

PRELIMINARY ECONOMIC ANALYSIS OF SPINY LOBSTER, *Panulirus homurus* CULTURE IN FLOATING NET CAGE IN EKAS BAY EAST LOMBOK

Anak Agung Alit, Titiek Aslianti, and Bejo Slamet

ABSTRACT

Spiny lobster, *Panulirus homurus* is an export commodity having high demand, hence, its culture has profitable business prospect. The purpose of this analysis was to evaluate economical spiny lobster culture in floating net cages. The data were gathered from Batu Nampar Village, Jero Waru Sub District, East Lombok Regency. Data were taken from farmers in February to October 2003. Spiny lobster were reared in bamboo floating cages, with size of 2 x 2 x 3 m³. Culture methods were Battery and net cage system = 200 ind./12 m³. The net profit in battery system = Rp 9,336,666,- and net cage system = Rp 12,026,666,- in one crop season. Selling price of spiny lobster was Rp 150,000,-/kg, pay back period 2.8 to 3.8 months with B/C ratio of 4.33—5.5. Therefore, spiny lobster culture in floating cage was economically feasible in both methods.

KEYWORDS: B/C ratio, *Spiny lobster*, profit economical analysis

INTRODUCTION

Mariculture in floating net cage is a significant business in Indonesia, *i.e.*, about 3,600 ha or 4% of the total culture development, of 89,025 ha. (Tonek & Ramansyah., 1993), but this potential area has not been optimally exploited. Humpback grouper culture in floating net cage has a good prospect in South East Asian countries. (Kohno *et al.*, 1988; Kahno, 1989; Tiensongrusmee & Rais, 1989).

In Indonesia potential area for spiny lobster culture is located in the South coast of Lombok Sea, at Batu Ampar Village, Jero Waru Sub District, East Lombok. Based on the oceanographical data, it shows that Ekas Bay has a good potential area for mariculture especially for spiny lobster. Nowadays, many farmers in Ekas Bay are culturing sea weeds, lobster, and humpback grouper in small scale as a home industry for additional income. Until September 2003, total number of floating net cage in Ekas Bay were 72 units. For that reason, an analysis should be done to know the economic performance to anticipate more competitive marketing prospect.

The purpose of the experiment was to analyze farming operation *i.e.* profit, product, total operational cost, investment, fixed cost, and feasibility study cooperative system.

MATERIALS AND METHODS

Ekas Bay is located in the south coast of Batu Nampar Village Jero Waru District, East Lombok Regency. Almost all of floating net cages in East Lombok are in this area. The data collected for this research were primary and secondary data as well. Primary data were obtained from survey and interview, and the result of experiment done by 25 farmers and fishermen in the area. Secondary data were obtained from fishery offices Lombok Timur Regency and BPPT-NTB. The business feasibility was analyzed in this spiny lobster culture in a two methods *i.e.* battery and net cage system = 200 pcs/12 m³.

The lobster were put in bamboo floating net cage. Lobster were fed with fresh frash fish the morning, afternoon, and evening. Farmers usually put the juveniles in the cage at 25—50 g weight. After 6 months old, the spiny grew to 100 g weight, harvested and sold.

Primary and secondary data obtained were tabulated descriptively. The calculation of income was based on Sukarwati *et al.* (1986). The business profit, break even point, pay back period and return on investment (ROI), balance of income and capital (B/C ratio) and economic rentability (ER) were calculated according to formula by Sigit (1979), Wattanutchrya & Panayoutou (1981); Kadariah *et al.* (1978). Mathematically the above values were obtained by using the following formulas:

1. Profit :

$$Ku = S. Y1. P_{yi} - Vc$$
2. Break even point:

$$BEP = FC / (1 - VC : NP)$$
3. Pay back period:

$$PP = (FC + VC) / Ku$$
4. Return on investment:

$$ROI = (FC + VC) / \text{total investment}$$
5. Ratio income investment:

$$B/C \text{ ratio} = NP / (VC + FCi)$$

Where:
 Yi = Product i. P= Price, FC = Fixed cost,
 VC= Variable cost, NP = Value product

RESULTS AND DISCUSSION

Business Analysis

Spiny lobster culture in floating net cage is cost cover investment, variable, and fixed costs. Investment cost covers: raft, cage, plastic rope, anchor, floater, pail, etc. (Table 1). While operational cost was fry, feed, etc. Cost

structure of business feasibility analysis is shown in Table 2.

The highest cost in this business was juveniles (Sapto *et al.*, 2001). The spiny lobster juveniles were paid by farmers in cash or by loan with a week period. Trash fish were bought nearby and was available sufficiently. In addition to artificial feed. Trash fish could also be obtained in their own farm or trapped to minimize operational cost.

Net cage system yielded 24.5 kg with 94% survival rate, and battery system lower= 20.5 kg with 100% the survival rate (Table 3). Spiny lobster culture in floating net cage gave higher income for the farmers between Rp 12,180,000,- — Rp 14,700,000,- (Table 2). It takes 6 mouths from initial weight to 100 g weight, and farmers harvested twice a year. Capital investment needed for spiny lobster culture in Ekas Bay can be seen in Table 1. Investment capital and working capital spent by the farmers were relatively small. Generally, farmers in Ekas Bay spend their own fund for their capital on with bank loan. Selling price of harvested lobster was Rp 150,000,-/kg.

The profit level obtained depends on survival rate (Sapto *et al.*, 2001). Selling price of spiny lobster and juveniles were able to minimize operational cost. In general, net profit for those two system battery Rp 9,366,666,- and net cage Rp 12,026,666,-/season. From two systems it appeared that both methods was economically feasible (Table 2). However survival rate spiny lobster in battery system was higher. Considering the profit level for those

Table 1. Investment capital, and depreciation rate of spiny lobster *P. homurus* trial in floating net cage in Ekas Bay in one unit

Materials	Pcs	Investment (Rp)	Economical period (year)	Depreciation 6 month (Rp)
Floating cage size (2 x 2 x 3x) m ³	8	1,500,000	3	250,000
Bamboo	18	90,000	1.5	30,000
Used drum	16	480,000	1	240,000
Plastic rope (roll)	1	200,000	1.5	88,666,670
Anchor 50 kg	4	500,000	5	50,000
Anchor rope (m)	50	200,000		66,666
Pail, etc.	16	200,000	1	703,333
Battery box		400,000		200,000
Total		3,570,000		9,003,333

Table 2. Business and profit analysis of spiny lobster *P. homurus* culture in floating net cage in Ekas Bay East Lombok

Business analysis	Battery System	Net Cage System
Product(kg)	81.2 (4 net cages x 20.5)	98 (4 net cages x 24.5)
Sale price (Rp)	150,000.00	150,000.00
Income (Rp)	12,180,000.00	14,700,000.00
Total cost (Rp)	3,964,333.00	2,673,333.00
Fixed cost (Rp)	903,333.00	703,333.00
Variable cost (Rp)	1,910,000.00	1,970,000.00
Juveniles (Rp)	1,350,000.00	1,350,000.00
Feed (Rp)	560,000.00	620,000.00
Gross profit (Rp)	10,270,000.00	12,730,000.00
Net profit (Rp)	9,366,666.00	12,026,666.00

Table 3. Performance of spiny lobster *Panulirus homurus* trial in floating net cage in Ekas Bay East Lombok

System	Initial stocking (kg)	Total lobster (pcs)	Survival rate (%)
Battery System : 200 pcs/ 12 m ³	20.5 kg	200	100
Net Cage System : 200 pcs/ 12 m ³	24.5 kg	188	94

two systems, it can be developed depending on farmer's capital.

Benefit Cost Analysis

Cost and benefit analysis in cultivating spiny lobster *P. homorus* covered: break even point, payback period, balance of income and capital (B/C ratio), and return on investment. The result of calculation of the above items

was recorded in Table 4. The result of the calculation of Spiny lobster *P. homurus* showed break even point, when the product reach 7.17 kg, and 5.39 kg in battery and net cage methods, respectively. Density for each system was 200 pcs/12 m³, pay back period were 3.8 months, and 2.8 months, respectively. While B/C ratio was 4.30—5.50. From the B/C ratio, and by density of 200 pcs/12 m³ gave adequate profit and worth developing. In term of capability,

Table 4. Benefit cost value of spiny lobster *P. homurus* culture in floating net cage in Ekas Bay East Lombok

Cost benefit	Battery System 200 pcs/12 m ³	Net Cage System 200 pcs/12m ³
Break even point (Rp)	1,075,396	703,333
Kg	7.17	5.39
Pay back period (month)	4.00	2.98
B/C ratio (year)	4.30	5.50
Economical profitability (%)	78.8	84.0

return on investment (ROI) was between 78.8% and 84%. Method A was 78.8% and B= 84%, respectively (Table 4).

CONCLUSION

Economically, business in spiny lobster *P. homurus* culture gave farmers a good profit. The level of profit obtained was flexible depending on the product, price of juveniles, and the selling harvest price. The profit in battery system, and net cage system of 200 pcs/12 m³ were between Rp 9,388,666,- and Rp 12,026,666,- while pay back investment in 2.8—3.8 month, B/C ratio = 4.33—5.55. However survival rate in system was higher. Therefore spiny lobster culture in floating cage was economically feasible in both systems.

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