



REQUEST FOR PRE-PROPOSALS

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

EVALUATION OF PROTEIN AND LIPID CONCENTRATIONS IN COMMERCIALY AVAILABLE TILAPIA FEEDS AND THEIR EFFECTS IN INTENSIVE PRODUCTION SYSTEMS

SRAC's Board of Directors has authorized up to \$200,000 for a 2-year project investigating protein and lipid concentrations in commercially available tilapia feeds and their effects in intensive production systems. This project will be developed using the "competitive proposal 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.

Background

Lipid and protein levels in commercial tilapia feeds used in U.S. intensive systems vary widely. Reported protein levels range from 34 to 42% and lipids from 6 to 14%; with typical formulations having protein/lipid levels of 36/6, 38/8 and 40/10. Apparently there is not general agreement amongst growers about which formulation is "best" in an intensive commercial system. This is in part, because some growers question the applicability of nutrition information developed in "small scale" systems with pristine water quality or formulations used in pond culture where natural productivity is present. If commercial intensive systems suitable for research are identified, nutrition studies, in conjunction with feed companies and utilizing these larger systems, could improve the information set that growers find credible and useful. This could tighten the range of "best" diets and determine which of the above combinations of protein/lipid percentages can optimize the cost-effectiveness of fish production and water quality management in intensive recirculating aquaculture systems (RAS). Such information could improve the efficiency and profitability of tilapia production in the Southern U.S. where growers use intensive RAS.

Objectives

- 1) In Year one, evaluate typical commercial diet formulations with different levels of protein and lipid to assess dietary effects on fish production and water quality parameters (i.e., total suspended solids, biochemical oxygen demand, and production of organic matter) in commercial intensive RAS. Economic analyses also will be conducted to determine the most cost-effective formulations under RAS conditions.
- 2) In Year two, using Year one results and in cooperation with a feed mill(s), test new diets with fine-tuned protein and lipids levels to see if these new test diets improve gross operating income.

Experimental Approach

In Year 1, this project should be conducted in commercial facilities where a limited number of presently available commercial diets (e.g., 36/6 versus 40/10) can be evaluated in replicate tanks on isolated RAS. In Year 2, it is anticipated that the diets to be evaluated will be produced by commercial manufacturer(s)

and composed of the same ingredients but vary in protein and lipid levels. Evaluations, in both years, will be directed towards fish in the size range of 100 to 500 g and trials should be of at least 3-months duration to allow adequate production data to be collected. This would allow multiple evaluations to be conducted at several sites each year of the project. It is anticipated that commercial producers participating in the project will have the opportunity to receive compensation for dedicating some of their facilities to the project. Their participation in the project will allow some expenses such as feed, expendable supplies, sample analyses and/or labor to be covered to a limited extent (~\$10,000 per year). How the compensation is to be paid should be specified. The compensation plan should incentivize commercial producers and ensure their participation through project completion. These producers also will be assisted by university researchers/personnel in collecting, compiling, and analyzing production data as well as subsequent economic analyses.

Proposals will be evaluated on the basis of the project team's research experience, productivity, complimentary expertise, as well as the availability of appropriate commercial culture facilities, potential collaborations with feed companies, and other resource arrangements required to implement the research in a cost-efficient manner. Preference will be given to pre-proposals clearly delineating the relationship among project participants. Adequately replicated experiments simulating commercial production with appropriate statistical design and analysis will be required. Cooperative efforts among commercial fish producers, academic institutions, and agencies are encouraged while duplication of effort and overlap with existing projects should be avoided. Proposals leveraging existing resources and infrastructure will be looked upon favorably. Pre-proposals should include a list of commercial collaborators and a brief description of these existing systems and other contributions to the proposed project.

How to Respond

Pre-proposals must address both 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. The *Guidelines for Writing a SRAC Pre-proposal (Comprehensive)* contains an example of a pre-proposal. Contact Kristen Thompson at 662-686-3269 for any assistance.

Send an electronic copy of the pre-proposal in Word format to Jimmy Avery, SRAC Director as an email attachment (jimmy.avery@msstate.edu) **by August 7, 2016**. Proposals received after that date will not be considered.