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EFFECT OF FEEDING SURVIVAL OF CANTANG GROUP (Epinephelus fuscoguttatus x Epinephelus lanceolatus) SEEDS IN SITUBONDO DISTRICT, EAST JAVA PROVINCE

Pengaruh Pakan Sintasan Benih Ikan Kerapu Cantang *(Epinephelus Fuscoguttatus X Epinephelus Lanceolatus)* Di Situbondo Jawa Timur

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ABSTRACT

Fish growth is one of the problems faced by many grouper fish farmers, where this problem requires a large amount of money. The problem with growth is the lack of feed needed to increase protein for the growth of grouper fish. The aim of carrying out this research is: To determine the effect of feed on the survival of Cantang Grouper. The results of the research show that in providing feed at CV. Jaya Utama Abadi suits the nutritional needs of grouper fish, from natural food to artificial food. Natural food in the form of phytoplanton and zooplanton. The type of phytoplanton used is Chorella sp. and for zooplanton there are two types, namely Rotifera sp. and Artemia. The planton is cultured itself starting from fertilization, hatching, and harvesting. Butane feeding is also supplemented with rebon shrimp.

Keywords: Cantang grouper, feed, growth

ABSTRAK

Permasalahan yang sering ditemui para pembudidaya ikan kerapu cantang adalah pertumbuhan, dimana permasalahan tersebut membutuhkan biaya yang mahal. Permasalahan dari berikutnya dari pertumbuhan ikan kerapu cantang adalah kurangnya kebutuhan pakan yang diperlukan sebagai penambah protein untuk pertumbuhannya. Tujuan dalam pelaksanaan Penelitian ini adalah: Untuk mengetahui pengaruh pakan terhadap sintasan Ikan Kerapu Cantang.Hasil penelitian menunjukkan bahwa Dalam pemberian pakan di CV. Jaya Utama Abadi sesuai dengan kebutuhan nutrisi pada ikan kerapu mulai dari pakan alami sampai pakan buatan. Pakan alami berupa fitoplanton dan zooplanton. Untuk jenis fitoplanton yang digunakan adalah *Chorella* sp. dan untuk zooplanton ada dua jenis yaitu *Rotifera* sp. dan *Artemia*. Planton tersebut dikultur sendiri mulai dari pemupukan, penetasan, dan pemanenan. Pemberian pakan butan juga ditambah dengan udang rebon

Kata Kunci: Kerapu Cantang, pakan, Pertumbuhan

INTRODUCTION

There are several types of grouper fish that are cultivated. One of them is the grouper fish from a cross, namely the Cantang grouper fish. The Cantang Grouper is the result of the marriage of a female Tiger Grouper (E. fuscoguttatus) and a male Tiger Grouper (E. lanceolatus). The purpose of this crossing is to create new types and advantages. The advantage of the Cantang grouper is that it grows twice as fast as other types of grouper (Rochmad 2020).

In cultivating Cantang Grouper there are various processes. The process includes various stages from seeding, nursery and rearing. In the nursery stage, the seeds usually grow to a total length of around 2-3 cm. The enlargement is carried out in floating net cages which require a larger size until the seeds are around 5-10 cm in size. The seed nursery stage involves enlarging the seeds from 2-3 cm in size to 5-10 cm, and will continue with the enlarging stage in the outdoor pond. The best way to breed grouper fish is by using a tank or pond located on the beach or close to sea water (Agustyar 2017).

One of the problems of farmers is not doing enough monitoring of fish growth, where monitoring activities must be carried out periodically. The problem with growth is the lack of feed needed to increase protein for the growth of grouper fish. Not only that, there are also many factors that influence the growth of grouper fish. According to Rahmaningsih & Ari (2013) the growth of grouper fish is influenced by the environmental environment, feeding periodization, and type of feed. To overcome this problem, aquaculture biotechnology is needed with techniques for manipulating fish growth such as feed engineering, adding probiotics, and adding hormones (Hendriansyah, Putra, and Miranti 2018). The aim of carrying out this research is to see the effect of feed on the survival of Cantang Grouper.

METHODS

Place and Time

This research was carried out for 1 month from August to September 2023 at CV. Jaya Utama Abadi, Situbondo Regency.

Tools and Materials

Table 1. Tools for research

No	Tools	Function
1.	Stationery	To record data
2.	Ruler	To measure sampling length
3.	Scales	To measure sampling weight
4.	Beaker	To take samples
5.	Thermometer	To measure temperature
6.	pH meter	To measure pH
7.	Filter Back	For water filters or planters
8.	Bucket	For natural food containers
9.	Dipper	To stock feed
10.	Plankton net	To harvest natural food
11.	Siphon tool	To clean the tub

12.	Foam	To clean scale
13.	Hose	For siphon suction tools and water fillers in tubs
14.	Water pump	As a means of moving or filling water
15.	Iron	As an opening and closing water outlet
16.	UV lamp	For water sterilization

Table 2. Research Materials

No	Materials	Function
1.	Cantang Grouper Fish Seeds or Eggs	Cultivated media
2.	Natural Feed	As grouper fish feed
3.	Artificial Feed	As feed and nutritional enhancer for grouper fish
4.	Chlorine	For sterilization of cultivation tanks
5.	Fertilizer	As a culture medium for *Chorella* sp.

This research uses Observation, Interview, Documentation and Active Participation methods.

a. Observation

Observation is a data collection method that is very often used or common in research. This method is an activity that uses the five senses to obtain information in determining answers to the research we conduct (Dr. Drs. I Wayan Suwendra & I. B. Arya Lawa Manuaba, 2018).

b. Interview

Interviews are the process of collecting data through communication by gathering information by asking questions and answers with expert sources in the field we are researching or the research subject. (Dr. Drs. I Wayan Suwendra & I. B. Arya Lawa Manuaba, 2018)

c. Documentation

According to Dr. Drs. I Wayan Suwendra & I. B. Arya Lawa Manuaba, (2018) data collection process through documentation is a collection of data in the form of letters, diaries, photos, daily journals, meeting results and so on. Documentation is used to explore information in the past or as an archive in carrying out research activities.

d. Active Participation

According to Suryosubroto in Untarti & Kusuma, (2018) Active participation is mental, emotional and physical involvement in providing initiative for activities carried out or someone's involvement in an organization to achieve goals within the organization.

Data analysis will be used to determine growth survival from feeding grouper fish during sampling:

a. Survival Rate data or percentage of fish alive (Dedi et al. 2018). Survival Rate (SR) is a percentage to identify dead fish. The results of the survival value or SR are in the form (%). In collecting data, calculations must be carried out first from the start of stocking to the end of sampling.

$$\mathbf{SR} = \left(\frac{Nt}{N0}\right) \text{ x } 100\%$$

Information :
Nt = Number of fish alive at the end of the study (tail)
N0 = Number of fish at the start of the study (tail)

b. The absolute length growth rate (growth rate) (M Hasan, Tri Yulianto, and Shavika Miranti 2021) can be calculated as follows:

$$\mathbf{L} = L_t - L_0$$

Information:
L = Long growth (cm)
L_t = Length at the end of sampling (cm)
L_0 = Length at the start of sampling (cm)

c. Absolute weight growth (growth weight) (Nazlia 2018) can be calculated using the following formula:

$$\mathbf{W} = W_t - W_0$$

Information:
W = Heavy growth (gr)
W_t = Fish weight at the end of sampling (gr)
W_0 = Fish weight at the start of sampling (gr)

RESULT

Feed used in grouper cultivation in CV. Jaya Utama Abadi is an artificial feed and natural feed. The artificial feed is in the form of dry pellets and the natural feed is in the form of phytoplankton (chorella sp.) and zooplankton (rotifera sp. and artemia). The content of artificial feed given to larvae is as in the table below:

Table 3. Larval Feed Content Age 13 and Over

Nutrition	Content
Proteins	50%
Fat	10%
Fiber	3%
Ash	16%
Calcium	2,3%
Phosphorus	1,5%

Table 4. Larval Feed Content Age 8-13 days

Nutrition	Content
Proteins	48%
Fat	10%
Fiber	5%
Ash	22%

Artificial feeding from 5 days of age with BP E. Guchi feed with a texture that is still in the form of a soft powder. After the age of 8 to 13, use larger sized feed that has a coarser texture. To feed larvae that are more than 13 days old, use the Otohime brand of feed in various sizes from size B to size S. Feeding can be seen in the table below:

Table 5. Natural feed aged 8-13 days and artificial feed aged 13 up

No.	Hari Setelah Penetasan	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30
	Pengelolaan Pakan																														
	Pakan Alami																														
1	Mikroalga (5 cm/bak)																														
2	Rotifer (5-7 ind/ml)																														
3	Rotifer (8-10 ind/ml)																														
4	Rotifer (± 15 ind/ml)																														
5	Artemia																														
6	Udang Rebon																														
	Pakan Buatan																														
1	BP E-Guchi																														
2	LL1																														
3	LL2																														
4	B1																														
5	B2																														
6	C1																														
7	S1																														

DISCUSSION

Feed the larvae every 2 hours 5 times a day. For administering Chorella sp. along with water changes. For brine shrimp, if the larvae are around 12 days old or are strong enough to suckle and rotifer is given to the larvae 2 days old after the eggs hatch, if the rotifer can run out within a day at the previous frequency of giving then the frequency of giving rotifer is increased or increased. On the 25th day, the larvae can be given the smallest rebon feed. The rebon is given after the water has been reduced and Chorella has been added. Artificial feed is given to larvae aged 4 or 5 days. The larvae are fed by giving it to each end of the tub because most of the larvae are clustered at the end of the tub.

Feed used in grouper cultivation in CV. Jaya Utama Abadi is an artificial feed and natural feed. The artificial feed is in the form of dry pellets and the natural feed is in the form of phytoplankton (chorella sp.) and zooplankton (rotifera sp. and artemia). The cultural method is as follows:

a. *Chorella* sp culture.

Microalgae Chorella sp. live in fresh water and sea water. Chorella is utilized using culture techniques. The success of this microalgae culture depends on the environment (Prihantini, Putri, and Yuniati 2010). Chorella sp culture. on a mass scale at CV. Jaya Utama Abadi produces approximately 8 tons in one tank. Chorella sp. This is used as natural food for cantang grouper fish and feed for Rotifera sp. Chorella sp. culture period. minimum 4 days and maximum 6 days because that is the peak growth of Chorella sp. which is good on a mass scale. Stages of starting planton culture at CV. Jaya Utama Abadi is by filling the tank using 5 tonnes of sea water then adding Chorella sp seeds. about 3 tons. The next stage is the application of fertilizer, according to Ameth et al., (2023) the factor that influences the increase and decrease in Chorella growth is fertilization with its treatment and dosage. The use of fertilizer as a means of accelerating or stimulating the growth of Chorella cells. Fertilizer used in CV. Jaya Utama Abadi include ZA 50 ppm, Urea 10 ppm, TSP 15 ppm, EDTA 2-5 ppm, FeCl3 1-2 ppm.

Calculation of fertilizer used with a tank volume of 8,500,000:

$$\text{ZA} = \frac{8.500.000}{1000\text{ml}} \times 50 = 425 \text{ gram}$$

$$\text{Urea} = \frac{8.500.000}{1000\text{ml}} \times 10 = 85 \text{ gram}$$

$$\text{TSP} = \frac{8.500.000}{1000\text{ml}} \times 15 = 127 \text{ gram}$$

$$\text{EDTA} = \frac{8.500.000}{1000\text{ml}} \times 5 = 42 \text{ gram}$$

$$\text{FeCl3} = \frac{8.500.000}{1000\text{ml}} \times 2 = 17 \text{ gram}$$

b. Culture of Rotifera sp.

According to Astuti (2012) Rotifera sp. has high nutrition (Yunita Sari, Luh Watiniasih, and Ayumayasari 2019). Culture of Rotifera sp. with the first mass scale for preparing the tub by cleaning the tub with a brush until the crust or dirt on the tub is gone. Then sterilize the tub with chlorine, then clean the chlorine with fresh water until it is clean. Fill the tub with up to 5 tons of sea water then fill it using a 1 ton plankton as feed for rotifer sp. Then prepare for the distribution of rotifer sp seeds. Before the seeds are sown, they are filtered using a plant net from the previous seed tank. Rotifer sp. culture period. This lasts about 4-5 days.

c. Culture of Artemia sp.

Artemia has various benefits for fish larvae, such as being easy to adapt, having high nutritional content for fish needs, being easy to prey on because it has soft skin (Yunita Sari, Luh Watiniasih, and Ayumayasari 2019). This artemia sp culture uses 2 methods, namely without decapsulation and with decapsulation. The decapsulation process is a way to make it easier for Artemia to get out of the shell, therefore the survival process is longer because this decapsulation process thins the shell and makes the nauplius hatch quickly (Widodo, Mulyana, and Mumpuni 2016). On CV. Jaya Utama Abadi uses a decapsulation method, a decapsulation process using a hypochlorite solution. Before the decapsulation process, the seeds or eggs are soaked in fresh water for 15 minutes. After 15 minutes, the artemia seeds were transferred to a bucket, then mixed with 1 liter of hypochlorite solution, then quickly until the artemia changed color, this process was carried out three times until the artemia changed color to reddish brown. After that, rinse until the smell of the hypochlorite solution disappears using fresh water. If the smell or hypochlorite solution disappears, store the artemia in the refrigerator to maintain the temperature.

The next process is hatching artemia using a conical tank with a volume of 500 liters. This process begins by preparing the tub in a clean condition and installing a pipe in the middle of the tub to facilitate the harvesting process and separating eggs that do not hatch for further processing. After the tank was filled with 300 liters of sea water, aeration was installed and the artemia was put into the tank. This process is carried out for 24 hours until the artemia hatch. Harvesting is done by removing aeration from the tub so that eggs that do not hatch can settle at the bottom of the tub. Then the pipe installed in the middle has a hole at the end to separate the eggs that do not hatch. Harvest artemia using a 150 micron planton net by draining the artemia using the faucet under the tub. If the hatched artemia have been harvested, then remove the pipe in the middle, then harvest all the artemia eggs that have not yet hatched to be hatched again in another tub.

Sampling Results

Long sampling was carried out for one month with four sampling times. Sampling was carried out from 23 August – 13 September 2023, this sampling was carried out from 9 days old larvae. The results of sampling the length of cantang grouper larvae from four sampling times are presented in the image below.

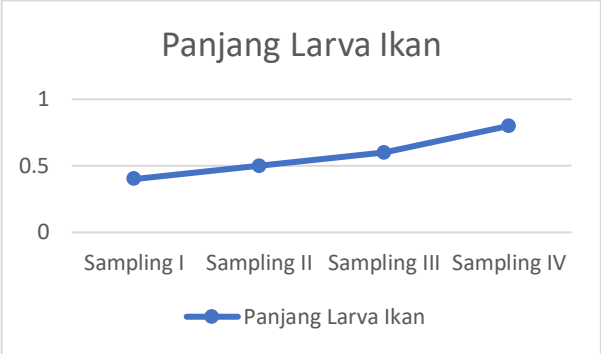

Fig 1. Length Growth of Cantang Grouper Fish

The picture shows that growth in length for 3 weeks has the same results with only an increase of 0.1 cm. According to Ghufron (2004), providing 40% -50% protein feed has an impact on optimal fish growth. Meanwhile, pellets contain the nutrients needed by fish (Rahmaningsih & Ari 2013).

Table 6. Grouper Growth Rate

Length Growth Rate	Average Length	Absolute Length
	0.6 cm	0.4 cm

Live presentation in one month of sampling we can get data from the population of Cantang Grouper larvae. With a population of Cantang Grouper larvae from a stocking of 100,000 per rearing tank, we can get an initial sampling of 75,000 per tank and a final sampling of 28,100 per tank.

$$\mathbf{SR} = \left(\frac{Nt}{N0}\right) \text{ x } 100\%$$

$$\mathbf{SR} = \left(\frac{28.100}{75.000}\right) \text{ x } 100\% = 37.4\ \%$$

The survival of cantang grouper larvae in rearing for 30 days was still less than optimal. Presentation was less than 50% due to bad weather which caused the temperature in the maintenance tank to decrease. This incident was shown when the temperature was measured in the maintenance tank within 24 hours. Grouper larvae are not strong enough in low temperatures, the fish will experience stress and will not eat. This problem also causes high levels of cannibalism.

CONCLUSSION

Research activities in Situbondo Regency, East Java can be summarized as follows: In providing feed at CV. Jaya Utama Abadi suits the nutritional needs of grouper fish, from natural food to artificial food. Natural food in the form of phytoplanton and zooplanton. The type of phytoplanton used is Chorella sp. and for zooplanton there are two types, namely Rotifera sp. and Artemia. The planton is cultured itself starting from fertilization, hatching, and harvesting. Butane feeding is also supplemented with rebon shrimp. For scheduled artificial feeding according to the size and age of the fish based on the mouth openings of the grouper larvae.

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