The Effect Of Artificial Fish Feed From Organic Waste On Fish Cultivation In The Maritime Region

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Abstract. The Riau islands preserve the potential for raising large fisheries cultivation in the maritime region. One of the components that support fisheries cultivation is fish feed. In this globalization, feed is increasingly expensive and must be imported. This is what makes the fisheries farmers struggle to produce fish because they can only buy feed in smaller portions than they should. Innovation in place of feed by using the anchovies, coconut dregs and banana husks, which are safely consumed and created with specific formulations based on the nutritional needs of the fish, has the purpose to overcome expensive feed costs and create a clean and healthy environment. This research is a qualitative study with an experiment method. The result would be an increase in fisheries production due to solving the economic problems. Hence, the existence of artificial feed with economic value can provide great opportunities in cultivation and maritime business.

1 Introduction

Riau Islands has great potential for the development of fish farming which is spread in almost every district/city. The greater the cultivation, the greater the need for fish food. So far, the fish feed used by fish farmers is imported from abroad. The price of feed is relatively expensive even almost reaching Rp.337,000 per kilogram. This is also what can cause losses to fish farmers because the need for fish feed must be used more and also for the cost of shipping feed from abroad which is quite expensive so that a solution is needed in the form of an alternative to this imported fish feed.

The alternative used is to produce a new innovation as a substitute for fish feed, namely by making healthier fish feed by utilizing organic waste that contains good content for fish. By utilizing organic waste as the main ingredient in making the latest fish feed innovation, this can benefit fish farmers. Because of the low production costs so that fish farmers can save on expenses [1].

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The organic wastes used as raw materials in this alternative aquaculture fish feed are anchovy heads, banana peels and coconut dregs. These three organic waste materials certainly have good nutritional content for fish in the form of protein, vitamins, minerals, energy, and starch. In addition to having good nutritional content, these three raw materials are certainly easy to find and do not use a lot of costs in producing them [2].

The purpose of this research itself is to find out whether there are other advantages in terms of processing costs of fish farming by using fish feed made from anchovy heads, coconut dregs, and banana peel. In addition, this research can be a source of information to fish farmers about cheap artificial animal feed as well as a solution in dealing with organic waste of anchovy heads, coconut dregs and banana peels. Not only that, this research can also aims to provide an example of organic waste management to the younger generation who are still in school. So that someday, they already have the knowledge and experience in creating a healthy and clean environment and provide good benefits from wise actions.

Therefore, with several considerations that have been found, the authors are interested in researching about the effect of artificial fish feed from organic waste on fish cultivation in the maritime region.

2 Method

This research uses a qualitative approach method by finding sources of information that strengthen the author's research. The author also uses the help of methods in the form of conducting research experiments in making fish feed directly with the main ingredients of alternative commercial fish feed.

In which the research experiment is carried out directly in order to find the experience and objectives of the research based on practice and field practice (coding).

2.1 Material

The materials used in this production are anchovy head, banana peel and coconut dregs. As for the tools used in this production are knives, blender, big buckets, trays, tarpaulin grinders, bags, and distilled water.

2.2 Manufacture

a) The production of this artificial fish feed is by collecting the three ingredients and then washing them using distilled water until they are clean considering that the material is waste.
b) After that, dry the anchovy heads and banana peels that already being washed and dry them.
c) Then, gather all the ingredients together in a large bucket and stir until evenly distributed.
d) Then blend a little at a time and add distilled water until it becomes a soft thick dough like a cake dough.
e) Put the dough into the grinder until it takes a long shape. Then cut the dough in the range of 0.5-1cm and round them until they are shaped like common fish feed.
f) Place the rounded fish feed dough onto a large tarp and expose them to the sun until they become a dry, non-sticky dough.
g) The artificial fish feed is ready to be stored and consumed by the fish.

3 Results

The results of this research product are in accordance with the research objectives. The feed this fish feed is free from chemicals and contains vitamins that are good for fish growth. This fish feed also helps fish farmers to benefit in terms of the cost of using artificial fish feed and to increase the yield of their fish livestock, especially tilapia.

Table 1. Nutrition Content of Banana Peel

Material Name	Carbohydrates	Crude Proteins	Iron/Manganese
Banana Peel	59%	0.9%	24.3%

While anchovies contain calcium, phosphorus, low mercury, and are also rich in protein. Before being processed, anchovies are converted into fishmeal first, because fishmeal is the best source of protein for fish, besides being rich in essential amino acids, it also contains organic pigments found in plant chloroplasts and chromoplasts (carotenoids) and its profile is also suitable for the nutritional needs of fish [3-10].

The fat contains polyunsaturated fatty acids (PUFAs) in the form of both omega 3 and omega 6 which are important in boosting the immune system and reducing stress in fish, as well as phospholipids, fat-soluble vitamins, and steroids necessary during growth [4-12]. The content of coconut dregs, including carbohydrates 38.1%, crude protein5.6%, crude fiber 31.6%, moisture content 5.5%, ash content 2.6%, and crude fat 16.3%.

With a few other provisions, the process of artificial feed production is carried out with the following reference examples.

Fig 1. Washed and dried anchovy heads

Fig 2. Sliced banana peels

Fig 3. Coconut Dregs

Fig 4. Soft thick Dough

Fig 5. Drying of the cut and rounded dough

The picture above is the process of making artificial feed production. The four images have represented the production process and the dissemination of information related to artificial feed as an alternative to imported fish feed.

The way of using this artificial fish feed is the same as the way of use in general by spreading it in ponds or fish ponds so that fish farmers have no difficulty in feeding livestock fish. This research will target local fish farmers who are beginners in fish farming first. If the trials are successful with their fish, the next step will be to introduce the artificial feed to the rest of Indonesia and to consider collaborating with neigh boring countries to distribute the artificial feed worldwide, especially to the fish farming community.

4 Conclusions

Based on the results of the analysis test, the authors get some results that are a very satisfying opportunity for this innovation. The economy of fish farmers in the Riau Islands will certainly

begin to be addressed considering that this cheap artificial feed can be a good alternative to the usual imported fish feed for the world especially on the maritime region.

In addition, fish farmers will also produce fish that have energy and are healthy, so that fish production will also increase rapidly per kilo. That way, fish farmers will benefit economically from both fish production and feed consumption.

Not only that, the handling of this organic waste can provide important information to the community about the benefits of organic waste, especially in the school environment. Students will learn early on the benefits of utilizing waste, so that they can create a healthy and clean environment not from eliminating waste, but finding new innovations from waste that will provide goodness for the whole world.

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