

ARTICLE NUMBER :
234-835-2-SM
RECEIVED :
2019-01-11
ACCEPTED :
2019-11-29
PUBLISHED :
VOLUME : 05
ISSUE : 02
MONTH, YEAR
DECEMBER 2019
PP.947-952

Increasing Public Awareness Of Embung Biting Sustainability In Sukorame Village, Sukorejo-Pasuruan Through Introduction Of Good And Environmentally Friendly Aquaculture

Yuni Kilawat ^{1*}, Yunita Maimunaha, Adharul Muttaqin ², Edi Priyo Utomo ³

¹ Faculty of Fisheries and Marine Science Brawijaya University

² Faculty of Engineering Brawijaya University

³ Faculty of Mathematics & Natural Science Brawijaya University

*Corresponding author :

Wendrarohmah@ub.ac.id

ABSTRACT

Embung Biting is a native habitat for freshwater fish for Cyprinidae, tilapia, catfish and other endemic fish species. Abundant of natural biological resources including supply of embung water from water sources are very important for meeting the community's water needs. In order to preserve the biological resources of ponds and as a source of fish nutrition for the people of Sukorame Village, it is necessary to be given an understanding to preserve the embung through the introduction of good and environmentally friendly methods of fish farming. The activity was carried out through surveying the condition of ponds, the condition of the community, counseling on how to cultivate good fish and the environment. This activity has been able to provide an understanding to the community of the importance of sustainability of the embung which is seen in the enthusiasm of the participants and the motivation of the participants to improve entrepreneurial skills in the field of fish farming as alternative livelihoods.

ABSTRAK

Embung Biting merupakan habitat asli ikan air tawar untuk spesies Wader, mujair, lele dan ikan endemic lainnya. Sumberdaya hayati alami yang melimpah termasuk suplai air embung yang berasal dari sumber air sangat penting untuk pemenuhan bagi kebutuhan air masyarakat. Guna menjaga kelestarian sumberdaya hayati embung dan sebagai sumber gizi ikani bagi masyarakat Desa Sukorame maka perlu diberikan pemahaman untuk menjaga kelestarian embung melalui pengenalan cara budidaya ikan yang baik dan ramah lingkungan. Kegiatan dilakukan melalui survey kondisi embung, kondisi masyarakat, penyuluhan cara budidaya ikan yang baik dan ramah lingkungan. Kegiatan ini telah mampu memberikan pemahaman kepada masyarakat akan pentingnya kelestarian embung yang terlihat pada antusiasme peserta dan adanya motivasi dari peserta untuk meningkatkan kemampuan berwirausaha dalam bidang budidaya ikan sebagai mata pencaharian alternatif.

KEYWORDS

Embung, sukorame, aquaculture.

INTRODUCTION

Administratively, Sukorame Village is located in the Sukorejo Subdistrict, Pasuruan Regency, with the position restricted by the Pandaan

Subdistrict area of neighboring villages. This village has a boundary area in the north: bordering the village of Banjarsari Pandaan, to the west: bordering the Curahrejo district of

Sukorejo, to the south: bordering the village of Kenduruan Kec. Sukorejo, east: bordering Wonokerto village, Sukorejo district. The total area of Sukorame village is 298 Ha consisting of 91.28 Ha of paddy field, 132.50 Ha of tegal land, yard / settlement: 45.70 Ha, and other areas such as rivers, graves and roads covering 8.52 Ha. The population of Sukorame village is 2,673 people, consisting of 1,836 men and 1999 people.

The majority of the villagers do not have a proper source of drinking water. Drinking water is not met adequately, some people are still experiencing a clean water crisis. Even if the rainy season sometimes the water becomes cloudy and less drinkable. The management of drinking water is very potential to be developed in the village. Access Village residents have water for bathing and washing. Access is sufficient during the rainy season, but some residents have not been fulfilled when the dry season is very short of water, so bathing and washing sometimes bring in a tank. From this problem, the village needs to make ponds and water uptake as a reservoir / rainfed in the dry season.

At present there are 5 hectares of ponds and 1.3 hectares of embungs which have not been optimally utilized. Many factors have caused the economic gap in the community, especially the resources that are not sufficient to meet the basic needs of the Sukorame villagers. They live below the minimum income level, so that 30% of the people are in poverty, including:

1. Education level are low
2. Difficulties in financial resources (livelihoods, access to capital credit)
3. Access to productive capital or assets (dry land, limited health, production equipment)
4. Social networks to get jobs, goods and services.
5. Access to information that is useful for the advancement of life.

The target of this program is the people of Sukorame Village who live around the Biting

Pond. The purpose of this activity is to provide an understanding of the importance of preserving Biting ponds related to the use of ponds as a source of water for the domestic expansion of the surrounding communities. The sustainability of ponds is very important for the survival of the original endemic fish Biting ponds and as a source of fish nutrition for the surrounding community.

Approach and Methodology Productive and environmentally friendly cultivation techniques are the methods used in fish farming using natural immunostimulants so that fish are not susceptible to disease so that their productivity is expected to be optimal. This system is a cultivation system using existing ponds so that the selected fish will also be suitable for the existing environmental conditions.

Understanding of aquaculture technology to facilitate fisheries business in order to increase the income of local communities is also applied to complement the business as an effort to make the partner village better Management Practices un Aquaculture (*Cara Budidaya Ikan yang Baik/CBIB*) is the application of how to maintain and / or raise fish and produce results in a controlled environment so as to provide food security from cultivation by taking into account sanitation, fish food and chemicals and biological materials. In applying CBIB, farmers need to understand the conditions required so that they can also carry out internal supervision of the implementation of the cultivation business.

Fisheries products are expected to be safe to consume according to the requirements required by the market as a consequence of global market needs, aquaculture products must have competitiveness, both in product quality and efficiency in production. Improving the quality of aquaculture products is more directed to provide food safety guarantees starting from raw materials to final products that are cultured that are free of contaminant materials such as according to market requirements.

MATERIALS AND METHODS

Productive and environmentally friendly cultivation techniques are the methods used in fish farming using natural method that fish are not susceptible to disease so that their productivity is expected to be optimal. This system is a cultivation system using existing ponds so that the selected fish will also be suitable for the existing environmental conditions. Understanding information technology to facilitate fisheries business in order to increase the income of local communities is also applied to complement the business as an effort to make the partner village better and be able to compete facing the 4.0 agro-industry revolution. Activity of community services in the program were:

1. **Village data collection** related to the quality of Biting pond water Embung water quality since it was made in 2007 until now there is no known water quality profile and environment. Therefore, it is necessary to collect water quality data. Water quality data obtained is then used as a basis for determining species that can be cultivated. Water quality parameters measured are dissolved oxygen (DO), temperature and pH.
2. **Agro industry 4.0 understanding training**
Agroindustry 4.0 training needs to be done to partners related to global economic development in the field of aquaculture. This training aims to understand partners to capture the revolution as a threat or as an opportunity to improve economic prosperity.
3. **Training to improve the quality of disease resistant and environmentally friendly fish farming products.** This activity is an extension of good fish maintenance methods in accordance with the natural conditions of the waters by minimizing the use of chemicals for fish cultivation. Through this activity it is expected that the application of

cultivation methods can be used as a science in organic fish cultivation.

RESULTS AND DISCUSSION

1. Village Data collection

Temperature measurement ranges from 27.34–27.52oC. The temperature range is still in a range that is good for fish growth. This is in accordance with [8] statement, that the optimal temperature for tilapia is 27-32oC, in that range oxygen consumption is high enough so that appetite is high while at temperatures below 20oC appetite will decrease.

Dissolved oxygen concentration during observation ranged from 5.35 to 5.62 mg / L in the morning while in the afternoon it was above 10 mg / L. During the day when photosynthesis occurs the amount of oxygen dissolved in water will be quite abundant and vice versa at night when photosynthesis does not occur, the oxygen formed during the day will be used by fish and aquatic plants resulting in a drastic reduction in oxygen concentration. Solubility of oxygen in water can be affected by temperature. Between oxygen and temperature is inversely proportional, if the temperature is high, then oxygen solubility decreases, and vice versa. Oxygen diffusion only occurs quickly on the surface of the water, whereas in the layer below it, oxygen diffusion runs very smoothly. To help the distribution of oxygen to the lower layers while increasing the solubility of oxygen, it is able to release oxygen to the atmosphere in a saturated state that can use aerator assistance [6].

pH range during study 7.45–8.02. According to [2], the ideal pH value for the life of aquatic organisms generally ranges from 7-8.5. Very acidic and highly alkaline water conditions will affect the metabolic and respiration systems in fish that are cultivated.

According to [1], the influence of pH on aquatic organisms is very large and important. Because the pH range is less than 6.5 will determine the growth rate and even the acidity level can be deadly and there is no reproductive rate, while pH 6.5-9 is the optimal range of water.

2. *Agro industry 4.0 understanding training.*

Understanding training in facing Agro-Industry 4.0 was carried out in Sukorame Village which was opened by the Head of Sukorejo Subdistrict, and was attended by representatives of Babinsa, Village officials namely village heads, Village secretaries, RT and RW leaders in Sukorame Village, and 30 trainees from Sukorame Village (Figure 1) Training materials were delivered by the DM Team members, namely Mr. Adharul Muttaqin, ST.MT. Training materials include the sequence of the industrial revolution period 1.0 to 4.0. This training activity aims to open up the participants' insight that the development of information technology has shifted many conventional agribusiness methods towards online Agribusiness businesses. The use of smartphones that are not optimal in the village community can be improved as a means for product information, product quality and quantity, selling prices and availability of agricultural and fishery products.

Discussions on the sidelines of the training showed that the residents of Sukorame Village were enthusiastic and motivated to use smartphones as a means of forming networks in the production chain and marketing of agricultural and fishery products.

At the end of the event the training participants asked the DM Team to conduct a similar training program with a different theme, namely about the use of various applications on smartphones and their technical use. This shows that training activities have succeeded in opening up the horizon of the people facing the Agroindustry 4.0 revolution and using it as an opportunity to improve the quality and quantity of products which in turn can increase the income of farmers and other agro-industry actors.

3. *Training to improve the quality of disease resistant and environmentally friendly fish farming products*

Training activities to increase production of disease-resistant fish culture were attended by

representatives of Babinsa, village officials namely village heads, village secretaries, RT and RW heads in Sukorame Village, and 40 trainees from Sukorame Village youth. Training material was delivered by the DM Team members, namely Mrs. Dr. Yunita Maimunah S.Pi, M.Sc aims to provide participants with knowledge about the requirements for good fish cultivation in accordance with (Kepmen KP Number: KEP. 02 / MEN / 2007) with the attached training material (Appendix 2). The CBIB concept is a way of maintaining and / or raising fish and harvesting the results in a controlled environment so as to guarantee food quality and safety from cultivation by paying attention to sanitation, feed, fish medicine, chemicals, biological materials, and paying attention to the balance of ecosystems and environment [4].

This program is proclaimed so that shrimp farmers can apply CBIB because the implementation of CBIB means that farmers have taken a concrete action in improving product quality and sustainable cultivation. For farmers who have done so, it is recommended to apply for CBIB certification in their business units (DJPB, 2016). CBIB is a program promoted by the government, in this case the Directorate General of Aquaculture, Ministry of Maritime Affairs and Fisheries, in order to guarantee the quality and safety of aquaculture products. These programs are the elaboration / implementation of the Regulation of the Minister of Maritime Affairs and Fisheries.

Figures and Tables





Figure 1. Situation during Training on Facing Agroindustrial Revolution 4.0



Figure 2. Site of Training to improve the quality of disease resistant and environmentally friendly fish farming products

CONCLUSIONS and SUGGESTION

Knowledge and insight about the good and environmentally friendly fish farming have increased. During this activity the role of the Sukorejo sub-district was very good, especially with good communication and assistance during the activities. It is necessary to initiate collaboration with the private sector to support fish farming activities in Embung Biting in Sukorame village in the form of CSR for the sustainability of fish farming.

ACKNOWLEDGEMENTS

Thank you to the University of Brawijaya for providing funds through DIPA fund No.IPA-042.01.2.400919 / 2018. To the Head of Sukorejo Sub-District, the Village Chief and the apparatus of Sukorame Village and the residents of Dusun Biting around Biting Village.

REFERENCES

- [1] Armita, D. 2011. Analisis perbandingan kualitas air di daerah budidaya rumput laut dengan daerah yang tidak ada budidaya rumput laut di dusun melelaya desa punaga kecamatan mangarabombang kabupaten takalar. Skripsi. Fakultas Ilmu Kelautan dan Perikanan. Universitas Hasanudin. Makasar. 62 hlm
- [2] Barus, T. A. 2002. Pengantar Limnologi. Jurusan Biologi FMIPA Universitas Sumatera Utara. Medan. 265 hlm.
- [3] Dirjen Perikanan Budidaya. 2016. Cara Budidaya Ikan Yang Baik. Kementerian Kelautan dan Perikanan Jakarta
- [4] Hanny, U. 2017. Strategi Implementasi Program Cara Berbudidaya Ikan Yang Baik (CBIB) Dalam Mendukung Budidaya Udang Berkelanjutan Di Kabupaten Pesawaran. Tesis. Program

PascaSarjana. Universitas
Lampung

- [5] Kemenperin, 2018. *Solusi Peningkatan Daya Saing Indonesia*.
[http://kemenperin.go.id/artikel/17432/Industri-4.0-Solusi - Peningkatan-Daya-Saing-Indonesia](http://kemenperin.go.id/artikel/17432/Industri-4.0-Solusi-Peningkatan-Daya-Saing-Indonesia). Diunduh September 2018
- [6] Kordi, K.M dan Ghufron. 2004. *Penanggulangan Hama dan Penyakit Ikan*. P.T. rineka Cipta. Jakarta
- [7] Nugrahaningsih, K. A. 2008 *Pengaruh tekanan osmotic media terhadap tingkat kelangsungan hidup dan pertumbuhan benih ikan patin (Pangasius sp) pada salinitas 5 PPT*. Skripsi. Institiut Pertanian Bogor. Bogor. 51 hlm.