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Budikdamber Training: Efforts to Optimize the Utilization of Home Yard

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Abstract

Breeding and farming with limited land and does not require significant capital, *Budikdamber* can be one of the most appropriate choices in overcoming food problems. This *Budikdamber* activity aims to provide knowledge and training to the Dasawisma group in utilizing home yard land and fostering an entrepreneurial spirit. The method used in this service was a direct practice method carried out by Dasawisma women using tools and materials prepared by the community service team. The participants consisted of 20 people. The activities were carried out by complying with the health protocols. The materials provided were 1) an explanation of *Budikdamber* (Fish Cultivation in a Bucket), 2) an Explanation of the tools and materials used, and 3) training on how to make *Budikdamber*. Through this activity, the people of Rukti Sedyo village have learned how to make good and correct *Budikdamber* techniques.

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INTRODUCTION

The availability of land becomes one of the factors of production that has a strategic function as a food provider (Asrini & Surata, 2020; Hafidah et al., 2017). People, especially in rural areas, use large land areas to raise fish and grow crops to support food needs. The land use in Rukti Sedyo village is primarily used as rice fields, gardens, and fields. The area of rice fields is 594.03 hectares, gardens are 152.8 hectares, and fields are 7.93 hectares. With such vast rice fields, it is no wonder that many Rukti Sedyo villagers work as farmers and planters. In addition to farmers, some people have small and medium enterprises (SMEs) such as kelanting, odrok, laying hens farms, etc.

Furthermore, the community in Rukti Sedyo village is divided into two groups: the agricultural and fishery groups. However, the groups that have been actively carrying out activities so far have only been the agrarian group. Then, the group in the field of Fisheries is not very active in the village of Rukti Sedyo. Of the 924 total heads of families in Rukti Sedyo village, only five families are involved in the fisheries sector. The rest dominate the agricultural industry, such as planting corn, rice, cassava, etc.

The inactivity of community groups in the fisheries sector is constrained by significant capital or budgets, considering that most people in this village are farmers whose economy is sure to be limited. In addition, the Covid-19 pandemic that occurred from the beginning of 2020 has dramatically impacted aspects of life (Amboro, 2020). The condition of the economic crisis during the current pandemic is one of the main problems caused by the Covid-19 pandemic (Andhikawati et al., 2021). Apart from budgetary constraints, other constraints experienced by the fisheries group are related to land issues. Although Rukti Sedyo village has an extensive land area, the land is paddy

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fields and farmland. Thus, residents who do not have paddy fields or fields cannot carry out programs in the field of fisheries because there is no land to serve as fish ponds (Febri et al., 2019).

Many people think that without a large yard, they will be unable to grow vegetables and raise fish. But in fact, this is not the case. Without a large area of land, we can still cultivate fish and grow vegetables with *Budikdamber*. One of the efforts to overcome the lack of land in the fisheries sector is cultivating fish in buckets and vegetables, commonly referred to as "*Budikdamber*" (Purnaningsih et al., 2020). Fish farming in buckets, or what is often called *Budikdamber*, is one of the future food solutions that can be developed on limited land to create community food self-sufficiency, especially during the current Covid-19 pandemic (Idianto & Imron, 2021).

Fish farming in buckets or *Budikdamber* is a simple hydrogenic model (Suryanti et al., 2020). The "*Budikdamber*" technique (Fish Cultivation in Buckets) was first discovered by Juli Nursandi, a lecturer from the Faculty of Fisheries Cultivation of the Lampung State Polytechnic (Polinela). Through this *Budikdamber* technique, people who live in rural and urban areas can use the not-too-wide garden area (Saputri & Rachmawatie, 2020). Fish and vegetable cultivation is very potential because it can be done in a narrow house area with more efficient water use. This fish and vegetable cultivation is easy and can be done at the homes of each community, considering that the PPKM (Enforcement of Community Activity Restrictions) has been implemented to anticipate the spread of the Covid-19 virus with little or relatively small capital (Zen et al., 2020). *Budikdamber* can be used as an alternative for the village community of Rukti Sedyo for fish cultivation and entrepreneurship (Prabawa et al., 2021). With Fish Cultivation in Buckets (*Budikdamber*), people can remain productive during the Covid-19 pandemic. They can raise fish and grow vegetables by utilizing the media used in *Budikdamber*, namely buckets and plastic cups. People who have yards and the ability to plant have the potential to produce their vegetables without having to buy them. Many people think that without a large yard, they will be unable to grow vegetables and raise fish. But this is not the case; without a large area of land, we can still cultivate fish and grow vegetables, namely with *Budikdamber*.

This *Budikdamber* activity is a form of implementing technopreneurship in the community. *Budikdamber* technique can be used for fish farming and hydroponic vegetable growing. This *Budikdamber* technique can be used as a solution to the limitations of yard land at home and can also be used as a place for entrepreneurship (Aini et al., 2020). This *Budikdamber* technique can help the community meet their nutritional needs without having to spend a lot of money. *Budikdamber* can efficiently utilize limited land (Syahfitri et al., 2021). This bucket fish cultivation training is important to create a productive workforce and instil the entrepreneurial spirit to have economic independence.

Education on Fish Cultivation in Buckets *(Budikdamber*) in Sukapura Village, Dayeuhkolot District, Bandung Regency because of the obstacles to the availability of clean water and the need for large land (Andhikawati et al., 2021). Aquaculture Fish and Aquaponics use the *Budikdamber* method to ensure food security for the people of Sungai Bilu Village, East Banjarmasin District, during the Covid-19 Pandemic (Fauzana et al., 2021). Community service activities related to *Budikdamber* include Budikdamber training to maintain family food security in the Banyuasri village (Prabawa et al., 2021). However, from the several services that have been carried out, no one has conducted *Budikdamber* training for Dasawisma in Rukti Sedyo village, North Raman District, Kab. East Lampung. Therefore, the activities consisted of training and demonstrations of making *Budikdamber* increase the knowledge of the village community about the *Budikdamber* technique and optimize the use of the house yard.

METHOD

The community service was carried out in the Dasawisma group, Rukti Sedyo village, North Raman District, East Lampung Province. The methods used in this service were counselling and training carried out directly so that people could understand the steps. The training activity for fish farming in buckets (*Budikdamber*) utilized the yard of the house and empowered the women of the Dasawisma group, Rukti Sedyo village. This activity could provide new knowledge, insights, and training on making fish culture media in buckets and cultivating the entrepreneurial spirit. The training activities used the direct practice method by Dasawisma women directly using tools and

materials prepared by the community service team. The following are the stages in the implementation of Budidamber activities:

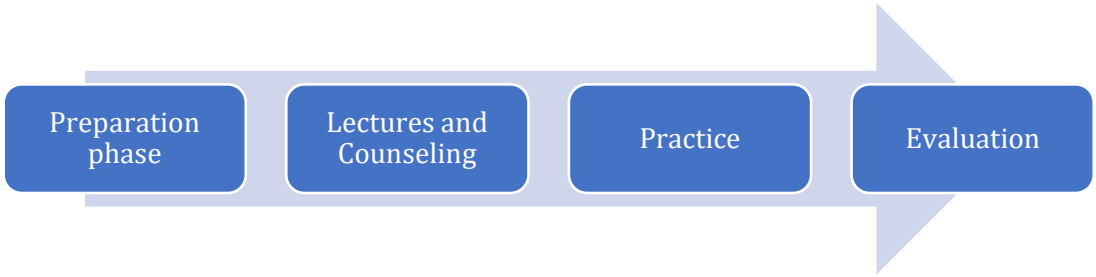

Figure 1. *Budikdamber* Stage Flow Chart

Preparation Phase

The first preparation stage was started by coordinating with the Lurah (village head) of Rukti Sedyo village. During the coordination, the community service team provided information regarding the goals and objectives of the program. The discussions regarding the location and schedule of the *Budikdamber* training with the Dasawiswa group of Rukti Sedyo Village were also conducted. Then, the preparation was continued by collecting tools and materials. The tools and materials provided were:

a) 60-liter bucket,
b) water spinach seeds,
c) 100 seeds of catfish,
d) Plastic cups,
e) Waring (nets),
f) Manure, soldering, adhesive glue, and water faucet.

After the tools and materials had been collected, the next step was the process of making tools to be used as support for the *Budikdamber* training.

Lectures and Counseling

The *Budikdamber* training activity was held on Monday, July 5, 2021, starting from 13.00 until finish. The participants consisted of 20 people. The implementation procedure began with the opening, the remarks, and material delivery. The following are some of the materials presented:

1. Delivering some basic information about *Budikdamber* (Fish in Bucket) for the public's initial knowledge because they were still unfamiliar with the cultivation system.
2. Delivering some information regarding the advantages of the *Budikdamber* system compared to other cultivation systems.
3. Explaining how to make fish culture media in buckets.
4. Providing knowledge related to business opportunities from the *Budikdamber* system as a source of side income.

Practice

After the lectures and counselling activities, the next thing to do was practice. Some of the activities carried out were:

1. Preparing tools and materials for *Budikdamber*.
2. Making a container as a medium for *Budikdamber*.
3. Preparing catfish seeds.
4. Preparing manure media for growing water spinach vegetables.
5. Preparing water spinach vegetable seeds.

Evaluation

The final stage of this community service activity was the evaluation. The community service team evaluated within two stages, namely:

1. Evaluation activities when participants received lecture materials and practised making *Budikdamber* through pretest and posttest.

2. Evaluation activities when the group of Dasawisma women received counselling materials and the practice of making *Budikdamber* through questions and answers.
3. Evaluation activities after the community service by reviewing homes donated by *Budikdamber* media to see the condition of fish and vegetables produced after counselling and training activities.

Figure 2 describes the activities carried out with the Dasawisma group in the village of Rukti Sedyo.

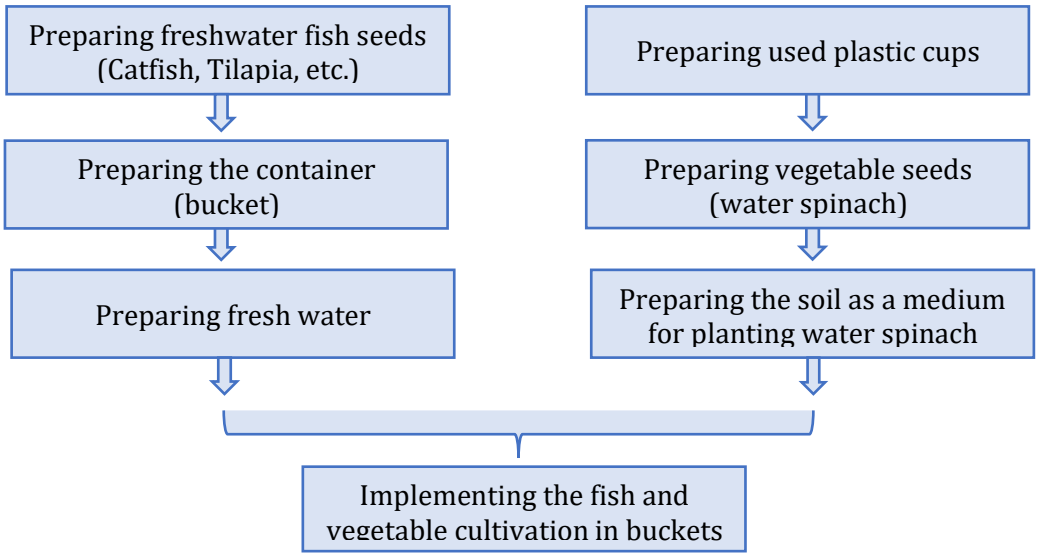

Figure 2. Activities Carried out with the Dasawisma Group

RESULTS AND DISCUSSION

The results were achieved in implementing the community service program entitled "Training for Fish Cultivation in Buckets (*Budikdamber*) for Optimizing the Utilization of Home Yards in the Dasawisma Group of Rukti Sedyo Village."

Budikdamber Preparation

The first preparation stage began with coordinating with the village head and officials Rukti Sedyo, North Raman. The next stage was a discussion with the related village officials regarding the conditions of Rukti Sedyo village. From the discussion results, most people were still less innovative in fish and vegetable cultivation using media other than land in their home yards and plantation land. Some residents do not have a large enough yard but want to try fish and vegetable cultivation. So, to help ease the shopping burden a little, we provided a solution for cultivating fish and vegetables in buckets (*Budikdamber*) in the form of catfish and water spinach. Furthermore, the community service team explained the objectives and targets of the *Budikdamber* training program to the village head and village hamlet head of Rukti Sedyo and compiled a schedule of *Budikdamber* training activities approved by the village head to be carried out with the Dasawisma group. The coordination of the work program with the Village Head and Village Apparatus Rukti Sedyo can see in Figure 3.

Figure 3. Coordination of Work Programs with the Village Head and Village Apparatus Rukti Sedyo.

Budikdamber Counseling and Training

After coordination of work programs with the village head and village officials, extension activities and training on Bucket Fish Cultivation (*Budikdamber*) were held. The activity was located at the house of one of the members of the Dasawisma group, namely in Hamlet VI, Rukti Sedyo Village. The activity began with counselling using the lecture method. The things explained in the lecture were introducing *Budikdamber*, providing information on the advantages of fish farming in buckets (*Budikdamber*) to the Dasawisma group, and providing information regarding the benefits and advantages of fish and vegetable cultivation in buckets compared to other cultivation systems. Counselling and lectures about *Budikdamber* to the Dasawisma group can see in Figure 4.

Figure 4. Counselling and Lectures about *Budikdamber* to the Dasawisma Group

The next stage was making *Budikdamber*. The stages of making *Budikdamber* can be seen in Figure 5.

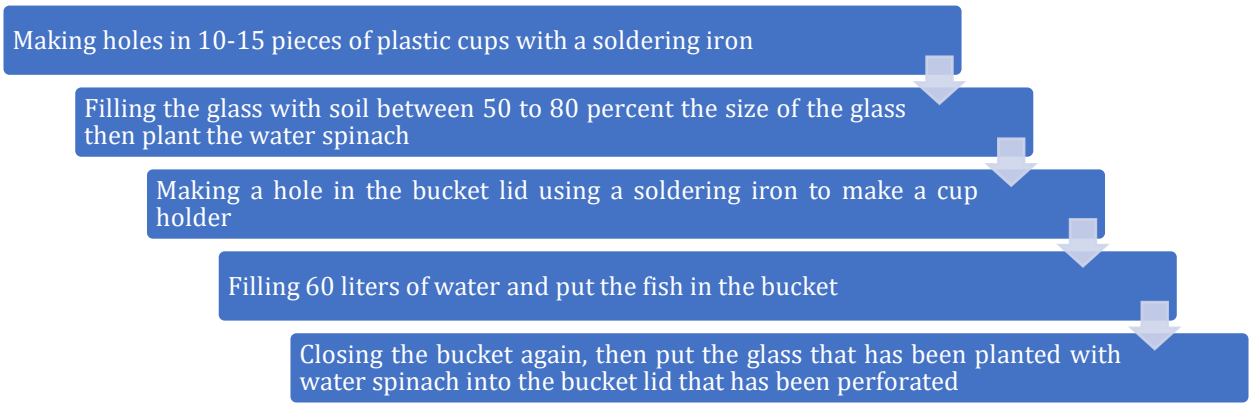

Figure 5. The Process of Making *Budikdamber*

Harvest and Evaluation

The last stage was harvesting and evaluating the yields. The water spinach was harvested once every two weeks while sowing vegetable seeds. The vegetable seeds used in *Budikdamber* were water spinach seeds. Other vegetables grown in *Budikdamber* are water spinach, mustard greens, lettuce, and other vegetables. In this activity, only water spinach was used.

Meanwhile, fish were harvested after two months of stocking catfish seeds in the prepared bucket. Besides catfish, fish that can be used are tilapia, carp, etc. However, the fish harvest time is longer than catfish. Based on the evaluation of the harvest, catfish growth was not balanced because the catfish are cannibals (eating fellow catfish) and have malignancy in eating the feed given (Sitio et al., 2017). The success rate of catfish harvest was only 75% because of the 100 catfish seeds; only 75 were successfully harvested.

Vegetable cultivation was successful with water spinach grown in buckets (Figure 6). The planting of vegetables in the container affected the water quality in the *Budikdamber* container, where the vegetables neutralized harmful organic and inorganic materials contained in the container by allowing decomposing bacteria to grow. The aquaponics system also affects the water quality of catfish nursery media, especially the reduction of ammonia (NH_3) content (Nursandi, 2018; Wicaksana et al., 2015).

In practice, the community service team educated the Dasawisma group by providing ways to maintain fish and plants in buckets by regularly changing or draining the water once a week. Dosage of feed for fish was *ad libitum* (satisfied) to avoid the possibility of food deposition, which can cause the water to have a foul and pungent odour. High feed requirements can result in decreased water quality caused by increased levels of metabolites in aquaculture containers (Diansari et al., 2013; Suhendar et al., 2021) and can also increase ammonia levels in the water (Sari et al., 2021). This will result in a decrease in appetite in catfish, so growth in catfish will decrease. Catfish can be harvested two months after cultivation, while water spinach can be harvested four times from the start of cultivation or from the beginning of planting to harvesting catfish. This can reduce household spending on catfish and water spinach after two months of cultivation. This is in line with research conducted by Windian that Aquaponic cultivation can be a household food solution (Windiana et al., 2021). The water spinach harvest from *Budikdamber* can see in Figure 6.

Figure 6. The Yield of Water Spinach from *Budikdamber*

The following are the advantages of *Budikdamber*, including:

a) Saving water (Scabra et al., 2022)
The *Budikdamber* system is an environmental ecosystem between fish and plants that is very water efficient. The decrease in water volume still occurs, but the amount is relatively small due to the process of evaporation of water and absorption by plants. The process of adding water is carried out about once a week to maintain the water quality and not smell bad. At the same time,

in the conventional fishery system, you must replace or fill the water pond repeatedly so that the fish are not poisoned from the fish waste.

b) Practical and easy maintenance than tarpaulin pools or cement pools (Fadhila et al., 2021)
In conventional fishing systems, the time spent caring for fish is about 30-60 minutes daily. Draining and cleaning the pond should also be done regularly. With the *Budikdamber* application, maintenance does not require too much energy and is enough to be done every 6-7 days.

c) Does not use chemicals (Nursandi, 2018; Setiyaningsih et al., 2020)
Plants in the *Budikdamber* system do not use chemical fertilizers during their growth but only use manure (compost).

d) Only a small amount of capital is required (Masitoh et al., 2020).

e) Practical because it does not need to be drained manually but only by opening the water faucet, which is installed at the bottom of the bucket (Putera et al., 2022).

f) Save space (Jamiati et al., 2020)

g) *Budikdamber*'s income is also quite promising if used as a business (Aini et al., 2020).

During the activities, the villagers of Rukti Sedyo were enthusiastic and actively participated, marked by interactive conversations between participants and presenters. At the end of the counselling activity, the community service team of UIN Raden Intan Lampung handed over catfish seeds, water spinach, and bucket containers. This activity is expected to increase the knowledge of the Rukti Sedyo village community in maintaining and managing fish farming in buckets. The delivery of seeds, etc., is expected to be a stimulus for participants or the community to be even more enthusiastic and motivated to develop themselves by directly carrying out the *Budikdamber* practice as a solution for home gardeners and also to fulfil the needs of animal protein and nutrition from family vegetables.

CONCLUSION

Based on the results of community service activities in Rukti Sedyo village, North Raman District, East Lampung Regency, the following conclusions can be drawn: Training on making and applying *Budikdamber* is one of the science and technology (Science and Technology and science) that is appropriate for use in a narrow yard because, in a narrow yard, it can be obtained simultaneously, namely livestock products in the form of catfish and vegetables such as water spinach. The community has responded well to the community service activities. The people of Rukti Sedyo village were enthusiastic and actively participated in this activity, marked by interactive conversations between participants and presenters. Activities that have been carried out include socialization, making *Budikdamber* containers, caring about how to harvest catfish and water spinach, and direct delivery to the target audience, namely the people of Sukamahi Village Sukaratu District, Tasikmalaya Regen. Then as for the shortcomings in this study, one of which is the problem of catfish feed. Because the price of catfish feed is slightly higher, further researchers suggest using cheap but good feed ingredients for catfish growth.

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