Smart Society : Community Service and Empowerment Journal
Volume 1, Issue 2, 81-86.
e_ISSN: 2807-5757
https://www.journal.foundae.com/index.php/smartsoc/index

Innovation of Fisheries Technology for the Development of Tarikolot Tourism Village

Usep Suhendar*
Universitas Pakuan, Bogor, INDONESIA

Linda Jati Kusumawardhan
Universitas Pakuan, Bogor, INDONESIA

Pandri Ferdias
University Lampung, INDONESIA

Article Info

Article history:

Received: September 24, 2021
Revised: November 30, 2021
Accepted: December 26, 2021

Keywords:

Automatic fish feeder;
Bioflocs and aquaponics;
Innovation of Fisheries Technology;
Solar panels;
Tarikolot Tourism Village.

Abstract

Tarikolot Tourism Village is one form of community empowerment that is quite good in the city of Bogor. The use of sleeping land in these locations by community residents, especially the Tarikolot United Youth Association and Ciluar Tourism Conscious Group (Pokdarwis), into productive activities such as fisheries and livestock, can be a pilot for other regions. However, the results obtained are still less than optimal because no touch of technological innovation can optimize the potential. The purpose of this activity is to provide technical innovations in the field of fisheries and livestock for the development of Tarikolot tourism village, including tilapia and catfish cultivation systems in bioflocs and aquaponics, automatic feeder machines, water pumps, versatile enumeration machines, solar power plants, solar public street lighting (PJU-TS), and planting Family Medicine Plants (TOGA) and fruits on site. The technological innovations were designed jointly between the proposing team from Pakuan University with both partners to be installed at the location. The method used is a Forum Group Discussion and workshop with a Community Development approach. The impacts resulting from this activity are (1) Partners can increase food availability in urban land. (2) The provision of capital assistance for the buyer of fish seedlings is expected by partners also to be able to supply food for the area and increase partners' income. and (3) With training, partners are expected to increase knowledge about fish and vegetable cultivation systems through aquaponics technology and bioflocs ponds, running the technology system well without any constraints in the field

To cite this article: Suhandar, U., Kusumawardhan, L. J., & Ferdias, P. (2021). Innovation of Fisheries Technology for the Development of Tarikolot Tourism Village. *Smart Society : Community Service and Empowerment Journal, 1*(2), 81-56.

INTRODUCTION

Ciluar is one of the villages in North Bogor Subdistrict, Bogor City. The village, which has an area of 220.3 ha, has a considerable population with a reasonably high population density (Azzam, 2015). Even so, the people in the area still hold a solid Sundanese cultural tradition, upholding the noble values of ancestors. To strengthen the rope of brotherhood between the youths, the youths in Ciluar Village formed the Tarikolot United Youth Association. This youth organization has a vision of realizing a young generation that is independent, resilient, skilled, intelligent, and qualified. In recognizing the concept, The Tarikolot Paguyuban held valuable activities in the community, one of which was to form Tarikolot Tourism Village by utilizing the sleeping land in one of the Ciluar Village areas. Thus, youth participation influences the development of a village (Dana, 2018; Putra, 2019).

By collaborating with the Ciluar Tourism Conscious Group (Pokdarwis), Tarikolot Paguyuban designed the tourist village as a place of Sundanese cultural actualization integrated with land use

* **Corresponding author:**
Usep Suhendar, Universitas Pakuan, Bogor, INDONESIA. ✉ usep.suhendar@unpak.ac.id

for productive activities that generate income for the community, for example, in the field of fisheries. This is inseparable from the presence of natural water sources in the location. Currently, in the tourism village of Tarikolot, several fishponds are being cultivated by the youth group in a row. The fish ponds are filled with catfish and tilapia, whose crops can be enjoyed by the surrounding community at a much lower price than the price in the market. In addition, the location of the tourism village of Tarikolot also built sheep farms managed by the *Paguyuban*. The sheep will get food from elephant grass that is also being planted on the sleeping grounds there. All productive activities are integrated with the concept of tourism villages equipped with good photo spots to attract residents from other regions, especially among young people in Bogor city and surrounding areas.

The main problem faced by The Tarikolot Association and Pokdarwis Ciluar in developing Tarikolot Tourism Village is the lack of technological touch in the management of the location so that the existing potential is not worked to the maximum. For example, the fishery system built is still traditional using ordinary ponds, so it needs innovations such as bioflocs and aquaponics technology. In addition, the process of feeding fish that has been scheduled alternately by *Paguyuban* members often experiencing delays for various reasons that make fish growth less maximal. On the other hand, the discharge of water coming out of the spring to the fish pond is very small because there is no sound irrigation system, so a lot of water flowing is wasted directly into the river (Haryati, 2014). Moreover, the location's distance hinders the desire to install a water pump at the spring's location from the people's homes, so it requires a very long electrical cable. Alternative energy sources such as solar panels can be installed directly on site. Likewise, sheep farming, less developed maximally because of the feed provided in the form of elephant grass straight from the surrounding crops, without being chopped and processed first into a more nutritious meal (Daning & Kristanti, 2018). In fact, with a bit of touch of technology such as silage, the grass will be more beneficial for the development of sheep (Daning et al., 2019; Maulana & Susandi, 2021; Siregar, 2014). Moreover, including existing goat dung has not been utilized optimally. In fact, processing goat dung to reduce environmental pollution is needed. dung processing can be done by using animal manure as manure. Goat dung is used as manure because it contains nutrients such as nitrogen (N), phosphorus (P), and potassium (K) as well as micro-nutrients such as calcium, magnesium, sulfur, sodium, iron, and copper which are very much needed by plants and soil fertility (Pamungkas & Pamungkas, 2019; Surya et al., 2021).

Based on some of these problems, this Technology Product program was the best solution in developing Tarikolot Tourism Village in Ciluar Village. This activity aims to provide technical innovations in the field of fisheries and livestock for the development of Tarikolot tourist village, including tilapia and catfish cultivation systems in bioflocs and aquaponics, automatic feeder machines, water pumps, versatile enumeration machines, solar power plants, solar public street lighting (PJU-TS), and planting Family Medicine Plants (TOGA) and fruits on site

METHOD

The method used is a Forum Group Discussion and Workshop with a Community Development approach. Technological innovations were jointly designed by the proposing team from Pakuan University and the two partners to be installed on site. The methods of carrying out activities that have been carried out can be seen in Figure 1.

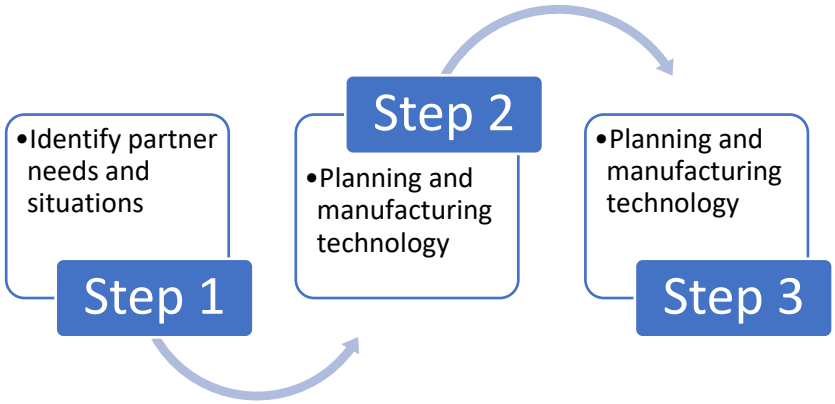

Figure 1. Activity implementation step

Identify partner needs and situations

The first step of this activity is to identify the needs and situation of the conditions at the Tarikolot Youth Association partner and ciluar Tourism Conscious Group. This identification is carried out to determine both groups' real needs and requirements, including situations and conditions in the field, such as the determination of prospective technology locations and operational management to support the existence of tourism villages. This identification is made through direct surveys to the field and intensive communication between the proposing team and both partners.

Planning and manufacturing technology

Technology design is done so that the installation installed later can operate adequately. Based on the results of discussions and location surveys, an image of equipment design and placement on site will be made as the basis for the procurement of equipment materials. After the procedure is completed, making equipment in the production engineering workshop by a reliable technician with supervision from the proposing team so that the technology produced is as expected.

Planning and manufacturing technology

After all the equipment has been made, the initial test is carried out in the engineering workshop to ensure that all equipment units operate correctly. After that, the equipment is sent to the location to be installed by technicians. Finally, the test process is carried out directly in the field after the equipment is installed correctly.

RESULTS AND DISCUSSION

This activity has produced technology packages for fisheries and livestock in support of the tourism village of Ciluar Bogor city. The technology package is the existence of several innovative fisheries and livestock technology equipment to be used in sleeping grounds, including the following: Bioflocs Pond, Aquaponic System, Automatic fish feeder machine, versatile enumeration machine, solar water pump, tandon water, solar power plant, solar street lighting, and family medicinal plants and fruit seeds (Figures 1 and 2). Tarpaulin pond is the cultivation of fish by using tarpaulin material as an alternative to soil or concrete ponds. The primary pool and the sides of the wall are made of tarpaulin. The tarp needed to make this pool is a tarpaulin with pressed material without leakage. This pool can be adapted more efficiently using bioflocs techniques and solar power (Ekasari, 2009; Nugrahadi et al., 2021; Suryadi et al., 2021). Aquaponics can help the community and partners be more productive in providing the needs of Pangan (Pratama et al., 2021; Septia et al., 2018; Syamsunarno et al., 2020). In the bioflocs pond, fish seedlings are carried out. Fish are scattered in each pond with a capacity of 500 tails per pond. The fish seeds used are catfish and tilapia with an average length of 3 cm and five cm. The fish release is done gradually to avoid stress (Dirgantara et al., 2021; Septia et al., 2018). After harvesting, this fish can be processed into products with economic value to improve the surrounding community's economy. Processed

catfish such as catfish floss, or can be processed into other processed (Suhendar et al., 2019; Sulistyaningsih, 2019).

Figure 1. Bioflocs, aquaponic and solar panels

Figure 2. Automatic fish feeder integrated with solar panels

Feeding is one of the essential things for the fish farming business. However, currently feeding generally still depends on manual human resources. Therefore, it is designed to automatically provide fish based on the feeding schedule and feed dose. This automatic fish feed uses PLC (Programmable Logic Controller), the central controller, Inverter as a DC voltage to AC change from solar panel to charge controller, solar panel as power plant obtained from sunlight equipped with charge controller and battery as storage and voltage channel (Derman et al., 2019).

During the implementation of this program, partners have actively participated, starting from identifying needs and equipment design that has been done. This is very helpful in making tools to suit partners' needs in the field. In the future, partner participation will be increased again, especially in handing over equipment by providing activity locations and technical assistance for handover events. In addition, more important is the active participation of partners in training and mentoring activities carried out by the proposing team so that both partners feel the benefits of the assistance of technology products that have been provided through this activity.

Once the equipment and machinery have been installed, it has a pretty good impact on the partner. The effect that occurs is (1) Partners can increase food availability in urban land. This increase is due to changes in the technology provided to the region. (2) The provision of capital assistance for the buyer of fish seedlings is expected by partners also to be able to supply food for

the area and increase partners' income. and (3) With training, partners are expected to increase knowledge about fish and vegetable cultivation systems through aquaponics technology and bioflocs ponds, running the technology system well without any constraints in the field.

CONCLUSION AND SUGGESTIONS

Conclusion

Based on the results of the implementation of survey activities that have been conducted to date, it can be concluded as follows: Tarikolot Youth Association and Pokdarwis Ciluar are currently experiencing problems providing technology to utilize sleeping land for fisheries and livestock in their area. The existence of technological innovations to be utilized optimally, such as aquaponics technology and bioflocs ponds, equipped with automatic fish feeders and energy sources from solar power plants (PLTS), is expected to be a solution to the problem. Furthermore, with the Implementation program of technology disseminated to the community, these partners feel very helpful in overcoming the issue of land limitations.

Suggestion

Based on the conditions obtained from the results of activities with the current, the following suggestions can be formulated: This activity should be planned much earlier so that the disbursement of funds, procurement of raw materials, manufacture of tools, until the handover, training, and mentoring can run well and is not done in a hurry result can be more maximal. It needs better HR management optimization so that this program can continue to grow.

ACKNOWLEDGMENT

Thank you to the Innovation and National Research Agency (PTDM) through the dissemination technology product program to the community (PTDM) 2021, Bogor City Government, Ciluar Village/ Village Government, Partners, and Communities.

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