From Tradition to Transformation: How Scientific Aquaculture is Changing Rural Odisha

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ABSTRACT

Scientific aquaculture has emerged as a transformative force in rural Odisha, converting traditional subsistence fish farming into a viable livelihood and entrepreneurial activity. This article examines the shift from low-yield, rain-dependent fish culture to modern, scientific practices involving pond preparation, quality seed, feed management, and water quality control. Highlighting the impact on productivity, income, and women's participation, the paper underscores how aquaculture is reshaping socio-economic conditions, enhancing resilience, and contributing to rural development. Challenges such as input costs, credit access, and quality seed supply are also discussed, alongside strategies for sustainable growth.

INTRODUCTION

On a quiet morning in rural Odisha, the surface of a pond ripples as farmers scatter feed across the water bodies. Just a decade ago, these ponds might have held a few local fish, grown slowly with little attention to science or markets. Today, they are buzzing with activity, producing record harvests that not only feed families but also bring in steady incomes. This is the story of how scientific aquaculture is reshaping lives and building sustainable livelihoods in the state.

From Custom to Change

For generations, fish farming here was a traditional livelihood system, often subsistence. Farmers relied on seasonal rains and natural ponds, hoping for modest catches that could support their families. The fish they caught were more for the kitchen than the market. Incomes were uncertain, and fish farming was rarely seen as a business with dual benefits of economic return and livelihood. But times have changed. With the introduction of modern techniques like better pond preparation, quality seed, balanced feed, and water quality management practices, farmers began to realize that aquaculture could be more than a minor income-generating activity. It could be a major livelihood and even a path out of poverty.

Ponds That Tell a New Story

In Jagatsinghpur district, farmers who once harvested barely two tonnes of fish per hectare now report yields of four tonnes or more. What made the difference was adopting scientific practices such as removing predatory fish, adjusting stocking density, and maintaining water quality. These practices doubled productivity, giving farmers not just fish, but hope (De *et al*., 2022).

One farmer summed it up simply: *"Earlier, we fished to survive. Now, we farm fish to thrive and build entrepreneurship models to enhance rural economy."*

Women Leading the Wave

The transformation is not just about yields. It's also about participation of family members at various levels. Women, organized into Self-Help Groups, have taken to aquaculture with determination, turning it into rural household enterprises. With training and access to ponds, many women now contribute directly to household income. For some, this has meant being able to send their children to better schools; for others, it has brought independence and pride. The ripple effect is clearly a forward-thinking movement. Families report improved spending power, better access to healthcare, and greater resilience during difficult times. For communities once bound by uncertainty, fish farming is becoming a reliable anchor for income sustenance (Raja *et al*., 2023; Dubey *et al*., 2024).

Still, Challenges Remain

The road is not without bumps. Feed costs are high, loans are hard to come by, and quality seed is often scarce. Many farmers still adopt only a few scientific practices, leaving much room for growth. Studies suggest that farmers are using only about one-third of their potential, meaning the opportunity ahead is huge (Bhat *et al*., 2023).

The Future of Rural Fish Farming

The way forward lies in filling these gaps — making credit accessible, ensuring good quality seed and feed by creating self-governed centres for input sourcing, and providing practical, hands-on training. Besides, connecting farmers to markets, creating cold storage and processing facilities will help them earn more for their hard work through a market-driven release of their produce to realize better prices.

CONCLUSION

From subsistence ponds to thriving enterprises, aquaculture in Odisha has come a long way. It is a story of how tradition, when blended with science, can open doors to opportunity. For thousands of rural families, fish farming is no longer just about survival; it is about building a future with a robust rural economy, enhanced living standards, and better health indices.

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