Costs of management practices of Asian seabass (Lates calcarifer Bloch, 1790) cage culture in Malaysia using stochastic model that includes uncertainty in mortality

ABSTRACT

With intensification, Asian seabass are prone to infectious diseases such as vibriosis that could lead to additional costs in the grow-out cage culture system. Other costs include feeds, fingerlings and antibiotics. To improve awareness to the costs, the objective of this study is to estimate the costs of Asian seabass that include endemic vibriosis. First, farm-level costs were estimated using a questionnaire performed to 20 monoculture of Asian seabass farms. Second, the costs of grow-out at cage culture Asian seabass in 210 days was estimated using stochastic bioeconomic model. Model developed included uncertainty in vibriosis prevalence, mortality and variation in body weight to be estimated as costs. Inputs in the model were based on literature, expert opinion and outcomes in the current survey. Survey results showed that the participating farms did not have Malaysian Good Aquaculture Practices (GAqP) certificate. The median cost to produce 1,500 tails of fish (1 kg/tail) in 12 months was USD 4,688/farm/cycle. The stochastic model estimated total cost to produce a tail of fish (1,079 g/tail) as USD 3.61 consisting of variable costs such as feeds (USD 3.51), fixed costs such as maintenance (USD 0.12) and provision costs due to mortality (USD 0.35). Total vibriosis costs (mortality, diagnosis and treatment costs) were USD 0.24/tail. The total cost was sensitive to change in feed conversion ratio (FCR) and mortality due to other causes. Improving farm efficiency and increasing production cycle to 1.73 times/year is necessary to lower the costs. Government should give more priority in research and development of cheaper feed alternatives, probiotics and vaccines. Farmers should be aware of the costs and make a better decision, for example improving FCR and biosecurity to improve profitability. Care must be taken to interpret the findings as the costs of grow-out Asian seabass is different for each farm due to different management practices.

Keyword: Aquaculture; Asian seabass; Lates calcarifer; Vibriosis costs; Cage culture