



# Development of Sustainable Land-Based Aquaculture Production Systems

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**CHALLENGE:** U.S. consumers are increasingly demanding a cost-competitive, safe, reliable animal protein supply which is appealing, nutritious, and raised with minimal environmental impacts. Controlled intensive aquaculture systems are intrinsically secure agriculture systems in which aquatic animals are produced in semi-closed environments with protected water supplies. Inputs to the systems can be controlled, so quality assurance is comparatively easier to achieve than in some other animal confinement systems. Controlled intensive aquacultural production systems are poised to expand to a larger role in the aquaculture production of the U.S. domestic edible seafood supply.

**SOLUTION:** This project uses a multi-disciplinary approach to develop and evaluate solutions to major challenges that delay expansion of the aquaculture industry. The major objectives of this project are:

1. To develop and evaluate solutions which improve efficiencies of scale and reduce water quality constraints for sustainable production in controlled intensive aquaculture systems.
2. To develop and evaluate sustainable waste management technologies which result in environmentally compatible controlled intensive aquaculture systems.

**OUTCOMES:** This research will advance the capacity to produce a nutritious seafood product in an aquaculture system that is secure, reliable, and both economically and environmentally sustainable. Improvements in resource and capital efficiencies for controlled intensive aquaculture systems will result in better production systems, management practices, and expanded market and investment opportunities for domestic aquaculture production. The research will result in more sustainable and globally competitive aquaculture systems for U.S. farmers. This work is relevant to consumers demanding cost competitive, high quality fish raised in environmentally friendly production systems, fish farmers producing a variety of freshwater and marine species in tank-based systems, and scientists and consultants who design and evaluate sustainable land-based finfish production systems.