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Utilization of the Abandoned Pond for African Catfish Farming to Improve the Economy of the People of Northwest Hagu Village, Lhokseumawe

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ABSTRACT

Northwest Hagu Village is one of the fishing villages in the Lhokseumawe City Area. In this village, there are also several ponds that are not productive (sleeping land) and only wild weeds grow throughout the pond. This community service activity aims to provide solutions by managing ponds into productive ponds by cultivating catfish training fishing communities to increase the economic income of the coastal communities of Northwest Hagu village with good cultivation techniques and maintaining pond water quality so that it is not polluted. So, that good harvests are obtained and marketable and increase economic income and welfare of community partner groups. This activity stage begins with a survey of environmental conditions and equipment, designing and manufacturing floating net cages, providing technical counselling/guidance to partners and conducting a thorough evaluation of the implementation of PKMM and the results achieved.

Keywords: Catfish, floating net cages, ponds.

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INTRODUCTION

The high poverty rate, unemployment and low real sector productivity are still the fundamental problems faced in the development process in Indonesia, especially Aceh, which places Aceh as the poorest province in Sumatra. To increase economic growth, a government policy is needed as a way to reduce poverty. To reduce unemployment and increase productivity, it must start from the village level.

The city of Lhokseumawe is one of the cities that was once glorious with its natural resource income from oil and gas sources in the 1980s. In this city there are several giant industries such as PT. Arun NGL, PT. Asean Aceh Fertilizer (AAF), PT. Aceh Kraft Paper (KKA), and PT. Pupuk Iskandar Muda (PIM). The condition of the people of Lhokseumawe City has changed drastically from a prosperous city to a poor city. Currently the Lhokseumawe City Government only relies on taxes from the people and central assistance to run the wheels of government. The decline in the wheels of the economy in Lhokseumawe City has caused a new problem to arise, namely the increasing number of poor people in urban areas.

Hagu Barat Laut Village is a village located in Banda Sakti District, Lhokseumawe City. Location The village is directly adjacent to the Malacca Strait and is only about 4 km from downtown Lhokseumawe. Generally, people work as fishermen who rely on fishing in the sea for a living. Ironically, most of these fishermen do not have their own boats, but work only as unskilled laborers whose income is highly dependent on the number of catches they get. This is far from sufficient to meet their daily needs. In this village there are also several unproductive ponds (idle land) and only overgrown with wild weeds throughout the pond. The population of Northwest Hagu Village is 3,274 people consisting of 1,422 men and 1,852 women. Of the total population of the village, currently 1,706 people (52.13%) [1] are residents of productive age. The economy of the Hagu Barat Laut village community is supported by various sectors, such as fishermen, traders, employees, farmers, and others. However, the most dominant livelihood is in the fishing sector.

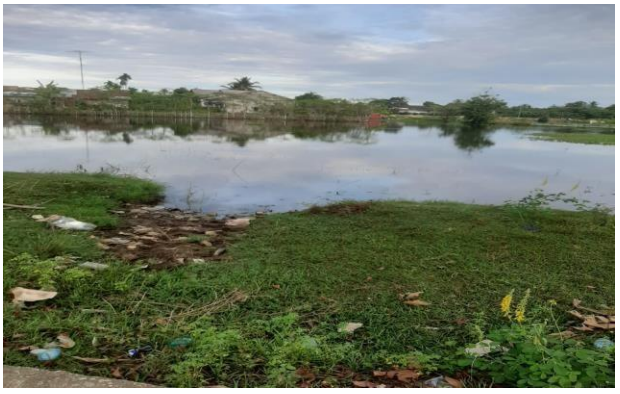

Figure 1. The condition of an abandoned pond in the northwestern village of Hagu

Catfish is a type of freshwater fish that is easy to find anywhere. Catfish is a type of fish that is easy to live with, resistant to all weather, even in dirty and muddy water, catfish can survive. Based on research results, catfish has a fairly high nutritional content. In 500 grams of African catfish (approximately consisting of 4 fish) contains 12 grams of protein, 149 calories of energy, 8.4 calories of fat grams, and 6.4 grams of carbohydrates [2].

Based on observations at the activity location in Hagu Barat Laut Village, Banda Sakti District, Lhokseumawe City, there are several problems, namely the existence of pools that are not used by the community to become productive pools around the village, the high level of unemployment in the village due to limited job opportunities in In Lhokseumawe City, apart from that there is no training related to fishery management in freshwater ponds which are places for catfish cultivation in order to improve the economic standard of fishermen.

Seeing the condition of the problems that exist at the activity location, the team of lecturers from the Lhokseumawe State Polytechnic plans to carry out a Community Service by utilizing this pond/idle land to be productive by cultivating African catfish, so that it can increase the community's socio-economic income. In addition, catfish are not expensive, so that all people can eat catfish.

The general objective of this service is to increase the income or income of the partner group; developing the potential for African catfish cultivation in partner villages; and reduce unemployment and open up new job opportunities. The target of this community service activity program is a group of fishermen partners and youth who have dropped out of work (unemployed) in the village.

METHOD

The implementation began with a survey on the condition of the village of Hagu Barat Laut, which is one of the fishing villages in Lhokseumawe City. The community generally works as fishermen who rely on sea fisheries as a source of livelihood. This service activity involves a number of students and lecturers. It is hoped that this program can serve as a model for empowering youth and fishermen on the coast to improve their standard of living, so they can get out of the poverty line.

The implementation of the program is carried out according to the plan that has been mutually agreed between the Lhokseumawe State Polytechnic Team and the Mita Raseki partner group. In the initial stages, the floating cages will be made, then the cages will be handed over to the partner group and the Lhokseumawe State Polytechnic team will help provide the seeds and then the team will conduct training starting from buying seeds, cultivating to the harvest stage. So the proposing team carries out several stages, namely as follows:

A. Making catfish ponds

The catfish pond that will be used in this community service activity is an earthen pond. By making floating net cages tied with ropes of wooden blocks or bamboo sticks, drums to make floating net ponds with a size of 2.5 x 4 x 2.3-meters and covered with a net on top so that snakes and other pests do not enter.

B. Selection of Catfish Seeds

Choosing stocked catfish seeds is a really healthy type of seed. There are several characteristics of healthy catfish seeds, such as agile movements, no defects or wounds, no disease, normal swimming movements and generally catfish seeds have a length of 5-7 cm. Before the seeds are sown into the pond, it's a good idea to make environmental adjustments first, by putting the seeds and the container used into the pond, then leaving them for 15 minutes so that the catfish seeds adjust to their new environment. Then tilt the container and let the catfish seeds come out by themselves. The quality of the seeds used is very influential on the level of production produced. Based on the results of interviews, the type of seed they obtained was not known with certainty, whether it was a catfish of the Sangkuriang type, a python or another, at this time the seeds used were mostly impure and the origins of the broodstock were unknown [3].

C. Catfish Feeding

Catfish feed is recommended to contain animal protein. However, various types of pellets that are sold in the market generally have a description of the nutritional content. Feeding is done twice a day, namely in the morning and evening. The use of fertilizer in catfish farming is intended to increase the fertility of the waters as a medium for fish cultivation. Catfish themselves need to feed 3-6% of their body weight every day. Then, make sure to do the weighing every 10 days. It is enough to take a few fish samples. This is to carry out the process of adjusting the amount of feed that needs to be given. provide feed other than pellets which function as additional feed. As from maggots and tofu dregs. In addition, snails and chicken waste can be given, but they need to be processed first [3]. Suggestions for catfish feed in general can be seen in Table 1 below.

Table 1. Dosage of catfish feed assuming 1000 fry

Cultivation period	Types of feed	Feed Amount at morning	Feed Amount at noon
Day-1(scatter seeds)	-	Not fed	Not fed
Day-2	-		
Day-3–5	Seed feed	75 gr	75 gr
Day-6–7	Seed feed	150 gr	150 gr

Day-8–9	Seed feed	200 gr	200 gr
Day-10–30	Seed feed	300-400 gr	300-400 gr
Day-31–60	Seed feed	600-900 gr	600-900 gr
Day-61–75	Last Seed feed	900-1000 gr	900-1000 gr

Note: 150 grams = ½ glass of bottled mineral water,
The calculation above depends on the condition of the fish
Morning = 07.00 – 09.00 WIB
Afternoon = 16.00 – 18.00 WIB
Source: Pamekasan District Fisheries Service.

D. Water Quality

The quality of pond water is maintained and the accumulation of unfinished feed remains at the bottom of the pond is avoided, so that the accumulation of unfinished feed can cause ammonia gas and is harmful to the survival of fish. Then the solution is to examine the physical and chemical variables of river water quality for the clarity of the water and the mineral content in it as described in [5], the degree of acidity (pH of river water); optimum temperature at 24-27˚C, Nitrate (NO2) content approx
0.25 ppm and the Nitrite (NO3) content is around 250 ppm.

E. Fish Harvesting Process

Some things that need to be considered during the process of harvesting fish, namely as follows:

a. Catfish are harvested at the age of 6-8 months, unless desired, they can be harvested at any time. The average weight at that age is around 200 grams/head.
b. In Dumbo catfish, harvesting can be done during the maintenance period of 3-4 months with a weight of 200-300 grams per head. If the maintenance time is added 5-6 months it will reach a weight of 1-2 kg with a length of 60-70 cm.
c. Harvesting should be done in the morning so that the catfish is not too hot.
d. Ponds are only partially drained and fish are caught using fine slides, hand, slow, tough or nets.
e. When catching using fishing rods, let the catfish get hungry first.
f. When catching using nets, harvesting is done simultaneously with feeding, so that catfish are easy to catch.
g. After being harvested, raise the catfish in a barrel/tub/hapa for 1-2 days without being fed so that the earthy and fishy smell disappears.

F. Marketing

Selling their crops to the market in the city of Lokseumawe. Prices are set based on market prices that apply every day or based on the high and low demand for catfish in the market.

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RESULT AND DISCUSSION

A. Cage Making

The implementation begins with providing guidance and training on cultivation techniques so that good yields are obtained and then preparing the pond by cleaning the pond from grass/weeds and water hyacinth and then making floating net cages using drums as a netting medium with a size of 2.5 x 4 x 2.3 meters and covered with a net on top so that snakes and other pests can not enter.

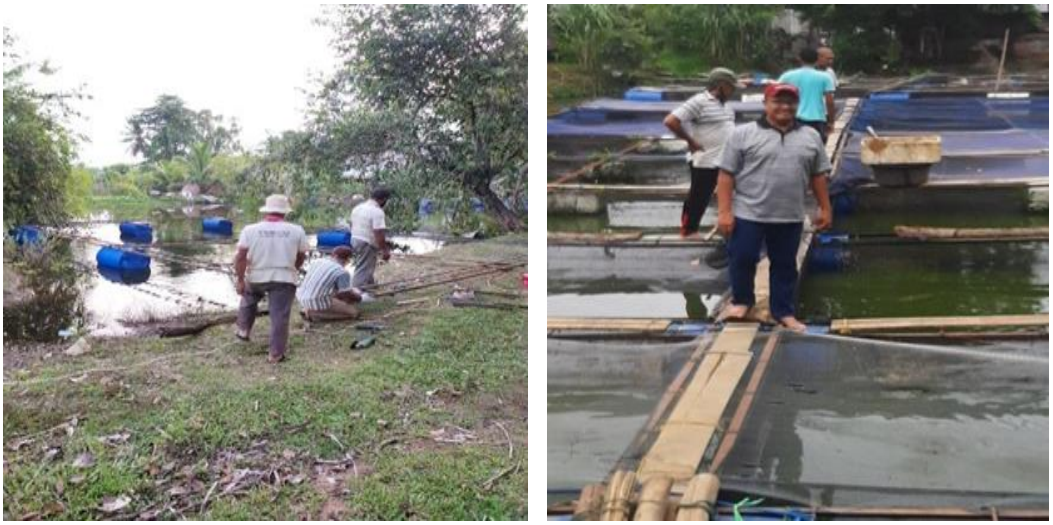
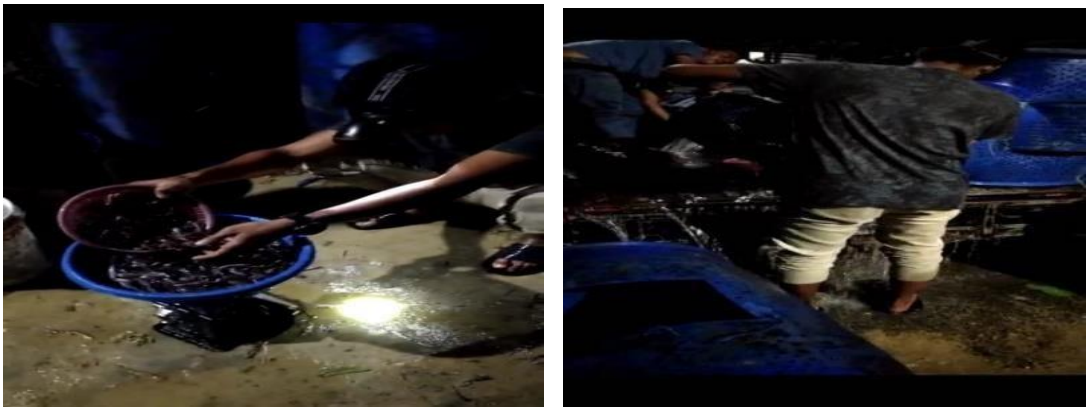


Figure 2. Making floating cage nets

B. Selection of Fish Seeds

Catfish seeds in this activity were purchased from fish seed dealers from Medan, North Sumatra, representatives of Lhokseumawe and seed distributors who wanted to buy back the fish harvest. The types of seeds purchased are really healthy, namely the movements are agile, there are no defects or wounds on the body, free from germs, before the seeds are sown into the pond, it is better to make environmental adjustments first.



Picture 3. The process of delivering/buying catfish seeds at night

Seed delivery here is done at night, this aims to maintain the temperature of the seeds on the way so that the seeds don't die. In addition, this also serves to reduce the stress level of catfish seeds. Because at night it will be easier for fish to make adjustments to the environment when the seeds are spread into the pond because the water temperature is still cold, this adjustment process needs to be done, because the environment where the seeds live may have different temperatures.

C. Catfish Feed

Early seed feeding (3-7 days old) is seed feed soaked first in water. After a little swelling, it is given to the fish (preventing bloating). In feeding must use the right dose and not excessive. If after 10 minutes the feed is given but there is still visible feed on the surface, it must be taken immediately so that it does not settle and become poison. giving feed other than pellets can also be additional feed.

In this activity, apart from pellets, feed was also given from chicken waste and feed from fish waste because it is still easy to find around the cultivation site, but previously it was ground with a crusher so it was easier to eat.

Figure 4. Feed milling from chicken waste and fish waste

The next activity is sorting by filtering it into a filter or holding tank, the fish in the sorting tub are moved to a different pond. Meanwhile, fish that escape the sorting tanks are returned to the original rearing pond to be raised again to the expected size. The purpose of sorting is to achieve maximum production, prevent cannibalism, control the development of fish weight, maintain balanced feed intake and uniform size of catfish. The sorting process is carried out in the morning. Prior to sorting, fish should not be fed to avoid stress which causes fish to vomit.

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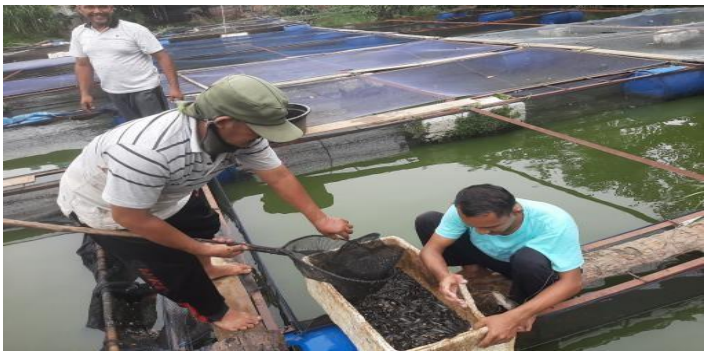


Figure 5. Sorting process

D. Pool water quality

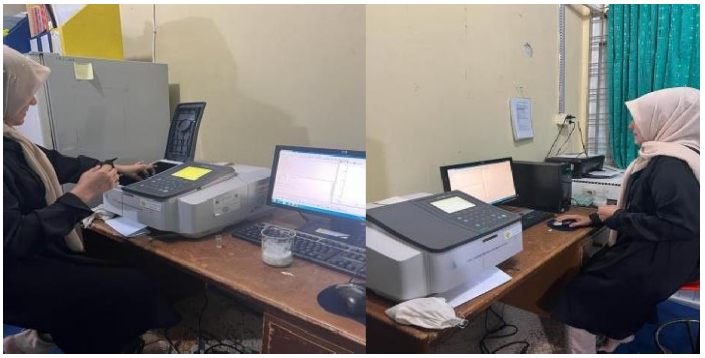
Nitrite has toxic properties for living things such as animals and humans. Nitrites in drinking water are then ingested by humans or animals, so the nitrites will enter the blood vessels in the body causing methemoglobinemia which blocks Hb from binding O2 and causes blue baby syndrome [4].

To ensure that water quality is maintained and avoid accumulation of leftover feed that does not run out at the bottom of the pond. Because the stockpile of feed that doesn't run out can become poison which causes sick or dead fish, so in this activity a pond water quality test is carried out to maintain the pool water quality so that it is not polluted, while the results of tests carried out in the laboratory can be seen in Figure 6 and the results analysis of pond water content in Table 2.

Table 2. Results of Analysis of Water Content in Catfish Ponds

No	Parameter	Value
1.	Degree of acidity (pH)	6.7
2.	Optimum temperature 24-27˚C)	26.5
3.	Oxygen (ppm)	2.03
4.	Nitrate (NO2) (mg/l)	8,60
5.	Nitrite (NO3) (mg/l)	0,13

According to results of testing pond water samples, it can be seen that based on SNI 6484.3.2014, the quality of pond water is still at the threshold, so fish farming can still be continued. The color of pond water that is good for catfish is green because catfish can survive in muddy water. Green color means a lot of moss around the pond. The color of the water in the catfish pond will turn red when it is fully grown and ready to be harvested.



(a) (b)

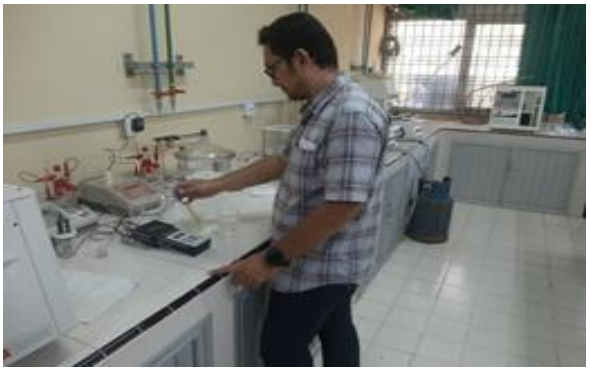


Figure 6. The process of testing the content of (a) Nitrate, (b) Nitrite using a Uvi-Visible spectrophotometer and (c) analysis using a pH meter

E. Process of harvesting fish and marketing

Catfish can usually be harvested after 3 months since the catfish seeds are sown. In Dumbo catfish, harvesting can be done during the rearing period of 3-4 months with a weight of 200-300 grams per head. If the maintenance time is added 5-6 months it will reach a weight of 1-2 kg with a length of 60-70 cm. The process of harvesting catfish can be done by sorting the fish that are suitable for consumption or already have a size of 4-7 fish per kilogram or according to the wishes of the buyer.

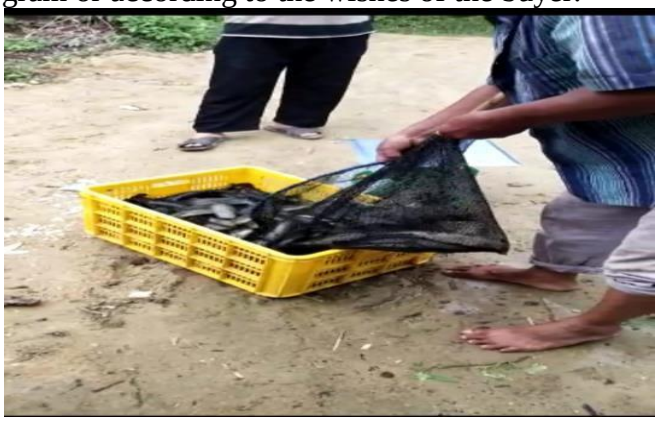


Figure 7. Harvested catfish will be sold to buying agents

Figure 8. Monitoring from the P3M Team

In the service activity, the fish can be harvested in the third month (3) since the seeds are sown and the sale of the harvest is no longer a problem, because the partners already have a cooperation bond with the seed provider, so that the fish harvest is directly purchased by seed selling agents and some are sold to the presidential market in the city of Lhokseumawe.

CONCLUSION

Service activities that have been carried out through the process of making abandoned ponds into productive pools and supporting economic income for the surrounding community. This service activity has been carried out with partners and obtained good catfish harvests thanks to cooperation with the Lhokseumawe State Polytechnic. Through this service program, currently the partners have developed catfish farming with the addition of dumbo catfish seeds little in order to get a harvest every month.

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