*2 (1), 2023, 38-40*
**Bulletin of Social Studies and Community Development**
https://imrecsjournal.com/journals/index.php/bsscd

# Hydroponic Vegetables by Utilizing Beverage Plastic Bottle Waste

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**Abstract:** The interest of Gampong Baro residents in farming, the limited space for living , the abundance of plastic bottle waste from beverages, and the lack of knowledge among Gampong Baro residents regarding the processing of plastic bottle waste, have turned plastic beverage bottles into mere waste without functional value. The existence of this community service is expected to make the residents of Gampong Baro realize that the accumulated plastic bottle waste will be difficult to decompose in the soil and will have negative health impact if burned. Plastic bottle waste has highly diverse functions if we understand to process it. The purpose of this community service is to provide counseling to Gampong Baro residents on how to utilize plastic bottle waste, one of which is to use it as a media for hydroponic vegetable cultivation. The result of this community service is healthy vegetables grown hydroponically using plastic bottle waste. The purpose of this community service is to reduce plastic bottle waste, enable gardening as a hobby despite limited space. The method used in this community service is the wick system, which is one of the hydroponic methods. The importance of the results of this community service is to inform the residents of Gampong Baro that plastic bottle waste can be utilized and has functions that can yield healthy vegetables, thereby enhancing the economic value of Gampong Baro residents.

**Keywords:** waste; hydroponic; vagetable; gampong baro; plastic bottle.

## ▪ INTRODUCTION

Most of the plastic waste is generated from beverage products and styrofoam for food packaging. Plastic bottles and styrofoam are the most common types of waste after plastic bags (Faizah, Nasirudin and Prakasa, 2020). Both types of packaging are quite strong and can be reused. The limited knowledge of the residents of Gampong Baro in processing the two packages of waste and the lack of knowledge about the technique of processing this waste as a planting medium has resulted in an abundance of plastic bottles and styrofoam which has an impact on the environment (Astuti, S.P., et al, 2021).

Apart from the problem of waste that cannot be used optimally, another problem for some Gampong Baro residents is channeling a hobby of farming which is difficult to do. This is due to the narrowness of the land. Nowadays, urban community buildings are shophouses (shophouses), flats (flats) and minimalist housing that have small land or even no land at all. So that the hobby of farming can be channeled to the residents of Gampong Baro, planting using the hydroponic method can be tried (Krismawati, 2012).

To improve plant cultivation, various hydroponic systems can be used in urban areas. There are various methods for growing hydroponically. Starting from the very simple to the sophisticated, from cheap to expensive. Starting from those that only use leftover objects, to modern ones that use greenhouses and technology that supports plant development. Efforts to continue the activity can be carried out by holding socialization and training for Gampong Baro residents by focusing on the area, economy and health

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Received: 14 March 2023
Accepted: 17 May 2023
Published: 18 May 2023

which can be experienced through growing hydroponic vegetables from waste bottles. Economically, it is able to reduce household spending, regionally it is able to reduce plastic waste from used bottles and healthfully it is able to fulfill nutrients obtained from vegetables. Another effort that can be tried for the sustainability of the activity is to incorporate this activity into the village program (Aji et al. 2018) and involve academics in the process of planning and facilitating activities (Mustikarini et al. 2019).

## ▪ METHOD

The methods of community service are: a) Outreach which aims to increase the understanding and awareness of Gampong Baro residents regarding accumulated plastic bottle waste, b) Direct practice by residents, resulting in products in the form of vegetables that can be consumed both personally and can be sold so that increase household income.

## ▪ RESULT AND DISCUSSION

The results of the service obtained are in the form of vegetables that have been sown in rockwool, and have been transferred to used plastic drinking bottles using a hydroponic wick system.

According to Marlina, et al (2015) One of the simplest hydroponic systems is the Wick system, also known as the axis system. This axis system acts as a distributor of nutrients to plants or vegetables. This hydroponic system can develop better and faster, because it obtains nutrient water directly (Azad et al. 2013).

Hydroponics is an agricultural system that does not need to be watered all the time because this system relies on nutrient water that flows through a wick in the form of wool cloth placed on hydroponic plants.

Hydroponic vegetables have a harvest period which is presented in the following table.

**Table 1.** Hydroponic vegetable harvesting period

| No | Nama Sayuran | Masa Panen (HSS) |
|---|---|---|
| 1 | Bayam | 30-40 |
| 2 | Kangkung | 27-35 |
| 3 | Selada | 35-50 |
| 4 | Pakcoy | 45-60 |
| 5 | Sawi Hijau/Caisim | 40-60 |
| 6 | Tomat | 45-75 |
| 7 | Cabai | 65-75 |
| 8 | Seledri | 60-90 |

**Sumber:** https://farmee.id/umur-tanaman-hidroponik-siap-panen/

## ▪ CONCLUSION

This activity aims to educate, motivate and raise awareness for the residents of Gampong Baro, Meuraxa District, Banda Aceh City for bottled waste that has piled up. The enthusiasm of the residents at the time of the activity was shown by the many questions that arose during the practice, the questions and answers were summarized in a pocket book.

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