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Development of Catfish Cultivation Skills to Improve the Economy of "Garipinus" Catfish Farmers in Karanggebang, Jetis, Ponorogo

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ABSTRACT

The catfish farming grup "Garipinus" is a catfish farming grup in Karanggebang village, Jetis, Ponorogo. Catfish cultivation is an activity that has potential to develop the economy of the Karanggebang village community. The availability of catfish from the "Garipinus" breeder group is already quite plentiful, but it is still lacking in supplying market demand, because traded cannot take the catfish products within a short period of time, so it is necessary to increase knowledge and abilities in the productivity of catfish cultivation. The steps taken are to provide training and assinstence related to increasing the productivity of catfish cultivation. This program uses method of observation, socialization, training, and mentoring as well as menitoring and evaluation. The result of this activity is increased knowledge and ability of members of the "Garipinus" catfish cultivation and factors than influence increasing its productivity.

A. INTRODUCTION

Fisheries cultivation is one of the subsectors that has the opportunity to develop because of the importantce of protein needs to fulfill people's nutrition, and there is an increase in consumption.(Sofyan Assauri, 2024) One of the freshwater fisheries commodities that has great opportunities for development is catfish.(Purba et al., 2023) In general, catfish is widely liked because it tasted delicious, savory, and rich in nutrients and health benefits and is a fish that is easy to cultivate.(Harizahayu, Friendly, 2021) More than that, there is still a high market opportunity for catfish so that it can be utilized by the community for potential and

business opportunities. Therefore, the Karanggebang village government is interested in developing these opportunities to improve the community's economy.(Harizahayu, Friendly, 2021)

The Garipinus catfish farming group is a catfish farming group in Karanggebang village, Jetis, Ponorogo. This group was formed as a forum for exchanging opinions or thoughts, a means of working together, a media and tool for village economic development, and a venue for developing exiting resources.(Sofyan Assauri, 2024) The Garipinus catfish breeders group was formed based on the village Head's Decree and has twelve members. This group was brought together to unite determination and harmonize steps in implementing catfish cultivation activities.(Swaputra et al., 2014) This group received village assistance with operational assistance in the form of *sibel,* four ponds with a diameter of four meters, one thousand Masamu or Mutiara catfish seeds with a capacity of two hundred and fifty pond, and eight quintals of feed.(Putri et al., 2024)

Catfish cultivation is an activity that has the potential to develop the economy of the Karanggebang village community.(Harizahayu, Friendly, 2021) However, there are several important factors that need to be considered and studied before, during and after cultivating catfish, including the availability of water which includes the quality, the condition of the land and its topography,(Islami et al., 2023) the stastus of the land, the type of catfish being cultivated, market conditions, availability of labor, feed, other infrastructure, waste management and utilization, business management, and product development so that they have high selling value.(Piranti. Yessy Risma, Ramadhani. Rizky, Hartono. Aldia Safira, Syazwani. Nabila Zafirna, Retnowati. Aprillia, 2023) The Garipinus catfish breeder group must pay attention to the factors above,(Triaji et al., 2022) in order to create good quality catfish, then increase their productivity in order to meet market demand, as well as create an increase in the selling value of these catfish derivate products.(Putri et al., 2024)

The potential and opportunities for catfish cultivation in Karanggebang village are very large, as can be seen from the high market demand for catfish, both for mousehold consumtion and for business. However, this high market demand must be directly proportional to the amount of production or supply of consumption fish, even higher than that. The availability of catfish from the Garipinus catfish farming group is already quite plentiful, but it is still lacking in terms of supplying market demand, because traders cannot collect the catfish products within a short period of time. Traders can take catfish at least once every three months, then their economic opportunities will also increase. Apart from that, market demand will also be met more quickly due to the increase in catfish farming productivity (Khoirul Anwar, n.d. tgl. 20 Juli 2024).

Based on the background of the problem outlined above, several issues that are problematic for the group members can be formulated to clarify the main points of discussion and implementation of community service activities:

1. Catfish farmers lack adequate knowledge and skills regarding effective and efficient catfish cultivation techniques;
2. Cantfish farmers experience difficulties in achieving optimal productivity due to errors in pond management, inappropriate feeding, or lack of understanding of ideal environmental conditions;

3. Catfish farmers do not have adequate knowledge and skills regarding the impact of catfish cultivation on environmental problems such as water pollution and damage to the surrounding ecosystem;
4. Catfish farmers do not understand new technology in catfish cultivation.

To be able to resolve this problem, the action offered as a solution is the implementation of training and assistance in increasing the productivity of catfish cultivation to resolve the problem of lack of adequate knowledge and skills regarding effective and efficient catfish cultivation techniques, as well as a lack of understanding regarding new technology in catfish cultivation.

B. METHODS

1. Activity Stages

This community service activity is divided into three stages, namely the preparation stage, implementation and monitoring stage. The following is a description of each stage:

a. Preparation Stage

The preparatory stages carried out include:

1) Initial survey. At this stage, a problem survey was carried out at the Garipinus Catfish Farmers Group in Karanggebang village;
2) Observation. After the survey, the implementation and targets of activity participants are determined;
3) Collaboration, after determining the target participants for the activity, collaboration is carried out with the Karanggebang Village Government to carry out the training;
4) Team Coordination Meeting or Forum Group Discussion (FGD), at this stage the meeting discusses the preparation of the work program, division of tasks, making a schedule for implementing activities, starting from preparation, implementation, to evaluation and preparation of reports;
5) Preparation of training modules to increase the productivity of catfish cultivation.

b. Socialization Stage

1) Preparation of facilities and infrastructure, this preparation includes the provision of facilities and infrastructure for training venues in collaboration with the Karanggebang village government;
2) Preparation of trainers, (a) training and assistance in increasing the productivity of catfish cultivation will be completed and accompanied by Use Etica.

c. Training Stage

The implementation stages of this training include:

1) Training to increase the productivity of catfish cultivation;
2) Training in the management and utilization of catfish farming waste.

d. Technology Implementation Stage

1) Application of airators to increase the productivity of catfish cultivation.

e. Mentoring Stage

The stages of implementing this assistance include:

2) Assistance in increasing the productivity of catfish cultivation;
3) Assistance in managing and utilizing catfish cultivation waste.


f. Monitoring and Evaluation Stage

1) Monitoring is carried out intensively by the implementing team when activities take place to ensure that activities run according to plan;
2) Evaluation of activities carried out in training and mentoring in increasing the productivity of catfish cultivation and waste utilization in the Garipinus catfish farmer group in Karanggebang village is through training participant feedback, observations in the workplace, practical assessments and filling out satisfaction survey questionnaires prepared by the community service team regarding the participants' responses to this community service activity;
3) The evaluation is processed in the form of a report by explaining each stage of the activity, when it was carried out, criteria, indicators of goal achievement and benchmarks used for the success of the activities carried out.

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2. Community Service Implementation Schedule

PKM IMPLEMENTATION SCHEDULE									
No	**Nama Kegiatan**	**Bulan**							
		June	**July**	**Aug**	**Sept**	**Oct**	**Nov**	**Dec**	**Jan**
1	Formation of Community Service team								
2	Material Research and Partner Survey								
3	Initial coordination of target teams and partners								
4	Problem Analysis								
5	Making Proposals								
6	Permits and Field Surveys								
7	FGD Preparation and Creation of Materials/Modules								
8	Training to Increase Catfish Cultivation Productivity								
9	Training on Management and Utilization of Catfish Waste for Vegetables								
10	Ass								
11	Assistance in increasing the productivity of catfish Cultivation								
12	Evaluation and Writing Report								
13	Production of outpust in the form of journal articles, activity videos, and publication in electronic media and mass media								

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3. Place for Community Service Implementation

The place for this community service is in Karanggebang Village, Jetis District, Ponorogo Regency with the partner community of catfish breeders "Garipinus" whose members number 12 people.

C. RESULTS AND DISCUSSION

This Community Service Program was attended by 12 members of the "Garipinus" catfish farming community, consisting of 9 men and 3 women. This training began with a discussion regarding the description of a promising catfish farming business because the need for it in society is very large, starting from individual consumption, traditional markets, restaurants, Islamic boarding schools, and fish-eating programs to reduce stunting. So catfish cultivation needs to be increased considering the huge market demand.(Fitriana & Wahid, 2023)

Factors that influence the quality of fish cultivation are: 1) seeds, 2) feed, 3) maintenance. The quality of seeds has an important role in catfish cultivation. Then talking about feed, feed requirements are the largest component of production costs, ranging from 80-85% of the total cultivation costs. Therefore, catfish farmers can carry out calculations using the sampling method without having to weigh all the fish to find out the weight of the fish.

Feed Conversion Ratio (FCR) is the conversion of feed to fish weight or the ratio of the amount of feed given in a certain period to the weight of the fish produced. Feed efficiency is important because it can produce large profits. FCR is also an indicator of feed quality, human resources' ability to manage feed and catfish health, as well as cost efficiency. The lower the FCR, the lower the feed costs incurred to produce 1 kg of meat.

$$FCR = \frac{Total\ Pakan\ yang\ Dikonsumsi}{Berat\ Ikan\ Akhir - Berat\ Ikan\ Awal}$$

Example:

Pak Rohmad has used 10 sacks of fish feed, the weight of which per sack of feed is 50 kg, and the fish biomass produced at the end of cultivation is 450 kg. Calculate the FCR produced if at the start of cultivation Pak Jamal fills fish with a population of 1,000 fish with an average fish weight of 1,000 fish. an average of 25 grams per head.

Answer:

Feed consumed = 10 bags x 50 kg/sack = 500 kg

Biomass or initial weight = 1,000 fish x 25 grams/head = 25 kg

Biomass or final weight = 450 kg

A low FCR value indicates that the feed management implemented and the quality of the feed provided is good. Vice versa, a high FCR value indicates that the feed management implemented is not good. Usually, the FCR value range considered ideal by fish farmers is 1.1 to 1.2.

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Program Pakan untuk Ikan Lele

Umur (hari)	Berat badan (gr/ekor)	Panjang (cm)	Ukuran pakan (mm)	Dosis pakan (%xberat badan)
1-10	2,5-5	7-8	2	6-5
11-20	5-20	11-12	2	5-4,5
21-30	20-50	15-16	2	4,5-4
31-40	50-80	18-19	3	4-3
41-50	80-100	20-22	3	3-2
51-60	>100	>30	3	2

Then in maintenance techniques, catfish farmers in Karanggebang village were introduced to cultivation techniques with biofloc. Biofloc is a collection of various organisms (bacteria, fungi, algae, protozoa, worms, etc.) combined in a clump (floc). Biofloc technology was initially an adoption of biologically activated sludge waste processing technology involving the activity of microorganisms (such as bacteria). The technique for cultivating catfish with biofloc is as follows:

- Carry out drying and disinfection using 10% chlorine;
- Fill the pool water until the water level is 80-100 cm;
- Installing equipment (pump and equipment);
- Water treatment is carried out by:
  - Quicklime 100 gr per m3; kaptan 200 gr per m3; mill 150 gr per m3);
  - Krosok salt (non-iodized); 3 kg per m3 of water);
  - Probiotics 5 cc per m3. type of probiotic);
  - Molasses (cane molasses) 100 cc per m3 or granulated sugar 75 gr per m3);
  - Then leave the water for 7 days or the water will appear to change color or feel smoother.

Intensive catfish cultivation techniques with biofloc can be done by:

4. Do stirring and aeration. Stirring is carried out using an aerator that is installed from the start of maintenance.
5. Spreading seeds, the catfish seeds that are spread are 7-8 cm in size (SNI Number 01- 6484.2-2000) with a stocking density of 1,000 fish/m3.
6. Feed management. After the seeds are spread into the pond, the seeds are then fasted for 2 days to adapt to the new environment while waiting for the stomach contents to be completely empty/clean.

D. CONCLUSION

The "Garipinus" catfish breeders group, which has 12 members, was formed with the aim of being a forum for exchanging opinions or thoughts, a means of working together, a media and tool for village economic development, and a venue for developing existing resources. To encourage the realization of the group's goals, this community service was held by providing training and assistance related to the development of catfish cultivation in order to improve the economy of catfish farmers in Karanggebang village.

The training and mentoring had a very positive impact. This can be seen from the increasing knowledge of group members regarding fish cultivation patterns depending

on 3 things, namely: seeds, feed, and maintenance techniques. Group members can also find out the estimated comparison of costs incurred for cultivation and harvest income by calculating FCR. Then group members also gain knowledge regarding efficient catfish cultivation techniques, both time, cost and feed efficient.

E. ACKNOWLEDGEMENTS

The Community Service Team would like to express its deepest thanks to all parties who have contributed to this community service activity. Especially to our community service team colleagues who have given their time to work together in carrying out the programs that have been planned. The hard work and dedication of team colleagues is truly extraordinary, without good cooperation from colleagues, this community service team could not achieve satisfactory results.

The Community Service Team also would like to thank the Karanggebang Village government, which has supported this activity with its resources and facilities. The presence and assistance of the Karanggebang Village government is very meaningful in ensuring the smooth running of this program.

Don't forget to thank the community service partners who have welcomed us with open arms, given their trust, and actively participated in this activity. Without active participation from partners, the goals of this service activity certainly cannot be achieved.

The Community Service Team realizes that community service is not an easy job, but with togetherness and a spirit of mutual cooperation, we can bring about positive change for communities in need. Therefore, the Team hopes that the good relationship that has been established can continue, and can provide greater benefits in the future.

F. AUTHOR CONTRIBUTIONS

The Community Service Team that has been formed consists of several members who have different backgrounds and expertise. Dhika Amalia Kurniawan (DAK) who has expertise in the field of management science, Use Etica (UE) who has expertise in the field of agricultural science, Meitria Cahyani (MC) who has expertise in the field of consumer protection, and Yana Elita Ardiani (YEA) who has expertise in the field of halal studies, as well as Abdullah Haris (AH), a student who has the ability in editing. For more clarity, the following is a description of the contribution of each team member in this activity:

1. Dhika Amalia Kurniawan (DAK)
   a. Conducting a survey related to the needs of the fields required by Darussalam Gontor University;
   b. Conducting an analysis of the needs of Darussalam Gontor University;
   c. Preparing a proposal and presenting it;
   d. Determining the trainer;
   e. Compiling journal article;
   f. Making a pretest and posttest design, a questionnaire that will be given to participants before and after the implementation to find out the evaluation of the activity and the results will be studied for the sustainability of cooperation with
   g. partners;
   h. Preparing a community service report with members.

2. Use Etica (UE)
   a. Assiting the community service coordinator and its implementation;
   b. Creating and preparing community service materials related to partners;
   c. Conduting monitoring and data analysis and evaluation;
   d. Assisting with community service reports.
3. Meitria Cahyani (MC)
   a. Assisting the coordinator of community service and its implementation;
   b. Making RAB and fund allocation;
   c. Assisting in journal publication;
   d. Making activity videos;
   e. Publication in electronic media and mass media.
4. Yana Elita Ardiani (YEA)
   a. Assisting the coordinator of community service and its implementation;
   b. Assisting with journal publication;
   c. Publication in electronic media and mass media.
5. Abdullah Haris (AH)
   a. Presenting the material that has been created by the team in the form of slides using Microsoft Power Point;
   b. Documenting community service activities;
   c. Participating in providing materials to participants;
   d. Collecting attendance recaps.

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