Addition of Water Hyacinth Flour to Feed for Sangkuriang Catfish Seed

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Abstract

This study aims to determine the effect of the addition of water hyacinth flour (Eichornia crassipes) on the manufacture of artificial feed on the survival and growth of sangkuriang catfish (Clarias gariepinus) seeds. This study used an experimental method with three treatments and three replications. The testing method is by feeding a number of different doses. The results showed that treatment A had the highest absolute length and weight growth of 1.7 cm and 0.5925g, followed by treatment B of 1.4 cm and 0.4827 g, and the lowest was indicated by treatment C of 1.2 cm and 0.3217 g. While the highest daily length and weight growth in treatment A were 0.14 cm and 0.049 g, treatment B was 0.12 cm and 0.036 g and C were 0.11 cm and 0.027 g. Survival of catfish seeds in all treatments during the study was 100%.

Keywords: catfish; sangkuriang; seeds; feed; water hyacinth.

Introduction

One effort to produce quality feed is to maintain the availability of raw materials both in quality and quantity, besides that these raw materials must be easily obtained, do not compete with human needs, are economical and are available all the time (Mudjiman, 2004) in (Yusuf, et al. , 2012). One effort to increase the production of fish yields is the provision of quality feed raw materials which up to now still rely on imported feed raw materials, especially soybean meal, fish meal and even corn (Amri, 2007). To cope with high feed prices, we need an alternative substitute for ingredients that have important economical prices and are available all the time. One alternative that can be used as a constituent of feed is water hyacinth (Eichornia crassipes).

Water hyacinth is known as a water weed plant that grows very fast. No wonder that currently water hyacinth is very abundant in Lake Limboto, Gorontalo Regency. Almost the entire surface of the lake is covered in water hyacinth. Handling of water hyacinth is not yet available from the government, although in fact funds have been allocated for its handling. In this regard, it is necessary to use water hyacinth as an alternative to artificial feed (Tangio, 2012).

The use of water hyacinth (Eichornia crassipes) as a constituent of fish feed is an alternative to get a companion or substitute for soy flour in feed as a source of vegetable protein, so that production costs can be reduced. According to Sudjono (1978), the results of chemical analysis show that water hyacinth contains organic material which is rich in vitamins and minerals, also contains protein and fat which is quite high. This plant is considered problematic by the community, especially fish farmers, because the growth rate is very fast so that in a short time can cover most of the waters.

This study aims to determine the effect of the addition of water hyacinth flour (Eichornia crassipes) on the manufacture of artificial feed on the survival and growth of sangkuriang catfish (Clarias gariepinus) seeds.

Research Methodology

This research was conducted in August 2016 for 12 days. Located at the Fish Seed Hall (BBI) Gorontalo City, Gorontalo Province. Catfish seeds used amounted to 90, obtained from farmers in Bandungan Village, Tapa District. Catfish seeds used are 4 cm in size.

Catfish seeds are placed in an aquarium, stocking 10 densely per treatment container and the amount of water used is 10 liters / container. Catfish seeds are acclimatized for 5 days. The number of aquariums used is 9 pieces with a size of 30 x 25 x 20 cm.

This research is divided into several stages, namely the manufacture of water hyacinth flour,

calculation of feed formulation, manufacture of fish pellet feed.

Processing of water hyacinth into flour is done by: separation of the water hyacinth leaves from the stem, then the water hyacinth leaves are dried using sunlight for ± 7 days, after dry then smoothed using a mortar, then sifted.

Preparation of feed formulations using trial and error method. The calculation of feed ingredients is as in Table 1.

Table 1 Feed formulation made from water hyacinth

No	Material	Protein	(%)
1	Fish meal	62,65	51
2	W. hyachint flour	11,2	30
3	starch	0,41	15
4	Vitamins	-	2
5	Minerals	-	2
			100%

The raw materials used in making catfish seed feed are fish meal, water hyacinth flour, vitamins, and minerals. All ingredients are mixed evenly then added starch as an adhesive. Added little by little water to 1 kg of feed then formed lumps to facilitate the printing of pellets. The next stage is pellet drying. Pellet drying is carried out in the sun for ± 5 days.

The maintenance of catfish seeds is carried out for 12 days, the growth measured is the length and weight of the seeds which are carried out every 3 days. The measured water quality is temperature, dissolved oxygen content (DO), and acidity level (pH). This measurement is done once a week. Penyiponan is done every morning and evening, as much as 25% water changes per penyiponan. 75% of the water is carried out every 3 days at the time of the seeding. The frequency of feeding during the experiment was carried out 3 times a day, namely morning, evening and night, before the feed was given first weighed according to the predetermined dose of 10%, 15% and 20%.

The design used in this study was a completely randomized design (CRD) with three treatments and three replications each. The treatment given is the provision of feed made from water hyacinth with different doses. Treatment A feeding with a dose of 10%, Treatment B feeding with a dose of 15%, Treatment C feeding with a dose of 20%. The analysis used was analysis of variance (ANOVA) and if it had an effect continued with the least significant difference test (LSD). The variables observed in this study were absolute growth, daily growth and survival variables calculated according to the formula used by Cholik, et al., (2005).

Results and Discussion

Absolute length

The absolute length growth of sangkuriang catfish (Clarias gariepinus) seedlings for 12 days using three different dose treatments namely treatment A (dose 10%), treatment B (dose 15%), and treatment C (dose 20%) (Figure 1).

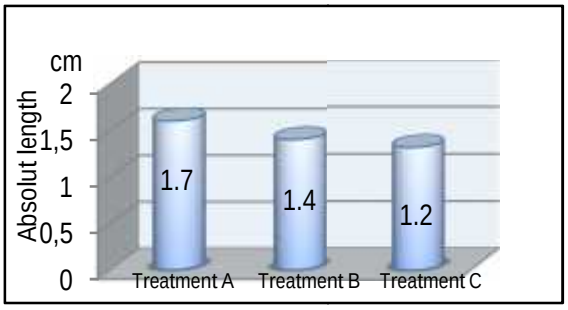

Figure 1 Absolute length growth of sangkuriang catfish seeds

Figure 1 illustrates that the growth in absolute length of sangkuriang catfish seeds in each treatment increased. At Grade A, the 10% feed dose shows the highest absolute length growth rate with a value of 1.6 cm. Followed by treatment B feed dose of 15% with a value of 1.4 cm and the lowest treatment C dose of 20% with a value of 1.3 cm.

The dosage of feed should be given as efficiently as possible so that the feed given is truly inedible and nothing is wasted and does not pollute the waters (Puja, 2001). Furthermore according to Cahyoko, et al, (2011) feeding according to needs in addition to ensuring fish life can also accelerate its growth.

The growth of sangkuriang catfish seeds occurs because of the supply of energy contained in the feed. The energy in feed consumed exceeds the

energy requirements needed for body maintenance and other bodily activities, so that the excess energy is used for growth.

The quality of the feed used greatly affects the growth of catfish seeds, this is related to the nutritional needs of catfish which include protein, carbohydrates, fats, fiber, vitamins and minerals which are the first component for fish growth. The food provided is not all eaten and can be used by fish. The amount of feed that can be utilized by fish depends on the composition of the feed compiler (Suyanto, 2007).

The results of the analysis of the length of the catfish seed length showed that different feed dosages had a significant effect (0.05) on the growth of catfish seed weight. Furthermore, to determine the effect of each treatment, continued with the Least Significant Difference Test (LSD). The Least Significant Difference Test Results (BNT) obtained BNT values of 5% in each treatment significantly affected.

Absolut weight

Giving different doses of feed on sangkuriang catfish seed yields a different average growth in absolute weight (Figure 2).

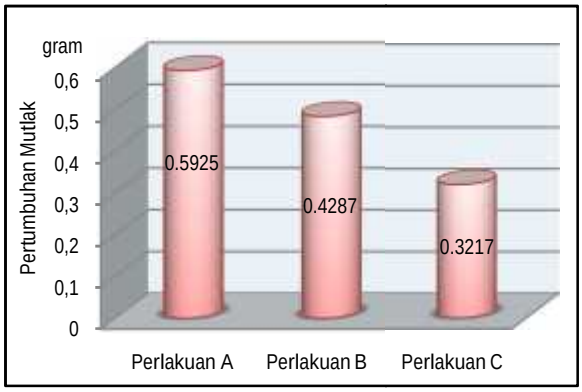

Figure 2 Growth of absolute weight of sangkuriang catfish seeds

Absolute weight growth in sangkuriang catfish seedlings based on the graph above shows that treatment A (dose 10%) had the highest weight growth then followed by treatment B (dose 15%) and treatment C (dose 20%) showed the lowest value. This happened because the dose of feeding during the study was different, resulting in different fish growth. A good dose of feed will make fish growth faster. In this study, giving a dose of 10% provides the best growth, this is because the feed is maximally utilized by fish. Excessive feeding can not only reduce water quality but also affect the high operational costs of seed maintenance.

The results of various sangkuriang catfish seed weight analysis showed that different feed doses had a significant effect (0.05) on the growth of sangkuriang catfish seed weight. Furthermore, to determine the effect of each treatment, continued with the Least Significant Difference Test (LSD). The Least Significant Difference Test Results (BNT) obtained BNT values of 5% in each treatment significantly affected.

Daily growth

Daily growth in length and weight of average catfish seeds for 12 days can be clearly seen in Table 2.

Table 2 Daily growth in length and weight of sangkuriang catfish seeds

Treatment	Average	
	Lenght (cm)	Weight (gram)
A Doses 10 %	0.14	0.049
B Doses 15 %	0.12	0.036
C Doses 20 %	0.11	0.027

Based on the daily growth chart above, it can be seen that sangkuriang catfish seeds have increased in length and weight growth every day. Increased growth in length and weight of sangkuriang catfish seeds during this study ranged from 0.11 to 0.14 cm, while weight growth ranged from 0.027 to 0.049 grams, the growth increased since the first day. This happens because before conducting research, seeds have been acclimatized to environmental conditions and the type of feed that is given. The difference in growth in each treatment is influenced by many factors, especially different feed doses. This is in accordance with the opinion of Effendie (1997) in Sari (2015), which states that growth is simply a process of changing size (length or weight) over a certain period of time, but growth is a complex biological process where many factors influence. Growth can occur if the environmental conditions and feed

provided are in accordance with the needs of the fish and there are other supporting factors.

Survival rate

The survival rate of sangkuriang catfish seeds during the study was 100% in each treatment. This is due to good water quality and adequate feeding so that cannibalism does not occur in fish. According to Hernowo and Rachmatun (2008), if the availability of feed is always sufficient, the success rate of maintenance can be close to 100% and no one even dies or disappears.

Conclusion

Giving different doses of feed gives a real influence on the growth and survival rate of sangkuriang catfish (Clarias gariepinus). Treatment using a 10% feed dose provides the best growth and survival rate for seeds.

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