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## **The application of new technology fisheries cultivation for communities in Nelayan Indah sub-district Medan Labuhan district Medan city North Sumatera province**

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### **Abstract**

The Community Service Program (PPM) aims to empower the community to utilize the potential of aquaculture, namely cages. Fish cultivation in cages is very instrumental in helping to conserve water resources in public waters, because arrests carried out continuously will disrupt the sustainability of these waters (Anonimus, 1996). Providing assistance in facilities and infrastructure in empowering fishing communities and providing capital to strengthen aquaculture businesses. Long-term goals can avoid a famine for fishermen where in the western season fishermen cannot catch fish, improve the quality of life of the community by expanding employment opportunities for fishermen and society in general. Community service was carried out in Kelurahan Nelayan Indah, Medan Labuhan Sub-District, Medan City, North Sumatra Province. To achieve this goal, several stages of activities will be carried out. First is the initial survey activity to find out the condition of the service location and find out how many fishermen have their own pool. The second stage is to socialize the planned activities that will be implemented to empower fishing communities and provide capital to strengthen aquaculture businesses that use new technology. The third stage is improving science and technology using fish cages. This community service program is carried out within 6 months. The target and output of this program are: (1) Improving new knowledge and technology about aquaculture in fishing communities that have pondering. (2) Development of productive and sustainable aquaculture that emphasizes environmentally friendly cultivation practices. (3) Using Floating Net Cages (KJA) which have superior strength, resistance waves and currents. Thus, fish yields of quality, healthy and highly nutritious fish are obtained.

**Keywords:** *Application, New Technology, Aquaculture, Fish Cages Marketing*

## **1. INTRODUCTION**

Medan Belawan Subdistrict is a beachfront area that is inhabited by traditional fishermen so that in this location there are many fish ponds which are one of the fishing businesses to make a living to meet their daily needs.

The people of Medan Belawan Subdistrict, especially in Belawan Sicanang Village, generally residents work as traditional fishermen and some do aquaculture.

Cultivation fisheries generally develop along with the diversification of micro businesses for the community. The potential of aquaculture is widely distributed in urban and rural areas. The increase in fisheries production is carried out in line with efforts to increase production for food security, added value and competitiveness, community empowerment, development of cultivation areas, environmentally friendly production businesses and capacity building of fish cultivators. It is hoped that in the future fish will be the main choice of convenient protein sources. Recorded during the 2007-2011 period, the average fish consumption per capita was 5.04 percent. The increase in fish consumption is supported by the product promotion and the Fish Feed Movement in all provinces.

Along with the program to increase fisheries production, the government launched various programs including the production of superior fish such as African catfish obtained by selective breeding. At that time, African catfish showed its superiority especially in terms of growth, high

feed conversion ability and disease resistance. The fact in the field, lately that the superiority of African catfish has decreased, seems to decrease weight per unit maintenance time, decrease disease resistance, feed conversion is very high, so there needs to be innovation to answer this problem.

The presence of sangkuriang catfish which is a genetic improvement of African catfish. Through the production of sangkuriang catfish, the superior potential of dumbo catfish is initially able to be expressed again. Sangkuriang catfish is the result of genetic improvement through back crossing between second generation female parent (F2) and sixth generation male parent (F6). Then produce male and female F2-6. Male F2-6 is then mated with second generation females (F2) to produce sangkuriang catfish. For more details can be seen in Figure 2. F2 female parent is a collection at the Center for Freshwater Aquaculture Development (BBPBAT) Sukabumi which comes from the second descendants of African catfish introduced from Africa to Indonesia in 1985. While male parent F6 is a parent stock in the Center for the Development of Sukabumi Freshwater Aquaculture (Anonimus, 2007).

Catfish farming in Kelurahan Nelayan Indah, Medan Labuhan Sub-District, Medan City is a new prospect that is easily managed both in terms of cultivation and relatively short maintenance periods. Cultivation that has been carried out in the concrete and soil ponds seems less exciting, so that the design of new containers using plastic sheeting without damaging / disturbing the existing land structure is one of the new efforts. Cultivation by the community is still limited to both the availability of superior seeds, dependence on commercial pellets, quality and continuity is not fully guaranteed.

The importance of developing the port area as the Sangkuriang Lele village is expected to be the driving force of the region and other groups to carry out the same or identical thing. Cultivation fisheries opportunities are related to the availability of fisheries land and cheap labor, opportunities to sharpen the formation of skills (skills) and development opportunities and application of knowledge (knowledge) in most fishermen, the possibility of networking (upstream) to the upstream and downstream sectors that have occurred, and readiness of institutions (institutions). With various facts above, empowering women fishermen through fish cultivation and institutional development is one of the solutions to get coastal communities out of poverty.

## **1.1. Partner Problems**

### **1.1.1. High Cost of Fish Production**

The price of ingredients for fish production facilities such as (seeds, feed, concrete media, medicines) that are relatively expensive is the cause of the decline in the level of community enthusiasm in cultivating fish. Increased production costs were not followed by an increase in the selling price of catfish. For example, the cost of feed has increased by Rp. 500,00-720,00 / kg. While sales prices still fluctuate Rp. 11,000.00 - 13,000.00. So that in producing 1 kg of catfish requires additional funds of Rp. 750,00 - 1,080.00. Costs are also allocated to labor.

### **1.1.2. Low Feed Conversion Ability**

In the concept of bioenergetics, on food consumed by fish (as an energy intake), it is expected that energy is allocated more to growth (energy growth), but catfish currently show high allocation of feed tends to be allocated to maintenance energy and activity energy, so that energy allocation low growth. Decreased ability to convert feed by catfish is thought to be due to a decrease in genetic potential for growth. Dumbo catfish was initially considered to have a feed conversion of 0.80 - 1.00 so that it was still feasible to develop, but genetic decline had caused feed conversion to reach 1.30 which meant that it caused wasted feed of 0.20 to 0.50 kg to reach 1 kg of fish meat.

### 1.1.3. The High Cost of Feed

Catfish farmers generally depend on synthetic pellets which are sold commercially at a high enough price, especially feed for starters and growing. This feed is purely required to continuously increase commercially, causing production costs to increase and low profits. On the other hand, the community's ability to produce cheap and relatively easy feed is still not widely applied by the community. Low Continuity of Superior Seeds. Seeds that are still widely used by the community are seeds of community hatchery with uncontrolled parent conditions that are thought to have experienced high-level inbreeding. Seeds that are used by the community now require a 90-day maintenance period, whereas superior catfish should be harvested for 70 days of maintenance. The ability of the community in the provision of superior seeds from superior mothers is expected to stimulate the nature of growth.

Low Cultivator Ability. Fish cultivation activities as a new job have caused the community not to fully understand the concepts of cultivation, including in managerial and technical capabilities of cultivation. The ability to adopt science and technology in cultivation is still low so that cultivation activities are still traditionally pure.

### 1.2. The Solution Offered

Implementation of coaching and community service activities is the answer that will be carried out by:

- 1) Providing Coaching and Counseling. Coaching to the Gunung Sari group is the beginning of introducing good fish farming (CBIB) according to recommended technology. Coaching. Coaching is carried out by a group approach, so that it is communally able to formulate the problems it faces. Through this approach created organizational empowerment. The group approach is expected to be effective, and efficient in resource use. Coaching is carried out by mentoring to guide them in an effort to improve their welfare.
- 2) Demosntration of Sangkuriang Catfish Cultivation. This demonstration is carried out as a learning center for the community. Through this demonstration, the community was introduced to good seed selection, preparation of cultivation containers, feeding, management of water quality, control of pests and diseases of fish and measures of harvesting cultivation. This demostration will be carried out in 1 (one) cycle of centralized catfish farming.
- 3) Container Design using Pool Tarps. The technology of using tarpaulins / plastic as a barrier to water in kalam is still in use. This technology has not been socialized for the community. In conditions of clay sandy with high porosity, the use of tarpaulin / plastic becomes a promising alternative. In addition, the use of plastic sheeting is relatively simpler, cheaper and old soil (about 6 cultivation buds).
- 4) Provision of Sangkuriang Catfish Seeds. People still tend to know dumbo catfish to be developed, while sangkuriang catfish which is a genetic improvement of dumbo catfish is still little known. By introducing sangkuriang catfish, the cultivator community will obtain superior seeds.
- 5) Independent Feed Production Development. The raw materials for making pellets can generally be easily obtained by the community. By introducing a method of making fish pellets on a household / group scale, group members will be increasingly economically helped in cultivation. The topic of fostering pellet production in fish is to know the source and type of raw material, how to form fish feed, techniques to produce feed and feed storage techniques.
- 6) Fish Hatchery Engineering Training. Dumbo catfish and sangkurian catfish seeds are not yet available continuously for the community. By introducing and training people to fix catfish independently with semi-artificial systems, the personality of seed scarcity can be overcome. The hatchery phase that will be introduced is how to prepare a mature parent,

mature parent selection, fish spawning stripping system, egg management, and handling larvaikan.

- 7) Development of Institutional Cultivation Groups. Improving the quality of the role and independence of institutional groups of farmers by paying attention to the preservation of natural resources in fisheries. Strengthening community institutions is carried out with sustainable guidance. The development of this group role is carried out through non-formal education that can improve mental quality, the ability to think independently and the ability to maintain institutions. Empowerment is an effort to develop that power, by encouraging, motivating and raising awareness of its potential and striving to develop it. This non-institutional education will contain organizational roles and job descriptions

### 1.3. Target Expected Expectations

- a) Non Formal Education. All (100%) participants of the Pokdakan Lestari and Khazanah Mangrove groups explore the potential of resource use and create job vacancies independently. All participants of the Science and Technology Implementation Guidance understand and realize the importance of empowering the potential contained in them, so that the time can be utilized properly and 2 (two) group members become workers who develop catfish hatcheries and the like.
- b) Fish Cultivation Skills. As many as 80% of group members have plastic tarpaulin ponds by cultivating sangkurian catfish. Groups especially those who have a pool can understand the techniques of fish development both managerial and technical aspects. With regular and continuous coaching, it is expected that half of the counseling participants are able to independently utilize all the potential available to be used in the data
- c) Business and Group Existence. The developed groups can sustainably maintain the existence of the group through the management of 5 (five) units of plastic sheeting ponds that are operated by you as soon as possible.
- d) Establishment of an Integrated Cooperative. Through this Coaching, it is expected that the group will be able to form and organize the operations of the Lele Joint Business Group (KUBE) and the Maju Jaya Cooperative Group. So that all participants participate in fish cultivators. The presence of integrated fisheries cooperatives will provide additional fishing activities / income and reduce operating costs through the provision of cheap needs.

## 2. APPROACH METHOD

The approach method used in this program is participatory methods through groups and individuals. Assistance and coordination to partners will be carried out by giving trainings by lecturing, discussing and practicing directly how to produce products. Monitoring of partners will be carried out once a month or tailored to the needs of partners. Partners will also continue to be motivated and share information so that partners are encouraged to continue to create a sustainable and directed business.

### 2.1. Activity Plan

Activities will be grouped into 3 major activities, namely:

1. Start stage  
At this stage the partner needs will be identified, the dedication team will see the extent of the partners' abilities and knowledge to carry out their business. The team will also coordinate with the training material providers so that the time allocation for training can be determined.
2. Training Implementation Phase

Team training will divide the training into 5 stages, namely human resource management training which will be filled with activities to provide skills to group members who have not mastered the latest technology in aquaculture. Production training will provide partners with knowledge on how to use better equipment and how to maintain the equipment. Financial management training will provide knowledge to partners to book accounts of partner finances such as preparation of Balance Sheet and Income Statement, Break-even Point calculation, and Payback Period. Marketing management training will provide knowledge to marketing partners, which cover the target market aspects, product aspects (quality, taste, packaging, brand and label), price aspects, aspects of product promotion and distribution). In addition, partners will also be given knowledge related to how to improve partner skills to be able to understand the use of internet technology, so that partners are able to market their products online

3. The final stage of implementation

At the stage of the evaluation process will be carried out to see the extent to which partners understand the contents of the training, as well as the extent to which the implementation of the partner business is carried out. The evaluation process of partners will also provide information about matters that must be corrected by the partner if there is an implementation that is not in accordance with the training material.

### 3. RESULTS AND DISCUSSION

Training in fish farming by selecting male and female fish seeds. This activity is done by selecting a parent / prospective male and female parent. After the election was made, the community of fishermen groups were trained in fish spawning techniques. This technician uses ovaprim hormone as a stimulant, but in ovulation uses a simple system. The details are the comparison of the number and weight of females and males = 1: 1, with water height of 15-25 cm given kakaban, kakaban 5-6 pieces / kg female, with a size of 25-40 cm. After doing the spawning technique, the fish then injects the fish in the catfish pituitary gland 1 kg donor / kg, mother or pituitary gland, 2 kg donor / kg, mother, or Ovaprim, 0.1 - 0.2 ml / kg parent, ovulation period 10-14 hours , temperature 22-25oC.

As many as 80% of group members have plastic tarpaulin ponds by cultivating sangkurian catfish. Groups especially those who have a pool can understand the techniques of fish development both managerial and technical aspects. With regular and continuous coaching, half of the education participants can independently take advantage of all the potential available for use in the article.

### 4. CONCLUSION

The result that can be achieved through this public service activity is :

1. Able to improve business partner and society knowledge about new technology regarding the fish cultivation especially for the fishermen who has fish pond around Neayan Indah Village district of Medan Labuhan Medan, North Sumatera.
2. Improve the society nutrient in the area through the existence of fresh fish and good and economic cultivation way.
3. Increase the local society income who do the fish cultivation by using an efficient technology.

The suggestions which can be told in this public service activity are :

1. To make the business partner use terpal pond as efficient technology which is economist and easy for the cat fish and nila fish cultivation
2. To make the business partner can help the local society to share their knowledge in the socialization therefore can increase and help the society economic activity.

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