AQUACULTURE INDUSTRY DRIVES TECHNOLOGICAL ADVANCEMENTS

Dr. Ambreen Afzal

Published in: **The Financial Daily International** on **19 November 2023**
Weblink: **https://thefinancialdaily.com/aquaculture-industry-drives-technological-advancements/**
Total Words: **590**
Keywords: ***Aquaculture, Controlled Breeding, Global Seafood Market, Sustainable Feed***

Aquaculture involves the controlled breeding, nurturing, and harvesting of aquatic life, including fish, mollusks, crustaceans, and aquatic plants, in various water environments.

The Aquaculture market worldwide, valued at USD 217,666.06 million in 2022, is projected to grow at a compound annual growth rate (CAGR) of 5.17% throughout the forecast period. This expansion is anticipated to lead to a market size of USD 294,597.24 million by the year 2028.

Southeast Asia serves as a major center for aquaculture, producing a diverse range of aquatic organisms that not only sustain local communities but also play a crucial role in the global seafood market. Countries like Vietnam, Thailand, and Indonesia are key exporters, particularly in shrimp and pangasius. In 2020, the region accounted for about 60% of global aquaculture production, with China leading the way. Shrimp farming is dominant, and these nations are influential in the global shrimp market.

In 2021, the aquaculture production in South Asia amounted to 12,374,703 metric tons, as reported by the World Bank using data from officially recognized sources. This information, including actual values, historical data, and future projections, was retrieved from the World Bank in November 2023.

However, the industry faces sustainability challenges, with concerns about mangrove destruction and water pollution. To address these issues, biosecurity measures, improved breeding practices, and disease-resistant strains are being adopted. Innovations such as recirculating aquaculture systems (RAS) and responsible land use practices aim to minimize environmental impact. Ensuring the quality and safety of exports is crucial, leading to the promotion of traceability systems and certification programs like the Aquaculture Stewardship Council (ASC) to meet international standards. Sustainable feed ingredients are also a key focus area for the industry.

The Aqua Farm 2023 conference explores current developments in aquaculture. As of 2023, notable trends in this field encompass:

Sustainable Aquaculture: There is a growing emphasis on environmentally friendly and socially responsible farming practices in aquaculture. This involves minimizing environmental impact by reducing the use of antibiotics and chemicals, enhancing feed efficiency, and mitigating waste and pollution.

Integrated Multi-Trophic Aquaculture (IMTA): IMTA involves cultivating various aquatic species in a shared system to optimize resource utilization and decrease environmental impacts. For instance, integrating fish farming with seaweed or shellfish farming creates a symbiotic relationship, reducing external inputs and enhancing overall system efficiency.

Recirculating Aquaculture Systems (RAS): RAS, closed-loop systems that recirculate water, are gaining popularity for their efficiency, controlled conditions, and benefits such as disease risk reduction and water conservation.

Genetic Improvement: Techniques like selective breeding, genetic engineering, and gene editing are employed to develop improved aquatic organisms with desirable traits, such as faster growth rates, disease resistance, and enhanced feed conversion efficiency.

Alternative Feeds: Due to the rising cost and sustainability concerns of traditional feeds like fishmeal and fish oil, there's a growing interest in alternative and sustainable sources, including plant-based feeds, insects, microorganisms, and novel nutrition sources for farmed aquatic species.

Traceability and Certification: Increasing consumer awareness prompts a demand for traceability and certification in aquaculture products. Third-party certifications ensure adherence to sustainable and responsible practices, addressing concerns about environmental and social responsibility in seafood production.

Technology Adoption: Aquaculture operations are integrating technology such as sensors, automation, artificial intelligence, and data analytics to monitor water quality, manage feed, detect diseases, and enhance overall farm efficiency.

Looking ahead, the aquaculture industry is anticipated to witness further advancements in technology, sustainable practices, and innovative approaches. This evolution aims to meet the growing seafood demand while minimizing environmental impact, emphasizing a future characterized by technological innovation, sustainability, and increased attention to environmental and social responsibility.