

OVERVIEW OF THE RESEARCH ACTIVITIES, ACADEMIC TRACK, AND TECHNOLOGICAL ACHIEVEMENTS OF THE UNIVERSITY OF MIAMI AQUACULTURE PROGRAM.

Daniel Benetti*, John Stieglitz, Jorge Suarez, Ron Hoenig, Carlos Tudela, Zack Daugherty, Charles James McGuigan, Jia Geng, Shubham Mathur, Yole Buchalla and Julio Camperio.

*University of Miami – RSMAS Aquaculture Program
4600 Rickenbacker Causeway, Miami, Florida 33149, USA
dbenetti@miami.edu

The University of Miami Aquaculture Program has been playing a major role spearheading advanced aquaculture technologies. Our research and academic programs are centered on innovative approaches to ensure that seafood production is science-based, wholesome, environmentally sustainable, and economically viable. We are engaged in collaborations around the world and are recognized for our contributions to the field – particularly for the development of challenging and high-value species, technology transfer activities, and the education and training of top professionals at all levels.

The academic program encompasses an introductory undergraduate course and five graduate level courses – covering everything from basic concepts to science, environment, management, social and economic aspects of sustainable aquaculture as well as regulatory issues, business and production models, all the way to seafood market and marketing. The program thrives on innovative research and development concepts focusing on emerging technologies. It is supported by a renowned, Global GAP certified marine fish hatchery with state-of-the-art dry and wet laboratory facilities, numerous broodstock maturation systems for conditioning fish to spawn volitionally, a number of larval rearing and nursery tanks of various volumes for experimental trials and commercial-scale fingerling production, and a variety of replicated systems with tank volumes ranging in size from 1,000-L to 5,000-L for nutrition and nursery and on-growing trials.

Current and past species with which we have conducted R&D activities include: cobia, mahi-mahi, snapper, grouper, hogfish, red drum, sea trout, snook, tuna, goggle-eye, yellowtail jacks (*Seriola spp*), pompano and flounder –among others. Our nutrition program works closely with the industry to conduct practical research, such as digestibility trials, to improve the ecological and economic efficiency of aquafeeds. Besides probiotics, we are looking into bacteriophages, organic acids, essential oils, and trace minerals to improve fish health. We are also investigating using artificial intelligence (AI) to optimize live feeds and larval rearing protocols.

The research program is science-based and centered on advanced hatchery, land-based (RAS and flow-through), and open-ocean grow out technologies of marine fish. We have published over 200 scientific articles in aquaculture technology, production, reproduction, physiology, nutrition, environmental issues, toxicology, and systems operations and management. Our expertise and experience in the field has led to numerous collaborations with the private and public sector operations throughout the U.S., Latin America, Europe, Asia, Caribbean, Africa, Australia and the Middle East. As the industry continues to expand, the University of Miami Aquaculture Program will continue to assist in advancing aquaculture technologies globally.