



EbiSeq: Innovative Environmental Nucleic Acid Tools to Improve Shrimp Farming

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What is the problem?

Aquaculture farmers face major challenges in keeping ponds healthy and productive amid unpredictable disease outbreaks, water quality issues, and microbial imbalances. These problems can cause heavy financial losses and environmental stress, yet most farmers rely on visual inspection or occasional water chemistry tests that provide little insight into what's really happening in the pond. As a result, farmers often react to problems only after they become severe. There is a clear need for a reliable, accessible, and science-based way to monitor pond ecosystems, identify early warning signs of disease, and support more sustainable and profitable aquaculture practices.

What is your solution?

EbiSeq is developing a simple, science-based monitoring tool that uses environmental DNA (eDNA) and RNA (eRNA) sequencing to track pond health in aquaculture. Instead of relying on visual checks or manual water tests, farmers collect small water samples that are analyzed for the genetic material of bacteria, algae, and other microorganisms. This provides a precise snapshot of the pond's microbial community and early warning signs of disease or imbalance. The results are delivered through an easy-to-understand report or online dashboard, showing which microbes are beneficial or harmful and how the pond's condition is changing over time. By turning complex molecular data into actionable insights, EbiSeq helps farmers manage their ponds proactively, reduce disease risks, and improve productivity using cutting-edge biotechnology.

Keywords: Aquaculture monitoring; microbiome analysis; disease prevention; sustainable aquaculture; environmental nucleic acids



Figure 1. Aerial view of an aquaculture farm.
(Source: Yoko Shintani)

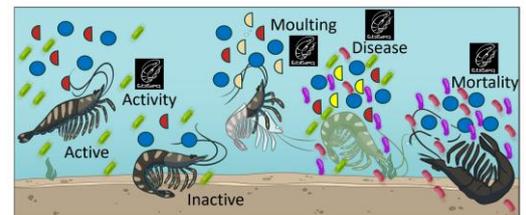


Figure 2. Assessing pond health using eRNA/eDNA ratios, detection of pathogenic bacteria, and key biomarker genes.

Other resources

- [Unit website](#)

Contribution to SDGs

