

## **THE EFFECT OF DIFFERENT FEED TYPES ON THE SURVIVAL OF CATFISH FRY (*Clarias* sp.)**

### **Pemberian Jenis Pakan yang Berbeda Terhadap Kelangsungan Hidup Benih Ikan Lele (*Clarias* sp.)**

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#### **ABSTRACT**

Catfish have strong endurance, but until now there has been no definite alternative feed so farmers tend to spend quite a lot of capital when raising seeds. This study aims to describe the right type of feed to increase the survival of catfish seeds. The research method used is a completely randomized design (CRD) with four treatments and three repetitions, In this study, the provision of feed as a treatment and measurement of weight, length, and survival as a repetition every 7 days. Data analysis conducted in this study is an experimental method. The results of this study indicate that the absolute growth rate of catfish seeds can be supported by providing silk worm feed. This result is evidenced by acquiring an absolute length value of 0.42 mm. The growth of the absolute weight of catfish seeds can be supported by providing egg yolk feed. This result is evidenced by acquiring an absolute weight value of 24 grams. The survival rate of catfish seeds can be maintained by providing *Artemia* sp. feed because the results of the study showed that this feed was able to maintain the survival rate of catfish seeds at a percentage of 98%.

**Key words:** catfish; growth; survival rate; feed;

#### **ABSTRAK**

Ikan lele memiliki daya tahan yang kuat, namun sampai saat ini belum memiliki alternatif pakan yang pasti sehingga para pembudidaya cenderung mengeluarkan modal yang cukup besar saat pembesaran benih. Penelitian ini bertujuan untuk mendeskripsikan jenis pakan yang tepat untuk meningkatkan kelangsungan hidup benih ikan lele. Metode penelitian yang digunakan adalah rancangan acak lengkap (RAL) dengan empat perlakuan dan tiga kali pengulangan, dalam penelitian ini dengan adanya pemberian pakan sebagai perlakuan serta pengukuran bobot, panjang, dan kelangsungan hidup sebagai pengulangan setiap 7 hari. Analisis data yang dilakukan pada penelitian ini adalah metode eksperimen. Hasil penelitian ini menunjukkan bahwa laju pertumbuhan panjang mutlak benih ikan lele dapat didukung dengan pemberian jenis pakan cacing sutra. Hasil ini dibuktikan dengan perolehan nilai

panjang mutlak sebesar 0,42 mm. Pertumbuhan bobot mutlak benih ikan lele dapat didukung dengan pemberian jenis pakan kuning telur. Hasil ini dibuktikan dengan perolehan nilai bobot mutlak sebesar 24 gram. Tingkat kelangsungan hidup benih ikan lele dapat dijaga dengan pemberian jenis pakan *artemia* sp. karena hasil penelitian menunjukkan pakan tersebut mampu menjaga tingkat kelangsungan hidup benih ikan lele dengan persentase sebesar 98%.

**Kata Kunci:** ikan lele; pertumbuhan; kelangsungan hidup; pakan.

## INTRODUCTION

Aquaculture includes the activities of breeding, rearing, processing, and marketing aquatic organisms in a controlled environment with the aim of making a profit (Sutiani et al., 2020). One of the cultivations widely carried out by farmers is catfish (*Clarias sp.*). Catfish are a type of freshwater fish consumed with a body shape similar to catfish, elongated, slimy, and scaleless, with a slightly rounded middle and a flat back (Saputri & Razak, 2018). Although catfish have strong endurance, farmers must spend quite a lot of capital, so alternative feed is needed to reduce production costs. These alternative feeds include artemia, pellets, silkworms, and egg yolks. According to Subandiyono (2015), nutritional content, especially high protein content, can stimulate the relative growth rate of catfish fry (Cahyaningrum et al., 2015). Artificial feed such as pellets can affect the growth rate of catfish fry (Apriani, 2019).

Catfish farmers place great importance on the survival of fry. During fry rearing, there is no alternative feed, which can reduce fish production costs. To improve the survival of catfish fry, this study aims to determine the appropriate feed types.

## RESEARCH METHODS

### Research Location and Time

This research was conducted in May 2022 at CV. Al Chansa Farm, Lubuklinggau. The research location map is shown in Figure 1.

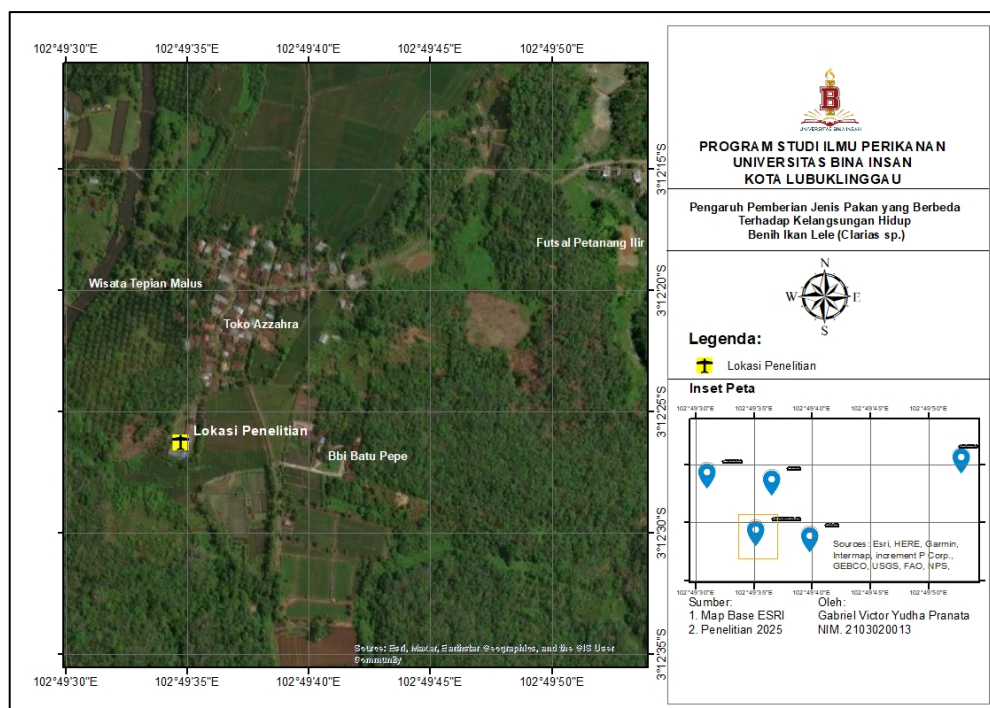


Figure 1. Map of research location

### Data collection

This study was designed using a Completely Randomized Design (CRD) with four treatments and three replications; in this study, feed was used as a treatment and replications were carried out every seven days to measure weight, length, and survival. Experimental methods were used to analyze the data of this study. One of the easiest and most widely used experimental designs in agriculture and biological studies is the Completely Randomized Design (CRD), which assigns random treatments to all experimental units. The Completely Randomized Design (CRD) method was used to analyze the measurement data descriptively using graphs and Analysis of Variance (ANOVA).

Table 1. Treatment and Repetition

Repeat	Treatment			
	T0	T1	T2	T3
1	T0 1	T1 2	T2 3	T3 4
2	T0 1	T1 2	T2 3	T3 4
3	T0 1	T1 2	T2 3	T3 4

Information: Repetition 1–3: Calculation of absolute length growth, absolute weight growth rate, and survival rate were carried out for each treatment for 7 days at a time. P0 indicates control pellets (mem brand), P1 indicates artemia sp., P2 indicates silkworms, and P3 indicates egg yolk. P0 1 indicates the administration of control pellets (mem brand) from each treatment, P1 2 indicates the administration of artemia sp., P2 3 indicates the administration of silkworms, and P3 4 indicates the administration of egg yolk from each treatment.

### Data analysis

Researchers used analysis of variance (ANOVA) in accordance with a Completely Randomized Design (CRD) to analyze the research data. Duncan's Multiple Ranges Test (DMRT) with a 5% significance level was used to evaluate the location of differences in effects between treatments. Duncan's multiple range test was conducted to determine whether the treatment applied during the study provided the best results (Kresno Aji, 2021).

Duncan's multiple range test, or DMRT, is a comprehensive test used to compare two means across all mean values. Unplanned comparisons are used in this test. Duncan's test is a post hoc test used to calculate specific differences between pairs of means. When testing for homogeneity is performed on multiple means, the results reject the null hypothesis and support the alternative hypothesis. One of the most common techniques used to compare treatment means is the DMRT. In conclusion, this test finds several significant differences with increasing values.

## RESULTS

### Absolute Length Growth

In medium 1, with pellets as the control, the absolute length growth was 0.19 mm. In medium 2, with artemia sp. as the feed, the absolute length growth was 0.24 mm. In medium 3, with egg yolk as the feed, the absolute length growth was 0.03 mm, and in medium 4 with silkworm as the feed, the absolute length growth was 0.32 mm.

According to research by Danang Yonarta (2023), natural feed is superior to artificial feed for fry growth and is a crucial component in catfish cultivation. With a value of 0.42 mm,

silkworms were shown to increase the absolute length growth rate the most compared to other feed types in this study.

#### a. Absolute Weight Growth Rate

In medium 1, the control pellet feed yielded an absolute weight gain of 0.8 grams, while the *Artemia* sp. feed yielded 1.9 grams, the egg yolk feed yielded 1.3 grams, and the silkworm feed yielded 2.1 grams. Therefore, this feed is the most appropriate for increasing the weight of catfish fry. Research by Lazuardi and H. Sudarto (2022) showed that regularly feeding catfish fry can rapidly increase their weight. This study demonstrated that silkworms can increase the absolute weight of catfish by 2.1 grams.

#### b. Survival Rate

With the type of pellet feed as a control, the survival rate in medium 1 was 93.7%. The survival rate in medium 2 was 94.1% with *artemia* sp. feed, the survival rate in medium 3 was 94% with egg yolk feed, and the survival rate in medium 4 was 96.1% with silkworm feed. So, it can be concluded that to increase survival. The type of feed given by catfish farmers affects the survival rate of fry, according to research by Nurul Aini (2020). The vulnerability of catfish fry is a major problem that farmers must overcome. The survival of catfish fry can be guaranteed with silkworms. Silkworms have been proven to be able to produce a survival rate of catfish fry of 96.1%, which strengthens the findings of this study. So the overall absolute length growth rate in each treatment can be seen in the following graph:

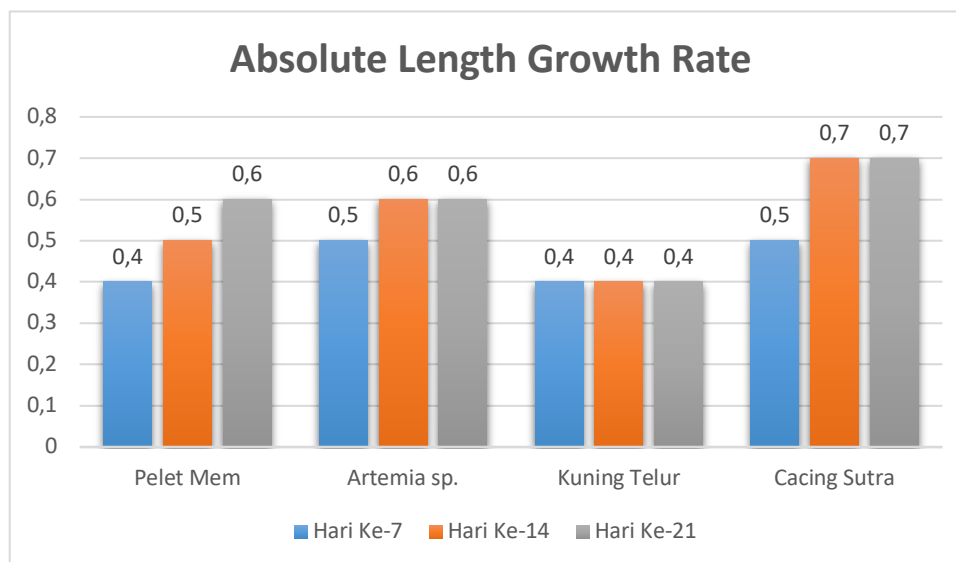


Figure 4.1 Absolute Length Growth Rate

Furthermore, the DMRT test results obtained were the DMRT test results obtained a value  $F_{hitung}$  of 4.568. Then the value  $F_{tabel}$  from 4 treatments with 3 repetitions is 3.26. So value  $F_{hitung} 4,568 > F_{tabel} 3,26$ , This means that the effect of providing different types of feed shows a significant difference in real length growth.

Furthermore, the post hoc test results showed that the highest value was found in treatment 4, namely 0.6700. Therefore, it can be concluded that the highest results were found in treatment 4 for each type of silkworm feed to increase the absolute length growth rate.

#### Absolute Weight Growth Rate

The results of the study in each treatment 1 using the type of pellet feed as a control had an absolute weight growth until the 21st day of 0.8 grams. The results of the study in each

treatment 2 using the type of *artemia sp.* feed had an absolute weight growth until the 21st day of 1.9 grams. The results of the study in each treatment 3 using the type of egg yolk feed had an absolute weight growth until the 21st day of 1.3 grams. The results of the study in each treatment 4 using the type of silk worm feed had an absolute weight growth until the 21st day of 2.1 grams.

So that overall the absolute weight growth in each treatment can be seen in the following graph:

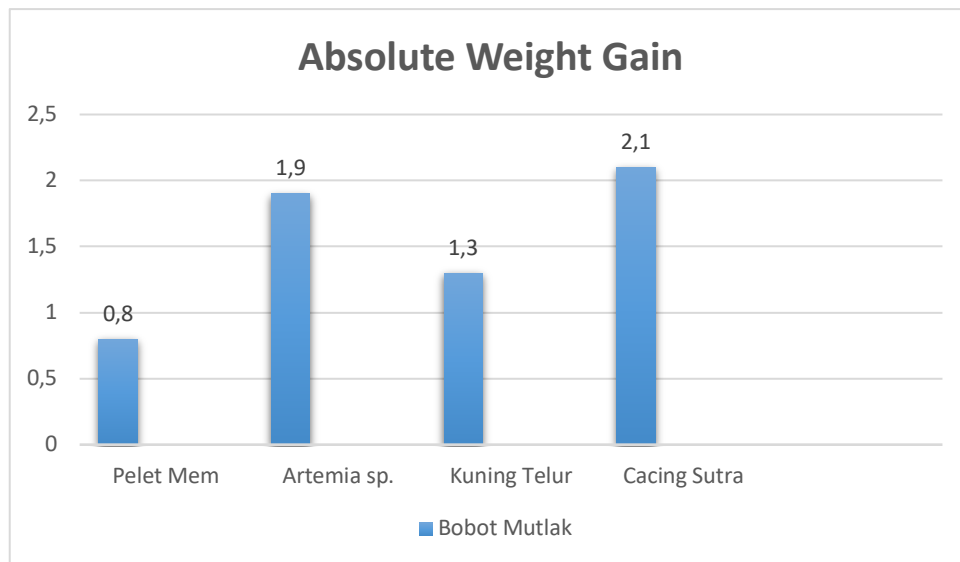


Figure 4.2 Absolute Weight Growth

Furthermore, the DMRT test results obtained were the DMRT test results obtained a value  $F_{hitung}$  amounting to 1263.675. Then the value  $F_{tabel}$  from 4 treatments with 3 repetitions is 3.26. So value  $F_{hitung} 1263,675 > F_{tabel} 3.26$ , this means that the effect of providing different types of feed shows a significant difference in absolute weight growth. Furthermore, the post hoc test results show that the highest value is in treatment 4, namely 67.2767. Therefore, it can be concluded that the highest results are in treatment 4 for each type of silkworm feed to increase absolute weight growth.

### Survival Rate

Media 1 (Mem Pellets) The results of the study on each treatment 1 using the type of mem pellet feed as a control had a survival rate up to the 21st day of 93.7%. Media 2 (*Artemia sp.*). The results of the study on each treatment 2 using the type of *artemia sp.* feed had a survival rate up to the 21st day of 94.1%. Media 3 (Egg Yolk). The results of the study on each treatment 3 using the type of egg yolk feed had a survival rate up to the 21st day of 94%. Media 4 (Silk Worms). The results of the study on each treatment 4 using the type of silk worm feed had a survival rate up to the 21st day of 96.1%. So the overall survival rate in each treatment can be seen in the following graph:

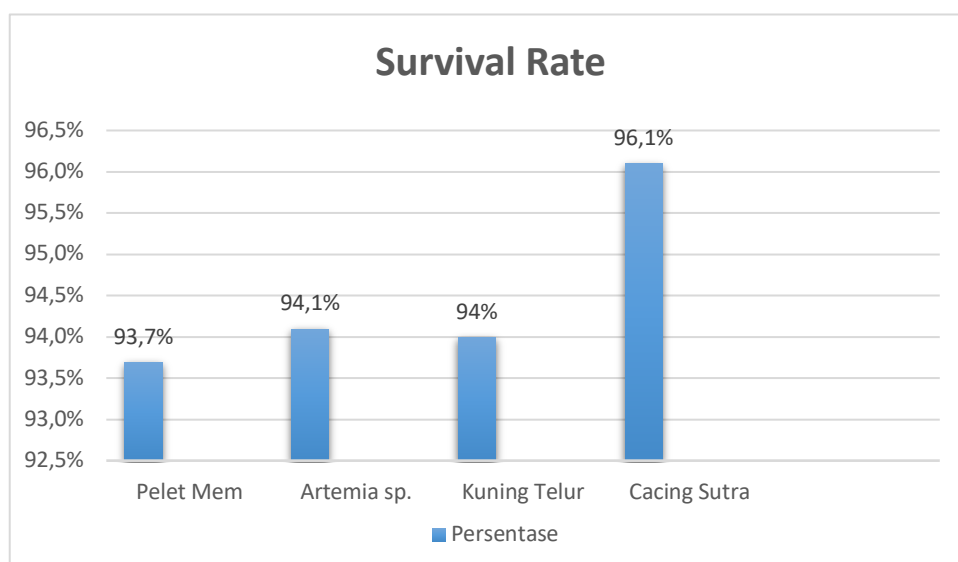


Figure 4.3 Survival Rate

Furthermore, the DMRT test results obtained were the DMRT test results obtained a value  $F_{hitung}$  amounting to 229,721. Then the value  $F_{tabel}$  from 4 treatments with 3 repetitions is 3.26. So value  $F_{hitung} 229,721 > F_{tabel} 3,26$ , This means that the effect of providing different types of feed shows a significant difference in real survival rates.

Furthermore, the post hoc test results showed that the highest value was found in treatment 4, namely 334.6667. Therefore, it can be concluded that the highest results were found in treatment 4 for each type of silkworm feed to increase the survival rate.

## DISCUSSION

Catfish (*Clarias sp.*) fry are small catfish ready to be grown into edible fish. One way to enhance the growth of catfish fry is by providing them with the right type of feed. This study demonstrated the effects of different feed types on catfish growth. These results were demonstrated by absolute length growth, absolute weight growth, and survival rate.

### Absolute Length Growth

In media 1, which used the type of pellet feed as a control, the absolute length growth results were 0.19 mm. Furthermore, media 2, which used the type of *artemia sp.* feed, the absolute length growth results were 0.24 mm. Then, in media 3, which used the type of egg yolk feed, the absolute length growth results were 0.03 mm. Then, in media 4, which used the type of silkworm feed, the absolute length growth results were 0.32 mm. Therefore, it can be concluded that the most effective type of feed for increasing the growth rate of catfish fry is silkworms with an average absolute length growth result of 0.32 mm.

Research by Danang Yonarta (2023) explains that natural feed is a crucial factor in catfish cultivation. Natural feed can significantly support fry growth compared to artificial feed. In this study, silkworms were shown to increase the absolute length growth rate the highest compared to other feed types, with a value of 0.42 mm.

### Absolute Weight Growth Rate

The absolute weight gain in media 1 with the control pellet feed was 0.8 grams. The absolute weight gain in media 2 with the *Artemia sp.* feed was 1.9 grams. The absolute weight gain in media 3 with the egg yolk feed was 1.3 grams, and the absolute weight gain in media 4

with the silkworm feed was 2.1 grams. Therefore, it can be concluded that the most appropriate feed to increase the weight of catfish fry is silkworms, with an absolute weight gain of 2.1 grams.

Research by Lazuardi and H. Sudarto (2022) explains that the weight of catfish fry increases rapidly when fed regularly. Regularly providing natural feed, such as silkworms, can increase the weight of catfish fry. This study aligns with these results, as silkworms have been shown to increase the absolute weight of catfish by 2.1 grams.

### **Survival Rate**

The survival rate obtained in media 1 with the type of pellet feed as a control was 93.7%. Then the survival rate in media 2 with the type of *artemia sp.* feed was 94.1%. Furthermore, the survival rate in media 3 with the type of egg yolk feed was 94% and the survival rate in media 4 with the type of silk worm feed was 96.1%. So it can be concluded that to increase the survival rate of catfish seeds, the most appropriate type of feed to use is silk worms because the survival rate value shows the largest percentage, namely 96.1%.

Research by Nurul Aini (2020) explains that the survival rate of catfish fry depends on the type of feed provided by catfish farmers. The vulnerability of catfish fry is key to solving the most important problem farmers face. Providing silkworms can maintain the stability of catfish fry survival. This research reinforces the findings of this study, as silkworms have been shown to produce a 96.1% survival rate for catfish fry.

## **CONCLUSION**

Based on the results of the research conducted, it is known that the provision of silk worms (*Tubifex sp.*) as feed has a real effect on the survival of catfish seeds with the obtained value.  $F_{hitung} 229,721 > F_{tabel} 3,26$ . In addition, the absolute length growth rate obtained a value of 0.32 mm, the absolute weight value obtained was 2.1 grams, and the survival rate value was 96.1%.

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