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UDC 639.31

Otong Zenal Arifin, Jojo Subagja, Vitas Atmadi Prakoso, and Endang Haris Suhud (Institute for Freshwater Aquaculture Research and Fisheries Extension)

Effect of stocking density on growth performance of domesticated barb (*Barbonymus balleroides*)

Indonesian Aquaculture Journal, 12 (1), 2017, 1-6

Barb (*Barbonymus balleroides*) considerably has economic potential as aquaculture commodity. However, there was still lack of development on aquaculture for this species. This study was conducted to observe the effect of different stocking density on growth of barb. The fish (body weight: 14.89 ± 0.13 g) were stocked in nine floating nets (dimension: 2 m x 2 m x 1 m) inside the ponds with three stocking density treatments (10, 15, and 20 fish/m³). Each treatment consisted of three replications. Fish were fed on commercial pellet (30% of crude protein) as much as 3% of the biomass per day with twice a day of feeding frequency. Data of growth performances (body weight, specific growth rate, average daily growth, biomass, food conversion ratio, and survival rate) were collected every 30 days during 90 days of rearing period. Water quality variables (temperature, pH, and dissolved oxygen) were observed during experiment. The results showed that the optimal stocking density for the growth of barb was 10 fish/m³. Best value of food conversion ratio was found 10 fish/m³ compared with 15 and 20 fish/m³ ($P < 0.05$). Meanwhile, there were no significant differences on survival rate between treatments. These results also showed the potential of rearing barb on culture ponds with appropriate stocking density.

KEYWORDS: *Barbonymus balleroides*; domestication; growth; stocking density

UDC 639.512

Asep Sopian, Alimuddin, Imron, Harry Krettiawan, Fajar Anggraeni, and Desy Nurul Astuti (Research Institute for Fish Breeding)

Identification of SNP spesific marker for crustacean hyperglycemic hormone gene: a somatic growth-related in giant freshwater prawn (*Macrobrachium rosenbergii*)

Indonesian Aquaculture Journal, 12 (1), 2017, 7-13

High size variation of giant freshwater prawn was found in harvest and resulting in low productivity. Marker assisted selection may be useful to generate broodstock that produces progeny with high growth and homogeneity. This study was conducted to obtain growth related molecular marker in giant freshwater prawn. Genomic DNA was extracted from swimming leg (pleiopods) of 201 giant freshwater prawns, consisted of 129 fast-growth (FG) with 16.06 ± 2.48 g body weight and 72 slow-growth (SG) with 6.05 ± 0.90 g body weight. Oligonucleotide primers were designed according to Gene Bank database of crustacean hyperglycemic hormone (CHH) gene sequence. The amplified DNA fragment was then sequenced. The results of sequencing showed there was one base different in nucleotides of FG and SG prawns. Six set of primers were designed based on those CH gene sequence. PCR analysis resulted one set of primers which showed a specific amplification product of 280 bp for growth. The result of sequence analysis using the basic local alignment search tools showed that the nucleotide sequence of those PCR products had similarity of 99%-100% with CHH gen of *M. rosenbergii*. Thus, a candidate of growth related molecular marker have been identified for giant freshwater prawn.

KEYWORDS: giant freshwater prawn; SNP molecular marker; fast growth; slow growth

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Deni Radona, Vitas Atmadi Prakoso, and Irin Iriana Kusmini (Institute for Freshwater Aquaculture Research and Fisheries Extension)

Analysis of growth of lalawak *Barbonymus balleroides* (Valenciennes, 1842) in three culture methods

Indonesian Aquaculture Journal, 12 (1), 2017, 15-20

In fish culture, optimal growth could be influenced by various culture methods. Aim of the study was to evaluate the productivity of *Barbonymus balleroides*, lalawak in floating net cages, concrete ponds, and earthen ponds. Cultivation was designed with the circulation water system. Experiment was conducted using completely randomized design with three treatments and three replications for each treatment. The experimental fish, sized of 4.20 ± 0.64 cm SL and weight of 2.14 ± 0.99 g, were obtained from induced breeding. The stocking density used was 20 individuals/m³. Fish were fed 3% of total weight two times every day using commercial pellet with 35% protein content for 90 day. The result showed that lalawak reared in earthen pond was no significant difference on length, weight, and biomass compared with that one in concrete pond ($P > 0.05$), but significantly different ($P < 0.05$) with floating net cages one. There were no different ($P > 0.05$) among the three different culture systems for survival rate and FCR. Lalawak reared on earthen pond system supported with optimal water quality could increase productivity value.

KEYWORDS: lalawak; growth; culture; ponds; floating net cages

UDC 639.3.09

Rommy Suprpto, Alimuddin, Sri Nuryati, Imron, Huria Marnis, and Bambang Iswanto (Research Institute for Fish Breeding)

MHC-II marker potential linked to motile Aeromonad septicaemia disease resistance in African catfish (*Clarias gariepinus*)

Indonesian Aquaculture Journal, 12 (1), 2017, 21-28

One of the important issues in catfish farming is motile aeromonad septicaemia (MAS) disease caused by the bacterium *Aeromonas hydrophila*. This study aimed to find the MHC-II marker potential for marker-based selection to generate MAS disease resistance of African catfish. PCR method was applied to identify catfish (body length: 7-8 cm) population that have MHC-II marker. Fish with and without the marker were then challenged by intraperitoneally injecting of 0.1 mL/fish with *A. hydrophila* (10^5 cfu/mL). The results showed that the survival of fish having MHC-II marker ($77.50 \pm 4.00\%$) was higher than that of fish without the marker ($53.33 \pm 4.77\%$). Fish carrying MHC-II marker fish has also higher total erythrocytes, total leukocytes, phagocytic activity, and hematocrit levels than that of fish without the marker. The PCR results using specific primer for MHC-II showed a specific DNA band of 426 bp in fish having the marker, while there were no DNA bands in fish without the marker. Results of the PCR analyses showed that the percentage of progenies carrying MHC-II marker was 80%, while progenies from broodstock without the marker was 0%; this indicated that MHC-II marker could be inherited to the offsprings. Thus, the MHC-II marker could be used as a molecular marker of MAS disease resistance catfish.

KEYWORDS: catfish; *Aeromonas hydrophila*; MAS; molecular markers; MHC-II

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Endang Susianingsih, Koko Kurniawan, and Muharijadi Atmomarsono (Research Institute for Coastal Aquaculture and Fisheries Extension)

Performance of cultured white-leg shrimp in RICA probiotic application method in pond the ponds aerated with supercharge blower

Indonesian Aquaculture Journal, 12 (1), 2017, 29-36

Several ways have been done to encounter shrimp disease affecting cultured shrimp in Indonesian ponds in the last two decades. This research was aimed to find out the effect of different application of probiotic RICA4, RICA5, and RICA3 method on survival rate and production of white-leg shrimp (*Litopenaeus vannamei*) cultured in ponds aerated with supercharge blower. RICA probiotics are bacteria probiotics produced by the Research and Development Institute for Coastal Aquaculture, originally isolated from seaweed and sea sediment. This experiment was carried out in completely randomized design using nine 250-m² experimental ponds stocked with 15 shrimp fries/m². There were three treatments namely: A=alternate use of three probiotics RICA4, RICA5, and RICA3; B=combination use of three probiotics RICA4, RICA5, and RICA3; and C=control (without probiotic), each treatment with three replications and cultured with supercharge blower. Variables observed in this study were survival rate and production of the shrimp calculated at the end of experiment, total vibrio count (TBV) and total plate count of common bacteria (TPC) of the pond waters and sediments monitored every two weeks. The results showed that application of probiotic RICA4, RICA5, and RICA3 applied either in alteration or in combination significantly increased survival rate ($P < 0.05$) but not on production ($P > 0.05$) of the white-leg shrimp. TBV/TPC ratio in the control pond waters after 10-weeks culture (over than 10%) was relatively dangerous for the cultured white-leg shrimp. This shows that application of probiotic could prevent the growth of *Vibrio* spp in the cultured shrimp pond water.

KEYWORDS: application method; RICA probiotic; TBV/TPC ratio; white-leg shrimp

UDC 639.62

Ofri Johan, Agus Budiarto, and Michael J. Sweet (Research Institute for Ornamental Fish Culture)

'Yellow syndrome' in scleractinian corals throughout bintan district, Kepulauan Riau Province, Indonesia

Indonesian Aquaculture Journal, 12 (1), 2017, 37-42

Coral disease surveys were conducted in Bintan, Kepulauan Riau Province. The purpose was to identify the abundance of corals showing signs of Yellow Syndrome (YS) disease and to describe similar pathological signs to that of AYBD throughout Bintan District. Three belt transects (2 m x 50 m in size) were set up to determine the abundance of coral reef attacked by YS disease. Line intercept transects were used to determine the percentage of live corals in the surveyed areas. The survey showed that the YS disease syndrome attacked 8 different genera i.e. *Acropora*, *Montipora*, *Porites*, *Pavona*, *Turbinaria*, *Favia*, *Platygyra*, and *Favites*. The highest attack happened at Mapur Island (0.06 kol/m²) on *Porites lutea*, *Turbinaria peltata*, *T. mesenterina*, *Acropora bruggemanni*, and *Pavona frondifera*. The survey also indicated that there may have been at least two types of YS i.e. the first type caused by a boring and/or over-growing sponge species and the second type caused by a kind of pathogenic microbe. Regardless the causal agent of YS, the severity of YS attack on coral urged immediate action to be undertaken and should include initial microscopic and histology examinations. Based on this initial microscopic and histology examinations it was found out that YS bears a close resemblance to the Arabian Yellow Band Disease. This study, however, argued that the word "disease" may have been incorrectly used without identifying a specific causal agent.

KEYWORDS: Arabian Yellow Band Disease; coral disease; sponge

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I Nyoman Adiasmara Giri[#], Ketut Sugama^{**}, Alimuddin^{***}, and Anang Hari Kristanto^{****}

^{*}) Research and Development Institute for Mariculture, Gondol

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KEYWORDS: Author guidelines; research journal; aquaculture; article template

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Table 1. Response to selection and final mean body weight of the third generation compared to the control population of the African catfish *Clarias gariepinus* at the end of larval rearing, nursery and grow-out phases

Phases	Periods (days)	Final mean body weight (g)		Response to selection	
		Third generation	Control	Gram (g)	Percentage (%)
Larval rearing	25	0.19 ± 0.10	0.19 ± 0.07	-	-
Nursery	30	6.12 ± 2.93	5.80 ± 3.50	-	-
Grow-out	60	198.67 ± 82.82	165.22 ± 71.09	33.45	20.24

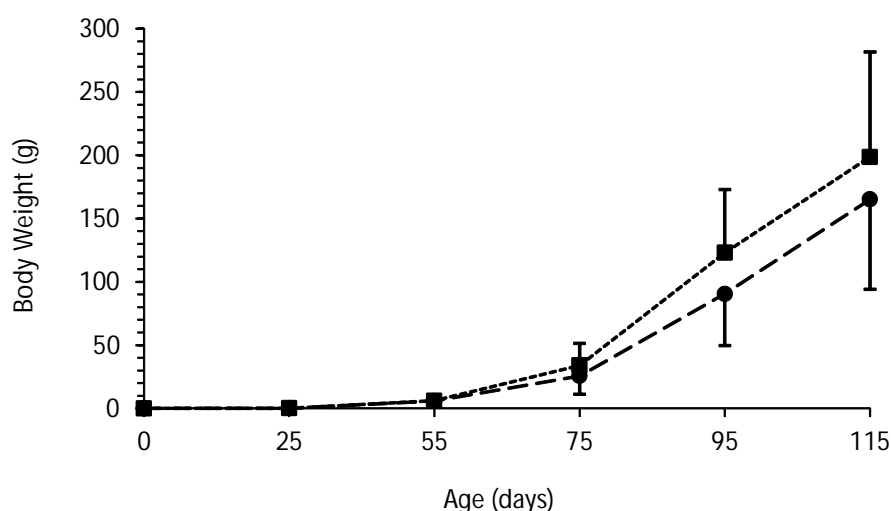


Figure 1. Growth performances based on body weight during 25 days of larval rearing phase, 30 days of nursery phase and 60 days of grow-out phase (based on samplings of 2% populations) of the third generation (■) and control population (●) of the African catfish (*Clarias gariepinus*) genetic improvement program held at Research Institute for Fish Breeding, Sukamandi. Vertical lines represent its each standard deviation

ACKNOWLEDGEMENTS: thanks mainly devoted to research funders. Acknowledgements can also be delivered to the parties that support the implementation of the research and writing of the manuscript.

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