

EMPOWERMENT AND UTILIZATION OF PLASTIC WASTE INTO HYDROPONIC MEDIA IN JEGU VILLAGE, PENEBEL DISTRICT, TABANAN REGENCY, BALI

I Kadek Oktama Setyawan^{1*}, I Made Praditya Maha Wiguna², Qorry Dewi Puspita Ningrat³, Tasya Prajna Pratisthita Hari Putri⁴, Adie Wahyudi Oktavia Gama⁵, Gusi Putu Lestara Permana⁶

Universitas Pendidikan Nasional Denpasar

Jl. Bedugul No. 39, Sidakarya, Kec. Denpasar Sel, Kota Denpasar, Bali 80224

^{1*} oktama.setyawan15@gmail.com, ² pradityamahawigunaa@gmail.com,

³ dewipuspitaningrat@gmail.com, ⁴ tasyahari2001@gmail.com,

⁵ adiewahyudi@undiknas.ac.id, ⁶ lestarapermanaclass@gmail.com

Abstract

The COVID-19 pandemic has greatly affected people's living conditions, namely in the food sector. Therefore, to overcome these problems by applying the use of plastic bottle waste in hydroponic media. In this activity, it is expected to be able to meet food needs while at the same time overcoming the problem of plastic waste in the Jegu Village community. The method in applying the use of plastic bottle waste into hydroponic media is by socializing and applying it directly at the Jegu Village Office and carried out by evaluation with discussion. The purpose of this community service is to provide knowledge about hydroponic media and the use of existing plastic bottle waste to the people of Jegu Village. In our opinion, Jegu Village is suitable for using a farming system with hydroponic media because it has a small area of land. This community service activity hopes to increase the knowledge of the Jegu Village community in utilizing plastic bottle waste in hydroponic media.

Keywords: Hydroponic media, Plastic bottle waste, Land use.

INTRODUCTION

Garbage is one of the main factors of environmental problems that require serious handling, along with a large number of residents in an area, it also increases the volume of waste. In addition, waste continues to be produced if people do not have the awareness to fix the problems that exist on this earth.

In this community, they have not been able to manage the waste they produce properly as a result there will be a buildup of garbage. This is because plastic waste is difficult to decompose so it can cause problems in environmental hygiene and health. One of the efforts to manage waste so that it has economic value is by reusing, reducing, recycle. Recycle movement or what is meant by recycling waste back with several processing stages. In managing this waste, it can be recycled so that it has use value for the community. This opportunity can be used by plastic bottle waste managers to become hydroponic media. The training on making hydroponic media uses plastic bottles as a vegetable growing medium. Farming activities are not only carried out in the fields but can be done around the house yard

using hydroponic media.

Growing vegetables with hydroponic media can increase the growth of vegetable productivity up to two times compared to planting them normally or conventionally. In this day and age, there is a modern way of growing crops using hydroponics. Because hydroponics does not need to use a large area of land. This system can benefit from the quality of the yield and can take advantage of the existing agricultural land.

An alternative that can be offered to reduce the soaring waste problem and improve the quality of protein in the community is to grow crops with hydroponic media. Cultivating vegetable crops with hydroponic media and utilizing plastic waste which is also able to improve the welfare and health of the community. Although this planting technique is in water, plants grown using hydroponic media require less water than ordinary planting. So hydroponic planting is very suitable to do if you want to save more water use. Using hydroponic media also makes it easier for us to provide nutrition, pest control, and lighting that is easier to manage.

Because this hydroponic system is more efficient to implement, therefore, the solutions and contributions from this service activity are expected to increase economic value and reduce the accumulation of plastic bottle waste in the community. In addition, basic needs such as vegetables can be met easily, and cost-effectively, do not require a large area of land, and also save time. This is because plants grown with hydroponic media are harvested quickly compared to being planted normally.

IMPLEMENTATION METHOD

The implementation method that we use in the activity program is Socialization which aims to increase the knowledge of the people of Jegu Village, Penebel District, Tabanan Regency, in the Utilization of Plastic Waste in Hydroponic Media.

The implementation of our socialization activity program is carried out at the Jegu Village Multipurpose Hall with the target being people who work as farmers. In this socialization activity, the use of plastic waste was carried out by giving direct explanations to the people who came to the Multipurpose Center about how to use plastic waste in hydroponic media and how to plant kale seeds in hydroponic media. In this program method, activities carried out in conducting socialization include several stages of implementation.

A. Observation Stage

The initial stage of this program is to make direct observations at the Jegu Village Head's office. We talked with the village head about the problems around the village. In conducting our observation activities, we saw the situation where a large number of agricultural lands in Jegu Village made us interested in bringing up the discussion about hydroponic media. In addition, because this village has problems related to waste, we are interested in discussing hydroponic media by utilizing plastic waste. We carried out our observations by asking for permission to carry out the work program that we made, besides that, we also prepared the tools and materials needed for socialization activities. We also made observations regarding places that could be used to carry out this educational activity.

B. Education Stage

We do this stage with the Education method. By using this method we provide education to the public and hope to convey brief information about hydroponics, plastic waste, and its benefits. Through the educational stage, we compiled the material for a smooth explanation of the material. The material is prepared by the socialization implementation team by looking for various references to obtain valid information. In preparing this material, they also prepared videos for making hydroponic tools and growing kale with hydroponic media to add information for socialization participants to make it clearer and understand the stages. We do this with the aim that the public can understand the scientific basis for recognizing the potential of plastic waste in farming with hydroponic media. Meanwhile, in the demonstration method here, we explain how hydroponic farming techniques are used and what the benefits of plastic waste are.

C. Evaluation Stage

At the evaluation stage of the final socialization activity, we closed by holding discussions with the community so that they could exchange ideas or information about the use of plastic waste in hydroponic media. In addition to the use of plastic waste in hydroponic media, we also discussed the experiences of each participant in the socialization. We also ensure that this socialization can help and also add information to the socialization participants about what hydroponic media is and how to use waste so that it can be used again or reused.

RESULTS AND DISCUSSION

Community service was carried out in Jegu Village, Penebel District, Tabanan Regency regarding education on the use of plastic waste in hydroponic media. This education is targeted at people who work in agriculture. In the early stages of our activities in community service in Jegu Village, we started by coordinating with the Village Head and implementing groups who discussed the series of activities to be carried out.



Figure 1. Coordination with the Village Head

This educational activity targets training for Subak residents who live in the Jegu Village area. The participants of this outreach activity were 20 people, consisting of PKK women and also subak residents in Jegu Village. This education is an activity or work program that they have just participated in. Previously, the community in Jegu Village had never attended any training activities on the use of plastic waste in hydroponic media, therefore this training was very necessary for the socialization participants. The purpose of delivering this education is to an environmentally friendly farming system and the use of

plastic waste in hydroponic media. Socialization participants need to provide information on this activity due to the problem of waste in the environment around where they live. We can see from the enthusiasm of the participants in participating in the socialization. Socialization activities on the use of used goods such as plastic bottle waste as hydroponic media.



Figure 2. Educational activities for the community



Figure 3. The material is delivered through education and demonstration

After the socialization stage, then carried out with a discussion and question and answer stage for the participants of the socialization. In our activity, the speaker provided an opportunity for participants to ask questions that they did not understand because this socialization activity was for the first time carried out in Jegu Village so the people of Jegu Village were very enthusiastic about following and learning from the explanations and stages of the activity.



Figure 4. Discussion of socialization participants

The result of this product is that this product has succeeded in increasing the knowledge and interest of participants to start trying to grow crops using hydroponic media. They realized there were other techniques in farming that made them want to try them. With this breakthrough, it can be considered new in reducing the problem of plastic waste in our environment. This hydroponic media is also able to give the impression of being environmentally friendly around the village if it is used by many people.

In providing socialization activities, we provide videos related to how to make hydroponic media tools with used plastic as well as how to grow kale with hydroponic media. With this video, it is hoped that it can provide a clearer explanation to the participants of the socialization of the required stages. The results of this activity also produce hydroponic media tools that we make using used tools that can be reused. The hydroponic media can plant more than 15 plant seeds in one hydroponic media tool.



Figure 5. Hydroponic media tools using plastic waste

Overall, this service activity was successful, it can be seen from several things such as their enthusiasm to attend this event, as well as the participants' curiosity about this hydroponic media. As we can see, the participants were very active in the discussion activities, as well as in asking and answering questions. Participants also seriously participated in this educational activity from the beginning of the activity to the end. This socialization is more interesting because we can know that waste can be processed into something useful, such as being a planting medium for hydroponic media. The inhibiting factors of this activity are few. The only drawback is the uneven distribution of information and education related to hydroponic media due to the lack of time to be able to spread this education widely to the entire community there.

Table 1. Development of Devotion

No	Before Devotion	After Devotion
1	Previously, the people of Jegu Village had not properly utilized Plastic Waste Disposal.	Now the people of Jegu Village are aware of the importance of using plastic waste in hydroponic media.
2	Previously, the community had no useful and productive activities.	Now more and more people are interested in utilizing plastic waste disposal which is processed into hydroponic media that is useful for food needs.
3	Previously, people did not understand how to make hydroponic media and how to plant it.	Now people have understood about making hydroponic media and how to plant it.

In the table it can be seen that there were changes that occurred before and after we carried out the education. Previously there were still many people who did not know and understand hydroponic media. And there are still many people who do not have activities that can generate income for them. However, after this educational activity, the community can grow crops easily, save time, and can generate income for them. In addition, they are also aware that they are not aware of the importance of reusing waste, especially plastic waste. This education adds to their knowledge that waste, especially plastic waste, can be reused into useful and environmentally friendly items.

The following is a video of the stage of making hydroponic media tools from the results

of hydroponic media education activities:

https://www.instagram.com/reel/CZeFWHPgC3s/?utm_medium=copy_link

CONCLUSION

This activity is a breakthrough in reducing the problem of plastic waste that is more environmentally friendly. In addition, this activity can help encourage economic improvement and reduce vegetable spending in the village. The use of plastic bottle waste as a hydroponic medium can provide an understanding of the importance of protecting the environment around us, besides that, it can help people's food availability and reduce the amount of plastic waste. The method used in this activity was able to increase the knowledge of socialization participants such as PKK women and subak residents in Jegu Village regarding planting plants using hydroponic media. And improve the skills of the community in Jegu Village regarding knowledge about how to grow hydroponically and utilize plastic waste as a hydroponic container.

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