



Vegetable Cultivation Using Residents' Yard Land to Increase Food Security in Gelanggang Village, East Sakra District, East Lombok Regency

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Received: January 22, 2024

Revised: March 10, 2024

Accepted: March 25, 2024

Published: March 30, 2024

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DOI: [10.29303/ujcs.v5i1.571](https://doi.org/10.29303/ujcs.v5i1.571)

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Abstract: Gelanggang Village is one of the villages located in East Sakra District, East Lombok Regency, which has great potential in the agricultural sector and almost 90% of the people living in Gelanggang village work as farmers. However, other plants such as vegetables, which are one of the food necessities, are not widely planted and cultivated, because they are considered less productive for the community. Apart from that, the people of Gelanggang village also have large plots of land which are not utilized. The aim of the main KKN-PMD program activities in Gelanggang Village is to provide education regarding the use of residents' yards for cultivating vegetable crops and increasing the food security of the Gelanggang Village community. The stages in carrying out the main KKN-PMD work program activities in Gelanggang Village are the first stage sowing vegetable seeds, the second stage making Verticulture shelves and the last stage carrying out outreach. The result obtained from this activity is that by conducting outreach related to vegetable cultivation, this can provide education regarding the use of residents' yard land for cultivating vegetable plants. Apart from that, this outreach is also an effort to increase the food security of the Gelanggang village community.

Keywords: Cultivation; Vegetable Plants; Food security.

Introduction

Gelanggang Village is a village located in East Sakra District, East Lombok Regency with an area of 441.18 Ha. With a recorded population of 6,973 people consisting of 3,440 men and 3,533 women with a total of 2,674 family heads. With a population density level of 16 people/km². With a population of 6,973 people, the level of education is still low, where only 258 men have studied up to high school level and only 233 women. This makes the level of human resources (HR) low,

hampering the growth and development of the village towards an advanced village in various aspects.

Gelanggang Village has great potential in the agricultural sector. Nearly 90% of the people living in Gelanggang village work as farmers. However, due to geographical conditions which cause two seasons, namely the dry season and the rainy season, the residents of Gelanggang village choose to farm tobacco and chilies during the dry season and during the rainy season to plant rice because this is more effective in increasing the income of the Gelanggang community from agricultural products. However, other plants such

How to Cite:

Kahar, A., Hanani, H., Rizwan, M. R., Juniarti, J., Yuliana, Y., Fitri, R., Nabilah, N., Komalasari, U.I., Fathan, M., Azhari, R., & Hikmawati, H. (2024). Vegetable Cultivation Using Residents' Yard Land to Increase Food Security in Gelanggang Village, East Sakra District, East Lombok Regency. *Unram Journal of Community Service*, 5(1), 1-5. <https://doi.org/10.29303/ujcs.v5i1.571>

as vegetables, which are one of the food necessities, are not widely planted and cultivated, because they are considered less productive for the community. Apart from that, the Gelanggang community also has a large area of house yard that is not utilized. For this reason, the KKN-PMD students of Mataram University took the initiative to utilize residents'/community yards to cultivate vegetable plants to increase food security in Gelanggang village. It is hoped that apart from earning income from agricultural land, the Gelanggang village community can also fulfill their food needs from cultivating vegetables in their home gardens.

Food security is one of the main pillars in realizing national food security, which for a country is very important, especially for countries that have a large and continuously increasing population, such as Indonesia. The level of food security can be measured from food availability, affordability, safety and food quality (Pujilestari & Haryanto, 2020). Food security is also a global issue, where increasing population will have consequences for increasing food needs (Kusumo et al., 2020).

In line with the challenges that will be realized by the Food Security Agency in 2045, namely realizing national food security, one of which is the increasing number of low-income people who tend to consume food in low quantity and quality due to limited purchasing power. Food security is a condition where food is met for the country and individuals, which is reflected in the availability of sufficient food in terms of quantity and quality. Apart from that, guaranteeing food that is safe, diverse, nutritious, equitable and affordable and does not conflict with the religion, beliefs and culture of the community so that they can live healthy, active and productive lives in a sustainable manner. This can be realized by planning a work program that utilizes residents' yards to cultivate vegetables (BKP, 2020). Apart from that, work programs that utilize residents' yards for cultivating vegetables can support government programs in preventing stunting cases.

Vegetable plants are part of horticultural plants which have an important role because they provide enormous benefits to humans. Vegetables are needed as a source of nutrition because they contain many sources of fiber, vitamins and minerals (Rianda et al., 2021). The types of vegetables are Pakcoy, Mustard greens, Kale, and so on. Pakcoy or bok choy (*Brassica rapa* subsp. *Chinensis*) is a vegetable that is generally consumed as fresh vegetables, a mixture of various dishes or pickled. Pakcoy belongs to the Brassicaceae family and it has high nutritional content, so it is good for consumption to support a healthy lifestyle (Jayanti, 2020). Furthermore, the mustard plant is a leaf vegetable plant that contains complete nutrients that meet nutritional requirements so it is very good for body health. Apart from that, there are

also other types of vegetable plants that can be cultivated in people's yards (Moi, 2015).

The KKN-PMD work program launched is relevant to research conducted by Masyhura and Arianty in 2019, where the aim of the research was to utilize home gardens in hydroponic reforestation efforts. Hydroponics is greening by utilizing water without using soil with an emphasis on meeting the nutritional needs of plants. Meanwhile, the KKN work program that will be carried out is utilizing home yard land using the Verticulture method (Masyhura MD, 2019).

Verticulture technique is a method used for optimal settlement of communities that have limited land. This technique will arrange the plants in layers from top to bottom with various types of plants. There are several types of Verticulture, namely bottles, PVC pipes and bamboo. Several types of vegetables that can be grown in this cultivation are lettuce, mustard greens, celery, spinach and kale (Mardilla & Pratiwi, 2021). These types of plants have high economic value, are short-lived, and are usually called annual plants. The advantages of this Verticulture technique are efficient use of land because the amount planted is greater compared to conventional systems, saves on the use of fertilizers and pesticides, the opportunity for grass and weeds to grow is small, easy to move because the plants are placed in certain containers, and makes maintenance easier (Kusmiati & Solikhah, 2015).

The aim of the main KKN-PMD program activities in Gelanggang Village is to provide education regarding the use of residents' yards for cultivating vegetable crops and increasing the food security of the Gelanggang village community.

Method

The stages in carrying out the KKN-PMD work program in Gelanggang village are as follows:

Sowing Vegetable Seeds

The first thing to do in cultivating vegetable plants is to sow vegetable seeds. Vegetable seeds that are sown include Pakcoy, Mustard greens, and Kale. Tomato and eggplant vegetable seeds are not sown directly but are obtained from the BSIP Mataram Office. The sowing of the three vegetable seeds was carried out by making a seedbed using bamboo and used materials that were no longer in use. When sowing, the planting medium used is a mixture of soil and roasted husks in a 1:1 ratio. Burnt husk is an organic material that can help maintain soil moisture because it has almost balanced macro and micro pores, so air circulation is quite good and water absorption is higher (Aryani et al., 2022). Sowing vegetable seeds is carried out for 14 days, which is marked by the growth of 3-4 perfect leaves.

Making Verticulture Shelves

The next stage is to make a Verticulture rack which is used as a method of cultivating vegetable plants. In making Verticulture shelves, they can be made from bamboo, pipes, used bottles, used sacks and so on, in this case the Verticulture shelves are made from bamboo and used bottles. Making this Verticulture rack does not depend on the age of the vegetable seeds being sown, it can be made after the age of the vegetable seeds is 10 days or 14 days or can be made at the same time as sowing the vegetable seeds. Once the Verticulture rack is ready to be used, the planting medium in the form of a mixture of soil and burnt husks can be put into the Verticulture rack being used.

Socialization

The final stage is to carry out outreach regarding the cultivation of vegetable crops by utilizing residents' yards. The series of socialization activities consisted of delivering material related to cultivating vegetable crops using residents' yards using Verticulture techniques, followed by a demonstration of mixing planting media and planting vegetables with residents (transplanting) and distributing vegetable seeds that had been sown.

Results and Discussion

In the sowing process, seeds for vegetable plants (mustard greens, pakcoy and water spinach) will begin to be sown on Friday 29 December 2023 in the afternoon. The seeding process is carried out for 14 days. Next, regular watering is carried out in the morning and evening using a plant sprayer. The results of sowing are vegetable plant seeds (mustard greens, pakcoy, water spinach), each amounting to 150 seeds. The Tomato and Eggplant vegetable seeds were obtained from the BSIP Mataram office, with 100 seeds each.

In the process of making Verticulture shelves, 2 different materials are used, namely bamboo and used drinking water bottles. The manufacture of Verticulture shelves or better known as vertical gardens used by the Unram KKN-PMD team in Gelanggang Village is divided into 2 stages. The first stage is the stage of making the shelf, in making the shelf you need 4 steps, namely the first step is preparing 4 pieces of bamboo measuring 180 cm to be used as rack trusses and 2 bamboo each measuring 40 cm, 60 cm and 80 cm as easel bar. The second step is to make an easel by connecting the ends of two bamboo poles to one part (as the top of the shelf). The third step is to adjust the shape of the two poles to form an isosceles triangle and install the 3 bars in sequence according to their size with an offset of 10 cm at the left and right ends. The final step is to connect the two horses with a 150 cm long bar, attach it with two nails on each side, the distance or height can be adjusted.

Next, the second stage is making bamboo pots. In making pots, 6 steps are required, namely the first step is preparing 6 pieces of bamboo with a diameter of 5-10 cm, with a length of 150 cm, 6 pieces. The second step is to split each piece of bamboo $\frac{1}{4}$ lengthwise using a machete. The third step is to make a hole in the bottom of the bamboo as a place for watering water to come out. The fourth step is to make two holes at each end of the bamboo in a perpendicular direction to the bamboo. These holes function as holes for tying the wire to the truss. The fifth step is to tie each bamboo pot according to the position of the easel bar as a backrest. The final step is to insert the planting medium in the form of soil and burnt husks and then the Verticulture rack or vertical bamboo garden is ready to be used for planting. Meanwhile, to make a Verticulture shelf using used plastic bottles, you need 8-10 used bottles measuring 1.5 liters, then each bottle is cut into two parts and a hole is made in the bottom and side of the bottle, this is intended as a place for the water to come out. The bottles have been cut into two parts, arranged vertically using small nylon rope, in 3 layers and the distance between each bottle is 30 cm. From 10 used bottles, 3 Verticulture racks were obtained which will later be filled with planting media in the form of a mixture of soil and burnt husks. Verticulture shelves with vegetable plants can be seen in Figure 1.



Figure 1. Verticulture Shelf with Vegetable Plants

Once the Verticulture rack is complete and ready to be used, preparations are made for socialization. The socialization activity was carried out on Thursday, January 18 2024 at the residence of Mrs. Emi (one of the residents in Dasan Baru hamlet), starting from 15.30 to 18.00 WITA. This activity was attended by 50 residents of the Gelanggang village community. The community's response to this socialization activity was very enthusiastic, so that the participants who attended the socialization event were not only fathers and mothers, but children also attended. The series of socialization activities include the opening, remarks by the chairman

of the Unram KKN-PMD, Gelanggang Village, Abdul Kahar, delivery of socialization material by members of the Unram KKN-PMD, Gelanggang Village, Juniarti and Muhammad Fathan, a demonstration of making planting media and planting vegetables with the residents of Gelanggang village (transplanting).) accompanied by the distribution of vegetable seeds, finally a cover and a group photo. Verticulture shelves with vegetable plants in residents' yards can be seen in Figure 2.



Figure 2. Verticulture Shelves with Vegetable Plants in Residents' Yards

The socialization material presented was in the form of an introduction regarding the cultivation of vegetable plants by utilizing the home yard using Verticulture techniques, the types of vegetables that can be cultivated in the home yard, namely Mustard greens, Pakcoy, Water Spinach, Tomatoes, Eggplant, Chilies, Celery, Lettuce and so on, and the planting media used are rice husks and soil. Apart from that, efforts to cultivate vegetable crops can support government programs, namely the challenge of the Food Security Agency in realizing national food security by 2045.

After the presentation of the socialization material there was a discussion/question and answer session with the residents present, one of the questions asked by the residents was asking about how to obtain fertilizer that comes from organic materials in order to minimize expenses in purchasing fertilizer considering that fertilizer is also relatively rare. Quoted from several scientific journal sources, by using tobacco stem waste, residents can obtain organic fertilizer from this waste, supported by the Gelanggang village community, the majority of whom are tobacco farmers and the tobacco stem waste in Gelanggang village is not used, it is only burned in open fields, so based on the scientific journal, the solution is /answers that can be given, by utilizing

tobacco stem waste in Gelanggang village. After completing the discussion/question and answer session, it was continued with a demonstration session on making planting media as well as planting vegetables together (transplanting). Making planting media by mixing soil and burnt husks was carried out by members of the Unram KKN-PMD witnessed by residents. After the planting media had been made, the residents who attended the socialization moved the vegetable seeds to the Verticulture shelves that had been created. Apart from the residents who planted together, this demonstration session was also attended by the Teniki Hamlet Head and the Gelanggang Village Community Police Head. Next, this activity was closed by holding a group photo session and before the residents went home, vegetable seeds were distributed so that the participants or the community could plant them directly in their yards.

By carrying out this outreach activity, we can provide information and education to the people of Gelanggang village regarding the cultivation of vegetable crops using home gardens. Apart from that, through this socialization and taking part in vegetable planting demonstrations with the Gelanggang village community, we are indirectly making efforts to increase food security by planting vegetables in home gardens so that it can make it easier for residents to consume vegetables. Activities to socialize vegetable cultivation in residents' yards can be seen in Figure 3.



Figure 3. Socialization Activities

Conclusion

Based on the description of the activities described above, the conclusion that can be drawn is that by conducting outreach regarding the cultivation of vegetable crops, this can provide education regarding the use of residents' yards for cultivating vegetable crops to meet daily home kitchen needs and minimize household expenses. Apart from that, this outreach is also an effort to increase the food security of the Gelanggang village community.

Acknowledgments

Thank you to the Institute for Research and Community Service (LPPM) of the University of Mataram for organizing the 2023-2024 Village Community Empowerment Real Work Lecture (KKN-PMD) as well as its support in various forms so that this KKN activity can run well. Thank you to the Head of Gelanggang Village and his staff as well as the people of Gelanggang Village, especially the residents of Dasan Baru Hamlet and Teniki Hamlet for their support, cooperation, family embrace and active participation in a series of KKN-PMD activities at the University of Mataram.

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