Recirculating Aquaculture conference featured OI's Super-Intensive shrimp growth system

Oceanic Institute Research Associate Clete Otoshi recently attended the Sixth International Conference on Recirculating Aquaculture hosted by Virginia Tech at The Hotel Roanoke Conference Center. On behalf of OI's shrimp department, Otoshi presented a paper titled "Super-intensive growout of the Pacific white shrimp, *Litopenaeus vannamei*: Recent advances at the Oceanic Institute."

Clete Otoshi

Otoshi's presentation addressed problems such as disease and environmental issues that continue to plague traditional shrimp farmers.

"Progress in the development of environmentally friendly and biosecure super-intensive recirculating systems offer a possible alternative," Otoshi asserts. "However, reduction in costs must occur for this technology to become a viable alternative."

From its selective breeding program, Specific Pathogen Free (SPF) growth-line shrimp were provided by the U.S. Marine Shrimp Farming Consortium to stock a 75 m^2 (76 cm depth) recirculating raceway at a density of 300 shrimp/m^2 (~400 shrimp/m^3).

At 14 weeks, the shrimp were harvested with the following results:

Stocking Weight	0.8 g
Harvest Weight	21.7 g
Survival	89.5 percent
Production	4.7 kg/m^2 (7.5 kg/m^3)
Growth Rate	1.44 g/week
FCR	1.5
Water Usage	187 L/kg shrimp
Water Exchange	0.3 percent per day

According to Otoshi, improved management techniques and system design resulted in significant improvements in survival, FCR and water use over previous trials. An external biofilter was not used in this trial and nitrification was completed by bacteria attached to particles suspended in the water column. On day 58, total DAPI bacterial count was 3.9 x 10^8 cells/ml. Florescence *In Situ* Hybridization showed that the nitrifying bateria of the genera *Nitrospira* were present at a concentration of 1.2 x 10^8 cells/ml, which is 31 percent of the total count.

"The improved shrimp performance and simplified design demonstrated in this trial constitutes a significant step toward economic viability of such a systems," Otoshi concluded.

Otoshi credits several colleagues at Oceanic Institute for their contributions to this study, including Larren R. Tang, Dion Dagdagan, Carrie Holl, Ph.D., Christine Tallamy, and Shaun M. Moss, Ph.D.