

Empowering Women Farmers: Cultivating Sustainable Livelihoods Through Home Yard Horticulture on Marginal Land in Imogiri, Yogyakarta

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Abstract.

*This study addresses food security and limited productive land in Java, focusing on marginal lands with steep topography and proximity to forest borders in Yogyakarta. Conventional perennial crops offer slow returns, prompting the exploration of alternative solutions. This research, conducted with Kelompok Wanita Tani (KWT) Cengkehan in Imogiri, a group facing land constraints and human-wildlife conflict with long-tailed macaques, investigates the utilization of home yards for horticulture planting. Through observation and interviews, we found that KWT Cengkehan successfully implemented a strategy of planting vegetables and medicinal plants in repurposed plastic waste containers on their sloped land. This innovative approach not only addresses land limitations and plastic waste management but also aligns with the Javanese philosophy of *memayu hayuning bawana*, fostering harmony with nature and mitigating wildlife conflicts by avoiding open-field cultivation. The findings suggest this method enhances agricultural productivity and economic value for the community, serving as a sustainable model for rural development.*

Keywords: *Marginal land; Kelompok Wanita Tani; Food security; Horticulture.*

I. INTRODUCTION

Java Island is one of the islands in Indonesia with an area of 128.3 square kilometers. Java is divided into six provinces, namely Banten, DKI Jakarta, West Java, Central Java, East Java, and the Special Region of Yogyakarta. Java Island is an island with a population of 170 million people, with a population density of 1317 people per square kilometer. The population on Java Island is estimated to reach more than 56% of the total population in Indonesia. This causes the need for food in Java to be very large. This large need for food is faced with limited productive land, resulting in challenges related to food provision and food price stability.

One of the problems of productive land that occurs in Java is the existence of transition areas and marginal land. A land bordering forests is a residential and agricultural area that has direct boundaries with forests. In this area, there is often interaction between humans and forest ecosystems. The Special Region of Yogyakarta has a land bordering forests in the Imogiri area. This area has been designated as a nature reserve, and its sustainability must be maintained

Marginal land is an area with low productivity due to several factors, including lack of water availability, lack of soil nutrient availability, extreme soil pH, saline land, and sloping

topography. Based on data, the Special Region of Yogyakarta has almost 80,000 hectares of marginal land that needs to be managed. The marginal land is spread along the coastline and in the karst hilly areas that are spread from Imogiri to Gunung Kidul (Iguna et al., 2022). Some marginal land has sloping topography, which causes its own challenges in its management.

Efforts to manage marginal land with sloping topography have begun by planting high-value plants that are adaptive in extreme conditions, namely pepper and wood plants such as teak and mahogany (Zulfikar et al., 2021). However, these plants are annuals with a fairly long harvest period and a relatively slow return on investment. Therefore, a comprehensive solution is needed to answer these challenges.

The Cengkehan Women Farmers Group (KWT) is one of the farmer groups living in the Imogiri area. The land managed by KWT Cengkehan is marginal land with sloping topography, and directly borders the Imogiri Nature Reserve, resulting in limited agricultural cultivation efforts. Departing from these problems, we carried out this community service activity with the aim of increasing the productivity of agricultural businesses and providing suggestions for increasing the economic value of the community. The output of this activity is expected to be the basis for compiling a strategic plan for community and village economic development.

II. METHODS

This activity is carried out using the area observation and interview methods. Area observation is carried out by observing vegetation, land slope, and location mapping. Interviews with several sources, namely members of farmer groups, agricultural extension officers, and village officials to understand the situation in the field. The results of these observations and interviews are then compiled into an activity report.

III. RESULT AND DISCUSSION

KWT Cengkehan

KWT Cengkehan is one of the farmer groups in the Imogiri area of Yogyakarta. KWT Cengkehan consists of women who work in agriculture. Most of the activities carried out are off-farm activities, especially in processing agricultural products, and handicrafts such as batik. However, since the COVID-19 pandemic, demand for handicrafts has decreased and encouraged KWT members to initiate other activities so that they are expected to improve the community's economy, one of which is by planting vegetables and medicinal plants in their home yard (Nurul Rofiqo Irwan et al., 2018). The cultivation of vegetable and medicinal plants carried out by KWT Cengkehan members has its own challenges, namely, limited productive land.

The limited productive land in the KWT Cengkehan area includes landscapes with sloping topography and land bordering forests. This has hampered the development of agricultural cultivation efforts due to topography, as well as conflicts between the community and wild animals, namely long-tailed monkeys (*Macaca* sp.). Long-tailed monkeys are animals protected by law and have a habitat in the Imogiri Nature Reserve; therefore, conflict management cannot be done by reducing the population, but rather by a preventive approach.

In order to overcome these problems, KWT Cengkehan tries to overcome the limited land available by planting vegetables and medicinal plants on sloping land and utilizing plastic waste as

a container for planting media. This concept, in addition to prioritizing the reduction of plastic waste, also prioritizes Javanese philosophy (*memayu hayuning bawana*) to harmonize what exists in nature. This philosophy grows and develops in the lives of rural communities, especially because of the values that are passed down from generation to generation to maintain the life that existed before. The existence of forest areas around settlements is considered a legacy of the past, so that the community, as residents, need to align themselves with the existing landscape.

Utilization of Plastic Waste and the Concept of Hamemayu Hayuning Bawana

Plastic waste is one of the important problems in the Special Region of Yogyakarta (Fitriani & Astuti, 2021). Plastic is a material that is difficult to decompose and is a major pollutant of the environment. Therefore, special handling is needed regarding plastic waste. The approach used to reduce the environmental impact of plastic waste is the application of the Reduce, Reuse, Recycle (3R) concept. This approach emphasizes the reuse of plastic waste that can be utilized, such as plastic bottles. The 3R concept is also in line with the *Hamemayu Hayuning Bawana* concept, which has taken root and lives in the Yogyakarta community (Ainia, 2021).

More broadly, the concept of *Hamemayu Hayuning Bawana* is also seen in the community's attitude in dealing with conflicts with wildlife. Conflict between residents and wildlife is a problem that often arises in the KWT Cengkehan area, especially during the dry season. To anticipate conflicts with wildlife, the community and members of KWT Cengkehan do not develop vegetable cultivation efforts in open land, but in plastic pots. In addition, members also plant medicinal plants that are not at risk of being attacked by wildlife.

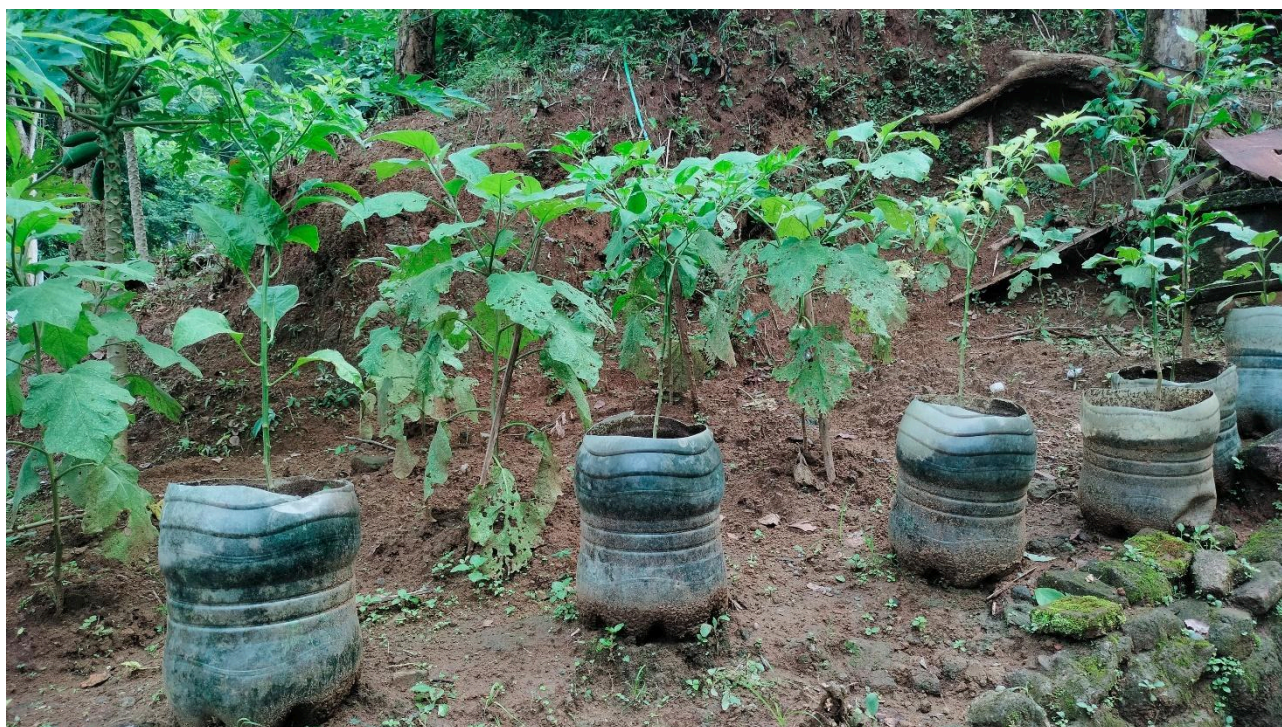


Figure 1. Utilisation of plastic bottle waste as planting media

Development of KWT Cengkehan

The existence of KWT Cengkehan is currently visible with the opening of the area as a tourist village. This is an advantage for KWT members in accessing market niches for off-farm

products that they develop, including batik, herbal medicine, and processed foods. Several business units have obtained official permits such as SNI and P-IRT, so that they can be marketed commercially. KWT members also utilize the digital marketplace platform to reach consumers more widely. In the future, KWT Cengkehan is expected to become a model for farmer groups in Yogyakarta.



Figure 2. Interview and discussion with local authority

IV. CONCLUSION

The study highlights the effectiveness of utilizing home yards for horticulture planting as a viable solution for agricultural challenges on marginal lands, particularly those with steep topography and adjacent to forest areas. The Kelompok Wanita Tani (KWT) Cengkehan in Imogiri demonstrated a successful adaptation strategy by cultivating vegetables and medicinal plants in repurposed plastic containers. This approach not only circumvents the limitations of sloped land and human-wildlife conflict but also integrates the traditional Javanese philosophy of *memayu hayuning bawana*, emphasizing environmental harmony. The initiative has enhanced the community's agricultural productivity and economic well-being, contributing to the development of a local tourism village and expanding market access for their products.

Based on the successful implementation by KWT Cengkehan, the following suggestions are offered:

- **Promote and Replicate the Model:** The KWT Cengkehan's innovative approach to utilizing home yards and repurposed materials should be promoted as a model for other farming groups facing similar land constraints and environmental challenges in Java and beyond.
- **Capacity Building:** Provide further training and resources to KWT Cengkehan members and other interested communities on advanced horticultural techniques, pest and disease management for container gardening, and efficient water usage.

- Market Linkages: Continue to support KWT Cengkehan in strengthening their market linkages, both online and offline, to ensure the sustainability and profitability of their horticultural products. Explore opportunities for direct sales to restaurants, hotels, or local markets.
- Research and Development: Conduct further research on the optimal plant varieties for cultivation in limited spaces and marginal lands in the region, as well as the long-term environmental impact and sustainability of using plastic waste as planting containers.
- Policy Support: Encourage local government and relevant agencies to develop policies and provide incentives that support home yard horticulture initiatives, plastic waste recycling for agricultural purposes, and community-based conservation efforts that align with local cultural philosophies..

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