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AquaFish Research on Feeds Contributes to Lifting of Cambodian Snakehead Ban

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AquaFish research opens door to economic opportunities



A farmer poses next to a bag of alternative protein feed developed by AquaFish researchers.

Fisheries of the Lower Mekong Basin provide the means to create food security and nutrition for 60 million people in Cambodia and Vietnam. While aquaculture of snakehead (*Channa striata*) in Vietnam has been gaining in popularity because of its high market value, snakehead farming was banned in neighboring Cambodia in 2004 in an effort to alleviate pressure on wild populations of small, low-value, freshwater fish that were being harvested for snakehead feed.

AquaFish Innovation Lab researchers — at the Inland Fisheries Research and Development Institute in Cambodia, Can Tho University in Vietnam, and the University of Connecticut–Avery Point, University of Rhode Island, and Oregon State University in the US — have been working in the region since the ban to develop technologies and strategies to create a sustainable snakehead aquaculture program that can meet consumer demand.

These efforts have focused on domestication of snakehead, formulating alternative protein commercial feeds, and developing protocols for weaning and grow-out of hatchery-reared snakehead on formulated feeds.

Traditional methods of culturing snakehead involve catching juvenile striped snakehead (*Channa striata*) from the wild, holding them in ponds or cages, and feeding them wild-caught low-value fish.

AquaFish research in Vietnam first developed a pelleted snakehead feed that contained 40% plant (soy) protein — a far more sustainable protein source than that found in typical fish feed. Mannan oligosaccharide (MO), an immune stimulant, was tested as a feed supplement in the same study. Incorporating a 0.2% to 0.4% level of MO in snakehead diets yielded better growth performance and higher immune response in the fish.

Once the feed was successfully adopted by feed mills and farmers in Vietnam, AquaFish researchers compared the weaning and grow-out performance of wild, indigenous snakehead in Cambodia to that of domesticated snakehead from Vietnamese hatcheries using pelleted diets that contained a combination of soybean and fish meal. The Vietnamese

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An AquaFish researcher holds a bowl of alternative protein feed.

hatchery fish showed a higher growth rate than that of wild Cambodian snakehead.

Outreach to spread information about the technology has already begun in the form of trainings about sustainable, small-scale snakehead culture for women in the Lower Mekong. Today, more than 90 percent for snakehead farmers use a pelleted feed that combines fish and soybean meals.

Cambodia's Fisheries Administration ultimately relied on information from AquaFish researchers regarding their investigations of snakehead domestication and breeding, weaning, and grow-out in considering a change to Cambodia's snakehead policy.

The ban on snakehead farming in Cambodia was lifted earlier this year, in April 2016. AquaFish-supported research played a critical role by informing the design and implementation of a successful and sustainable snakehead aquaculture policy.

Success in ending the ban not only opens the door for improved economic opportunities and better nutrition and food security for Cambodians but also promises to alleviate the environmental impacts of overfishing in the Lower Mekong Basin.