

2010-2012 Summary of Funded Projects



The Regional Aquaculture Centers are funded through the USDA National Institute of Food and Agriculture with a history over 25 consecutive years. The combined five regional centers represent a national program that covers and reaches all states and territories in the US. The program is unique with the participation of aquaculture industry representatives appointed to an Industry Advisory Council who identify regional research and extension education priorities for project development and monitor progress and outcomes. Other project development and oversight bodies include a Technical Advisory Committee and Board of Directors.

This material updates past project summaries that covered the period 2005-2010. For more information about the listed projects as well as past projects, please visit the home page for each of the five Regional Aquaculture Centers that is referenced below.

North Central Regional Aquaculture Center (NCRAC)

Director: Joe Morris, Iowa State University

Home page: <http://www.ncrac.org/>

Evaluate Phase II Production of Bluegill Sunfish Comparing a Least-Cost Diet Utilized in the Phase I Verification Study Compared to an “Industry Standard” for One Production Cycle

Funding level: \$75,000

Project start date: 1 September 2012

Project duration: 1 year

Participants: Lincoln University, Purdue University, University of Wisconsin-Stevens Point

Results garnered from this project will provide the aquaculture industry with relevant, field-tested information related to the culture of age-2 bluegills using least-cost experimental diets. Project results will be coordinated with the NCRAC Technical Committee/Extension Subcommittee to provide deliverables, such as technical bulletins, containing such detailed information as growth, production parameters, size composition, and survival using data collected over grow-out to market size.

Economic Impact Assessment

Funding level: \$115,000

Project start date: 1 September 2012

Project duration: 2 years

Participants: Ohio State University, University of Wisconsin-Stevens Point, University of Wisconsin-Extension

This project will conduct direct mail- and electronic media-based surveys of aquaculture producers throughout the 12-state region and a variety of suppliers and end users in selected states. The purpose of these surveys is to collect information that characterizes the size and scope of the aquaculture industry as it relates to each of the states within the region, and the region as a whole. An appropriate IMPLAN (a statistical software program) analysis will be done for each state and the region. Finally, 1 regional and 12 state publications will be done containing selected findings of the analyses along with descriptive summaries for use by extension personnel, educators, researchers, and the industry. An overall report including an executive summary detailing the specifics of the survey findings and IMPLAN analysis will also be produced.

Probiotics in Yellow Perch and Tilapia Culture

Funding level: \$240,000

Project start date: September 2012

Project duration: 2 years

Participants: Ohio State University, University of Minnesota

The proposed studies include comprehensive characterization of the bacterial flora found in the yellow perch digestive tract and surrounding water in production facilities in this region. Results will be used to identify probiotic bacteria that are inhibitory to yellow perch pathogens. It is expected that probiotic strains will be identified that can protect yellow perch juveniles from infection by at least two common pathogens, *Aeromonas* and *Vibrio* species without negative effects on the fish. The probiotics identified in this study can potentially contribute to sustainable development of the aquaculture industry and help meet future organic standards when finalized. The effects of probiotics on the microbial communities, gut development, and resulting growth characteristics need to be elucidated if optimal fish growth, development, and health are to be realized.

3rd Regional Aquaculture Extension Specialist (RAES) Project

Funding level: \$196,612

Project start date: September 2011

Project duration: 2 years

Participants: Michigan State University

This project team consists of a Principal Investigator, two non-funded collaborators, an Industry Advisory Council Liaison, and an Extension Liaison. While NCRAC funded projects typically involve active participation by extension and research groups from two or more states in the region, this program is well suited for committee oversight of a single full-time

Extension specialist to achieve regional extension objectives. This role helps augment the limited number of Extension professionals working in aquaculture in the region and assist others with partial duties in numerous states. The regional Extension specialist provides team members updates on project activities and facilitates a minimum of two teleconferences annually.

Assessment of Carbon Dioxide (CO₂) and Inorganic Nitrogen Compounds to Enhance Winter-Kill in Natural Rearing Ponds used for Fish Production in the North Central Region

Funding level: \$175,000

Project start date: September 2011

Project duration: 2 years

Participants: U.S. Geological Survey, Ohio State University, U.S. Geological Survey, Northern Rocky Mountain Science Center

Natural winter-kills effectively eliminate unwanted fish species from commercial rearing ponds, saving producers time and money. However, winter-kill conditions occur sporadically and are difficult to predict. Eliminating unwanted species (e.g., bullhead, carp, etc.) by enhancing natural winter-kill conditions can increase harvest and productivity of desired cultured species. Identification of methods that consistently and inexpensively enhance natural winter-kill conditions is needed to enhance this natural process and ensure winter-kill conditions are reliably achieved in natural rearing ponds.

Efficacy of Eugenol to Reduce Transport Stress and Mortality of Tilapia and Yellow Perch

Funding level: \$100,000

Project start date: September 2011

Project duration: 2 years

Participants: U.S. Geological Survey, Upper Midwest Environmental Sciences Center, University of Wisconsin-Stevens Point

This project is assessing the use of eugenol, a natural fish anesthetic, to enhance post-transport survival and increase loading density during long duration (>12 h) live fish transport. This study will be initiated with a thorough review of the literature to compile existing data on the use of sedatives during fish transport. The Upper Midwest Environmental Sciences Center (UMESC) will schedule a pre-submission conference with the Food and Drug Administration (FDA) to discuss needed study parameters to be included into the final study protocols for the project. UMESC and the University of Wisconsin-Stevens Point will collaboratively prepare the protocols. UMESC will submit the protocols to FDA through a publicly-disclosed Investigational New Animal Drug (INAD) permit for eugenol and will request FDA review and approval of the protocol prior to conducting the study.

Aquaculture: NCRAC and MarketMaker™ Collaboration

Funding level: \$23,565

Project start date: September 2010

Project duration: 1 year

Participant: Iowa State University

With respect to production coordination, marketing outreach, and production demographics, North Central Region aquaculture producers are an underserved producer group. This project increases producer visibility, enabling producers to create easily executed market evaluations and customer-contact strategies. These goals will be achieved by utilizing the rapidly growing web-based marketing tool MarketMaker™, a national partnership of Land Grant institutions and State Departments of Agriculture, dedicated to the development of a comprehensive interactive data base of food-industry marketing and business data.

Evaluation of the Newly-Developed Least-Cost Experimental Diet for Bluegill at Commercial Densities in Ponds at Two or More Facilities in the North Central Region

Funding level: \$124,400

Project start date: September 2010

Project duration: 2 years

Participants: Iowa State University (Lead Institution), Lincoln University, Purdue University

A need exists to reduce production costs using more nutritionally adequate diets for emerging aquaculture species in the region. The aim of this study is to evaluate a diet for juvenile bluegill developed in an earlier project that is both significantly less costly than currently available diets for sunfish, but also at least comparable in growth rate.

Determination of Production Parameters of Selected Yellow Perch Lines at Commercial Densities in Ponds at Two or More Facilities in the North Central Region

Funding level: \$150,000

Project start date: September 2010

Project duration: 3 years

Participants: Ohio State University (Lead Institution), University of Wisconsin-Stevens Point

The impact of this proposed project will be realized through the delivery of superior yellow perch strains to farmers for use in a wide-range of culture conditions across the region. The greatest return on investment for this project is the ultimate reduction in production costs due to increased growth rate and reduced feed costs by using genetically improved

strains. At the completion of this project, multiplication stations will be established to produce enough fry/fingerlings from improved strains for fish farmers in the region. Improved strains should show increased growth by 20-25% per generation and have a tremendous positive impact on the regional yellow perch aquaculture industry.