

Integrated Farming System Based on Fisheries to Increase Fishermen Community Income at Banjar Kemuning Village

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ABSTRACT

Banjar Kemuning Village is one of the coastal villages in Sedati District, Sidoarjo Regency. The majority of fishermen do their daily activities by utilizing sea products. In addition to the Banjar Kemuning Village fishermen, there are also fishermen from other areas who use the waters of the village to look for shells. Seashells are usually sold raw and cooked. Shells that have been shelled from their shells produce waste that has accumulated. Shells are only used as a mixture of animal feed, even in other coastal areas, the shells are thrown away, causing an unpleasant odor. From the heaps of waste shells, technological innovation is needed in its processing. Like processing shells into chitin and chitosan which can be added value from the waste. Chitin and chitosan are renewable polymer sources that are very useful in the world of agriculture, the food industry, the chemical industry and health. Integrated Farming System based on fisheries, where by processing the shellfish waste is expected to increase the income of coastal communities. During this time, although fisheries yields have increased, but not followed by increased income of coastal communities.

Keywords: Integrated Farming System, fisheries, fishermen, Banjar Kemuning

1. INTRODUCTION

One of the provinces that has a vast sea area is East Java Province with an area of sea 110,764.28 km². From BPS data in 2016, the results of capture fisheries production both marine fisheries and general fisheries amounted to 407,814.6 tons slightly lower than in 2015 of 416,529 tons. From the fisheries production, there are export commodities that are very potential, namely crabs and shrimp. From the BPS data in 2015 exports of crabs and shellfish reached 109,624.4 tons, while shrimp commodities amounted to 145,077.9 tons. The high level of shrimp production and export of shrimp in processed form produces by-products in the form of shells or shrimp heads. According to [1] found that 40% of shrimp could be consumed and the rest were shells and heads. Of the approximately 170 shrimp processing industry units with a production capacity of 500,000 tons per year, approximately 300,000 tons of shrimp waste will be estimated.

Every activity carried out by the community will produce waste, this waste on a small scale will not cause problems

because nature has the ability to decompose the components contained in the waste. However, if accumulated on a large scale, problems will arise that can disrupt the environmental balance. Banjar Kemuning is a village located in the eastern part of Sidoarjo Regency which is directly adjacent to the Java Sea, this village enters into the Sedati Subdistrict area where most of the population works as fishermen, many fishing boats are lined up neatly on the river bank. Banjar Kemuning village community is a community that must be empowered because besides there are still many who have a minimal income, there is also a lack of community awareness of marine resources that must be managed and utilized. During this time, from the catches of fish obtained by fishermen, most of them especially those of good quality are directly handed over to the skipper, then the rest is taken by the fishermen themselves.

Shellfish became the most abundant recorded commodity in Banjar Kemuning Village. As a village fishing village, it cannot be separated from the activities of coastal residents, for example along the river, many women gather to peel the shells that have been obtained by the fishermen to sell as a support for the economy of the local people. Shellfish after being peeled and then discarded or mixed with animal feed.

Various life difficulties that meet the daily needs of society are the economic pressures that must be faced by citizens causing the lower welfare of the people there. The fishing season in Banjar Kemuning Village was also uncertain due to the frequent occurrence of unexpected famine. Natural factors related to fish season fluctuations, namely if the fish season or fish potential is relatively good in coastal waters, income can be guaranteed, whereas when it is not fish or fish season, fishermen will face economic difficulties to meet their daily needs - day. This natural factor is always repeated every year. Based on the background of the problem above, the formulation of the problem can be taken as follows: How can the fisheries-based Integrated Farming System strategy improve the welfare of fishermen in the Banjar Kemuning village?

2. LITERATURE REVIEW

According to [2], Integrated farming system as a solution to meet the needs of food, clothing and shelter. In the long run, the system can be an alternative to improving land productivity, village development, and integrated environmental conservation. Integrated farming systems combine the functions of agriculture, animal husbandry, fisheries and forestry in an integrated area. That said, all of these fields are interrelated and influence each other. Directly, this system adopts the concept of a food chain between humans, animals and plants.

This system has one center and one goal that is human that needs to be met. The center is surrounded by various models of agricultural economic activities that are interrelated with one another such as livestock, fisheries, fields / rice fields and waste management (waste treatment). One by one we will discuss the components of integrated farming systems:

1. Humans,
Humans as living beings need energy as a motor of life. With integrated farming systems, humans not only get financial benefits but also food as primary needs and heat and electricity.
2. Animal Husbandry
Animal husbandry plays a role as an energy source and an economic driver in an integrated farming system. Energy sources come from meat, milk, eggs and other body organs and even animal waste. While the economic driving function comes from the sale of livestock, eggs, milk and livestock by-products (feathers and dirt). In designing animal husbandry components that will be used for Integrated Farming System biosecurity factors are important factors that must always be considered. Is the prevention of transmission of diseases between animals which is the focus of biosecurity.
3. Rice fields or fields
Plant conditions that can be cultivated are of economic value and can provide feed for livestock. Rice,

strawberries, apples, grapes, cassava, tomatoes, taro and mushrooms can be used in integrated farming systems. Note that the rice used must be labeled blue or which is resistant to water which is rather high. Agricultural by-products in the form of straw, husks and remaining stems can be used as animal feed and fish, biogas and compost production.

4. Fisheries
Fish used for the Integrated Farming System are freshwater fish that can adapt to the turbid water environment, do not need extra care, are able to utilize existing nutrients and have economic value.

According to [3], fishermen are a group of people whose lives depend directly on marine products, either by fishing or cultivation, they generally live on the beach.

[4] explain that, the income of the fishing community depends on the utilization of the potential of the fishery resources contained in the oceans. The income of the fishing community directly or indirectly will greatly affect their quality of life, because income from sailing results is the main source of income or even the only one for them, so that the size of the income will greatly affect their lives, especially their ability to manage the environment where they live.

3. RESEARCH METHODS

This study uses a qualitative method. Qualitative method is a method that emphasizes data in the form of words, images, not numbers. Even if there are numbers, their nature is only as a support. According to [5], the purpose of qualitative research is not always to look for cause and effect, but rather to try to understand a particular situation, try to break through and explore the symptoms by interpreting the problem or concluding a combination of various problems as presented by the situation.

Data collection techniques are used to obtain reliable, accurate and relevant research results. In valid data collection efforts, the techniques used in this study are as follows:

1. Interview
2. Documentation
3. Literature study
4. Observation of non-participants

While data analysis is the process of arranging data sequences, organizing them into a pattern, category and unit of basic description so that themes can be found and work hypotheses can be formulated as suggested by the data. Data obtained from research is used to answer existing problems by analysing the data. This research uses inductive data analysis. The analysis was carried out after collecting data through interviews and direct observation in the field. There are several reasons for using inductive data analysis. First, you can find a lot of reality in the data. Second, it can make the researcher-respondent relationship explicit, easily recognized and responsible. Third, describe the background in full.

Fourth, can find a joint effect that sharpens the relationship and can be taken into account in this study.

4. RESULTS AND DISCUSSION

The fisheries sector is a source of regional economic growth and development as well as a land of livelihood for the people as well as the country's foreign exchange earning sources. So far Indonesian fisheries have played a good role in meeting world food needs. Indonesia has great potential to become an export commodity from the non-oil and gas sector. One of Indonesia's leading exports is processed shrimp, crab and crab products. From the BPS data in 2015 exports of crabs and shellfish reached 109,624.4 tons, while shrimp commodities amounted to 145,077.9 tons. Sidoarjo Regency is one of the districts that has a high potential of capture fisheries. One of the results of the leading capture fisheries commodities is shellfish. According to statistics from the Department of Fisheries and Maritime Affairs of East Java Province in 2010, the production of blood clams (*Tegillarca granosa*) in Sidoarjo Regency reached 952.7 tons. This value has not been added to the results of other shellfish catches, including feather shells and batik shells. Unfortunately, this large fishery potential has not been supported by proper management and environmentally friendly fisheries. This can be seen from the activities of fishermen who have not been selective in choosing the size of shells worthy of consumption and the comprehensive stock status of all types of shellfish in Sidoarjo Regency is not yet known.

In the Banjar Kemuning village as one of the producers of shellfish in Sidoarjo Regency, it is also not yet possible to treat the shells of shellfish waste. Even though the wives of fishermen mostly do shelling activities before shellfish are sold. During this time, waste from the shells of shells, only used as additional animal feed and some made accessories, even in some coastal areas are only buried, causing an unpleasant odor.

According to [6], shellfish shells that have not been used yet are often regarded as one of the sources of pollution by humans, because they consider the shells as waste which is feared to pollute the environment and get protests from the government and society. So that the accumulation of waste produced by the shells of shells around the fishing community settlements becomes useful, technological innovation is needed in processing it into chitin and chitosan so that it can provide added value to the product.

[7] Explain this renewable polymer source is very beneficial for agriculture, the chemical industry, health, and food. Chitin levels in shrimp weight ranged between 60-70% and when processed into chitosan yield 15-20% yield.

According to [8] shrimp skin contains 15-20% chitin and chitosan by 50% from chitin content, ash content by 20% and protein content by 35% on a dry basis.

The benefits of chitosan in general can be used for natural preservatives of various food products such as meatballs, sausages, nuggets, fruit / vegetable juices, tofu, salted fish, wet noodles, processed fish products, fruits, mayonnaise, dodol, etc., because has antimicrobial and antioxidant activity. Chitin and chitosan are also useful in agriculture as plant growth promoters and plant immunity against pests and diseases. Seeing the amount of waste produced, a technological innovation is needed in its processing. Processing of shellfish into chitin and chitosan is an innovation and an opportunity that can be an added value of the waste.

Increased knowledge and environmental insight.

Knowledge and environmental insight need to be socialized to provide the same and correct concepts and views to the community about the environment and its role in the life of society as a whole. The types of knowledge and insights provided differ according to the location of the settlement and type of work. For communities located in the core zone, it is certainly more specific and emphasizes more on knowledge and insights related to the direct relationship between local communities and the use of natural resources and their supervision compared to communities outside the region. Increased knowledge and insight also need to involve village, village and sub-district officials as well as the wider community in order to equip people with alternative economic ventures so as not to damage the environment, including:

Skills development of fishing communities.

Improving the practical skills of environmental management for the community and the ranks of the government at the village and sub-district level are very important to actively encourage the participation of these elements in tackling environmental problems that are ecologically and economically harmful. These skills are primarily related to ways to use natural resources efficiently, and skills about efforts to overcome problems. Mastery of these skills will increase the effectiveness of the participation of fishermen communities in coastal and marine management.

Capacity building of fishing communities.

Capacity building of fishing communities is needed to be able to participate in the policy-making process, especially in the planning, implementation and supervision processes. Community capacity development is actually a series of activities as described previously, but in this program it is important to emphasize the importance of the ability and opportunity of the community to be able to articulate their interests through social groups or institutions. The main target

of this program is to increase community confidence and ability to take initiative.

Self-quality development.

The quality of the fishing community needs to be improved to answer two challenges. The first challenge is, efforts to overcome economic problems, both to overcome the problem of meeting basic needs, and in order to improve broader welfare. The second challenge is, efforts to overcome the problem of natural damage, namely to reduce pressure on natural resources in coastal and marine areas as a result of the increasing human activity in the region. Self-development includes the development of human quality, both individually and in groups to fill the increasingly diverse workforce needs.

5. CONCLUSION

1. The current condition of the marine and fisheries sector has a very important role in supporting the nation's economy. In addition to providing food and raw materials for the industry, this sector also acts as a source of foreign exchange earnings, providing employment and increasing community income. Not only that, the fisheries sector is also a source of nationally healthy and nutritious food
2. By processing Shellfish shells into Chitin and Chitosan, it can reduce Shellfish waste waste with more useful processing results.
3. With the results of processing Shellfish shells into Chitin and Chitosan, the production of fishermen also increases.

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