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## DEVELOPMENT OF GROUPER AQUACULTURE WITH COMMUNITY-BASED PARTNERSHIP

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### Abstract

Regional economic development based on natural resources potential of an area requires creativity, innovation, commitment, and consistency in a pattern of development based on community development involving various interlinked stakeholders. This study investigates the successful trials on grouper aquaculture development in Bualemo District Gorontalo Province using partnership and community based patterns. Potential development of grouper aquaculture in the district was based on a survey conducted by the Department of Marine and Fisheries Gorontalo (2014) covering an area of 140 ha. Until now, this potential is not maximally utilized generally due to constrain in capital and technical aspects of cultivation. On that basis, trials on grouper aquaculture development are currently being conducted within triangular partnership cooperation between PT. Binatama Bali as investor with PT. Gorontalo Fitrah Mandiri and local fishermen. PT. Binatama Bali served as a supplier of seeds, provision of technical and market guarantees, PT. Gorontalo Fitrah Mandiri provides capital infrastructure investment, maintenance and supply of feed while local fishermen became farmers in the field and get paid every month. The result during the first cycle of maintenance in 2014 showed that among 7,500 seedlings there were 6,500 harvests with an average weight of 0.5 kg up to a total production of 3.5 tons to be sold to the partner, PT. Bali Binatama, for Rp. 350.000.- /kg, according to the contract agreement. Net profit after tax earned by PT. Gorontalo Fitrah Mandiri was Rp. 499.531.750.-. The feasibility analysis shows the B/C ratio of 1.73, the break-even production of 2596.8 kg and breakeven price of Rp.140.348.- with a payback period of 7 months 5 days and on the basis of such matters, the cultivation of grouper in the District of Boalemo is feasible to be developed.

**Key Words:** Feasibility, Partnership, Development, Aquaculture, Groupers.

### 1 INTRODUCTION

Regional economic development based on natural resources potential of an area requires creativity, innovation, commitment, and consistency in a pattern of development based on community development involving various interlinked stakeholders. In the face of global competition today, linkages between central and local government in development is necessary. According to Tarigan (2015), in this case local government must have innovative steps in developing their regions to increase incomes.

Grouper cultivation in Boalemo District is one of the potential for aquaculture development in Gorontalo Province, which is promising although only gain little enthusiasm from farmers and investors. Grouper is a priority fish which are cultured in floating net cages (KJA) for its high price among other species of marine fish. Kinds of groupers already widely cultivated, including *Cromileptes altivelis* (Kerapu Tikus), *Epinephelus fuscogutatus* (Kerapu Macan), as well as *Epinephelus coioides* (Kerapu Lumpur). KJA is an ideal method grouper cultivation because its process directly take place in the sea and the results are even better (Wiwie, 2015: 120).

Because of the fisheries potential has not been utilized to the maximum, then in 2014 the Government of Gorontalo Province launched a pilot project on grouper cultivation development with PT. Binatama Bali, as an



investor, in cooperation with PT. Gorontalo Fitrah Mandiri as an executor. The purposes of the cooperation were to increase grouper production with quality products that can be accepted in the market. To deal with importing countries which are generally critical consumers, the quality of the product has to be improved (Kordi, 2015: 94). A triangular model of cooperation, namely PT. Binatama Bali as a provider of initial capital in kind of 7,500 seeds donated for the first stage, and PT. Fitrah Mandiri Gorontalo in charge of the maintenance and supply of feed, and fishermen in group as cultivators receive wages every month. Technical instructors were summoned from Bali, expected to pass on technical knowledge to the fishermen. Market availability is guaranteed by PT. Binatama Bali at market prices according to an agreement with PT. Fitrah Mandiri. This way, technical knowledge of cultivation and spirit of entrepreneurship are expected to pass on to fishermen that they will not only become workers but will be the owner some day because the developing potential is still quite large.

## II. METHODOLOGY

Site suitability and feasibility studies viewed from various aspects such as aspects of production, raw materials (seeds), engineering, human resources, social and economic, marketing, legal and environmental are approaches that taken to measure the merits of the project. The analytical method used is descriptive and quantitative methods. Site suitability determination is done in accordance with Grouper Cultivation Development Policy at central, provincial and Boalemo District government levels. While aspects related to feasibility analysis revealed in descriptive data and adapted to the needs of the field. The financial aspects were computed in quantitative analysis, namely: Analysis of Costs and Benefits that compares the amount of benefits and costs over a period of cultivation so as to produce a net gain (net benefit) which then to calculate the net present value (NPV). Investment criteria are: if  $NPV > 0$ , the activities of investment projects feasible and profitable, and vice versa if  $NPV < 0$ , the activities of the investment project is not feasible to carry out. In addition, the B/C ratio is used to compare between benefits and costs. If the ratio is greater then the investment can be carried out. Calculation of Internal Rate of Return (IRR) is also used to look at the return on investment. The impact of cooperation on the transfer of technology to local farmers communities is also analyzed.

## III. DISCUSSION

The results showed that the potential development of grouper aquaculture in Boalemo district was that in Lamu Village of 50 ha, Bajo Village of 40 ha and Village Dulupi of 50 ha. The three areas have waters that are suitable for the development of grouper culture and sheltered by islands that are around. Thus even though until now the utilization rate of grouper aquaculture development in the region is not maximal although governments of Gorontalo Province as well as Boalemo District have issued a variety of supporting policy schemes, such as KJA,



and assistance in kind of seed and feed in piloting programs on grouper cultivation development. However when the programs completed fishermen were reluctant to continue as a stand alone program.

When questioned, about 98% fishermen answered difficulties and were not prepared in providing enough capital, long waiting period of one cycle of maintenance which reach 18 to 24 months. Moreover, in general cultivation is done on small scale farming and requires cultivation techniques that are pretty intense. Because of these current problems Government of Gorontalo Province launched a pilot project on grouper cultivation development with PT. Binatama Bali, as an investor, in cooperation with PT. Gorontalo Fitrah Mandiri as an executor. The purposes of the cooperation were to increase grouper production with quality products that can be accepted in the market. A triangular model of cooperation, namely PT. Binatama Bali as a provider of initial capital in kind of 7,500 seeds donated for the first stage, and PT. Fitrah Mandiri Gorontalo in charge of the maintenance and supply of feed, and fishermen in group as cultivators receive wages every month. Technical instructors were summoned from Bali, expected to pass on technical knowledge to the fishermen. Market availability is guaranteed by PT. Binatama Bali at market prices according to an agreement with PT. Fitrah Mandiri. This way, technical knowledge of cultivation and spirit of entrepreneurship are expected to pass on to fishermen that they will not only become workers but will be the owner some day because the developing potential is still quite large.

The result of the feasibility analysis on various aspects of grouper aquaculture in Boalemo District is very feasible. From the aspects of production, there are two alternatives, namely the use of HDPE or "Aquatic" KJA. This kind of KJA is durable from pounding waves and not easily weathered by water, but the price is very expensive and difficult for fishermen to afford. However, fishermen have another alternative to build their KJA using wood or bamboo. Both of these materials can be easily obtained at a relatively cheap price in Boalemo District. According to calculations of an instructor from Bali a KJA made of bamboo with 24 plots including guard house can be built at a cost of 90 million Rupiahs while for the material of the "Aquatic" can be obtained at the price of hundreds of millions Rupiahs.

For the procurement of seeds at this time can be served in Balai Benih Ikan Payau (Brackish Fish Seed Center / BBIP Lamu) owned by the Department of Marine and Fisheries Gorontalo Province, so there will be no problem if there is increase on seed demand. Seedlings of grouper in the Brackish Fish Seed Center in Lamu is in cooperation with the Department of Marine and Fisheries Ambon by bringing in the grouper eggs and hatched and nurse them in BBIP Lamu. Seedlings are nursed since they hatched into larvae with a length of about 3 cm to become seedlings ready to be stocked with a length of 8 cm and ready for sale to farmers in need. The presence BBIP Lamu guarantees the supply to the needs of the fishermen and the investors in whatever amount they need as long as it is coordinated in advance.

From technical aspect, the three locations (villages) are also eligible. They are protected by small islands around it with a wave height below 0.5 meters, the current is weak to moderate speeds with a magnitude between 0.04 up to 0.4 m/s, the water quality with a brightness of between 0.5 m - 100%. There are enough feed available especially trash feed made from small fish like sardines because the cultivation area is very close to fishing grounds. Salinity is between 30-33‰. Surface temperature of the water is still quite feasible because it is constant and still



below the ideal water temperature in the range of about 27 - 29°C. Degree of acidity is still quite safe between ideal Ph from 8.0 to 8.2 and dissolved oxygen is also still safe enough for grouper cultivation on the three target locations.

For marketing, PT. Binatama Bali has guaranteed to buy the product with prices follow the market price. Man power, in these case fishermen farmers, are sufficiently available in the three locations and it is feasible because the 2,460 fishermen who inhabit coastal villages of Boalemo District generally expressed support and are willing to develop grouper culture.

The legality aspect of this endeavor is also quite feasible because it is an official program established by all levels of government. This program received support from various parties: District Government, village government, also public figures, Religious Leaders, Youth Leaders, NGOs and society at large.

The results of the financial calculation during the first cycle of nursery in 2014 showed that out of 7,500 seeds 6,500 live with an average weight of 0.5 kg up to a total production of 3.5 tons and sold to the partner, PT. Bali Binatama, according to the contract agreement for Rp. 350.000.- per kg. After tax net profit earned by PT. Gorontalo Fitrah Mandiri was Rp. 499.531.750.-. Feasibility analysis shows the analysis of B / C ratio of 1.73, the break-even production of 2596.8 kg and breakeven price of Rp. 140.348.- with a pay back period of 7 months 5 days. Benefits received by fishermen in addition to obtaining a salary per month is also aquaculture technical knowledge on grouper nursery as basic capital if they want to start the business by their own or in groups. On the basis of these matters, grouper cultivation with business partnership in Bolaemo District deserves to be developed.

## **Conclusion**

The results showed that the aquaculture potential that exists in Boalemo District was technically very qualified for grouper aquaculture development. Similarly the results of the feasibility study on the various aspects of grouper aquaculture shows that it is very feasible to be developed.

## **Suggestions**

Development of grouper aquaculture with partnership between investors, enterprises, and local fishermen should be continued with an emphasis on the transfer of cultivation technology to the local fishermen. For fishermen who have well trained and advanced skill should be facilitated by the local government to establish groups in order for them to get access to capital assistance so they can remain independent by partnering with investors for quality control and market assurance.



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