NURSING OF SEA BASS FINGGERLING (Lates calcalifer Bloch 1970) ON EARTHEN POND

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Introduction

- In order to support the Directorate General of Aquaculture's program regarding the establishment of “Aquaculture villages” , aquiculture businesses are needed that are based on local feed which is available abundantly and cheaply.
- The business of sea bass nursery in earthen ponds is one of the businesses that is easy for fish farmer to carry out.
- Sea bass do not have any problems in terms of technical feeding because they are able to adapt to whatever feed is given.
- However, from an economic perspective, the use of sea bass feed must be a consideration as to whether the business is feasible or not.
- The provision of Seabass feed which economical, good quality, and abundant in the nursery area is a very important requirement in supporting increased production.
- The aim of this study was to compare commercial seabass feed with fresh feed on the nursery phase (7.5 to 15 cm) (growth, SR, FCR and production cost).

Methods

- This research design was carried with 3 treatments feed and 3 repetitions, namely:
  A. 100% commercial feed (Protein 42%),
  B. 100% fresh feed (white mussel) and
  C. both of commercial feed and mussels (50: 50 %).
- The stocking density for each treatment was 100 fish/m^2 with a fingerling size of 7.5 cm.
- Observation parameters include: Average Daily Growth (ADG), Survival Rate (SR), Feed Conversion Ratio (FCR), Size distribution, Water quality (temperature, pH, salinity, DO, Ammonia, Nitrite, Phosphate, Alkalinity, Organic matter), and economic analysis.
- All data obtained will be analyzed using the SPSS statistical package version 18.0 for Windows and Microsoft Excel. The analysis results will be presented as means ± SE (Standard error). Differences between treatments will be investigated using One Way Analysis of Variance (ANOVA). Significant differences were then carried out by Scheffe's test (post hoc test). All significant differences in the data will be displayed at a confidence level of $P<0.05$.

Results

Table 1. Length measurement data (cm) during maintenance

Treatment	Day of Culture			
	D - 0	D - 14	D - 28	D - 46
A	7,70 ± 0,06 a	10,72 ± 0,10 ab	13,52 ± 0,12 b	14,94 ± 0,04 a
B	7,70 ± 0,06 a	10,49 ± 0,08 a	12,47 ± 0,28 a	14,84 ± 0,34 a
C	7,70 ± 0,06 a	10,93 ± 0,03 b	13,58 ± 0,21 b	15,43 ± 0,34 a

Table 2. Weight measurement data (grams) during maintenance

Treatment	Day of Culture			
	D - 0	D - 14	D - 28	D - 46
A	7,27 ± 0,20 a	18,22 ± 0,53 a	40,65 ± 1,16 b	49,01 ± 1,06 a
B	7,27 ± 0,20 a	17,13 ± 0,28 a	27,92 ± 2,10 a	51,12 ± 3,83 a
C	7,27 ± 0,20 a	18,28 ± 0,57 a	37,58 ± 1,64 b	57,31 ± 3,59 a

Table 3. Results of proximate analysis of sea bass commercial feed and white mussels (*Corbula faba*)

Parameters	Unit	Commercal Feedl	White Mussel	SNI Seabass Feed
Crude Protein	%	42	15,06	Min 42
Crude Lipid	%	10	0,27	Min 10
Ash	%	12	2,67	Max 12
Moisture	%	10	78	Max 12
Crude Fiber	%	3	0,09	Max 5

Table 4. Cost of sea bass nursery feed (in Rupiah) with different types of feed

Parameter	**Treatment**		
	A	**B**	**C**
Feed Price (Rp.)	25.000	10.000	35.000 (A+B)
Total amounth of feed (kg)	54,6	56,4	55,4
FCR	5,32	5,16	4,52
Total weight of fish (kg)	10.26	10,93	12,25
Total feed costs (Rp)	1.365.000	564.000	974.750

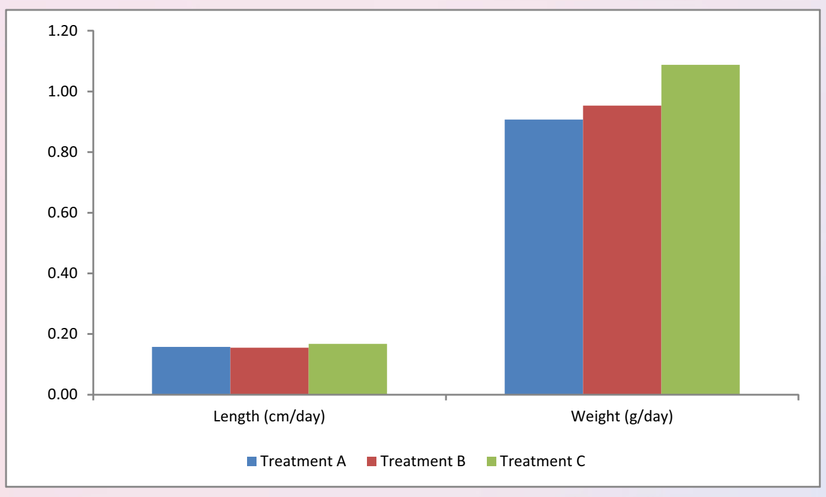
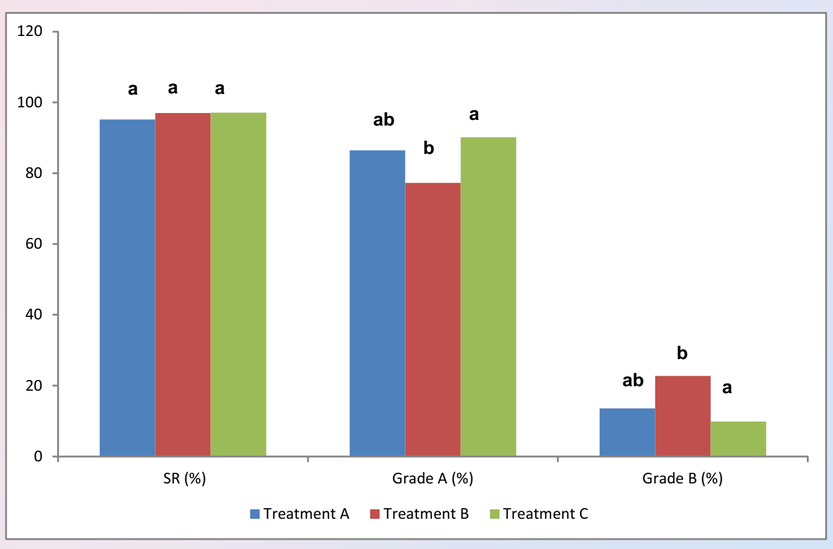


Figure 1. Average daily growth (ADG) of sea bass fingerlings (7.5 – 15 cm)



Grade A : Size > 14 cm ; Grade B : Size < 14 cm

Figure 2. Comparison of average survival rate (SR %) and percentage distribution of sea bass fingerlings (7.5 – 15 cm)

Table 5. Results of water quality observations during the nursery period of seabass finggerlings

No.	**PARAMETERS**	**UNIT**	**RESULT**		
			D – 1	**D - 30**	**D - 50**
1	pH	-	8,515	8,25	8,21
2	Temprature	°C	29 - 30	29 - 30	29 - 30
3	Salinity	%o	12	15	17
4	DO	mg/L	3,8 - 4,5	3,8 - 4,2	3,3 - 4,0
5	Nitrit (NO_2)	mg/L	<0,001	1,08	<0,001
6	TAN	mg/L	<0,01	<0,01	0,558
	Amoniak bebas	mg/L	<0,001	<0,001	0,030
7	Phospat (PO_4-P)	mg/L	0,12	0,12	0,11
8	Alkalinity	mg/L	142	166	216
9	Total Organic Matter	mg/L	94,80	69,52	73,31
10	Total Suspend Solid	mg/L	29	75	62
11	Total Bacteria	CFU/mL	$1,2 \times 10^4$	$1,6 \times 10^4$	4×10^4
12	Total Vibrio :	CFU/mL	$5,0 \times 10^2$	$1,5 \times 10^3$	$3,2 \times 10^3$
	Yellow Colony	CFU/mL	$5,0 \times 10^2$	$8,0 \times 10^2$	$1,4 \times 10^3$
	Green Colony	CFU/mL	0	$7,2 \times 10^2$	$1,8 \times 10^3$

- The results of 46 days rearing showed that there was no significant difference in ADG and SR in the 3 treatments.
- The ADG values and SR percentages were A. 0.907 ± 0.023 g/day; 95.15 ± 0.61%, B. 0.953 ± 0.083 g/day; 96.97 ± 1.69 % and C. 1.008 ± 0.078 g/day; 97.12 ± 0.15%, respectively.
- The size distribution data showed a significant difference with the highest level of uniformity was treatment C (90.17 ± 2.36 %), followed by treatment A (86.46 ± 0.45%) and treatment B (77.25 ± 2 ,29 %).
- Water quality data shows that pH, DO, temperature, salinity, ammonia and nitrite are still in a good range, in accordance with SNI 6145.4:2014 concerning the production of sea bass fingerling in ponds.
- The FCR value in each treatment was different, with the smallest value in treatment C. 4.52, then B. 5.16 and A. 5.32.
- The lowest cost of feed produced by treatment B, followed by C and A.

Discussion

The seabass nursery at the trial location (Pasuruan) showed that the use of fresh feed (feed B) was more profitable and efficient compared to feed A or feed C. This is due to several facts from the data produced, namely that the growth and survival of seabass finggerling between the three treatments were not significantly different. Likewise with the FCR value produced, where the use of feed B has the lowest FCR value. This means that economically the most profitable cost incurred to produce seabass finggerling at the nursery stage is to use 100% mussel as feed. Even though the level of uniformity is still below feed A and feed C, the price of commercial feed is twice as expensive as mussels causing production costs to be high.

The results of proximate analysis showed that the small white mussels protein content was only 15% compared to commercial feed of 42%. A combination of commercial feed and mussels in a ratio of 50 : 50 provides the highest level of uniformity. It is interesting to note that the potential use of both feeds could be more beneficial.

Conclusions and recommendations

Conclusions : The use of a both of fresh feed (mussel) and commercial feed for fingerling production of seabass (7.5 to 15 cm) is more profitable and efficient compared to 100% commercial feed or fresh feed.

Recommendation : Further trials need to be carried out to obtain the ideal feed combination between commercial feed and mussel so that optimal production efficiency is obtained.

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