

SURVIVAL RATE of TIGER GROUPEL LARVA (*Epinephelus fuscoguttatus*) HOUSEHOLD SCALE ON THE NORTH COAST of BALI

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ABSTRACT

The main problem in tiger grouper cultivation is the availability of superior seeds. Where superior tiger grouper seeds must have fast growth, be resistant to new environments, low FCR, have perfect morphology and be resistant to. Superior seeds of tiger grouper can be seen from the value of Survival Rate (SR), where superior seeds will have a much higher SR when maintained. The purpose of this study was to determine the Survival Rate of tiger grouper hatchery in household-scale hatcheries located on the North Coast of Bali as the main parameter and water quality as a supporting parameter. Methods of data collection is done by using 4 ways: survey, active participation, observation, and interviews. Survival rate data analysis was carried out by performing calculations based on the SR calculation formula and analyzed descriptively. The results of observations of water quality are classified as good for the value of Salinity (33-35 ppt), Temperature (28-29.4°C), and DO (6-6.5 ppm). While the pH value can be said to be not good for tiger grouper hatchery and rearing with a pH value of (7.3-7.4). The result of the calculation of the Survival Rate is 20% with a total of ± 24,000 seeds. From the percentage of survival rate, it can be said that the survival rate of tiger grouper larvae in this household-scale hatchery is still low. However, it should be noted that a low survival rate in grouper hatcheries does not always affect the value of profits and losses of a grouper hatchery business.

INTRODUCTION

Tiger grouper (*Epinephelus fuscoguttatus*) is a leading aquaculture commodity in Indonesia and has been exported to various countries (Lutfiyah & Budi, 2019). Tiger grouper (*Epinephelus fuscoguttatus*) has become a favorite for grouper cultivators in Indonesia and is quite popular because it has a stable selling price, is easy to cultivate, easy to grow and has a relatively fast growth. Especially on the island of Bali, the tiger grouper (*Epinephelus fuscoguttatus*) is widely cultivated and raised along the northern coast of Bali (Ismi et al., 2012).

Tiger grouper (*Epinephelus fuscoguttatus*) hatchery at the household scale has contributed to an increase in national grouper seed production (Dadiono & Insani, 2020). So directly, this household scale seeding needs support from the government to increase its seed production, whether it's the support of facilities or support for the latest science related to seeding.

The main problem in the cultivation of tiger grouper (*Epinephelus fuscoguttatus*) is the availability of superior seeds. Where superior seeds of tiger grouper (*Epinephelus fuscoguttatus*) must have fast growth, be resistant to new environments, low FCR, have perfect morphology and be resistant to disease (Sutarmat & Yudha, 2013; Dadiono et al., 2020). Superior seeds of tiger grouper can be seen from their SR (Survival Rate), where superior seeds will have a much higher SR when reared.

The purpose of this study was to determine the Survival Rate (SR) of tiger grouper (*Epinephelus fuscoguttatus*) hatcheries in household scale hatcheries located on the North Coast of Bali as the main parameter and water quality as a supporting parameter.

METHODOLOGY

Time and Place

This research was conducted in October-November 2019 at a household-scale hatchery owned by Mr. Apri located in Penyabangan Village, Gerokgak, Buleleng Regency.

Method of Collecting Data

The data collection method in this study was carried out using 4 methods: survey, active participation, observation, and interviews. The survey was conducted to determine the conditions around the household-scale hatchery be researched. While the interview is emphasized to take data directly from the informant. Secondary data were obtained by taking several literacies as a source of data used to discuss and compare the results of this study (Halim et al., 2021).

Water Quality Observation

Observations of water quality are observed every 2 times a day and are carried out in the morning and evening (Dadiono & Andayani, Sri, Zailanie, 2017). Parameters observed included Salinity, Temperature, DO, and pH of the water in the hatchery. Observation of salinity was carried out using a refractometer, pH was observed using a pH meter, while the DO and temperature were observed using a DO meter provided at Hachery.

Data Analysis

Survival Rate (SR) data analysis was carried out by performing calculations based on the SR calculation formula (Effendie, 1979; Suprianto et al., 2019; Budi et al., 2019) as follows:

$$SR = \left(\frac{N_t}{N_o} \right) \times 100\%$$

Information:

SR = Survival Rate (%)

N_t = Number of fish at the end of the study

N_o = Number of fish at the beginning of the study

The results of the calculations using the SR formula were then analyzed in a descriptive

way, namely by comparing the results obtained with secondary data in the form of literature and connected with supporting parameters to strengthen the discussion.

RESULT AND DISCUSSION

Water Quality

Observations of water quality began when tiger grouper larvae entered the 15th day of rearing, observations were made every morning and evening. The maintenance-media water must be changed every day with a change of 20% of the volume of water in the larval rearing pond. In addition, siphoning was also carried out when the larvae began to enter the 17th day each day. Parameters observed were Salinity, Temperature, DO, and pH of the water.

Salinity

The results of salinity measurements every morning and evening obtained an average value between 33-35 ppt. This salinity range is still good for grouper larvae hatchery and rearing. According to Ismi (2017), from observations of several hatcheries in Bali the average salinity ranges from 33-34 ppt and groupers are kept in a healthy condition, this shows that 33-34 ppt salinity is good for grouper rearing. Meanwhile, according to SNI (Indonesian National Standard) (2011), the most optimal salinity for grouper hatchery and rearing activities is between 28-33 ppt.

Temperature

The results of temperature measurements obtained an average value between 28-29.4 °C. This temperature can be said to be good for grouper larvae rearing. Based on SNI (Indonesian National Standard) (2011), the optimal temperature for grouper rearing is between 28-32 °C. The grouper-rearing temperature must be controlled with water temperatures between 29-30 °C with a maximum and minimum temperature difference of 1-1.5 °C (Ismi *et al.*, 2018).

DO

The results of DO observations obtained an average value of 6-6.5 ppm. DO value of 6-6.6 ppm is good for grouper larvae rearing, this is confirmed by SNI (Indonesian National Standard) (2011), the optimal DO for grouper rearing is at least 4 ppm. This statement was reinforced by Ismi (2017) who said that the DO which is classified as good for grouper maintenance is at least 4.60 ppm.

pH

The results of pH measurements obtained values between 7.3-7.4. According to SNI (Indonesian National Standard) (2011), the pH value is less than optimal for grouper larvae rearing and is classified as poor, because in grouper larvae rearing the optimal pH is between 7.5-8.5. This is reinforced by the results of Ismi (2017) research, where a good pH value for grouper rearing is between 8.01-8.23.

Survival Rate (SR)

Survival Rate (SR) here is the survival rate of grouper larvae during maintenance from day 0 to day 45. During rearing tiger grouper larvae, the calculation result of Survival Rate (SR) is 20% with a total of ± 24,000 fish. From the percentage of the Survival Rate (SR) which is only 20%, it can be said that the Survival Rate (SR) of tiger grouper larvae in Hatchery on a household scale is relatively low, this can be influenced by several factors, including poor parenting factors.

According to Dadiono (2021), the grouper brooders to be spawned must be in a healthy condition and not physically disabled because it can affect the condition of the larvae

produced. normal condition, abnormal larval body condition and low larval survival ability. In addition, the low survival rate (SR) can be caused by errors in feeding, such as feeding that is not appropriate for the age of the larvae. Insufficient feeding of natural food to larvae will eat a lot of artificial feed given, so with a lot of artificial feed that is eaten and the feed is not digested completely it can lead to the death of the larvae (Cahu & Zambonino Infante, 2001; Ismi *et al.*, 2018). The next factor that can cause the low Survival Rate (SR) is the influence of water quality, in this study it was known that Salinity, Temperature, and DO were good for grouper larvae rearing, but the pH value of this study was 7.3-7.4 classified as less good for grouper larvae rearing. This may be a factor causing the low SR value on this household-scale hatchery. However, it should be noted that the low level of SR in grouper hatchery does not always affect the value of profits and losses of a grouper hatchery business.

CONCLUSIONS AND SUGGESTIONS

Observation of water quality from household-scale hatchery on the north coast of Bali is still good for the value of Salinity (33-35 ppt), Temperature (28-29.4 °C) and DO (6-6.5 ppm). As for the pH value at this hatchery, it can be said that it is not good for tiger grouper hatchery and rearing with a pH value of (7.3-7.4). During the rearing of tiger grouper larvae, the calculated Survival Rate (SR) was 20% with a total of \pm 24,000 seeds. From the percentage of Survival Rate (SR) values, it can be said that the Survival Rate (SR) of tiger grouper larvae in Hatchery on a household scale is still low.

Suggestions that can be given are for grouper hatcheries on a household scale on the North coast of Bali to better control the condition of water quality in larval rearing containers so that they comply with predetermined standards. In addition, the hatchery needs to conduct strict parental selection to obtain superior seeds and control the feed given according to the age of the larvae so that it can increase the SR value of fish and the income of fish breeders.

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