

Cost Effective and Efficient Feeding: A Way Forward for Sustainable and Profitable Aquaculture

Authors : Pawan Kumar Sharma, J. Stephan Sampath Kumar, S. Anand, Chandana B. L.

Abstract : Protein is the major component for the success in culture of shrimp and fishes. Apparently, excess dietary protein is undesirable, as it not only enhances the production cost but also leads to water quality deterioration. A field survey was conducted with aqua farmers of Kerala, India, a leading state in coastal aquaculture, to assess the role of protein component in feed that can be efficiently and effectively managed for sustainable aquaculture. The study showed an average feed amount of 13.55 ± 2.16 tonnes per hectare was being used by the farmers of Kerala. The average feed cost percentage of Rs. 57.76 ± 13.46 /kg was invested for an average protein level of $36.26 \% \pm 0.082$ in the feed and Rs. 78.95 ± 3.086 per kilogram of feed was being paid by the farmers. Study revealed that replacement of fish meal and fish oil within shrimp aquafeeds with alternative protein, and lipid sources can only be achieved if changes are made in the basic shrimp culturing practices, such as closed farming system through water recycling or zero-water exchange, and by maximizing in-situ, floc and natural food production within the culture system. The upshot of such production systems is that imports of high-quality feed ingredients and aqua feeds can eventually be eliminated, and the utilization of locally available feed ingredients from agricultural by-products can be greatly improved and maximized. The promotion of closed shrimp production systems would also greatly reduce water use and increase shrimp production per unit area but would necessitate the continuous provision of electricity for aeration during production. Alternative energy sources such as solar power might be used, and resource poor farming communities should also explore wind energy for use. The study concluded that farm made feed and closed farming systems are essential for the sustainability and profitability of the aquaculture industry.

Keywords : aqua feeds, floc, fish meal, protein, zero-water exchange

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