

## House Terrace Utilization as a Hydroponic Cultivation (Tjsl PT Pertamina Patra Niaga Fuel Terminal Gorontalo)



Gunawan Rasyidi<sup>1</sup>, Kadek Dwi Ariyanto<sup>2</sup>, Arizal<sup>3</sup>

<sup>1,2,3</sup> PT Pertamina Patra Niaga Fuel Terminal Gorontalo

**ABSTRACT:** Research on the utilization of house terraces as hydroponic cultivation areas has been conducted in Tenda village, Hulonthalangi sub-district, Gorontalo city. This research employed a qualitative approach with a focus on studying one of PT Pertamina Patra Niaga Fuel Terminal Gorontalo's Corporate Social Responsibility (CSR) programs, namely the Kelurahan Tenda Hijau program, located in Tenda village, Hulonthalangi sub-district, Gorontalo city.

The data collection for this research was conducted through observation and literature study, spanning a period of two weeks from May 26, 2023, to June 2, 2023. The focus of this study was twofold, examining the pre-implementation process and the program's actual implementation. The results of this research indicate that the utilization of house terraces as hydroponic cultivation areas is an effective solution to optimize limited space in urban areas. Hydroponic cultivation on house terraces has the potential to enhance local food availability, and the utilization of house terraces for hydroponic cultivation has environmental impacts.

**KEYWORDS:** hydroponic system, house terrace, tenda village, pt pertamina fuel terminal gorontalo

### INTRODUCTION

The utilization of house terraces as spaces for hydroponic cultivation has become an interesting topic in the field of urban agriculture. In densely populated urban areas, limited land often poses a major constraint on practicing agricultural activities. However, by employing hydroponic methods and utilizing house terraces, an effective solution can be achieved on producing plants within confined spaces.

Tenda village is an example of an area in Indonesia that faces land limitations and the need for local food sources. In this context, the utilization of house terraces as spaces for hydroponic cultivation becomes an interesting alternative to enhance food availability and reduce dependency on food supplies from outside the village.

PT Pertamina Patra Niaga Fuel Terminal Gorontalo as a state-owned enterprise (BUMN) engaged in oil and gas distribution, recognizes the limitations present in Tenda village as a long-term potential. Through its Corporate Social Responsibility program, PT Pertamina Patra Niaga Fuel Terminal Gorontalo collaborates with the residents of the village to form a dedicated group that implements a program called Kelurahan Tenda Hijau. Through the Kelurahan Tenda Hijau program, community members are taught, facilitated, and encouraged to collectively engage in hydroponic cultivation on their respective house terraces.

Hydroponic cultivation conducted on house terraces in Tenda village has the potential to provide significant benefits. Firstly, the hydroponic method allows plant growth without the need for soil. This is particularly important in situations where land is limited, and soil quality may be an issue. Additionally, hydroponics requires less water usage compared to conventional farming, thus helping to address any water scarcity issues that may exist in the area.

In this journal, the researchers explore the concept and practice of utilizing house terraces as spaces for hydroponic cultivation in Tenda Village. The researchers discuss important aspects such as designing hydroponic systems suitable for house terraces, as well as the challenges and opportunities that may arise in implementing this practice.

It is hoped that this journal will provide valuable insights for the residents of Tenda Village and the general public who are interested in utilizing house terraces as spaces for hydroponic cultivation. Furthermore, by implementing this practice, it is expected to promote increased availability of local food, strengthen food resilience, and provide positive economic and social benefits for the community.

## House Terrace Utilization as a Hydroponic Cultivation (Tjst PT Pertamina Patra Niaga Fuel Terminal Gorontalo)

### METHODS

This research utilizes a qualitative approach with a focus on studying one of PT Pertamina Patra Niaga Fuel Terminal Gorontalo's Corporate Social Responsibility (CSR) programs, namely the "Kelurahan Tenda Hijau" program, located in Tenda village, Hulonthalangi sub-district, Gorontalo city. Data collection for this study was conducted through observations and a literature review. The research had two main focuses: the pre-implementation phase of the program and the program's actual implementation. The study was conducted over a period of two weeks, from May 26, 2023, to June 2, 2023.

### RESULTS

#### The Pre-implementation Phase of the Program

Prior to the implementation of the Kelurahan Tenda Hijau program, PT Pertamina Patra Niaga Fuel Terminal Gorontalo conducted Social Mapping to identify the issues and potentials within Tenda village, Gorontalo city. Through the social mapping process, it was revealed that many families relied on natural resources outside of Tenda village for their daily consumption. This was seen as a risky situation, especially in the event of another outbreak of the Covid-19 virus, which would restrict the movement of people, including their ability to access their daily food needs. Therefore, there was a need for concrete steps to prepare for local food resilience, particularly at the village level.

On the other hand, there are many houses in Tenda village that have terraces that can be utilized for hydroponic cultivation. Moreover, the findings from the Social Mapping process served as the basis for proposing TJS (Social and Environmental Responsibility) programs to the management of PT Pertamina Patra Niaga, including the Kelurahan Tenda Hijau program.

After the program proposal is approved by the management of PT Pertamina Patra Niaga, the Kelurahan Tenda Hijau program is then socialized and formulated collaboratively with local stakeholders, such as the sub-district head, village head, neighborhood association (RT/RW) leaders, and influential community figures. The focus of the discussions revolves around the technical implementation of the program and identifying the members who will be involved in it. The involvement of these stakeholders ensures that the program is tailored to the specific needs and context of Tenda village.



Figure 1. Socialization of the Kelurahan Tenda Hijau program

During the process of socialization, there are pros and cons regarding who has the right to be part of this program group, and several weaknesses of the hydroponic system such as the need for special skills in hydroponic cultivation. This is in line with what Roidah (2014) stated, the weaknesses of the hydroponic system include:

- (1) High initial investment
- (2) Requires special skills to measure and mix chemical ingredients
- (3) The availability and maintenance of hydroponic equipment can be somewhat challenging

It is undeniable that hydroponic cultivation requires a significant amount of capital in practice. However, this expensive investment is necessary and directly proportional to the long-term benefits that will be obtained. As is known, hydroponic cultivation has its advantages. As stated by Putra (2019), some advantages of hydroponic cultivation include:

1. Vegetables grown in hydroponics do not come into direct contact with soil, resulting in cleaner and healthier produce.
2. Vegetables are less prone to pests and diseases, and the nutrient solution is tailored to meet the specific needs of the plants.
3. Hydroponics requires less land compared to traditional farming methods.
4. Hydroponically grown vegetables have high market value due to their quality and perceived health benefits.
5. Harvested vegetables can be immediately consumed in their fresh state, providing maximum freshness and nutritional value.

## House Terrace Utilization as a Hydroponic Cultivation (Tjsl PT Pertamina Patra Niaga Fuel Terminal Gorontalo)

Silvina and Syafrinal (2008) also mentioned the advantages of hydroponic farming, which include easier maintenance of plant cleanliness, no need for land preparation and weed control, sterile growing media, efficient use of water and fertilizers, continuous cultivation regardless of the season, suitability for small land areas, and protection from direct rain and sunlight.

### The Implementation of the Program

The implementation of the Green Tent Program began with a hydroponic cultivation training attended by all members of the group. The training was inaugurated by the Manager of PT Pertamina Patra Niaga Fuel Terminal Gorontalo at that time.

Hydroponic plants generally require a significant amount of water. Siregar (2021) states that hydroponic cultivation is a technique that utilizes a nutrient-rich water medium. The literal meaning of hydroponics is "working water" (Masduki, 2017).



Figure 2. First day of hydroponic cultivation training

On the first day of the training, all the necessary facilities and equipment for hydroponic cultivation were handed over to the farming group. These hydroponic facilities and equipment were specifically tailored to the average size of the participants' household terraces as part of the Green Tent Program. To ensure effective knowledge transfer, the training sessions were not conducted as a one-time event. Instead, multiple training sessions were planned, with each session focusing on specific topics based on the evaluation of the previous training. This approach allowed for a progressive learning experience and addressed any specific areas that needed further clarification or improvement. Each training session ended with practical exercises and group discussions. These practical sessions provided participants with hands-on experience in setting up and managing the hydroponic systems. The group discussions fostered a collaborative learning environment, allowing participants to share their insights, exchange ideas, and address any challenges they encountered during the practical exercises.

By incorporating practical sessions and group discussions, the training aimed to enhance participants' understanding of hydroponic cultivation and enable them to apply the knowledge effectively in their own setups



Figure 3. Second day of hydroponic cultivation training

In the implementation of the program, the Hydroponic Farming group, consisting mainly of PKK (Family Welfare Movement) mothers from Tenda Village, not only received training but also received six months of guidance from the private sector. This support aimed to ensure that the processes and outputs produced by the Hydroponic Farming group in the Green Tent Program were optimized.



**Figure 4. Hydroponic cultivation assistance**

Furthermore, in support of the Kelurahan Tenda Hijau program, group members are provided with guidance and technical support by trained mentors or facilitators. These facilitators then assist the group members in understanding the basic concepts of hydroponics, selecting suitable plant varieties, planning the layout of the hydroponic system, determining the appropriate nutrient solution formula, and implementing more efficient water management.

Through this mentoring process, group members also gain a better understanding of practical steps in caring for plants, controlling pests and diseases, and regularly monitoring plant quality.



**Figure 5. One of the results of hydroponic cultivation**

### CONCLUSIONS

Based on the conducted research, the following conclusions can be drawn:

1. Utilizing house terraces as hydroponic cultivation areas is an effective solution to optimize limited space in urban areas.
2. Hydroponic cultivation on house terraces has the potential to improve local food availability. By utilizing house terraces, group members can produce their own vegetables and other food crops, reducing dependence on external food supplies.
3. The utilization of house terraces for hydroponic cultivation has environmental impacts. This method reduces the water usage required compared to conventional farming and decreases the risk of soil erosion that can occur on open land

### ADVICE

This research hopes to pave the way for further studies related to hydroponics. One suggested area of research is conducting a feasibility study on the economic aspects of hydroponic cultivation on house terraces. This research could involve analyzing the investment costs, operational expenses, and potential income generated from hydroponic cultivation on house terraces.

Additionally, it is important to pay attention to research on the social and behavioral factors that influence public acceptance of hydroponic cultivation on house terraces. Understanding these factors can provide insights into how to promote and encourage widespread adoption of hydroponics in the community.

**REFERENCES**

- 1) Hidayat, S., Satria, Y., dan Laila, N. 2020. Penerapan Model Hidroponik Sebagai Upaya Penghematan Lahan Tanam di Desa Babadan Kecamatan Ngajum Kabupaten Malang. *Jurnal Graha Pengabdian*. Vol 2 (2).
- 2) Masyura MD., dan Nel Arianty. 2019. Pemanfaatan Pekarangan Dalam Usaha Budidaya Sayuran Secara Hidroponik. *Prosiding Seminar Nasional Kewirausahaan*. 1(1).
- 3) Masduki, A. 2017. Hidroponik Sebagai Sarana Pemanfaatan Lahan Sempit di Dusun Randubelang, Bangunharjo, Sewon, Bantul. *Jurnal Pemberdayaan*. Vol. 1 (2).
- 4) Putra, yudha Andriansyah., Gustina Siregar., dan Sri Utama. 2019. Peningkatan Pendapatan Masyarakat Melalui Pemanfaatan Pekarangan Dengan Teknik Budidaya Hidroponik. *Prosiding Seminar Nasional Kewirausahaan*. 1(1).
- 5) Roidah, Ida syamsu. 2014. Pemanfaatan lahan dengan menggunakan sistem hidroponik. *Jurnal Universitas Tulungagung Bonorowo* vol. 1, No. 2.
- 6) Silvina F., dan Syafrinal. 2008. Penggunaan berbagai Medium Tanam dan Konsentrasi Pupuk Organik Cair Pada Pertumbuhan dan Produksi Mentimun Jepang (*Cucumis sativus*) secara Hidroponik. *J. SAGU*. 7 (1): 7-12
- 7) Siregar, M Haikal Fakhri Fazri & Aisar Novita. 2021. Sosialisasi Budidaya Sistem Tanam Hidroponik Dan Veltikultur. *IHSAN: Jurnal Pengabdian Masyarakat* Vol. 3, No. 1



There is an Open Access article, distributed under the term of the Creative Commons Attribution – Non Commercial 4.0 International (CC BY-NC 4.0) (<https://creativecommons.org/licenses/by-nc/4.0/>), which permits remixing, adapting and building upon the work for non-commercial use, provided the original work is properly cited.