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Optimizing Community Income through Ponds Catfish Farming in Griya Cendekia UII Sedayu Bantul

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ABSTRACT

Aquaculture is an important sector that plays a role in supporting food security while improving the economy of rural communities. This activity is an easy alternative because it can utilize limited land and simple media, such as ponds. Bantul Regency is one of the areas in the Special Region of Yogyakarta that has aquaculture activities with promising prospects. Catfish is the favorite fish of the community in terms of consumption, so it is not surprising that the production volume of catfish is quite high on a regional scale. This community service activity aims to encourage and enhance community empowerment in managing vacant land potential so that the community can have additional income through catfish farming using tarpaulin ponds in the Griya Cendekia UII Sedayu Bantul assisted village located in Padukuhan Kaliberot. The results of catfish farming are used as a marketing tool that can improve community welfare and create new jobs. The community service methods implemented include the identification of problems and potential partners; the construction of catfish ponds; training in catfish pond cultivation; program monitoring; and evaluation and sustainability strategies. The results of community service activities show that these activities improve the community's ability to manage catfish productively and optimize marketing management. These activities conclude that catfish farming not only supports the environmental ecosystem but also creates new economic opportunities for the community.

Keywords: Aquaculture, Catfish Farming, Community Income, Community Service

INTRODUCTION

Aquaculture is an important sector that plays a role in supporting food security while improving the economy of rural communities. This activity is an easy alternative because it can utilize limited land and simple media, such as tarpaulin ponds. With these characteristics, fish farming is a promising business opportunity, especially for farming households that need additional sources of income (Manurung et al., 2023). In aquaculture in villages, it is necessary to select fish seeds that are able to adapt to the surrounding weather and climate. Afriyanti et al. (2021) mention that catfish is an alternative seed that is known to have high adaptability to the rural environment.

Bantul Regency is one of the areas in the Special Region of Yogyakarta that has promising aquaculture activities. Catfish is a favorite among the community in terms of consumption, so it is not surprising that the production volume of catfish is quite high on a regional scale. The following table outlines the production volume of catfish aquaculture in Bantul Regency from 2020 to 2024.

Table 1. Catfish Aquaculture Production in Bantul Regency (2020–2024)

Year	Catfish (Ton)	Description
2020	7.498,039	Catfish is the main commodity with the largest contribution.
2021	8.221,196	Catfish production has increased from the previous year.
2022	8.381,509	Catfish production continues to increase and shows a positive harvest trend.
2023	8.490,293	Catfish production trends remain stable with an upward trend.
2024	8.664,330	Catfish production remains dominant.

Source: Pemerintah Kabupaten Bantul (2025)

It is evident that the increasing production of catfish indicates a high level of consumption by the people of Bantul. This condition confirms the opportunity for developing local aquaculture, which can contribute to increasing fish availability while strengthening regional food security (Rahmawati & Nurhayati, 2020). The Griya Cendekia UII Mentored Village, located in Sedayu District, Bantul, has a total population of 42,943, with most of the residents of Sedayu District working as farmers. This is one of the strategic steps in community service that enables the community to engage in fishing activities in addition to agriculture. The abundance of vacant land around the Griya Cendekia UII Mentored Village can be used for various social purposes, such as plantations, rice fields, fish ponds, and others (Priyadi & Achiria, 2022). Thus, the utilization of vacant land through catfish farming with tarpaulin ponds is a strategic step aimed at improving the household economy of the surrounding community and regional food security.

Figure 1. Location of the land to be used for the catfish pond

The image shows the location of the land that will be used for a tarpaulin fish pond measuring 8 meters x 4 meters with a depth of 1.5 meters. This location is considered very strategic for developing catfish farming with tarpaulin ponds while utilizing limited land to increase local food availability (Sunarya et al., 2021). Similar results were shown by Handayani et al. (2023) who found that the survival rate of fish in tarpaulin ponds reached 75%, directly impacting the increase in farmers' income. Considering the field conditions, the application of the tarpaulin pond method in the UII Griya Cendekia Binaan Village is an appropriate solution, both from a technical and socio-economic perspective.

This community service program aims to empower the community, administrators and members of the KUB (Kelompok Usaha Bersama) of the Griya Cendekia Fostered Village of the Endowment Foundation of Universitas Islam Indonesia (YBW UII), Sedayu Bantul, located in Kaliberot Hamlet with a population of around 350 families totaling 1,200 people. The urgency of this community service activity lies in its ability to provide real solutions to environmental and economic problems faced by village communities. In addition to improving skills and knowledge, this activity is also the first step in building an independent, productive, and ecologically and economically sustainable village.

The goal of this community service is that catfish farming can drive a circular economy that creates jobs, increases income, and improves the marketing of farming products. Improving the welfare of the local community can be carried out sustainably to enhance the level of the economy (Priyadi et al., 2021). Thus, fish farming using tarpaulin ponds has the potential to become a model in other regions oriented toward sustainable development goals (SDGs) through collaboration between researchers, the government, the community, and the region.

METHODS

This community service activity was carried out in the Griya Cendekia YBW UII Mentored Village, Sedayu District, Bantul Regency, DIY and also scheduled for 5months from November 2025 until March 2026. This activity was carried out by implementing community participation known as kerja bakti in order to empower the community, which was designed to manage catfish ponds as a

means of increasing the income of the surrounding community. The participants in this service activity were the entire community in Griya Cendekia Bantul Village. This activity was carried out using classical and individual approaches. The classical approach focuses on the delivery of material and general discussion, while the individual approach emphasizes direct assistance to participants so that they gain practical experience that can be applied in the field. This activity was carried out through five interrelated stages (Mustika et al., 2018).

The first stage **is Identification of Problems and Potential Partners**. The activity began with a preliminary survey conducted at the partner's location to explore the actual conditions faced by the community. The survey aimed to identify key needs, existing obstacles, and business opportunities that had the potential to provide additional income. Aspects of concern include land availability, the socioeconomic conditions of households, the readiness of the community to be involved in maintenance, and the market prospects for catfish in the Griya Cendekia Sedayu Mentored Village.

The second stage is **Construction of Catfish Farming Ponds**. The construction of tarpaulin catfish ponds is adjusted to the location of the land in the Griya Cendekia Sedayu assisted village. According to information provided by the head of Griya Cendekia, the land that will be used for the catfish pond measures 8 meters x 4 meters with a depth of about 1.5 meters. This is part of the adjustment process in the construction, which includes land clearing and preparation, installation of support frames, and installation of tarpaulins that are ready for use.

The third stage is **Catfish Fingerling Stocking Stage**. Fry distribution is a key priority in the success of the community service that has been carried out. The catfish fry used are around 5-7 cm in size, with the hope that they will grow quickly and periodically so that they can be marketed immediately by the surrounding community.

Last stage is **Catfish Farming Socialization and Training**. At this stage, partner communities were given training on catfish farming techniques. The material covered includes pond management, feed selection and feeding, water quality control, and fish disease management. The purpose of this training is to equip partners with practical skills so that they are able to manage their businesses independently while increasing the chances of successful farming. In this stage, include an evaluation too to conducted to assess the extent to which the program has had a positive impact on partners. The assessment covers the functionality of the ponds, fish growth rates, and economic contributions to partner households. The evaluation results form the basis for the formulation of sustainability measures, such as long-term maintenance strategies, plans to increase the number of ponds, and the development of market access for catfish products. Thus, the program does not stop at the construction of facilities, but is also directed towards enabling the community to continue to develop independently.

RESULT AND DISCUSSIONS

1) Identification of Problems and Potential Partners

The problem identification stage was carried out through discussions with the leaders of Griya Cendekia UII Village. This was aimed at exploring the potential and business opportunities of catfish pond cultivation. The results of the identification showed that fishing activities had not yet been widely implemented in the target village, as the majority of the community worked as farmers or entrepreneurs. In addition, from a welfare perspective, it was found that there was no stable cash flow for the community. This condition attracted the community service team to carry out a community service program with the main objectives of increasing the variety of sources of livelihood for the community and increasing income in a sustainable manner.

Figure 2. Identify problems together with the leadership of Griya Cendekia

2) Construction of Catfish Farming Ponds

The pond construction phase was carried out over a period of approximately one month with the aim of producing a strong, stable construction with long-term durability in accordance with technical standards for community-based catfish farming. This activity is not only oriented towards physical development, but also pays attention to the operational sustainability of the pond so that it can support a sustainable production cycle. The construction process begins with determining the location, taking into account the topographical conditions, availability of water sources, and ease of drainage systems. Subsequently, soil excavation was carried out as the foundation for the pond structure, walls were installed using herbel concrete to increase the strength and efficiency of the construction, and a water circulation system was set up, which included an inlet channel, flow control, and the installation of aquaculture waste disposal to maintain the quality of the aquatic environment (Bahtiar et al., 2024; Taufik et al., 2024).

The construction of the pond was carried out through a joint working mechanism that actively involved the local community in the form of community service. This collective involvement not only served as a labor efficiency strategy, but also became a means of social learning and strengthening a sense of ownership of the facilities being built. This participatory management pattern is in line with the principle of community participation in empowerment and community service activities, as stated by Sherry Arnstein through the concept of the ladder of citizen participation, which emphasizes the importance of community involvement in the decision-making process, as well as the participatory development approach popularized by Robert Chambers, which places the community as the main subject of development.

Through this approach, development activities not only produce aquaculture infrastructure, but also encourage increased social capacity, strengthen community solidarity, and transfer technical knowledge to the community. Active community participation is expected to foster independence in fisheries management while strengthening the sustainability of the service program being implemented. Ultimately, these aquaculture ponds are expected to become a productive medium that serves as an instrument for local economic empowerment, opens up new business opportunities, and contributes to the sustainable improvement of the cash flow of the Griya Cendekia Village community.

Figure 3. Monitoring Ponds Construction

Figure 4. Ponds Construction

3) Catfish Fingerling Stocking Stage

The release of catfish fry is a key operational step in a community service program that aims to increase household income through the development of aquaculture. This activity was carried out on March 4, 2026, at Griya Cendekia Sedayu, Bantul, using a participatory approach that placed community members as learners and implementers. In the context of community service, this process emphasized the dissemination of knowledge along with practical application.

Prior to the seed release process, the outreach team helped participants ensure the readiness of the ponds by stabilizing water conditions and explaining the environmental requirements necessary for fish survival. This preparation served as an initial educational session on responsible pond management. The catfish seeds will be gradually adapted to the pond environment in order to prevent stress and increase survival rates.

The community is actively involved in determining fish seed distribution procedures, including the selection of suitable fish seeds, the application of appropriate breeding methods, and the calculation of distribution density based on pond size. This experience-based learning strengthens participants' technical understanding and encourages independent catfish farming practices. Overall, the stocking activity serves as a technical intervention and capacity building process. Through elaborate guidance and direct participation, the program is able to support increased community income, sustainable cash flow circulation, improved skills, and strengthen fish farming as a viable strategy for improving local economic resilience.

Figure 5. Catfish Fingerling Stocking Stage

Figure 6. Catfish Seed Handover

Figure 7. Catfish Seeds

4) Catfish Farming Socialization and Training

The community service program was carried out to optimize community income through the construction of catfish ponds. Based on the results of previous problem identification, it was found that there were no large-scale fishing activities and low cash flow among the community. Socialization was carried out with the aim of providing a general understanding of the economic potential of catfish farming and the role of the community in the entire series of community service activities.

The training focused on improving knowledge and skills in pond maintenance, selection of quality seeds, feed management, water circulation, and cash flow during the harvest period. The training approach was practical and contextual, so that the material presented could be directly applied in accordance with the local conditions of the community. The final outcome of the socialization and training phase is that the community not only gains technical knowledge but also a basic understanding of entrepreneurship that supports income optimization. Catfish farming is a promising alternative for rural communities and is relatively easy to implement with affordable costs and a relatively fast and significant capital turnover.

At this stage, an evaluation of the community is also carried out to assess the overall effectiveness of the program that has been implemented. Technically, the evaluation focuses on the process of spreading seeds and the readiness of the ponds as well as the community's knowledge of catfish farming. The evaluation results show that the Griya Cendekia community already has fairly good catfish pond management practices. This can be further developed as a step to increase community income.

Figure 8. Catfish Farming Socialization and Training

CONCLUSION

The community service program to optimize community income through the construction of catfish ponds in Griya Cendekia YBW UII Village, Sedayu District, Bantul Regency, has successfully provided significant benefits to the community in terms of fish management and economic empowerment. Through socialization, guidance, and hands-on practice, the community has acquired new skills and knowledge related to productive fish management to improve their daily cash flow. This can also be done by marketing the harvest to the market, so that income will continue to flow.

The outcomes of this training are evident in improved knowledge of freshwater aquaculture, high-value catfish production, and the creation of a sustainable ecosystem. The program also contributes to environmental conservation and sustainable economic empowerment. Overall, the success of this program demonstrates great potential for enhancing local business opportunities for the community, equipped with the technical skills and knowledge provided.

RECOMMENDATION

Although this program has been successfully implemented, there are several suggestions and recommendations to expand its impact and ensure its sustainability. **First**, integrate this program with local government policies to provide material and technological support for the development of local fishing activities. **Second**, expand the catfish pond cultivation program to other villages and Kapanewon in Bantul Regency or other areas with similar potential, so as to accelerate the adoption

of sustainable fish farming. This program can be used as a model that can be applied in many places, with adjustments according to the characteristics and needs of the local community. **Third**, to increase the economic impact of this program, it is necessary to form freshwater fish farming-based business groups that can utilize the training results to create products that can be marketed more widely. **Fourth**, the local village government must support this program through policy integration, funding, and ongoing community training.

This program directly supports SDG 12 (Sustainable Consumption and Production), which emphasizes the importance of aquaculture as a means of production and sustainable food security. By establishing a catfish pond ecosystem as a means of cultivation, this program contributes to increasing the economic activity of the surrounding community. In addition, by involving the community at every stage, this program raises awareness and knowledge about the importance of responsible consumption and production, as well as encouraging a more environmentally friendly lifestyle. Through wider implementation and development, this program has the potential to have a greater positive impact, especially on community empowerment in the field of freshwater fish farming.

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