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DEVELOPMENT OF FISH FEED MATERIAL ALTERNATIVE OF WATER PLANTS BASED AND PROBIOTICS ADDITION TO IMPROVE GROWTH OF GOURAMY (*OSPHRONEMUS GOURAMY*)

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ABSTRACT

The aims of this study was to get the raw material ofwater plants feed and the addition of probiotics that can improve the growth of gauramy fish. The method used is the method of complete randomized design experiment with three replications. The treatments that were tried are four kinds of fish feed (pellets) made from *Azollamicrophylla* (salviniales), *Lemna sp*, *Hydrillaverticillata* (algae) and the pellet without water plants and the addition of probiotics. The results showed the growth of fish fed the pellets without water plant together with pellets made from *Lemna sp*. and better than pellets made of *Azollamicrophylla* and *Hydrillaverticillata*. Absolute growth ranged from 4.55 to 10.499 g, the relative growth from 26.059 to 54.302%, the daily growth from 0.1635 to 0.377 g / day, feed efficiency 26.697 to 54.961% and a survival rate of 63.33 to 70%. Temperatures range from 26-29^{0}C, pH 6,5 - 8 and ammonia 0.6200 - 0.9931 ppm. The results of the measurement of temperature, pH and ammonia still fulfill the qualification of carp live.

KEYWORDS: *gauramy, alternative feed, water plants, probiotics, growth rate*.

INTRODUCTION

The success of fish farming is strongly influenced by the factors of the feed. This is because of the costs incurred for the procurement of relatively large that feed up to 60-80% of total production (Mokoginta et.al., 2006). The high cost of the feed prices due to raw material sources of animal protein is that fish meals until today still rely on imports. The supply of fish

resources are limited and demanders of fish meal high in turn will make the feed prices will remain expensive. For that, it is necessary to remove the dependency of the use of fishmeal in feed formulations. The effort to reduce the use of fish meal can be done by looking for sources of raw materials as substitutes for fish meal.

Utilization of local resources as a substitute of fish meal is absolutely necessary, but it should be explored from a variety of existing materials that are either natural or available in nature, especially of aquatic plants. Water plant (*hidrophytic*) is a plant that grew in the water environment and lives under water or on the surface and has a special adaptation. The abundance of water plants in agricultural areas is a weed for farmers because it can inhibit the growth of rice. The abundance of water plants on waters in fishing areas can reduce light penetration, as well as inhibit the growth of plankton. Aquatic plants such as algae (*Hydrillaverticillata*), *Lemnasp* and salviniales (*Azollamiccrophylla*) is an appropriate alternative feed as raw material in the manufacture of pellets for mixing easily, cheap andavailable of many kinds. The aquatic weeds, if managed properly could potentially be used as feed (Agung et al, 2007). The use of aquatic weeds (water plant) is the right step to solve the problem, because it contains nutrients such as protein and minerals are high enough so that it can be used to support the growth of fish (Agung et al., 2007).

Feed ingredients derived from plants, especially water plants have drawbacks when used for feedstuffs. One drawback is that the digestibilities of ingredients for aquatic plants also havehigh fiber content. This can be overcome either by the addition of probiotics. Probiotics according toGismono, et.al in Yousefian and Amiri (2009) is a supplement of microbial cells alive on the feed that benefit the host by improving the balance in its intestines. Irianto (2003) suggests that probiotics can be used for improvement of feed. Probiotics are added to feed will go through a process of fermentation; the fermentation process is expected to digest parts of the feed material that is difficult to digest the fish gut. Given that feed ismost fundamental issueof the aquaculture business activities, in order to overcome these problems through the development of science and technology in order to realize Sustainable Aquaculture Based on Local Resources.

MATERIALS AND METHODS

1) Experimental research and experimental design was a Complete Randomized Design. Factors that was attempted in the study are three kinds of fish feed (pellets) made from *Azollamicrophylla* (salviniales), *Lemnasp* and *Hydrillaverticillata* (algae), with the

addition of probiotics and three replications.

2) Research variables include: absolute growth, daily growth, relative growth, feed efficiency and survival rate.
3) Water quality parameters that are measured include temperature, pH, dissolved oxygen and ammonia. Temperatures were done every day morning and afternoon, while pH, dissolved oxygen and ammonia in the beginning, middle and end of the study.
4) Procedure Research

a. Preparation of the container includes a container for the cultivation of aquatic plants and maintenance of fish. Container of the cultivation of aquatic plants is in the form of round plastic 32 cm in diameter. Container of the maintenance carp made of tarpaulin rectangles with a size of 3 x 4 m and a height of 1 m. Before all containers are used, it soaked with KMnO4 for 24 hours, and dried. Filled with water to a height of 60 cm water and salt as much as 200 g per square meter.
b. Water Cultivation is done by water media and was given NPK fertilizer by as much as 5 g each plastic container. Harvesting is done every time a container filled with water plants and spared 5 g for regrowth. Harvesting of the aquatic plants is put in the sun to dry.
c. Making of Feed Pellet with water plant based: The raw materials include fish meal pellets, *Azolla*, *Lemna* and *Hydrilla*are dry blended with milled way. After finely sifted and weighed according to the needs. Flour constituent materials pellets that have been weighed are mixed thoroughly and added *CMC*. Once well blended water is added to be formed, and then steamed for 10 minutes. After it steamed, cooled, and is given probiotics, included in a black plastic bag cover tightly, and fermented for six days. Six days later it is removed from the plastic bag plus vitamins and minerals and milled. Results of mill are in the form of pellets and dried. Once dry stored in closed containers, pellet is in the proximate analysis and physical testing.
d. Maintenance of carp fish used acclimatized beforehand for 6 days in a pool tarp. After six days the fish weighed and again in the pool tarp and not given food for one day. Pelleted feed given as much as 3% of the weight of fish and given two times in the morning and afternoon. Sampling fish is done once a week to add the feed in accordance body weight.
e. Monitoring of the water quality is done by measuring the temperature, pH, oxygen content, and Ammonia. Substitution water is performed once a week to replace the water as much as 20%.

RESULTS AND DISCUSSION

Table 1 shows the results during the study, which includes the growth of absolute, relative, daily, feed efficiency and survival rate. It shows that the absolute growth indicates that the control treatment (fishmeal) with pelleted feed were not significantly differentfrom *Lemna*, *Azolla* while feed pellets and *Hydrilla* significantly different. The results of absolute growth ranged from 4.905 to 10.025 g.

Table 1: Data were absolute growth, relative growth, daily growth, feed efficiency and survival rate.

Variabel	P0	P1	P2	P3
Absolute growth	10,025±0,715[a]	4,905±2,705[b]	10,499±1,16[a]	4,55±2,728[b]
Relative growth	52,649±5,299[a]	26,059±13,728[b]	54,302±7,699[a]	35,689±8,10[b]
Daily growth	0,3338±0,0244	0,1635±0,090	0,3768±0,078	0,3156±0,202
Feed efficiency	54,961±1,215[a]	28,059±13,573[b]	52,458±5,791[a]	26,697±15,763[b]
Survival	68,33 ± 0,029	66,667±0,076	70±0,05	63,333±0,029

Description: P0: pellets made from fish meal; P1: pellets made from *Azolla* flour; P2: pellets made from *Lemna*flour and P3: pellets made from *Hydrilla*flour.

Relative growth ranged from 26.059 to 54.302 (%), where growth relative to the feeding of fish meal and pellets *Lemnasp* did not differ significantly and growth relative to pelleted feed *Azolla* and *hydrilla* not significantly different (Figure 1).

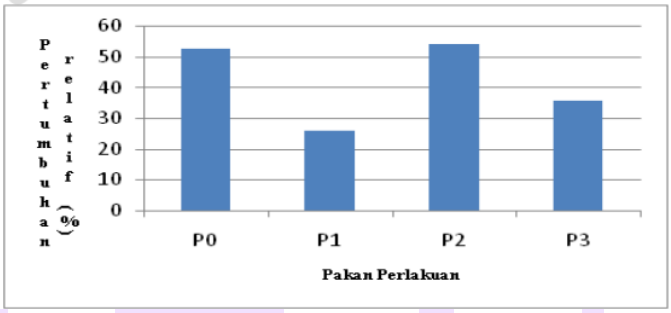

Figure 1: The relative growth (%) of carp with the provision of four kinds of feed pellets.

Description: P0: pellets made from fish meal; P1: pellets made from *Azolla*flour; P2: pellets made from *Lemna*flour and P3: pellets made from flour of*Hydrilla*flour.

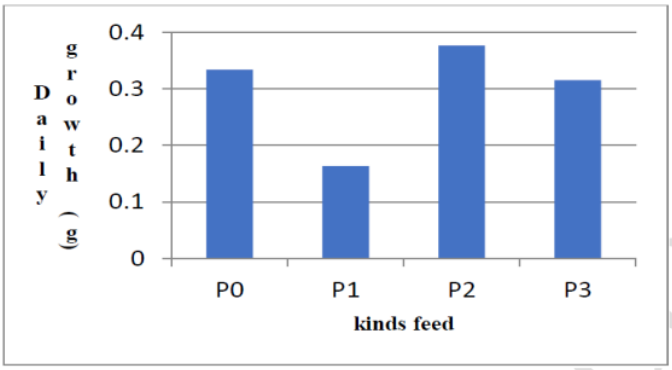

Figure 2: Daily Growth (g/day) of carp with the provision of four kinds of feed pellets.

Description: P0: pellets made from fish meal; P1: pellets made from *Azolla* flour; P2: pellets made from flour *Lemna* flour and P3: pellets made from flour *Hydrilla* flour.

Based on the ANOVA test, daily growth was not significantly different between treatments (F count <F table). This is in contrast with the results of both relative and absolute growth, likely due to the relatively short maintenance period (Figure 2).

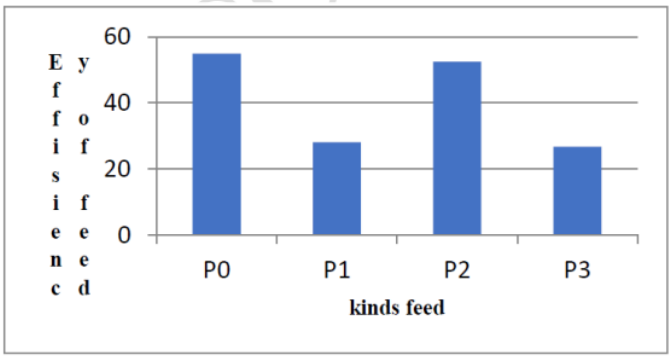

Figure 3: Efficiency of feed (%) of carp with the provision of four kinds of feed pellets.

Description: P0: pellets made from fish meal; P1: pellets made from *Azolla* flour; P2: pellets made from *Lemna* flour and P3: pellets made from*Hydrilla* flour.

Based on the ANOVA test, feed efficiency is significantly different between each treatments (F count> F table). Test F are different, therefore it is continued with Least Significant Difference test. Least Significant Difference Test showed that treatment with pelleted feed controls were not significantly different from *Lemna*, while feed pellets from *Azolla* and

*Hydrilla*were significantly different (Figure 3).

Survival during the study ranged from 63.3% - 70%. These results indicate that the research is still relatively good, because the survival rate of over 50%. Treatment Controls 68.33%, *Azolla* treatment pellet 66.67%, *Lemna* pellet 70% and *Hydrilla* pellet 63.33%. Anova Data shows the results did not differ significantly (F count <F table). (Figure 4)

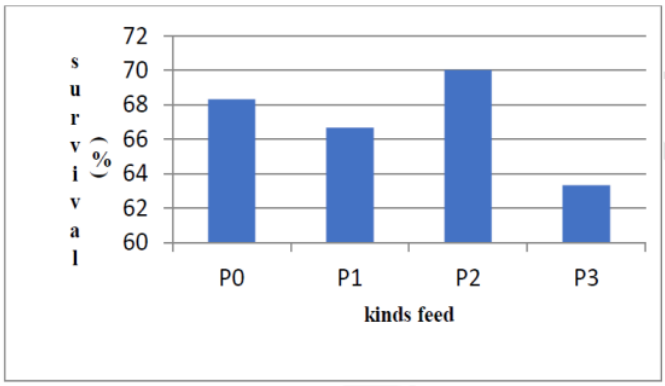

Figure 4: Survival (%) of carp with the provision of four kinds of feed pellets

Description: P0: pellets made from fish meal; P1: pellets made from *Azolla* flour; P2: pellets made from *Lemna*flour and P3: pellets made from*Hydrilla*flour.

Research results of Handajani (2006) states that the crude fiber content of *Azolla*flour amounted to 23.06%. *Azolla*flour as one constituent of Gift Tilapia fish feed with fish protein digestibility results ranging from 55.51% - 67.68%. Research results fromHaetami and Sastrawibawa (2005) showed the digestibility value of fish of carp to feed using *Azolla* flour ranges from 58.70% - 67.90%. Digestibility value is not maximized because the feed given is not digested properly, this is due to the crude fiber content is high enough on *Azolla* flour. Handajani (2007) conducted a study with *Azolla* powder feed ingredients through fermentation and fermented flour obtained by *RhizophusAzollasp* gives the best result of several fermenters, shown to lower crude fiber content of *Azolla* flour from 23.06% to 14.62%.

Dry matter is a reflection of the amount of carbohydrates contained in the feed materials making up rations, for approximately 50-80% of plant dry matter is composed of carbohydrates. In the proximate analysis, some cell wall components, such as hemicellulose, cellulose, and lignin, included in the group of carbohydrates (crude fiber and BETN), so that

the diet containing relatively coarse fibers are different then the digestibility of dry material is relatively different. Crude fiber pellet study ranged from 12.54 to 14.65% and ranged BETN 27,28-36,04. This will cause the feed efficiency will be low. In line with the opinion of Ranjhan (1980) which explains that the type and quantity of materials or the addition of carbohydrate in the diet digestibility reflect other food substances, especially with the increasing content of crude fiber in the diet, the digestibility of other nutrients will decrease.

Temperature measurement is done every day in the morning and afternoon. Temperatures range from 26-29 ^{0}C, pH 6.5 - 8, oxygen ranging from 5.3 to 6.4 ppm of ammonia and 0.6200 - 0.9931. The results of temperature measurements are still eligible to live, because carp can live well at 25 - 30^{0}C, pH 6.5 - 8 and 2 ppm ammonia.

CONCLUSIONS

1. Fish feed that based on raw material of aquatic plants (*Azolla, Lemna, Hydrilla*) and the addition of probiotics can boost the growth of carp;
2. The absolute and relative growth of carp gave the same response when fed pellets made from fishmeal and *Lemna sp*.

REFERENCES

1. Agung, M.U.K., Kiki, H.,dan Yuniar, M. 2007. Penggunaan Limbah Kiambang Jenis *Duckweeds* dan Azolla dalam Pakan dan Implikasinya Pada Ikan Nilem. Laporan Penelitian, LITSAR UNPAD. Fakultas Perikanan Dan Ilmu Kelautan, Universitas Padjadjaran. Bandung.
2. Haetami dan Sastrawibawa, EvaluasiKecernaanTepung*Azolla*dalamRansumIkanBawal Air Tawar (*Colossomamacropomum*). *Jurnal Bionatura*, November, 2005; 7(3): 225–233.
3. Handajani. Pemanfaatan Tepung Azolla sebagai pakan ikan terhadap pertumbuhan dan daya cerna ikan nila (*Oreochromis sp*). Jurnal Gamm, 2006.
4. Handajani, Peningkatan Nilai Nutrisi Tepung *Azolla* Melalui Fermentasi. Laporan Penelitian. Lembaga Penelitian UMM. Malang, 2007.
5. Irianto, A, *Probiotik Aquacultur*. UGM, Press, 2003.
6. Mokoginta, I., D, Jusadi, M. A. Suprayudi dan J. Ekasari. Bioteknologi Pakan dalam, 2006.
7. *Akuakultur*. *Prosiding Simposium Nasional Bioteknologi dalam Akuakultur 2006*. Bogor 5 Juli 2006. Departemen Budidaya Perairan FPIK-IPB dan Balai Riset Perikanan Budidaya Air Tawar, Badan Riset Kelautan dan Perikanan.

8. Ranjhan, S.K. Animal Nutrition in the Tropics. Vikas Publishing Hause P&T Ltd., New Delhi, 1980.
9. Yousefian, M and M.S. Amiri, A Review of the use of Probiotic in Aquaculture for fish and shrimp African. Journal of Bioteckology, 2009; 8(25): 7313-7318.

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