

Bioflok Technology In Local Shrimp Cultivation Systems In Efforts To Improve The Economy And As An Education Village In Pante Ceureumen District, West Aceh

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Abstract.

This research-based service program aims to seek to develop the research results of the proposing team for community empowerment. The application of the research results was carried out on the biofloc technology program in local shrimp farming systems in an effort to increase the economy and as an educational village in Pante Ceureumen District, West Aceh which is a potential aquaculture that must be developed. The application system is local shrimp farming with biofloc technology. Biofloc technology is a cultivation technique through environmental engineering that relies on oxygen supply and the use of microorganisms that can directly increase the digestibility value of feed. This service activity aims to increase farmers' income with high shrimp productivity and increase local shrimp production. The activity was carried out for 6 months in Pante Ceureumen District, West Aceh. The results obtained are to reduce production costs by 54% until the harvest is 90 days. The outputs that will be produced are in the form of international journals, services, and methods as well as mass media.

Keywords: Bioflok, efisiensi, local shrimp.

I. INTRODUCTION

The businesses of fish cultivators as micro entrepreneurs in West Aceh Regency have begun to develop, but unfortunately the types that are kept are foreign fish introduced from outside Aceh and even outside the country. This condition puts pressure on the local native fish population. Meanwhile, Aceh also has the potential for native fish that are not inferior both in terms of quantity and quality, such as fish and giant prawns [1]. According to the research results of the research team, the production of local fish that have been successfully increased include squirrel fish [2], giant prawns [3], banana shrimp [4] and local snakehead fish [5]. Potential and business opportunities for prospective entrepreneurs are very potential, because the location of the activity is very strategic, which has abundant and superior natural resources and the average human resource worker in the area is farmers and fish cultivators, but cannot be cultivated because do not have knowledge in the field so much arrest was made.

This service activity is to increase the income of farmers and fish cultivators by applying biofloc technology. The business group (partner) will make business management, especially shrimp farming with biofloc technology to improve the economy, but the problem faced by partners is that they have not received knowledge and science that can increase their production results. The technology used to increase shrimp production is the application of biofloc technology. Biofloc technology is a cultivation technique through environmental engineering that relies on oxygen supply and the use of microorganisms that can directly increase the digestibility value of feed. The abundance of natural resources in the location area and the lack of human resources who do not have the knowledge in their fields, so that this service program is very feasible to carry out its activities to improve the economy of farmer groups, with solutions for implementing local shrimp cultivation through a biofloc technology system. This cultivation technique is through environmental engineering that relies on the supply of oxygen and the use of microorganisms that can directly increase the digestibility value of feed.

II. METHODS

The method offered is to implement an appropriate technology application program for shrimp farming with biofloc systems in Pante Ceureumen District, West Aceh, which is an environmental engineering system that relies on oxygen supply and the use of microorganisms that can directly increase the digestibility value of feed. This program aims to increase the income of farmers with high productivity of shrimp yields and increase aquaculture production. The materials used in this activity are: local shrimp, bacteria floc, molasses, dolomite lime, cruciferous salt, and shrimp pellets. The tools used in this research are: round pool, blower, oxygen installation, scales, ruler, label, meter, safety net, camera, and stationery. The first service activity carried out was to design a round central drain pool with a diameter of 2 m and a depth of 2 m cleaned by brushing until clean and filled with water. Aeration installations are installed in round ponds with 8 aeration stones in each pool.

The position of the aeration stone is adjusted so that oxygen can be evenly distributed throughout the pond water column. The ingredients for making biofloc media are krosok salt 1 kg/m³, dolomite lime 50 grams/m³, molasses 100 ml/m³, probiotics with the composition bacteria *Bacillus* sp. 10 ml/m³ (using a combination of multi cells and biofloculants). Each of these ingredients is sequentially dissolved with water and put into the pond. The pool is left for 7 days or until the pool wall feels slippery when held. Water quality is measured and maintained at least 2 mg/L dissolved oxygen and pH 6-8 and the color of the water is observed. Shrimp seeds were put into the pond in the afternoon at a density of 100 fish/m³. Shrimp were fed after 2x24 hours with a dose of 3% of the shrimp body weight. The water treatment during maintenance is as follows: Molasses and probiotics are added if the oxygen level is close to 3 mg/L. Dolomite is added if there is a change in the pH of the water which tends to be acidic (pH 5). Biofloc media water is cultivated to be brownish in color. The volume of the flock was maintained up to 50 ml/L and if the flock was too dense then feeding was stopped. Water is added when evaporation occurs.

III. RESULT AND DISCUSSION

Biofloc System Local Shrimp Cultivation Process

The local shrimp farming activity with the biofloc system begins with the creation of a circular pond with a diameter of 2 meters with a pond volume of 2.51 m³. A circular pool made of tarpaulin and an iron frame is installed and installed in the air installation setting. Inside the pond, 100 shrimp seeds are stocked/m³. After the construction of the pool is complete, the pool is filled with water as high as one-fifth of the pool.



Fig 1. Local shrimp culture biofloc pond

Biofloc ponds that have been filled with water cannot be directly used in shrimp farming, first the water in the pond is formed into flocs as shrimp feed ingredients. In the process of making biofloc, a fermentation process is carried out for seven days. These materials (Figure 2) are mixed and then put into a pond that has been filled with water.



Fig 2.Materials of the biofloc system

Ponds that already contain flocs are then stocked with shrimp seeds. In Figure 4 it can be seen that the pond water that has been fermented produces a brownish color. This is a characteristic of the existence of flocs that can be utilized by shrimp. The biofloc formed is the result of floc bacteria and molasses. These materials are very good and relatively more ideal in shrimp farming. The resulting biofloc media can also provide faster and healthier shrimp growth [6].

Important Factors in the Local Shrimp Cultivation Process Biofloc System

The process of local shrimp cultivation with biofloc systems needs to be considered in shrimp culture production to increase production and economy. These include:

- The rearing tank must be round in an effort to distribute oxygen evenly and suppress pathogenic bacteria from growing
- Acclimatize (adjust) the seeds to the environment/water first This aims to reduce the death of seedlings due to stress [7]
- Providing shelter in a maintenance container in the form of paralon in suppressing the level of shrimp cannibalism [8].
- Providing apartments in aquaculture containers in an effort to increase shrimp density [9].
- The best time for feeding shrimp is at night. This is because shrimp are nocturnal and look for food at night.
- Giving molasses again every 2 weeks, and boiled before use.

The cost of feed production from the results of the biofloc system

By using the biofloc method, the shrimp produced are healthier, use less water and the cost of feed production is also lower than shrimp culture using conventional methods. The yield of biofloc feed production maintained for 90 days with one production cycle and one cultivation container with a feed percentage of 70% [10] in the use of feed can be seen in Table 1 below.

Table 1.Feed production costs

Type of activity	Amount Bag	Price Feed /10 kg (Rp)	Production cost Feed (Rp)	Percentage Production
Technology biofloc	4	200000	800000	54%
conventional	5.2	200000	1040000	70%

The cost of feed production using biofloc technology can reduce the cost of purchasing commercial feed at a cost of Rp. 240,000 for one production in each container for 90 days. This is because the shrimp biofloc system eats the nitrogen regeneration results from the rest of the feed and shrimp manure into nutrients for shrimp both from its derivatives into plankton and in the form of floc, so that the feed given can be reduced.

IV. CONCLUSION

The technology used is the use of floc bacteria which aims to increase farmers' income and increase production shrimp production. The results of the production cost of feed used is 54% and the cost of expenditure is Rp. 240,000, for one production in one container for 90 days.

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