



## REQUEST FOR PRE-PROPOSALS

*Please Copy and Distribute to All Interested Parties*

The USDA-NIFA Southern Regional Aquaculture Center solicits response from qualified multi-state teams interested in participating in the regional project:

### **Increasing Protein Retention and Managing Ammonia Concentrations in Pond Culture of Hybrid Striped Bass and Catfish**

SRAC's Board of Directors has authorized up to \$300,000 for a 3-year project on *Increasing Protein Retention and Managing Ammonia Concentrations in Pond Culture of Hybrid Striped Bass and Catfish*. This project will be developed using the "comprehensive method" where a team of multi-state scientists having demonstrated records of expertise in the subject complete a single pre-proposal that addresses all project objectives. One proposal will be selected for funding based on review by a committee of scientists not involved in any of the proposals that are submitted. No funds are currently obligated or authorized by USDA NIFA and therefore no awards will be made in this RFP cycle until SRAC receives the funds from USDA. The RFP may be withdrawn or start dates delayed based on timing of USDA NIFA funding.

#### **Background**

Given that protein is the most expensive component of fish diets, it is critical to maximize its utilization and retention in cultured fish. Not only will this increase production efficiency, but it also will reduce the amount of ammonia excreted into the culture system. It is well established that hybrid striped bass (HSB) are much more sensitive to elevated ammonia concentrations in pond culture compared to other warmwater species such as channel catfish and tilapia. Water exchange or addition of pond amendments consisting of carbon-rich products such as granulated sugar have been used in commercial HSB culture to reduce ammonia concentrations. In addition, feeding of HSB often is restricted or curtailed for periods of time when ammonia levels exceed certain limits set by HSB producers based on personal experience. These management strategies are costly, limit fish production, and/or increase the time to market. Certain dietary manipulations hold promise as potential means to increase HSB and catfish production while limiting nutrient excretion into the water.

#### **Objectives**

1. Evaluate under controlled conditions alternative carbon sources that may be more effective or less expensive in controlling unionized ammonia in pond culture. Candidates include *Yucca schidigera* extract, cassava starch, corn starch, corn syrup, rice bran, or other sugar-rich products. Probiotics and/or other water amendments also may be considered.
2. Evaluate the supplementation of diets with additives such as black cumin seed, extract from *Yucca*, and exogenous enzymes such as carbohydrase, phytase, protease or a combination to

improve protein digestion and nitrogen retention of HSB and catfish, thereby reducing ammonia excretion.

3. Based on pond studies, conduct an economic analysis to quantify the relative economic impact of the evaluated ammonia control practices as well as the diet manipulations and feeding practices under production conditions.

### **Experimental Approach**

Initial experiments concerning pond amendments and dietary manipulations will be conducted under controlled laboratory conditions or mesocosm type enclosures after which the most promising treatments will be evaluated under pond culture conditions. In terms of dietary supplements, controlled laboratory studies should quantify nitrogen retention in the animal, shifts in digestibility values. As appropriate, excreted waste could also be determined. In terms of the evaluation of carbon sources, preliminary trials could be conducted under controlled laboratory condition or using mesocosms. The economic impact of various strategies will be quantified to allow producers to make informed decisions regarding the supplementation of diet additives and control of ammonia levels in pond production

### **How to Respond**

Pre-proposals must address all objectives. Preference will be given to pre-proposals that show a high degree of collaboration and coordination among participants. To meet the criterion for a regional project, the pre-proposal must include collaboration from scientists in two or more states or territories in the Southern Region (Alabama, Arkansas, Florida, Georgia, Kentucky, Louisiana, Mississippi, North Carolina, Oklahoma, Puerto Rico, South Carolina, Tennessee, Texas, U.S. Virgin Islands, and Virginia).

The pre-proposal must include a one-page vita for each participant and a proposed budget for each participating institution or organization. Pre-proposals, vitae, and budgets that are not in the proper format will not be considered. (See “Guidelines for Writing a SRAC Pre-Proposal (Comprehensive)” file attached or contact Kristen Walters with the SRAC office at 662-686-3269.)

Send an electronic copy of the pre-proposal in Word format to Jimmy Avery, SRAC Director as an email attachment ([jimmy.avery@msstate.edu](mailto:jimmy.avery@msstate.edu)) by **July 1, 2025**. Proposals received after that date will not be considered.