

The Growth of Mullet (Mugil dusemmerie) Seeds was Observed from the Provision of Different Types of Feed

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ABSTRACT

The purpose of this study was to determine the effect of giving tempuyung crude extract with different concentrations on the survival rate of carp infected with *Aeromonas hydrophila* bacteria. The purpose of this research is as a source of information for entrepreneurs and fish farmers which can be used as an alternative ingredient to treat fish that are attacked by diseases caused by the bacterium *Aeromonas hydrophila*. The results showed that administration of tempuyung crude extract (*Sonchus arvensis* L.) with different doses had a significant effect on the survival rate of carp (*Cyprinus carpio* L.) infected with *Aeromonas hydrophila* bacteria, this means rejecting H_0 and accepting H_1 . The BNT test results showed that treatment A (3%) gave the highest survival rate of 93.33%, followed by treatment B (6%) of 73.33%, then treatment C (9%) and D (12%) of 60%. While the K treatment (control) was 20%. The relationship between the concentration of tempuyung crude extract and the survival rate of carp is in the form of a quadratic line equation $Y = - 1.1 X^2 + 14.89 X + 31.996$ with $R^2 = 0.672$ and $r = 0.82$. The higher the dose of antibacterial used, the faster the bacterial cells will be killed. But it is not effective to use doses that are too high in treatment. Besides causing bacterial resistance to certain antibacterials, the use of doses that are too high can kill the host (goldfish) and is also less economical to use.

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1. INTRODUCTION

Mullet is abundant in the Kuala Bubon area, both in terms of cultivation and in the wild. The mullets are in great demand by the public both for production and consumption. Food is a very important factor in fish growth. The study of giving different types of fresh feed to mullets (*Mugil dussumerie*) is one of the important things for management and cultivation efforts and can provide a knowledge about the best feed from the types of feed given to mullets, and feed nutrients.

This research is very important in cultivation so that feeding and feeding techniques can be designed to encourage or enlarge for production, consumption, survival and growth. In this study the feed used was sea pepper (*Caulerpa* sp), Hydrilla (*Hidriila verticillata*), coconut dregs. (*Cocos nucifera*) and commercial feed as controls, the feed used in this study is very easy to obtain at an economical price. Mullet fish live in shallow seas with warm climates and vegetation, but some live in estuaries in tropical, subtropical and temperate climate area. This fish has a tolerance for salinity of 0-38ppt and has a wide tolerance for temperature.

The Mugilidae family has a wide distribution. In Indonesia, *Mugil dussumierii* is found in Sumatra (Bagan Siapi-api, Langkat, Deli Beach, Bengkulu, Trusan, Padang, Bintang, Bangka), Kalimantan (Singkawang, Stragen, Balik Papan, Kota Bam), Java (L. Java, Banten, Jakarta, Perdana, Semarang, Pasuruan), Sulawesi (Makasar, Lake Sinderaug, Minlarang River), Bali, Lombok, Flores, Timor, Buton. *Mugil dussumierii* is also found in Singapore, India, Andamau, Ceylon, New Guinea, the Philippines and Australia.

Growth is the increase in length or weight over time. Besides that, it can also be defined as a change in the size or amount of body material, both positive and negative changes, temporally or over a long period of time. Fish growth is influenced by several factors, namely internal factors and external factors. Internal factors are generally factors that are difficult to control, such as heredity, sex, age, parasites and disease. The main external factors affecting fish growth are temperature and food. Water quality has 3 factors, namely physical, chemical and biological factors. Physical factors include temperature, brightness and turbidity. Chemical factors include the solubility of oxygen, CO₂, NH₃ – N and pH. While biological factors are the content of plankton and others.

Table 1. Chemical composition of fresh coconut pulp at 3 age levels.

Material composition per 100 grams	Unit	Fruit age		
		young	Half old	Old
Calories	Cal	68	180	.0 359
Proteins	G	1.0	4.0	3,4
Fat	G	0.9	15.0	34,7
Carbohydrate	G	14.0	10.0	14.0
Calcium	Mg	7.0	8.0	21.0
Phosphor	Mg	30.0	55.0	98.0
Iron	Mg	1.0	1,3	2.0
Value of Vitamin A	Si	0.0	10.0	0.0
Vitamin B1	Mg	0.06	0.05	0.1
Vitamin C	Mg	4.0	4.0	2.0
Water	G	83.0	70.0	46,9

Source: (Palungkun, 2004).

Research results prove that coconut pulp protein has a relatively good amino acid composition and high nutritional value. Coconut dregs protein does not have anti-nutritional compounds like those found in other vegetable proteins, especially in legumes and has a low Glycemic Index value which is good for use with high dietary fiber. (Hasbullah, 2001).

2. METHOD

2.1 Types of research

The research method used in this study is the experimental method. The experimental method is a form of observation under artificial conditions, where these conditions are created and regulated by the researcher. That is, basically conducting an experiment to see the results, and the results of the experiment will confirm how the causal position is between the variables being investigated

2.2 Research Variables

The variables in the research consisted of independent variables which were mullets with free feeding

2.3 Research design

This study uses an experimental design that will be used is a Completely Randomized Design (CRD). The completely randomized design used consisted of 4 treatment levels with 3 replications each, and a control. So that the number of experimental units is 12 experimental units. From the table results it is known that the water quality conditions when rearing mullets (*Mugil dussumierie*) seeds were salinity 20 ppt, temperature 29 oC, pH 6 and dissolved oxygen (DO) 4.7 mg/L. The use of different types of fresh feed did not have a significant effect on the growth of mullet (*Mugil dussumierie*) fry. ($F_{count} < F_{table}$).

2.4 Sampling location

The research sample to be carried out uses mullets with different types of feed and different doses.

2.5 Time and Place of Research.

This research was conducted for 60 days, from March to April 2014 in the ponds of Gampong Kuala Bubon, Samatiga District, West Aceh District. This research was conducted at the Hatchery of the Faculty of Marine Science and Fisheries, University of Teuku Umar, Meulaboh.

2.6 Tools and Materials

The following are the tools used in the research: Cage As a place for rearing larvae; Scoop As an oxygen enhancer; Digital Scales As a counterweight to the weight of mullet seeds; Lamus paper As a measure of the acid content of waters; Refractometer As a measure of salinity; Microscope As a fish identification tool; Documentation Digital Camera

Mullet Research Material (*Mugil dussumierie*): Sea/brackish water As a medium for raising larvae and seeds; Fresh feed (Sea Pepper, Coconut Dregs, Hydrilla); Commercial Feed As control feed; *Mugil dussumierii* mullet seeds.

2.7 Research procedure

Mullet Research Materials (*Mugil dussumierie*). This research consists of two stages, namely the preparation stage and the implementation stage. The preparatory stage consists of processing raw materials, making test feed, preparing research tools and containers, acclimatizing test fish. While the implementation stage consists of raising test fish, giving test feed, and measuring water quality. Observation of the weight and measurement of the seeds of Gift tilapia (*O. niloticus*) was carried out once every 10 days during sampling.

2.8 Data analysis.

The data obtained was then analyzed for variance using Analysis Of Variance (Anova). These data are presented in the form of graphs and tables. If from the analysis of variance it is known that the treatment shows a significantly different effect or very significantly different then to compare the best treatment it is continued with the Least Significant Difference Test (LSD).

3. RESULTS AND DISCUSSION

3.1 Research result

Based on the results of the research that has been done, data on daily growth rate (SGR), absolute length growth (Lm), and survival rate (SR) are obtained.

Table 2. Data on Specific Growth Rate (SGR), Absolute Length Growth (Lm), and Survival Rate (SR) During the Study.

Test Parameters	Control	P1	P2	P3
SGR (%)	0.327 ns	0.30 ns	0.307 ns	0.327 ns
Lm(cm)	0.733 ns	0.6 ns	0.667 ns	0.633 ns
SR (%)	80 ns	63.33333 ns	60 ns	60 ns

Note: ns = not significantly different (non-significant).

The highest percentage of survival rate of mullets during the study was obtained in treatment P1 (63.3%) while the lowest percentage was obtained in treatment P2 (60%) and P3 (60%). However, when compared with the control, a significantly different value was obtained (80%) and the highest absolute length growth of mullet seeds was obtained in treatment P2 (0.66 cm) and the lowest was obtained in treatment P1 (0.6 cm) and P3 (0.6 cm). However, when compared with the significantly different controls (0.73 cm) and the highest specific growth of mullet seeds was obtained in treatment P3 (0.32%) and the lowest was obtained in treatment P1 (0.30%) and P2 (0.30%). However, when compared to the control, it is not much different (0.32%).

3.1.1 Growth rate of SR, Lm and SGR

The average feed consumption rate of the test fish for 30 days of rearing. The results of the analysis of variance (ANOVA) showed that the addition of different REIGH growth hormone to the test fish did not have a significant effect on the average feed consumption level of the test fish. The process of eating in fish starts from the level of appetite consumption, then continues with the response to stimulation and finding sources of stimulation, determining the location, type of feed, and catching feed. If the taste of the feed is in accordance with the wishes of the fish, then the feed will be consumed. Conversely, if the taste of the feed is not good, then the feed will be left or not eaten. The average level of feed consumption between each treatment was almost the same and not much different ($p > 0.05$),

3.1.2 Water Quality Parameters

Water quality parameters measured during the study included salinity, temperature, pH, and dissolved oxygen (DO) in the table:

Table 3. Water quality parameters measured during the study included salinity, temperature, pH, and dissolved oxygen (DO)

Treatment	Parameter Range			
	Salinity (ppt)	Temperature (oC)	pH	DO (mg/l)
Control	20	29	6	4,7
P1	20	29	6	4,7
P2	20	29	6	4,7
P3	20	29	6	4,7
P4	20	29	6	4,7

That the water quality in all treatments during the study ranged on average between salinity 20 ppt, temperature 29 °C, water pH ranged from 6 and dissolved oxygen concentration (DO) ranged from 4.7 mg/L.

3.2 Discussion

This research aims to complete the insights/knowledge in the field of aquaculture, especially the different types of fresh feed for mullet seeds, and can be used as a guide for readers' considerations to open a mullet farming business (*Mugil dussumierie*). According to Hartadi, Reksohadiprodo, and Tillman (1997) the larger the size (growth) of the fish changes its diet and simultaneously fills two or more kinds of food niches, the breadth of the food niche of a group of fish can indicate the food habits of fish in utilizing its food.

Niche overlap is the shared use of one or more resources by two or more species. The use of the same type of food illustrates the joint superiority of existing food resources by two or more groups of fish (Hartadi, Reksohadiprodo and Tillman. 1997).

4. CONCLUSION

Based on the data obtained during the study, the results of the study can be concluded that the best daily growth rate (SGR) is in the P3 treatment and control with an amount of 0.32%, the best absolute length growth (Lm) is in the P2 treatment with a total of 0.66 cm and the best survival (SR) was treatment P1 with a total of 63.3%. and the use of different types of fresh feed did not have a significant effect on the growth of mullets (*Mugil dussumierie*) seeds. ($F_{count} < F_{table}$).

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It is necessary to carry out further research on the provision of other types of feed for the growth of mullets and other types of fish.

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