WATER QUALITY MANAGEMENT OF MILK FISH (*Chanos chanos*) AT THE SOUTH AREA AND SEA FISHERIES CENTER PANGANDARAN

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ABSTRACT

Milkfish is one type of commodity that is widely consumed by the people of Indonesia because it has a savory meat taste and a fairly affordable price. For the milkfish cultivation process to run well, it is necessary to pay attention to several aspects. One of them is the water quality of the cultivation media, this is very important because it can affect the growth and survival of an organism. For physical and chemical parameters of waters for milkfish cultivation at the stadia nener, if SNI (6148.3 2013) is used as a comparison, the resulting water quality includes salinity 16-29 ppt, pH 7- 9.4 and temperature 28.3-33°C, water quality this condition still meets the appropriate SNI for the survival of milkfish in the nener stage.

Keywords: *fish farming, survival, physical and chemical parameters*

1. INTRODUCTION

Fisheries in Indonesia are divided into three categories of water, namely salt water, fresh water, and brackish water. Of the three categories, they have advantages because the production process can be controlled and the ease of harvesting is brackish water cultivation (Jamaluddin, Ratniarsih, and Widjajanti 2013). Of the many variations of existing brackish water fisheries such as milkfish, tiger shrimp, white shrimp, mixed shrimp, tawes, and others. Milkfish production is much larger than other types of fish because milkfish cultivation is relatively easy and has high economic value, in addition to being resistant to extreme environmental changes (Sudradjat *et al*., 2011 *in* Andriyanto 2013).

According to Andriyanto (2013), milkfish is one type of commodity that is widely consumed by the people of Indonesia, because it has a savory meat taste and a fairly affordable price. Therefore, milkfish has a large enough contribution to improving nutrition in the community. The high demand among the community, which is strengthened by the potential, can be used as a business opportunity to further develop milkfish for good quality cultivation. For the milkfish cultivation process to run well, it is necessary to pay attention to several aspects. One of them is the water quality of the cultivation media, this is very important because it can affect the growth and survival of an organism. The purpose of this research is to analyze water quality management for milkfish hatcheries at the South Sea and Brackish Water Development Center (PAPLWS).

2. MATERIALS AND METHOD

The method used in this research is descriptive, this method is commonly used to examine the status of a group, a person, an object, a set of conditions, a system of thought, or a class of events in the present (Nazir, 2017). The purpose of using the descriptive method is to obtain a systematic, factual, and accurate description of the facts in the field during research activities. Data was obtained from primary and secondary data collection through several methods of retrieval. Primary data is a data source that directly provides data to data collectors. The sources of this research were obtained to answer the research questions. 2 methods can be used in primary data collection, namely using survey and observation methods. Secondary data can be in the form of internal and external data. Internal data is data that contains water quality documents, and existing operations and is recorded within an organization. Meanwhile, external data is generally compiled by an entity other than the subject of the organization concerned.

3. RESULTS

Milkfish is one of the fish that can be found in the high seas, the surface, or near the coast/littoral zone, often entering the estuary to penetrate the flow of fresh water. This fish likes to live in groups in small to large groups near the beach or around islands where there are well-developed coral reefs. Eggs and larvae are pelagic for up to 2-3 weeks. Older larvae migrate ashore and settle in coastal wetlands (mangroves, estuaries) during the juvenile stage, or occasionally enter freshwater lakes. Juveniles and sub-adults return to the ocean where they become sexually mature (Fishbase.org, nd).

The systematic taxonomy of milkfish according to Forsskal (1775) is as follows (Figure 1):

Kingdom : Animalia
Phylum : Chordate
Class : Actinopteri
Order : Gonorynchiformies
Family : Chanidae
Genus : Chanos
Species : *Chanos chanos*

Figure 1. Milkfish
Source: fishbase.org

Fish Milkfish has a slender body shape, terminal mouth (mouth located at the front end of the fish's head), cycloid type of scales, the number of scales on the scales is between 75-80 pieces with a maximum length of 1.7 in which is usually 1.0 in. In addition, the dorsal fin ranges between 13-17, pelvic fins 11-12, anal fins 9-11, and is equipped with a long and forked caudal fin (Moyle and Joseph 2000 *in* Mas'ud 2011).

In milkfish cultivation activities, it is necessary to support good water quality/by SNI so that the growth and development of milkfish can be optimal. The water quality test has parameters and standards that can show the water is still within normal limits or has been polluted. If a water quality parameter, value is still within the standard range, then the water is still in the normal range, but a parameter is said to be polluted if the parameter value has exceeded the standard threshold. Below is table 1 of water quality for milkfish seed cultivation media.

Table 1. Water Quality for Milkfish Seed Cultivation (Nener)

No	Parameters	Value	Unit
1	Temperature	28-32^0	^{0}C
2	pH	7-8,5	-
3	Salinity	30-35	ppt
4	Dissolved oxygen	Min 5	mg/L

Source: (SNI 6148.3, 2013)

Results of field temperature testing have a value range of 28.3-33°C. When compared with SNI (6148.3 2013) for the cultivation of milkfish stadia nener, then the temperature value obtained in this test is by SNI (6148.3 2013) and is suitable for survival of milkfish stadia nener. This is also in line with research conducted by Efendi (2003) *in* Nusa *et al*., (2019), that milkfish can live normally at a temperature of 27-35 °C. However, the lower temperature conditions provide an opportunity for the development of pathogens/parasites that can interfere with cultured fish. The temperature has a very important role in the survival of fish in the waters, this is also to the opinion of Taufik, Azwar, and Sutrisno (2009) *in* Ayuniar and Hidayat (2018) that water temperature is one of the important components that act as a *controlling factor* that can affect the survival of aquatic organisms. Fish are cold-blooded (*poikilothermal*) animals, so their metabolic and immune processes are highly dependent on environmental temperature. Below is a graph of the temperature from the first day of testing.

The salinity test was found to be in the range of 16-29 ppt, when compared with SNI (6148.3 2013) in the range of 30-35 ppt, the salinity range of milkfish cultivation at the nener stage was lower in value. Milkfish is classified as a type of *euryhaline* which has a high tolerance (tolerance) to changes in water salt levels ranging from 0-60%. Good salinity for milkfish growth ranges from 20-30%. (Girl *et al*, 1986 *in* Mas'ud 2011). This allows the fish to continue to live even in low salinity conditions.

The results of the pH test are in the range of 7-9.4 this can happen because the pH meter used has experienced an error during the test to show pH 9. For the ideal pH value for the growth of milkfish stadia nener according to SNI (6148.3 2013) shows the number 7 – 8,5. Ekubo and Abowei (2011) *in* Ayuniar and Hidayat (2018) suggest that the pH value range of 7 – 8.5 is an ideal value for biological productivity in waters, while a pH value below 4 will hurt aquatic life in waters. Most aquatic organisms do not like a wide range of daily pH fluctuations because this condition will have an impact on the death of organisms in these waters. Below is a graph of the pH value during the test time.

Maintenance of aquaculture water quality is usually carried out by siphoning activities twice a week. This siphoning function is to remove feed residues and fish metabolism residues that settle at the bottom of the pond. If this is allowed, it can contaminate aquaculture ponds and can result in decreased water quality resulting in pathogens or parasites being easy to grow and multiply, so that the survival and growth of cultured fish will be disrupted.

4. CONCLUSIONS

Conclusions that can be drawn from this research are for the physical and chemical parameters of the waters for the cultivation of milkfish stadia nener if SNI (6148.3 2013) is used as a comparison, the resulting water quality includes salinity 16 - 29 ppt, pH 7 - 9.4 and temperature 28,3-33°C, the water quality still meets the appropriate SNI for the survival of milkfish in the nener stage. To maintain the quality of aquaculture water, siphoning is usually carried out. This siphoning function is to remove feed residues and fish metabolism residues that settle at the bottom of the pond. If this is allowed, it can contaminate aquaculture ponds and can result in decreased water quality resulting in easy pathogens or parasites to grow and multiply, so that the survival and growth of cultured fish will be disrupted.

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