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Assessment of Good Fish Farming Practices (CBIB) in Tilapia Floating Net Cages (KJA) at Jatiluhur Reservoir, Sukasari District, Purwakarta Regency

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ABSTRACT

This study aims to assess the implementation of Good Fish Farming Practices (CBIB) in tilapia (Oreochromis niloticus) using the Floating Net Cages (KJA) system in Jatiluhur Reservoir, Sukasari District, Purwakarta Regency, Indonesia. This study uses a qualitative descriptive approach with a case study method. Data collection was conducted through structured interviews and field observations of fish cultivators; then, the results were compared with the standards stipulated in the Decree of the Minister of Maritime Affairs and Fisheries of the Republic of Indonesia Number KEP.01/MEN/2007 concerning Good Fish Farming Practices (CBIB). The results show that the implementation of CBIB principles at the research site is not fully optimal. Several aspects, such as site selection, cage design, equipment cleanliness, feed management, and harvesting and post-harvest processes, are in accordance with CBIB provisions. However, other important aspects, such as water source management, container sanitation, use of certified seeds, fish health management, waste management, and activity documentation, have not been implemented properly. Factors inhibiting the implementation of CBIB include limited technical knowledge among fish cultivators, a lack of training and mentoring from government agencies, and declining aquatic environmental quality due to domestic and industrial activities around the reservoir. Despite this, fish cultivators have a high level of awareness and willingness to improve and maintain sustainable aquaculture practices.

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Therefore, ongoing efforts through training, environmental quality monitoring, and institutional support are needed to ensure effective implementation of CBIB in the Jatiluhur Reservoir and contribute to improving the quality and safety of aquaculture products.

Keywords: CBIB, Floating Net Cage, Jatiluhur Reservoir, Tilapia.

1. INTRODUCTION

Good Aquaculture Practices (GAP), known in Indonesia as Cara Budidaya Ikan yang Baik (CBIB), are guidelines established to ensure that aquaculture is conducted responsibly, safely, environmentally friendly, and sustainably. The CBIB assessment covers several key aspects, including site and facility management, water quality, seed, feed, fish health, the use of chemicals and drugs, harvesting, post-harvest handling, and environmental management. In Oreochromis niloticus (tilapia) cage culture at Jatiluhur Reservoir, the implementation of CBIB principles is essential to maintain water quality, improve productivity, and ensure the safety and quality of aquaculture products.

Fisheries in Purwakarta Regency are divided into two types: aquaculture and capture fisheries. Capture fisheries originate from fishing in rivers and lakes, while aquaculture in Purwakarta Regency originates from rice fields, floating net cages (KJA), stillwater ponds, and fast-flowing ponds. Most residents around the Jatiluhur Reservoir work as fish cultivators, utilizing the reservoir's farming area. The livelihoods of residents around the Jatiluhur Reservoir still depend on floating net cages fish farming, although some residents now have other jobs.

Jatiluhur Reservoir is an artificial water body with an area of 8.3 km2 located in Purwakarta Regency, West Java. The primary functions of Jatiluhur Reservoir are flood control, water source, power generation, and irrigation, while fisheries and tourism are secondary functions. Fish farming activities in Jatiluhur Reservoir are carried out using Floating Net Cages (KJA) [1]. Fisheries farming, such as in Jatiluhur Reservoir, located in Purwakarta Regency. Freshwater fish farming is one of the leading fisheries sectors that is profitable, has high economic value, has nutritional content, and is able to meet the community's protein needs [2].

Jatiluhur Reservoir is one of the largest reservoirs in Indonesia and is used for various purposes, such as irrigation, power generation, tourism, and fish farming, particularly with the floating net cages (KJA) system. KJA productivity will decline as the number of operating cages increases. This is related to the increasing pollution load, which exceeds the carrying capacity of the Jatiluhur Reservoir's waters [3]. The application of CBIB in fish farming development is crucial for considering potential and carrying capacity, both technically, economically, and socially. Optimal fisheries potential requires a survey to obtain information on fisheries potential, environmental carrying capacity, and the facilities and infrastructure needed to support fish farming activities [4].

Floating net cages are an ideal intensive aquaculture system because they can be applied to both freshwater and saltwater. Jatiluhur Reservoir is one of the largest freshwater reservoirs with floating net cages fish farming in Indonesia [5]. Fish farming activities in floating net cages (KJA) in the Jatiluhur Reservoir generally take the form of polyculture, or raising two or more fish species in the same container.

Raising two or more fish species simultaneously in a single container (polyculture) requires specific techniques and management, including fish species selection, feed management, and water quality management, given that each species has distinct characteristics [6].

The success of freshwater fish farming activities in improving the quality of food safety assurance or the quality of fishery production results can be determined by environmental factors, namely the type of soil and water [7]. Decree of the Minister of Maritime Affairs and Fisheries No. KEP. 02/MEN/2007 states that the decision can run efficiently and effectively to regulate fish farming activities by implementing good fish farming practices, as well as providing requirements that are well considered for CBIB auditors, fish farming groups, and other farming actors. CBIB is the application of methods for maintaining and raising fish and harvesting results in a controlled environment so that it can provide food security from fish cultivators by paying attention to sanitation, feed, fish medicine, chemicals, and biologicals (Directorate General of Aquaculture 2017).

The condition of the waters in the Jatiluhur Reservoir area has experienced a significant decline in water quality, dominated by organic waste from KJA fish farming activities, resulting in the reservoir water not being able to be utilized by the community as it should [8]. The increase in fish farming intensity is often not balanced with a good fish farming system. Leftover fish feed and feces can pollute the water, increase ammonia and phosphate levels, and reduce dissolved oxygen levels, which ultimately disrupt the aquatic ecosystem. Therefore, research was conducted on the Assessment of Good Fish Farming Practices (CBIB) in Tilapia Floating Net Cages (KJA) at Jatiluhur Reservoir, Sukasari District, Purwakarta Regency.

2. MATERIALS AND METHODS

2.1. Time and Place

The research location for the Assessment of Good Fish Farming Practices (CBIB) in Tilapia Floating Net Cages (KJA) at Jatiluhur Reservoir, Sukasari District, Purwakarta Regency, West Java Province, Indonesia. Data collection was conducted for one month, from October 2022 to November 2022. A map of the research location can be seen in Figure 1.

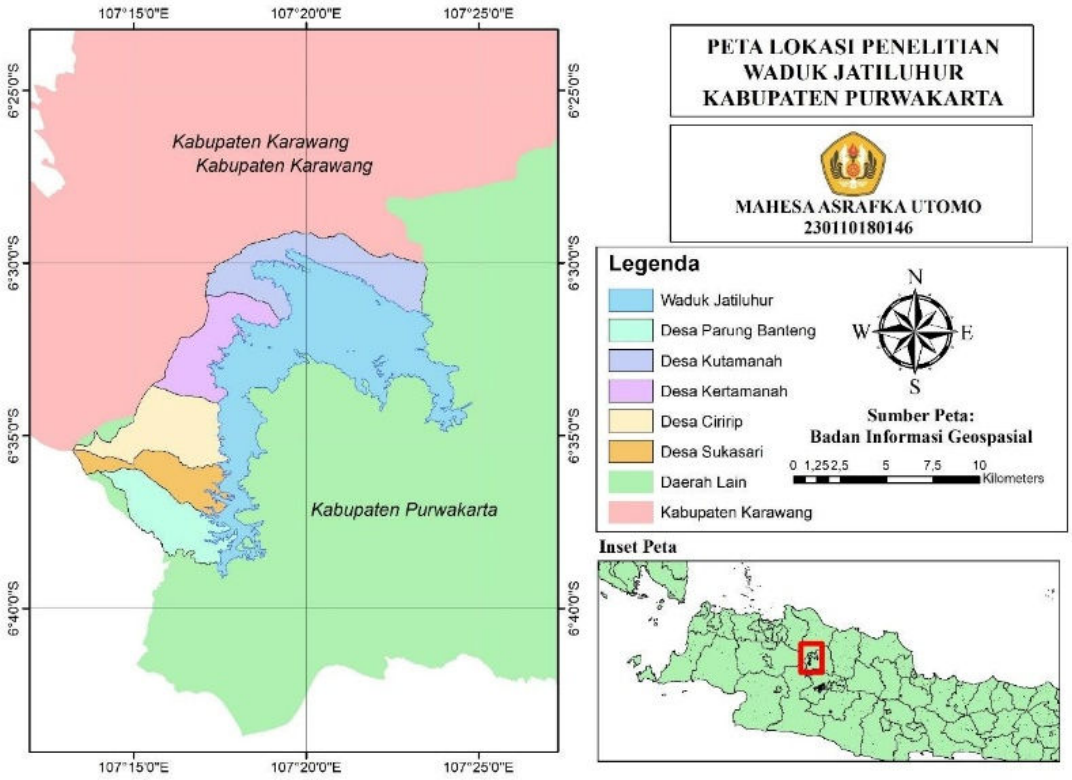

Figure 1. Research Location Map.

Figure 2. Jatiluhur Reservoir.

2.2. Metode Penelitian

This research uses a qualitative descriptive research approach. The research method used in this research is a case study method. A case study is an in-depth study of an individual, a group, an organization, an activity program, and so on within a certain time with the aim of obtaining a complete and in-depth description of an entity by producing data that is then analyzed to produce a theory [9]. Data were collected through field observation activities and structured interviews with tilapia fish cage fish cultivators in the Jatiluhur Reservoir, Sukasari District, Purwakarta Regency, using a questionnaire containing questions about the floating net cages farming of tilapia implemented by fish cultivators as a tool to assess whether floating net cages fish farming in the Jatiluhur Reservoir is appropriate or not.

2.3. Analysis Data

This analysis was conducted by comparing field findings with the standards stipulated in KEP.01/MEN/2007 concerning Good Fish Farming Practices (CBIB). CBIB emphasizes three main aspects: food safety, environmental safety, and fish welfare, which are operationalized through technical components of fish farming. The matters regulated in CBIB can be seen in Table 1.

Table 1. CBIB Assessment Requirements.

No	Category	Assessment Requirements
1	Location	1. The area surrounding the fish farming unit must be free from potential contamination that may cause the product to be unsafe. 2. The fish farming unit must be located in an area that is protected from contamination risks and food safety hazards.
2	Water Supply	1. The availability and quality of water must meet the requirements for aquaculture to ensure that the final product is safe for human consumption. 2. The water source must be free from contamination that may affect food safety, including animal waste and human activities.
3	Layout and Design	1. The culture containers must support the production process. 2. The layout and facilities of the aquaculture unit must minimize contamination and/or cross-contamination, including the placement of sanitation facilities (toilets, septic tanks, wastewater, and drainage). 3. The construction of the facility must maintain an optimal environment according to fish species and container type. 4. The aquaculture container must ensure that fish do not escape directly into public waters to preserve natural resources.

4	Facility and Equipment Hygiene	1. Aquaculture equipment must be made from environmentally friendly materials. 2. Equipment must be made from non-hazardous materials that do not cause physical damage or contamination to fish. 3. Equipment must be made of materials and designs that are easy to clean.
5	Preparation of Culture Units	1. The container must be prepared in a sanitary manner by drying the base and filtering incoming water to prevent entry of parasites, hosts, or predators. 2. Lime, fertilizers, and chemicals must be used according to prescribed doses and usage regulations.
6	Seed (Fingerlings)	1. Seeds used must come from hatchery units certified with CPIB (Good Hatchery Practices) and/or have a health certificate from an authorized institution or laboratory. 2. If using wild seeds, their collection must be carried out responsibly to preserve fishery resources.
7	Stocking Density	Stocking density must comply with the Indonesian National Standard (SNI) 6495:2011.
8	Feed	1. Commercial feed used must be registered with the competent authority, and/or self-produced feed must use ingredients recommended by the competent authority with hygienic handling. 2. Feed and additives must be used efficiently and responsibly to minimize negative environmental impacts and ensure food safety. 3. Feed must be stored in clean containers and handled according to the type of feed under hygienic conditions.
9	Health Management	1. Fish health must be monitored visually and/or through laboratory analysis when necessary. 2. Sick fish or newly arrived fish must be isolated and/or quarantined. 3. Fish that cannot be cured must be destroyed by burning or burying (after disinfection with chlorine at the recommended dose), and the aquaculture unit must be disinfected.
10	Water Management	1. Water quality must meet maintenance requirements according to the fish species being cultured. 2. Water management must prevent the entry and spread of diseases. 3. The use of water sources must prevent salinization of soil and freshwater resources. 4. Water quality must be measured periodically.
11	Site and Facility Cleanliness	1. Facilities and locations must be kept clean and free from contamination. 2. Equipment must be cleaned after use and, if necessary, disinfected to prevent disease transmission.

12	Harvesting and Post-Harvest Handling	1. Harvesting and handling must be carried out promptly to prevent product damage and minimize contamination. 2. Harvesting tools must be made from non-hazardous materials that do not cause physical damage or contamination to fish. 3. Clean water and ice must be used during harvesting and handling.
13	Waste Disposal	1. Liquid, solid, and hazardous waste must be managed to minimize environmental impacts and product contamination according to requirements. 2. Dead fish from grow-out units must be collected immediately and disposed of properly (buried or burned).
14	Environmental Management	Periodic monitoring of the environmental quality inside and outside the aquaculture area must be conducted.
15	Workers	1. Workers handling harvested products must be healthy and free from communicable diseases. 2. Workers handling fish during harvest and post-harvest must not have wounds, infections, or illnesses that could contaminate fish.
16	Training	Workers should receive training or socialization and understand Good Hygiene Practices (GHP) related to fish health and welfare, including fish behavior, physiology, clinical symptoms, disease types, maintenance techniques, water and environmental management, and fish handling procedures.
17	Documentation	Fish cultivators must document activities at pre-production, production, harvest, and post-harvest stages for traceability, including: a. Container preparation; b. Seed usage; c. Feed usage; d. Water and environmental quality monitoring; e. Fish health monitoring and medication usage; f. Harvest and distribution.

3. RESULT AND DISCUSSION

According to the Production Section of the Directorate of Aquaculture, the implementation of CBIB requires several requirements. These requirements comprise seventeen criteria for assessing suitability, including location suitability, water supply, layout and design, equipment cleanliness, container preparation, seed, stocking density, feed, health management, water management, site and facility cleanliness, harvesting and post-harvest management, waste management, environmental management, workers, training, and documentation. Based on the Directorate's provisions, the assessment of tilapia floating net cages farming activities in Sukasari District can be seen in Table 2.

Table 2. Assessment of Good Fish Farming Practices (CBIB) at Jatiluhur Reservoir.

Assessment Aspect	Assessment Results		Remarks
	Compliant (✓)	Non-Compliant (X)	
Location	✓		The environmental conditions are in accordance with food safety standards and free from pollution.
Water Source		X	The water source is mixed with industrial and domestic waste.
Design and Layout	✓		The aquaculture area is suitable for fish farming activities.
Equipment	✓		The aquaculture equipment is made from non-hazardous and easy-to-clean materials.
Container Preparation		X	The containers are not prepared using sanitary methods.
Seed (Fingerlings)		X	The seeds lack certification or verification from authorized institutions or laboratories.
Stocking Density		X	Stocking density does not comply with Indonesian National Standard (SNI) 6495:2011.
Feed	✓		Feed is stored in clean containers and handled hygienically according to feed type.
Health Management		X	Sick fish are not isolated, quarantined, or examined in laboratories.
Water Management		X	Water quality is not properly managed or measured periodically.
Site and Facility Cleanliness	✓		Facilities and locations are kept clean and free from contamination.
Harvesting and Post-Harvest Handling	✓		Harvesting tools are made from non-hazardous materials, and handling uses clean water and ice.
Waste Management		X	No treatment of liquid or solid waste is conducted.
Environmental Management		X	No periodic monitoring of aquaculture environmental quality is performed.
Workers	✓		Workers handling harvested products are healthy and free from communicable diseases.
Training		X	Workers have not received socialization or training on Good Hygiene Practices (GHP).
Documentation		X	Production, pre-production, harvest, and post-harvest activities are not fully documented for traceability.

Source: Primary Data (Processed 2022)

The results of the study indicate that the implementation of Good Fish Farming Practices (CBIB) in tilapia floating net cages in Jatiluhur Reservoir, Sukasari District, Purwakarta Regency, has not fully met the standards as regulated in the Decree of the Minister of Maritime Affairs and Fisheries of the Republic of Indonesia Number KEP.01/MEN/2007 concerning Good Fish Farming Practices (CBIB).

Several aspects of the fish farming process demonstrate compliance with CBIB principles, such as site selection, cage design and layout, use of safe and hygienic equipment, feed management, and harvesting and post-harvest processes. However, other important aspects, such as water source management, container preparation, use of certified seed, fish health management, waste management, and activity documentation, have not been optimally implemented.

The aspect of the fish farming location is relatively in accordance with the CBIB criteria because the cage area is in calm waters and is easy to reach. Aquaculture can be carried out sustainably and optimally if the fish farming location is selected according to ecological and economic principles [10]. Location selection is necessary to obtain a water source that meets the threshold, and technology is needed to maintain optimal fish farming water quality [11]. However, the condition of the water sources in the Jatiluhur Reservoir is still a major problem due to the mixture of domestic waste and industrial activities around the reservoir. There are several pollution problems in fish farming activities, namely activities from household, agricultural, and livestock waste. This pollution is not considered a big problem for fish cultivators, even though it violates the rules and regulations of the CBIB [12]. If organic waste in a body of water, including waste from fish farming activities in the KJA system, is allowed to continue to increase, the aerobic layer in the reservoir water body can cause it to gradually be pushed upwards. Under these conditions at night, the concentration of dissolved oxygen in the waters can approach zero, which means that fish farming using the Floating Net Cages (KJA) system will be hampered because conditions like this can cause mass fish deaths [13].

The design and layout aspects are in accordance with the CBIB principles; the building construction can maintain optimal environmental conditions according to the type of fish and container. The fish farming container can ensure that the fish do not escape directly into public waters to maintain resource sustainability, and the fish farming container can support the production process. In relation to KJA, the strength of the current can reduce organisms that stick (fouling) to the net so that the design and construction of the cage must be adjusted to the current speed and the condition of the water base (mud, sand, coral) [14].

In terms of equipment and fish farming containers, fish cultivators in the Jatiluhur Reservoir have used non-hazardous and easy-to-clean materials, but sanitation activities for containers before seed distribution have not been carried out routinely. External factors, namely the aquatic environment, are indeed difficult to control, but efforts can be made through increasing fish immunity, improving nutrition, and sanitation of containers or nets [15].

Figure 3. Floating Net Cages (KJA).

The research results also show that most fish cultivators use seeds without certificates from official seed institutions. This condition is in accordance with the findings of the availability of seeds is a factor that affects the sustainability of tilapia fish farming [16]. Sustainability in the provision of seeds must be balanced with the availability of superior tilapia seeds that have seed quality certificates [17]. Improving the quality of fishery products is aimed at providing food safety guarantees starting from seeds to final fishery products that are free from contamination according to market requirements [18].

Furthermore, fish stocking densities in the field do not meet SNI 6495:2011 standards, which can lead to stress, slow growth, and increased mortality. High fish stocking densities in a container will lead to competition between individual fish for food, so that lower stocking densities will result in greater growth [19]. In terms of managing fish health and water quality, most fish cultivators do not conduct routine checks or isolate sick fish. However, CBIB emphasizes the importance of regular monitoring of fish health. Disease, as one of the factors that reduces production, needs to be controlled through good fish farming management. Fish cultivators need to understand fish health management techniques to minimize disease incidence [20]. To prevent disease in other fish, it is best to separate or quarantine sick fish in a separate container, such as a tub, bucket, or special aquarium equipped with an aerator, and routinely change a quarter of the water daily [21].

Meanwhile, the cleanliness of the facilities and harvesting process at the Jatiluhur Reservoir is relatively good. Fish cultivators have maintained a clean work area and used clean water and ice in the post-harvest process. Harvesting activities can be seen in Figure 4. According to [22] facilities and infrastructure are one of the important factors in handling products and ensuring food safety and production quality because they can determine the success of a fishery farming activity.

Figure 4. Fish Harvesting Activities.

Waste management and activity documentation have yet to be implemented. According to [24] the rapid annual growth of floating net cages (KJA) is directly proportional to the resulting feed waste. The large amount of fish feed waste containing nitrogen and phosphorus that enters the waters will settle as sediment at the bottom of the reservoir. At high concentrations, nitrate and phosphate can cause rapid phytoplankton blooms, leading to eutrophication. The increased number of phytoplankton in the waters will result in the water surface being covered and causing low dissolved oxygen levels. Furthermore, fish cultivators have not yet recorded production activities, even though documentation is a primary requirement for ensuring traceability of production results and food safety.

In terms of human resources, field workers are generally healthy but have never received formal training related to CBIB or Good Hygiene Practices (GHP). These differing abilities between individuals are thought to be related to individual characteristics such as age, education level, income level, experience (length of fish farming), and ownership of business land [25]. Floating Net Cages (KJA) fish cultivators in the Jatiluhur reservoir require training activities. Research results show that training activities on good tilapia farming methods for fish cultivators can improve knowledge, skills, and capacity of tilapia farming and can increase tilapia production [26].

In general, the research results indicate that the level of CBIB implementation in the Jatiluhur Reservoir is still low to moderate. The main challenges faced include a lack of technical knowledge, the absence of intensive training, and minimal support from the government or fisheries institutions. Therefore, strategies are needed to increase the capacity of fish cultivators through training programs, CBIB outreach, and institutional strengthening of fish cultivator groups so that CBIB implementation can be sustainable and have a significant impact on improving the quality of fisheries production in the Jatiluhur Reservoir.

4. CONCLUSIONS

Based on the results of a Assessment of Good Fish Farming Practices (CBIB) in Tilapia Floating Net Cages (KJA) at Jatiluhur Reservoir, Sukasari District, Purwakarta Regency, it can be concluded that the implementation of CBIB or GAP principles in the field is still suboptimal. Some fish cultivators have understood and implemented several basic aspects of CBIB or GAP, such as selecting a farming site, cleaning equipment, and managing feed and harvesting. However, other aspects, such as water quality management, the use of certified seed, recording farming activities, and waste management, have not been fully implemented in accordance with the provisions stipulated in the Decree of the Minister of Maritime Affairs and Fisheries No. KEP.01/MEN/2007 concerning CBIB.

This low level of implementation is due to several factors, including limited knowledge and technical skills of fish cultivators, a lack of training and assistance from the government, and the absence of an integrated monitoring system. Furthermore, the environmental conditions of the Jatiluhur Reservoir, which are under pressure from human activities, also affect the quality of fish farming. Despite this, fish cultivators have demonstrated a high level of enthusiasm and awareness of the importance of implementing CBIB standards to improve the quality and safety of fishery products. With ongoing mentoring, capacity building, and institutional support from the government and fish cultivator groups, CBIB implementation in the Jatiluhur Reservoir has the potential to develop further and sustainably in the future.

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References

[1] Warsa, A, Sembiring, T, & Astuti, L. P, Produktivitas dan Laju Pertumbuhan Ikan yang Dipelihara Pada Kolam Keramba Jaring Apung Smart Di Waduk Jatiluhur, Purwakarta, Jawa Barat. *Berita Biologi* 22(1) (2023) 23-30.

[2] Sutiani L, Bachtiar, Y, Analisis model budidaya ikan air tawar berdominasi ikan gurame (*Osphronemus Gourame*) di Desa Sukawening, Bogor, Jawa Barat. *Jurnal Pusat Inovasi Masyarakat* 2 (2) (2020) 207-214.

[3] Deswati, D., & Adrison, A, Analisis Kualitas Air di Sekitar Keramba Jaring Apung di Waduk Jatiluhur. *Jurnal Ilmu Perairan Indonesia* 5(2) (2019) 45–52.

[4] Priyono S, Tingkat penerimaan masyarakat terhadap penerapan sistem CBIB (Cara Budidaya Ikan Yang Baik) pada budidaya pembesaran ikan lele kolam terpal di Kecamatan Slawi Dan Kecamatan Lebaksiu Kabupaten Tegal. *Indonesian J Fish Commun Empowerment* 1 (2) (2021) 130-140.

[5] Mashan, Evaluasi Perairan Waturia Untuk Kelayakan Budidaya Ikan Kerapu Sunu (Plectropomus Leopardus) Pada Keramba Jaring Apung (KJA) Di Kabupaten Sikka, Provinsi Nusa Tenggara Timur. Universitas Muhammadiyah Makassar.

[6] Hamdani, H., Kelana, P. P., & Zidni, I, Kajian Peningkatan Produktivitas Polikultur Pada Karamba Jaring Apung di Waduk Cirata dengan Pemanfaatan Teknologi Aerasi. *Akuatika Indonesia* 2(2) (2017) 120.

[7] Ayuningtyas, Wahjoe Dyah, Maria Heny Praktinjo, And Antonius Purwanto, Implementasi program cara budidaya ikan yang baik bagi masyarakat pembudidaya ikan di Kabupaten Bolaang Mongondow Timur. *Jurnal Administrasi Publik* 4 (53) (2018).

[8] Prinajati, Purnomosutji Dyah, Kualitas air Waduk Jatiluhur di Purwakarta terhadap pengaruh keramba jaring apung. *Journal of Community Based Environmental Engineering and Management* 3(2) (2019) 78-86.

[9] Abdussamad, Z, Metode Penelitian Kualitatif. In Nucl. Phys. (1st edition , Vol. 13, Issue 1). Makassar: Syakir Media Press.

[10] Dahuri, R., Ginting, S.., Rais, J., & Sitepu, M. J.. Pengelolaan Sumberdaya Pesisir dan Lautan secara Terpadu. PT Pratdya Paramitha (2001).

[11] Setyawan, A. R., Purnama, S., & Sudarmadji, S, Analisis Kesesuaian Air Sumber untuk Budidaya Udang di Kecamatan Purwodadi, Kabupaten Purworejo. *Jurnal Perikanan Universitas Gadjah Mada*, 23(1) (2021) 25–30

[12] Fianti, Anna, Pemberdayaan Masyarakat Pembudidaya Ikan Melalui Pengawasan Di Desa Basarang Kabupaten Kapuas. *JURNAL BAKTI UPPR: Jurnal Pengabdian Kepada Masyarakat* 1(2) (2023) 98-106.

[13] Soetrisno, Y, Beban Pencemaran Limbah Perikanan Budidaya dan Yutrofikasi di Perairan Waduk pada DAS Citarum. *Jurnal Teknologi Lingkungan BPPT*, 3(2) (2002) 141518.

[14] Hidayah, Taufik, and Marson Marson, Analisis Kesesuaian Lokasi Untuk Budidaya Keramba Jaring Apung Di Waduk Batutegi Kabupaten Tanggamus Lampung. *Fiseries* 8 (1) (2020) 1-8.

[15] Hidayati, D., Ashuri, N. M., & Arifudin, S, Nearshore aquaculture: Keramba jaring apung (KJA) teknik budidaya dan penanggulangan penyakit. Surabaya: Pusat Studi Kelautan LPPM Institut Teknologi Sepuluh Nopember. (2018) 1-74.

[16] Al Ghozali, Ashil Falih Kes Foh, Doddy Gunawan, and Asri Sawiji, A review of hatchery techniques of Red Tilapia (Oreochromis niloticus) at UPT of Freshwater Aquaculture Fisheries (PBAT), Pasuruan. *Journal of Marine Resources and Coastal Management* 2(1) (2021) 20-24.

[17] Zulendra, Muhammad Fiqi, and Sinar Pagi Sektiana, Analisa Faktor-Faktor Permasalahan Untuk Meningkatkan Kelangsungan Hidup Benih Ikan Nila Pada UPR Golden Fish Farm Kecamatan Kauditan-Minahasa Utara. *Buletin Jalanidhitah Sarva Jivitam* 4(1) (2022) 39-46.

[18] Priyono, Slamet, Tingkat Penerimaan Masyarakat Terhadap Penerapan Sistem Cbib (Cara Budidaya Ikan Yang Baik) Pada Budidaya Pembesaran Ikan Lele Kolam Terpal Di Kecamatan Slawi Dan Kecamatan Lebaksiu Kabupaten Tegal. *Indonesian Journal of Fisheries Community Empowerment* 1(2) (2021) 130-140.

[19] Widiastuti, I.M, Pertumbuhan dan Kelangsungan Hidup (*Survival rate*) Ikan Mas (*Cyprinus Carpio*) yang Dipelihara dalam Wadah Terkontrol dengan Padat Penebaran Yang Berbeda. *Media Litbang Sulteng* 2(2) (2009) 126-130.

[20] Agustina, Adi Susanto, and Irman Irawan, Upaya Peningkatan Pemahaman Pembudidaya Terkait Pengelolaan Kesehatan Ikan yang dibudidayakan dalam Keramba Jaring Apung Di Kota Bontang. *Jurnal Abdi Insani* 12(2) (2025) 759-765.

[21] Lukistyowati I & Morina R, Analisa Penyakit Ikan. UNRI-Press, Pekanbaru, (2005) 120p.

[22] Elenda, Endang Bidayani, And Robin Robin, Study of CBIB aspects for sustainable fresh water fish cultivation business in Tuatunu Village, Gerunggang District, Pangkalpinang City, Bangka Belitung Islands, Indonesia. *In Prosiding Seminar Nasional Masyarakat Biodiversitas Indonesia* 9(2) (2023) 63-69.

[23] Gelman A, Glatman L, Drabkin V, Harpaz, Effect of storage temperature and preservative treatment on shelf life of the pond-raised freshwater fish, silverperch (Bidyanus bidyanus). *Journal Food Protection* 64 (2001) 1584-1591.

[24] Adawiah, Seni Robiatul, Vina Amalia, and Sri Endah Purnamaningtyas, Analisis kesuburan perairan di daerah keramba jaring apung berdasarkan kandungan unsur hara (Nitrat dan fosfat) di Waduk Ir. H. Djuanda, Jatiluhur Purwakarta. *Jurnal Kartika Kimia* 4(2) (2021) 96-105.

[25] Wardana I, Priono B, Mubarak dan Cholik F, Buletin Penelitian Perikanan. Pusat Penelitian dan Pengembangan Perikanan. Jakarta (1994) 167p.

[26] Handajani, Hany, and Ganjar Adhywirawan Sutarjo, Penerapan Manajemen Budidaya Ikan Nila Yang Baik Dikelompok Pembudidaya Ikan Gemari Jaya Kabupaten Malang. *Jurnal Abdi Insani* 9(2) (2022) 400-409.