Identifies the variety of self-watering pot designs available, including differences in size, materials, and water regulation mechanisms.Presents product or DIY (Do It Yourself) examples available for readers who want to make or buy self-watering pots. Select the right planting medium by using a soil mix that is suitable for the type of plant to be planted. Make sure the soil mixture has a good ability to absorb water and provide sufficient drainage so that water does not stagnate. Setting the Water Level by knowing the water needs of the plants planted in the pot. Adjust the water level in the water storage container (reservoir) according to the needs of the plants. Do not leave it too dry or too wet. Regular monitoring by checking the pots regularly to ensure the water level in the reservoir is still sufficient. This is especially important when the weather changes or the plants are in an active growth phase. Choose the right location Place the pot in a place that has access to enough sunlight according to the needs of the plant. This helps the process of water absorption and photosynthesis of plants. Plant Care In addition to watering, make sure the plants get appropriate care such as fertilizing and pruning if needed. Healthy plants are more efficient in using water. Regular maintenance by cleaning the pots periodically to avoid salt or mineral accumulation that may interfere with the performance of the self-watering pots. By implementing these strategies, you can optimize the use of self-watering pots to support the optimal health and growth of your plants.

3.2. Practice Making a Self-Watering Pot.

The practice of decorating self-watering pots was carried out directly by PKK women by forming several groups, each group containing about 8-10 people. In this practice, PKK women can learn how to decorate self-watering pots so that they are not only functional but also aesthetic. The process of decorating these pots involves various techniques such as painting, adding decorations such as stickers or fabrics, as well as using various additional materials to enhance the appearance of the pots. The purpose of this practice is not only to improve skills in the art of decoration but also to inspire creativity and strengthen the bond between PKK members. By sharing ideas and skills, each participant is expected to take home a unique and personalized pot. Through this activity, it is hoped that mothers can find pleasure in creating something beautiful and useful, and apply the skills they have acquired to beautify their own homes. The practice of decorating self-watering pots is also one of the efforts to support environmental sustainability, by encouraging the use of reusable pots and minimizing water wastage. Thus, the practice of decorating self-watering pots by PKK women is not just an arts and crafts activity, but also a positive step towards a more sustainable and creative lifestyle. Some of the sequences that took place during the practice of decorating the self-watering pot are as follows:

3.3. Material preparation

Prepared self-watering pots that have been primed with white paint. Paint or colorant to paint the pot (optional). Brush or tool to decorate the pot.

3.4. Work steps

Pot Cleaning: Make sure the self-watering pot is clean before starting to decorate. The pot is clean with a white base color. Painting (Optional): If you want to give a basic color to the pot, PKK mothers can use paint or dye that matches the desired theme or design. Make sure to give it time to dry before moving on to the next step.

Add designs: PKK women can add a variety of free designs that they want, for example, a Nature theme by using leaf, flower, or animal motifs. Polka dots or stripes: For a more modern look.

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Ethnic or traditional motifs: With patterns inspired by local culture.

Pot Drying: The painted and decorated pots are dried and ready to be used as self-watering pots. and ready to be used as self-watering pots.

Figure 1. Picture of Mungkung Village PKK Women Decorating Self-Watering Pot

PKK women can share their experiences and techniques with other members, and Group 01 KKNT MBKM and encourage them to try something similar with their creations. PKK women can create self-watering pots that not only function well but also become unique and personalized works of art. With this innovative self-watering pot technology, plant hobbyists can enjoy the convenience of caring for their plants without having to worry about water shortages. These pots not only make maintenance easier but also help keep the plants consistently moist. Thus, the self-watering pot is an ideal choice for anyone who wants to adorn their home or office with beautiful plants without having to sacrifice a lot of time to maintain them."

Figure 2. Picture of Joint Photo Session with PKKWomen together with Group 01 KKNT MBKM 2024 with the results of the Practice of Decorating Self-Watering Pot.

4. CONCLUSION

Community service activities with PKK women in Mungkung Village aim to educate and practice the use of self-watering pots made from recycled gallon waste. This initiative promotes sustainable resource and environmental management. Self-watering pots provide a consistent water supply without the need for regular manual watering, raising awareness about recycling and reducing plastic waste in the local environment. This initiative aligns with the Sustainable Development Goals (SDGs), particularly SDG 12, "Responsible Production and Consumption," and SDG 15, "Life on Land," which emphasize efficient waste management and the reduction of organic waste to support sustainable agriculture. The use of self-watering pots can be applied in various contexts, from household to commercial scales, offering a sustainable solution with potential economic benefits. Challenges in using self-watering pots include selecting appropriate plant types, managing drainage, maintaining water levels, monitoring plant nutrients, and ensuring the pot systems function optimally. Decorating these pots by PKK women is not only a craft activity but also a positive step towards a more sustainable and creative lifestyle, inspiring innovative and sustainable waste management practices.

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