Enhancing Profitability in Shrimp Farming: The Impact of Yeast-Sourced Astaxanthin as a Feed Additive on Yield and Gross Profitability in Bangka Island, Indonesia

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Abstract

This research, conducted on a commercial shrimp farm in Bangka Island, Indonesia, aims to identify effective feed additives that enhance profitability amid a challenging global shrimp market characterized by high quality demands and fluctuating prices. The study utilized post-larvae shrimp from a uniform genetic batch, adhering to consistent farming protocols across 14 ponds. Eight ponds received no feed additives, while three utilized bacterial-sourced astaxanthin and another three employed yeast-sourced astaxanthin.

Results revealed that only five ponds met harvest targets, with those utilizing yeast- sourced astaxanthin maintaining the highest yield of 37.25 tons per hectare—6% greater than the average yield across all ponds and 2.14% above the remaining ponds. The total biomass achieved in these ponds was 8,979.91 kilograms, outpacing the overall average by 9.4%. Notably, plankton composition and population did not significantly differ among the ponds, underscoring the yeast-derived astaxanthin's pivotal role in enhancing shrimp culture profitability under standard conditions. Gross profits for ponds utilizing yeast astaxanthin were 7.78% above average and 6.33% higher than the remaining ponds, highlighting its viability as a strategic feed additive for commercial shrimp farming.

Keywords

Astaxanthin. Shrimp farming, feed, plankton, profitability, yield production.