Fisheries Journal, 14(3), 1560-1566 (2024)
http://doi.org/10.29303/jp.v14i3.872

CORRELATION OF WATER QUALITY ON THE GROWTH OF LARVAE OF BAWAL BINTANG FISH (TRACHINOTUS BLOCHI) IN THE SEA FISH SEED HALL (BBIL), TIDUNG ISLANDS, SERIBU ISLAND

Korelasi Kualitas Air Pada Pertumbuhan Larva Ikan Bawal Bintang (*Trachinotus Blochi*) Di Balai Benih Ikan Laut (Bbil), Pulau Tidung Kepulauan Seribu

Catur Pramono Adi[1*], Muhamad Fauzan[1], Aripudin[1], Maria goreti Eny Kristiany[2]

[1]Karawang Marine and Fisheries Polytechnic, [2]Jakarta Fisheries Business Expert Polytechnic

Lingkar Tanjungpura street, Karawang, West Java 41315

[*]Correspondence author: pramonoadi.catur@gmail.com

(Received May 24th 2024; Accepted September 24th 2024)

ABSTRACT

Bintang pomfret is an introduced fish from Taiwan and has quite good prospects in the asia pacific region with quite high prices. The aim of carrying out this research is to carry out correlations and to determine the effect of water quality on growth, correlation are calculared. The water qualliyt parameters observed included temperature, pH and salinity show that based on the three water quality parameters, it shows that temperatur and pH are relatively negative while the others are relatively positive, this means there is no significant difference between the two growth patterns. Long and heavy. Meanwhile the results of the correlation coefficient between water quality and growth show that there is no real influence between the water quality parameters observed on the growth of the pomfret.

Keywords: Pomfret, Correlation, Water Quality, Growth

ABSTRAK

Bawal bintang merupakan ikan introduksi dari Taiwan dan memiliki prospek yang cukup bagus di Kawasan Asia Pasifik dengan harga yang cukup tinggi. Kegiatan pelaksanaan penelitian ini bertujuan untuk dilakukan correlations dan untuk mengetahui pengaruh kualitas air terhadap pertumbuhan dilakukan penghitungan correlations. Parameter kualitas air yang yang diamati meliputi suhu, pH dan salinitas Hasil correlations menunjukan bahwa berdasarkan correlations dari ketiga parameter kualitas air menunjukan bahwa suhu dengan pH mempunyai kerelatif negatif sedangkan yang lain mempunyai kerelatif positif, hal ini berarti tidak ada perbedaan yang signifikan antara kedua pola pertumbuhan panjang dan berat. Sedangkan hasil koefisien korelasi antara kualitas air dan pertumbuhan menunjukan bahwa tidak ada pengaruh yang nyata antara parameter kualitas air yang diamati terhadap pertumbuhan bawal bintang.

Kata kunci: Bawal Bintang, Korelasi, Kualitas Air, Pertumbuhan

INTRODUCTION

Aquaculture activities in Indonesia have experienced a significant increase as evidenced by several increases in 2015, reaching 17.91 million tonnes in 2019, which then increased to 29.9 million tonnes. The total potential area for fish cultivation activities is 17.91 million hectares, of which 2.8 million hectares are available for freshwater cultivation, equivalent to around 15.8 million hectares of the total water area. Aquaculture is a term that has been used for almost several decades and is intended to describe the activity of cultivating aquatic organisms in a controlled environment (Azima, 2023). Organisms targeted for cultivation include aquatic products such as tilapia, pomfret, mackerel, seaweed and shrimp. Bintang pomfret is an imported fish from Taiwan which is very promising in the Asia Pacific region and has a very expensive price. Pomfret cultivation is one of the products that can be developed in the fisheries cultivation business, and its market value is relatively high. Chairunnisa (2021).

Apart from cultivating the star pomfret fish having relatively high value, the star pomfret fish is also not easily attacked by disease and is also easy to maintain. (Retnani et al., 2013). Several areas have developed the pomfret fish cultivation business which is managed by private parties, one of which is the Seribu Islands, Batam and Bali (Rahmayanti, 2020). Factors that influence the growth of pomfret fish in the cultivation system process include feed, water quality, age, gender and genetic factors (Trianzah & Adi, 2023). Through the reviews above, research was conducted to find out the correlation between water quality and the growth pattern of pomfret fish (Trachinotus blochi) larvae).

METHODS

Place and Time

The activity of collecting data on water quality comparison samples for pomfret fish larvae in this research was carried out on 21 September – 25 November 2023. Located at the Marine Fish Seed Center (BBIL), Tidung Island, Seribu Islands. Research activities were carried out from January 29 2024 to April 5 2024, at BBIL Seribu Islands, Jakarta.

Tools and Materials

The tool used in this research is a supporting tool in the data collection process so that it can help and simplify production activities according to table 1 below.

Table 1. Tools for research activities

Tools	Function
Concrete tub	For fish keeping
Basin	For temporary fish storage and washing of natural food
	fetch water or tools to provide natural food
Dipper	For natural food storage
Bucket	To take fish seeds
Drain	To measure natural feed
Measuring cup	For air distribution
Aeration hose	To increase oxygen bubbles in water
Air stone	To help produce oxygen from the air into the water
Hi-blower	For tools to drain water
Water drain hose	For dirt suction equipment
Siphon hose	To filter the water entering the maintenance tank
Filter bags	For packaging fish seeds

Plastic bags	For fastening plastic bags
Rubber bracelet	To increase oxygen in plastic bags
Oxygen tube	For measuring water and room temperature
Thermometer	For feed preservatives and medicines

The materials used in this research are materials to assist in the data collection process so that they can help and simplify production activities, the materials used are Bintang Pomfret fish seeds, Sea Water. As shown in table 2 below.

Table 2. Materials for research activities

Materials	Function
Bintang Pomfret fish seeds	As cultivated Biota
Sea water	As a maintenance medium for cantang grouper
Feed	To meet needs, growth and reproduction

Method of collecting data

The data obtained in making this research is a descriptive method, apart from that, this research was also carried out using interviews and observation, participation and literature study methods.

Data Collection Method

Data collection in research entitled "Correlation of Water Quality on the Growth of Bintang Pomfret Fish Larvae is classified into primary and secondary data.

a. Secondary Data

Secondary data is data collected and combined as part of previous research studies or published by various other institutions. Indirect sources usually include documentary data and official archives (Farhansyah, A, 2021). In practice, secondary data collection includes not only financial data, but also general location conditions, company history, organizational structure, facilities and infrastructure, production planning, and production data from previous cycles.

Data Analysis

Data on the correlation of water quality with the growth of pomfret larvae have been obtained in previous activities, and the data used is quantitative data, namely data in the form of numerical values that have been measured and observed empirically (Handayani et al., 2021). Next, descriptive analysis was carried out in the form of graphs and tables, then continued with SPSS analysis to calculate the pattern of growth in length and weight growth of fish and test the correlation.

RESULT

Water Quality

The success of fish cultivation both in hatching and rearing cannot be separated from external factors and genetic factors which have an important role in fish growth. By paying attention to water quality parameters such as temperature, pH and salinity, the water conditions can be used for cultivation activities. (Istikomah et al., 2023). Water quality management when rearing pomfret larvae at BBIL is by measuring water quality, siphoning and changing water. Water quality measurement activities are carried out periodically, the parameters observed are temperature, pH and salinity. Temperature, salinity and pH measurements were carried out

directly. Measurements of water quality parameters measured in research media include, among others:

Temperature

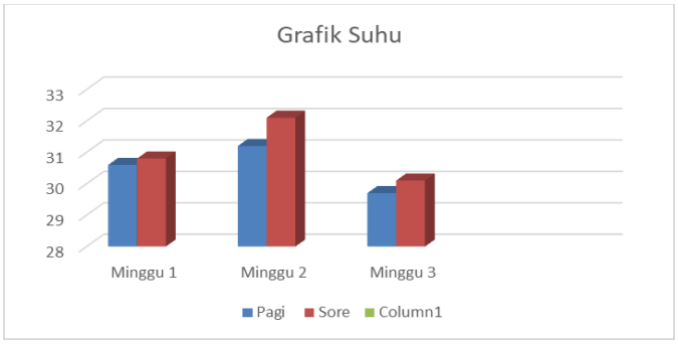

Fig 2. temperature graph

Water temperature measurement data carried out in the morning and evening during maintenance over the last three weeks shows that the average water temperature is 30.6 °C in the morning and 30.8 °C in the afternoon. This temperature is considered very suitable because it is the optimal temperature range for fish and their lifespan is between 28 °C to 32 °C.

Degree of Acidity (pH)

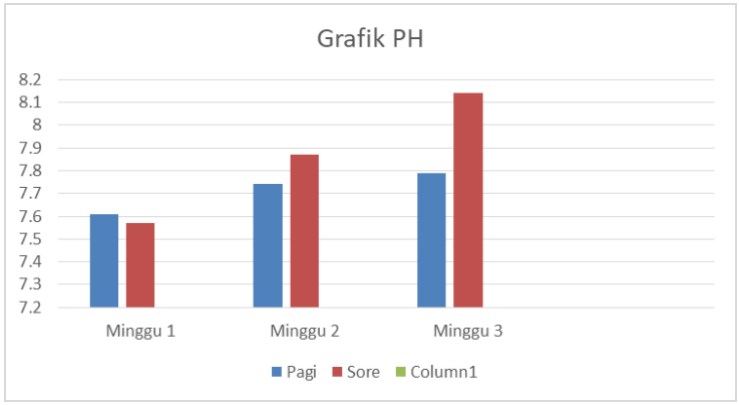

Fig 3. pH graph

The average acidity (pH) each week during the research period shows that the water pH in the first week was 7.61. According to Kuswadi et al. (2016). This is stated when grown at pH 5. Fish can still be tolerated, but their growth will be affected. However, fish grow optimally at a pH of 6.5 to 9.0. According to Karimah, (2018) the acidity level that can be tolerated by freshwater fish is 4.0. Meanwhile, according to Liang et al. (2017), the pH value of water that is suitable for raising pomfret fish is between 6 and 8.5, with an optimal range of between 7 and 8. This means that the range of acidity levels studied is still in a fairly good range.

Salinity

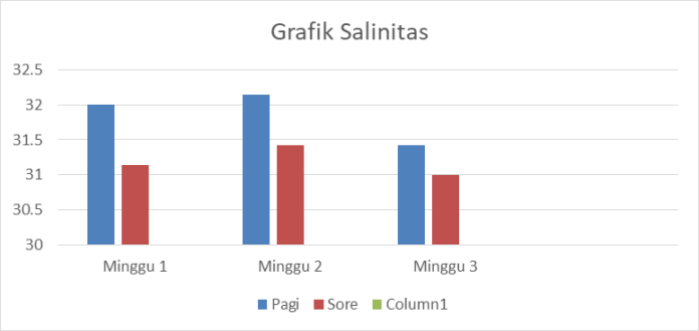

Fig 4. Salinity Chart

DISCUSSION

Based on the results of observations regarding the influence of water quality on the growth of pomfret fish (Trachinotus blochi) at the Marine Fish Seed Center (BBIL), Tidung Island, Seribu Islands during the 3 week rearing period, data was obtained including: data on average population weight, average standard length population, relative growth rate (%) and water quality which includes water temperature, pH and salinity (Lestari, 2016).

Correlations

		Suhu	pH	Salinitas
Temperature	Pearson Correlation	1	-.048	0.484**
	Sig. (2-tailed)		.763	.001
	N	42	42	42
pH	Pearson Correlation	-.048	1	.002
	Sig. (2-tailed)	.763		.992
	N	42	42	42
Salinity	Pearson Correlation	.484**	.002	1
	Sig. (2-tailed)	.001	.922	
	N	42	42	42

Correlation Data on Water Quality Relationships.

Based on the correlation data from the three water quality parameters above, it shows that temperature and pH have a negative correlation while the others have a positive correlation. The significant values of these parameters are not correlated because the significant value is > 0.05 (Putra et al., 2017). The Pearson correlation value between temperature and pH is -0.048. Salinity with temperature is 0.484. pH with salinity has a value of 0.002. With these values, it can be concluded that temperature and salinity have no correlation, while temperature and pH and salinity and pH have a correlation. The parameter relationship between pH and temperature has an inverse or opposite value. Temperature with pH and salinity with pH have values in the same direction.

The results of measuring salinity concentrations in the morning and evening for three weeks during the maintenance period showed that the average salinity concentration was 31.42 in the morning and 31.42 in the afternoon.

Growth Patterns

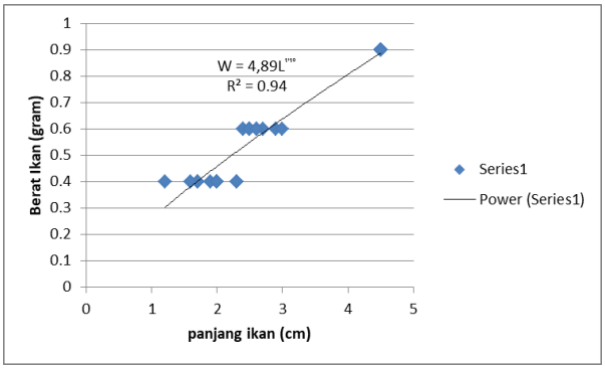

Fig 5. Length and Weight Growth Chart

Based on the graph in Figure 5, it shows the regression results of the relationship between length and weight of Bintang pomfret fish W = 4.89L1.10 with a coefficient of determination R2 = 0.94 (Perbadi, R, 2017). This shows that the value of b < 3 (Putri, S. F, 2020). So with this value it can be concluded that the growth pattern of the pomfret fish is negative allometric, which means that the growth in length of the pomfret fish is faster than the growth in weight of the fish. The relationship between length and weight is influenced by water quality such as temperature, pH and water salinity. In this correlation, what is more dominant in growth is the length of the fish.

CONCLUSSION

Water quality and the growth rate of pomfret fish seeds have been determined by taking direct measurements of temperature, salinity and pH. Water quality can influence the rate of increase in growth of the pomfret fish fry, where the weight at weeks 1.2 and 3 averages around 0.4 - 0.6 - 0.9 and the length at weeks 1.2 and 3 averages around 2.3 3.6. 4.5. In this correlation, the relationship between water quality influences the growth pattern of fish length and weight, resulting in length growth being faster than fish weight growth.

REFERENCES

Azima, M. F. (2023). Teknik Pembesaran Ikan Bawal Bintang (*Trachinotus blochii*). *South East Asian Aquaculture*, *1*(1), 16-23.

Chairunnisa, Z. (2021). Pembenihan dan Pembesaran Ikan Bawal Bintang *Trachinotus blochii* di Balai Perikanan Budidaya Laut Lombok, Nusa Tenggara Barat.

Dwi, R. A. (2020). Pembenihan dan Pembesaran Ikan Bawal Bintang *Trachinotus blochii* di Balai Perikanan Budidaya Laut Batam, Kepulauan Riau.

Farhansyah, A. (2021). Pembenihan dan Pembesaran Ikan Bawal Bintang *Trachinotus blochii* di Balai Perikananan Budidaya Laut Lombok Nusa Tenggara Barat..

Handayani, P., Akhrianti, I., & Putro, D. H. (2021). Teknik Pensortiran Benih Ikan Bawal Bintang (*Trachinotus blochii*) di Balai Besar Perikanan Budidaya Laut (BBPBL) Lampung. *Aquatic science*, *3*(1), 20-24.

Istikomah, I., Setyawan, A., Adiputra, Y. T., Supono, S., Sarida, S. (2023). Ectoparasite Diversity of Cultured Snubnose Pompano (*Trachinotus blochii*) at Lampung Bay. *Journal of Tropical Marine Science, 6*(1): 31-37.

Kuswadi, K., & Karsimin, K. (2016). Teknik Pembesaran Bawal Bintang (*Trachinotus blochii*) dengan Frekuensi Pemberian Pakan Berbeda di Kja Pend. *Buletin Teknik Litkayasa Akuakultur*, *8*(1), 55-60.

Karimah, U., & Samidjan, I. (2018). Performa Pertumbuhan dan Kelulushidupan Ikan Nila Gift (*Oreochromis niloticus*) yang Biberi Jumlah Pakan yang Berbeda. *Journal of Aquaculture Management and Technology*, *7*(1), 128-135.

Liang, X., Pang, Q., Kochetkov, I. R., Sempere, M. S., Huang, H., Sun, X., & Nazar, L. F. (2017). A facile Surface Chemistry Route to a Stabilized Lithium Metal Anode. *Nature Energy*, *2*(9), 1-7.

Lestari, P. (2016). Teknik Pendederan Ikan Bawal Bintang (*Trachinotus blochii*) di Balai Budidaya Laut Sekotong, Kabupaten Lombok Barat, Provinsi Nusa Tenggara Barat.

Putra, W. K., Handrianto, R., & Razai, T. S. (2017). Maturasi Gonad Bawal Bintang (*Trachinotus blochii*) dengan Induksi Hormon Human Chorionic Gonadotropin (Hcg) dan Pregnant Mare Serum Gonadotropin (PMSG). *Jurnal perikanan universitas gadjah mada*, *19*(2), 75-78.

Pribadi, R. (2017). Teknik Budidaya Bawal Bintang (*Trachinotus blochii*) di Balai Perikanan Budidaya Laut Lombok, Nusa Tenggara Barat.

Putri, S. F. (2020). Pembenihan dan Pembesaran Ikan Bawal Bintang *Trachinotus blochii* di Balai Besar Perikanan Budidaya Laut, Lampung.

Retnani. (2013). Morfologi Ikan Bawal Air Tawar (*Colossoma macropomum*) dan Ikan Bawal Bintang (*Trachinotus blochii*).

Trianzah, R., & Adi, C. P. (2023). Teknik Pemeliharaan Induk Ikan Bawal Bintang (*Trachinotus blochi*) di Balai Benih Ikan Laut (BBIL), Pulau Tidung Kepulauan Seribu. *Cendekia: Jurnal Ilmu Pengetahuan*, *3*(4), 211-219.