Breeding hybrid catfish
6 December 2013, by Sandra Avant

ARS scientists are helping catfish farmers increase production by breeding hybrid catfish—crosses between channel catfish and blue catfish like these.

In the catfish industry, it's well-known that hybrid catfish—a cross of the channel catfish with the blue catfish—generally have better growth, higher survival rates and better meat yield than purebred channel catfish. Although production has increased from 30 million hybrid fry in 2007 to about 150 million in 2012, these fish are not easy to breed.

Thanks to U.S. Department of Agriculture (USDA) scientists, producers are getting help learning how to produce hybrids. Using hybrids instead of channel catfish could increase their production by 20 to 30 percent.

Unlike channel catfish that spawn naturally, the hybrid catfish is a cross between two species that rarely mate with each other. Hybrid fry production involves hormone-assisted reproduction. Geneticists Brian Bosworth and Nagaraj Chatakondi in the Agricultural Research Service (ARS) Warmwater Aquaculture Research Unit in Stoneville, Miss., work with their Mississippi State University colleagues at the Thad Cochran National Warmwater Aquaculture Center to give hands-on training to farmers who are learning about the hybrid breeding process. ARS is USDA's chief intramural scientific research agency.

In addition, ARS scientists study catfish nutrition, genetics and management practices to produce a better catfish, whether it's channel, blue or hybrid. Research includes improving hybrid embryo production by determining the effects of the calcium content of the water on the hatching success of eggs, and developing a method to identify poor-quality eggs before they hatch.

Geoff Waldbieser, a ARS molecular biologist at Stoneville, is developing DNA markers for channel and blue catfish to determine genetic diversity, produce pedigree populations and identify markers associated with important traits like meat yield and disease resistance. Also at Stoneville, ARS physiologist Brian Peterson is investigating the relationship between gene expression, catfish growth and immune function.

While great improvement has been made in catfish breeding, one goal is to provide research to help U.S producers grappling with a slow economy, high feed costs and fish imports from foreign countries. Studies are under way to determine desirable heritable traits, improve germplasm, identify crucial water-quality factors, and develop better production systems.

More information: Read more about this research in the November/December 2013 issue of Agricultural Research magazine.

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