

Education on the Use of Hydrogels to Grow Ornamental Plants: Building Environmental Awareness since an Early Age (SB Sentul Kuala Lumpur, Malaysia)

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Abstract: The purpose of this community service activity are to introduce hydrogel planting media and provide knowledge about ornamental plants that can be recommended to students at Sanggar Belajar Sentul, Kuala Lumpur, Malaysia. The fulfillment of the material target, the level of enthusiasm of the participants, and the ability of the participants to take part in planting training using hydrogel planting media-which involves the reuse of used bottles for ornamental plants are the three main achievements of the community service activities that have been carried out.

1. Introduction

In modern times like today, many have forgotten the importance of the role of plants in the survival of the earth and humans. Plants have many benefits, namely as oxygen producers, noise absorbers and can be used as room decoration. Lately, public interest and awareness to start cultivating their own plants has increased, especially the cultivation of ornamental plants that can be grown indoors. Ornamental plants are one of the potential agribusiness commodities, because they can be grown in a narrow area. In addition, they also have high economic value. Therefore, the demand for quality is very high, so the cultivation technology is the use of planting media. Cultivation of ornamental plants without using soil can increase the aesthetic value of plants and make the room more unique, namely with the use of hydrogel media [1].

One of the simple technologies that can be used in agriculture is the use of verticulture planting methods in ornamental plant cultivation. Cultivation of ornamental plants can be tried with various media, either with soil media or cultivation of plants without soil of high aesthetic value, among others with hydrogel media. Hydrogel is a soil replacement planting medium for ornamental plants in vases. The function of hydrogel is to help reduce the capacity and frequency of watering water by always fulfilling the water needs of ornamental plants in vases. Ornamental plants that can be cultivated with hydrogel media include Aglaonema, Sansievera, Anthurium, Phylodendron, Japanese bamboo and red betel [2].

Hydrogel is an alternative growing medium as a soil substitute for potted ornamental plants. The function of hydrogels is to help reduce the volume and frequency of watering water while still meeting the water needs of plants. Hydrogels have a technology that can be utilised in agriculture on narrow land (urban farming) where hydrogels have the ability to absorb and store water and physiological solutions up to thousands of times its dry weight and not easily dissolved. In terms of increasing knowledge about hydrogels can be done by cultivating ornamental plants using hydrogels [3].

According to previous research the use of hydrogel as a growing medium produces chilli plants that have longer roots than plants grown using soil media [4]. This is very good for plants because the roots have functions, among others, as plant support, respiration, helping the photosynthesis process, reproduction, absorption of water and nutrients, storing food reserves and plant movement.

The results of research by Andrian et.al [5] stated that the use of hydrogel has a significant effect on the number of leaves at 5 weeks after planting (WAT), while watering plants on soil media has a significant effect on the number of leaves at 2-5 (WAT). These results indicate that plant growth is slightly slower than plants that are watered with water every day. However, the nature of the hydrogel that can store water is able to provide moisture to the plants. Thus the plants can continue to grow even though they are not watered every day.

Children have a great nature of curiosity, and like to play. As a form of learning and play media for children, it is necessary to learn about the function of hydrogel as a planting medium, so that children can learn to care for plants with colourful media according to their preferences. Children should be taught to grow plants from an early age, so as to create a sense of responsibility, as well as the benefits of hydrogel and the dangers of hydrogel when consumed.

This community service activity will make value-added products with the use of hydrogel as a planting medium, in addition to learning to the children of the learning studio about the benefits and dangers of hydrogel. The purpose of ornamental plants in the room is not only fake plants (from plastic) but can be with real plants without using soil but using hydrogel planting media and can add to the beauty of these ornamental plants.

2. Method of implementation

This community service activity was carried out with practical methods and direct lectures to students from learning centres invited to plant using hydrogel media at SB Sentul, Kuala Lumpur Malaysia as the location of the service activity. The activity was carried out on 26 June 2024. The sequence of activities from beginning to end is as follows:

1. Establishing Cooperation with Sanggar Belajar Sentul, Kuala Lumpur Malaysia
2. Literature study related to planting techniques using hydrogel planting media
3. Establish training materials and methods for planting techniques for ornamental plants (hockey bamboo) using hydrogel planting media.
4. Provide briefings to children at SB Sentul Kuala Lumpur, Malaysia using the following methods:
 - a. This approach method is used to communicate ideas that are very understandable to children. This approach uses lectures with practice so that information can be absorbed concisely, quickly and simply. Understanding of hydrogel planting media, its advantages and disadvantages, ornamental plants to be planted, and how to care for plants using hydrogel planting media.
 - b. Lecture Method, this approach was chosen to assess the extent to which the students could receive and understand the information that had been given. This approach was used because a question and answer session can increase the energy of the forum and provide direct feedback to the presenters on whether or not their message was understood.
 - c. Practical Method, together with the practice of planting ornamental plants using hydrogel planting media, this method was chosen to apply and integrate knowledge and skills in real life.

The first step in using hydrogel media is to soak it in water, then let it sit for one day and one night. Hydrogels that have been soaked have the ability to change shape from a very small sphere to a very large sphere. Hydrogel growing media is ready for use if it has been soaked in water and the hydrogel has grown into rather large spheres. Prepare the plants that will be used, the plants used are hockey bamboo. You can start using the hydrogel for planting as soon as the plant and hydrogel are ready. Prepare an old bottle, add a little hydrogel to it and insert the houseplant. The plant is ready to be displayed as a houseplant. living room, kitchen, bedroom and terrace are possible locations for the plant.

3. Results Of Discussion And Activities

The results of the implementation of community service activities include the achievement of the target material, the level of enthusiasm shown by the students and the ability of the students to make ornamental plant containers from used plastic bottles using hydrogel planting media.

The material in question has been presented in a way that is mostly complete and precise, with a good level of achievement. The material presented includes the definition of hydrogel growing media, its advantages and disadvantages, what ornamental plants can grow well on hydrogel growing media, and how to care for plants grown on hydrogel growing media. Students at SB Sentul Kuala Lumpur are very enthusiastic in using hydrogel growing media to cultivate ornamental plants.

The enthusiasm of SB Sentul students in growing ornamental plants using hydrogel growing media is quite good. Students are given hands-on practice putting hydrogel into used bottles, planting Chinese bamboo and the used bottles are named after each student so that they are responsible for the plants planted.

The results of monitoring and evaluation show that students can follow the socialisation activities well. Students in SB Sentul who did not know what hydrogel is, now understand its benefits. The students engaged in lively conversations with each other during the activity. They were very happy when they planted using hydrogels as they did not have to worry about watering the plants every day. In addition, the hydrogels in different colours enhanced the beauty of their classroom.



4. Conclusion

Empowering students and providing good assistance, students' enthusiasm for greening and instilling love for the surrounding environment increases, especially by utilising hydrogel as an alternative planting medium. Students get unforgettable experiences and benefits and can follow the activities from start to finish. Hydrogel can be an alternative planting media in urban areas that have narrow land.

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