

**Department of Agriculture, Trade and Consumer Protection**  
**Division of Agricultural Development**  
**Agricultural Development & Diversification Program (ADD)**  
**Grant Project Final Report**

Contract Number: 23001

Grant Project Title: A commercial demonstration of new technologies for producing walleye and hybrid walleye for stocking and food fish.

Amount of Funding Awarded: \$24,205

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Report Submitted on: 7/8/10

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Please use the following questions as a guide for writing your grant project final report. In your final report, please answer each question as it relates to your grant project.

1) What was the original intent of the grant?

The goal of this project is to use a combination of recently developed technologies for raising large walleye and hybrid walleye in a single growing season. Walleye have been raised for many years by both the private and public sector, but new technologies are now available to raise these fish to a much larger size. Our project will demonstrate the potential for the commercial use of these technologies in Wisconsin fish farms to produce two products for which strong markets are already established.

- How was it expected to benefit Wisconsin Agriculture?  
Provides and demonstrates the technology to produce two products for which strong markets exist, this project should lead to expansion of aqua industry and its profitability.
- What makes this project work important or significant?

Establishes and demonstrates technological feasibility to produce walleye and hybrid walleye for both stocking and food fish use.

2) What steps did you take to reach your goal?

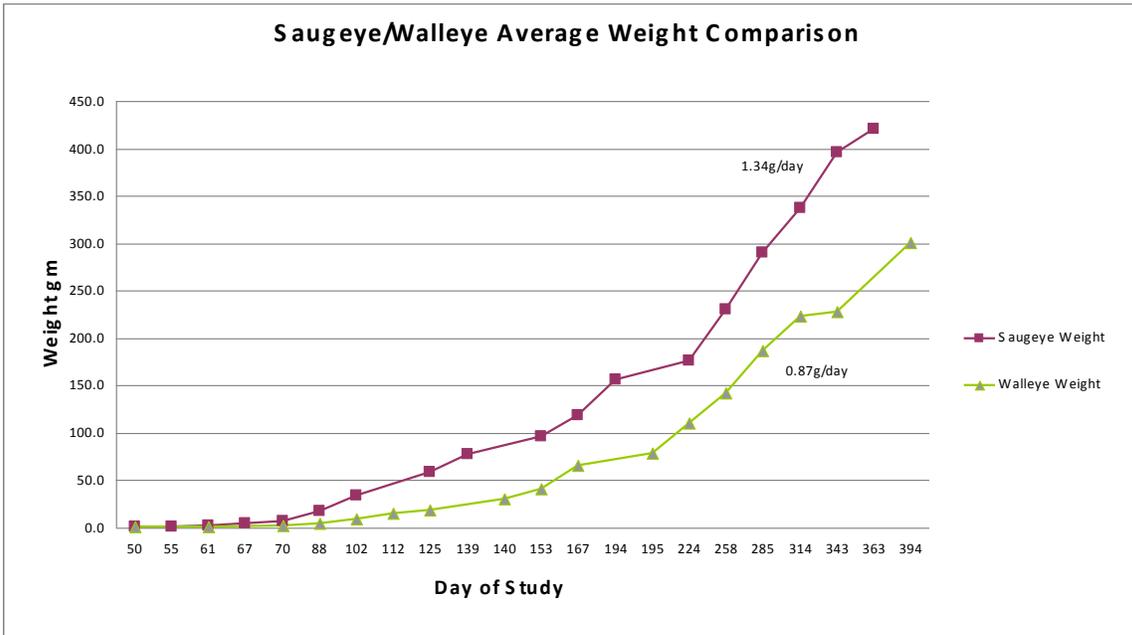
Acquired walleye and sauger broodstock, hybridized walleye and sauger, spawned broodstock early and collected eggs, incubated and hatched eggs, feed trained larvae and raised fish to market size in RAS on commercial diets. Marketed fish in conjunction with two commercial Wisconsin fish farms.

- What worked? Key step = indoor larval rearing on formulated food. We were successful in raising walleye, hybrid walleye and sauger intensively on commercial diet utilizing an indoor

RAS system. Large size and fast growth in short time period was crucial. First comments from industry collaborators indicate great market acceptance of ½ - 1 lb hybrids and good profit potential.

- What challenges did you face? Collecting broodstock from multiple locations and states, acquiring proper permits and fish health assessments, spawning out of season, feed training larvae fish with specific feeds and methodology, specialized rearing tank conditions and cleaning systems, fin erosion and deformities with purebred walleye, collecting data throughout the entire rearing time period.
  - What would you do differently? Collect broodstock in fall, modify clean and feed management schemes, lower density of small fish in tank earlier, run higher densities of larger fish in RAS tanks.
- 3) What were you able to accomplish? Successfully raised hybrid walleyes and purebred walleyes to market size (¾-1.0 lb) in 1 year intensively in a water recycle system utilizing new technologies and supplied them to processors for market analysis. Successfully collected and spawned walleye and sauger early out of season utilizing a variety of methodology and created hybrid walleye (saugeye) for food fish production. Installed new equipment and systems to successfully raise larvae walleye and hybrid walleye on pelleted commercial diets intensively. Developed and implemented growout protocols for rearing of saugeye and walleye in a recycle water system.

What are the results from this project? Very good growth rates and production potential in one year. See growth rate summaries below.



**Fillet Yield Average (Scaled, Skin On)**

Fillet yield averaged 50% for fish less than 227 g (3/4 lb).

Fillet yield averaged 45% for fish larger than 227g (3/4lb)

High consumer acceptance of this product may result in good market value vs. cost of production. Consumer testing (taste test) to date of hybrid walleye fillets has received very good reviews.

### **Outreach/Extension**

This information has been shared with the industry at the 2010 Wisconsin Aquaculture Association Annual Conference and at the 2010 UWSP- NADF Field Days Workshop/Conference.

May 7, 2009 article on project in The County Journal, Washburn, WI.

- 4) What conclusions can you make based on project work the analysis of collected data? Hybrid walleye can be successfully raised to market size in 1 year in an RAS and may prove to be a profitable aquaculture species in Wisconsin. Purebred walleye and sauger larvae can also be raised successfully on commercial feed intensively utilizing new technologies potentially for a stocking market. Generated lots of interest in private sector – work became the focus of NADF field days 2010.
- 4) What do you plan to do in the future as a result of this project? Continue research development especially on early feed training and maximizing survival, need to gather economic information and a little more demonstration, working directly with private sector.
- 5) What information or additional resources are needed to commercially develop this enterprise? Commercial application of research with larger scale projects and funding to continue. Economic info – is it profitable? More outreach and extension to get production into private sector.
- 6) How should the agricultural industry use the results from your grant project? Implement them on their operations.



## **NADF PROJECT SUMMARY**

**Title:**

A commercial demonstration of new technologies for producing walleye and hybrid walleye for stocking and food fish.

**Dates:**

2008-2010

**Support:**

NADF, DATCP-ADD

**Facilities/Resources utilized/needed:**

NADF – ponds, egg hatching facilities, fry/fingerling rearing (60g tanks), RAS

UW-Madison – ponds

Star Prairie-Processing/Market

Northside Enterprises-RAS

**Lead Personnel:**

Greg, Kendall, Jeff, Jim

**Collaborators:**

Iowa DNR, Genoa Fish Hatchery, Northside Enterprises, Star Prairie

**Targeted audience/end user groups:**

Private and public sector walleye producers

**Goal/Objectives:**

The goal of this project is to use a combination of recently developed technologies for raising large walleye and hybrid walleye in a single growing season. Walleye have been raised for many years by both the private and public sector, but new technologies are now available to raise these fish to a much larger size. One focus is on methods to eliminate the need for expensive pinhead forage for advanced growout of walleye. Hybrid walleye potentially show promise as a food fish due to fast growth and feed acceptance. Focus on growout of hybrid walleye to market size and time period to achieve that will be explored.

**Progress (include statistical outcomes, specific findings, additional information)**

Grant submitted and approved by DATCP.

Walleye/sauger broodstock were obtained in spring, 2008, but summer survival in pond was poor. Additional broodstock collected in winter 2008/09.

Fall 2008. Visit to Rathbun hatchery and Alan Johnson (Greg, Jeff, Jim) to learn indoor fry culture rearing techniques.

Winter 2008. Fry culture facilities developed and equipment installed and systems tested.

Early spring 2009. Broodstock injected with HCG and successfully spawned approximately 1 month before normal spawn.

Spring 2009. Additional walleye/sauger spawned for project with assistance from Genoa NFH and Genoa USFWS.

June 2009. hybrid walleye sent to UW-Madison research ponds for evaluation.

June-Sept 2009. Feed trained walleyes placed into NADF pond and fed minnows. Harvested from pond in Sept.

2009-2010. Purebred and hybrid walleye successfully reared utilizing fry culture techniques and formulated feed. Fish successfully moved to indoor RAS system at NADF and raised to market size in 1 year on commercial feed.

Spring 2010. Hybrid and purebred walleye grown to market size (1.0 lb) in one year and sent to WI processors for market analysis.

Spring 2010. Continued project with spawning of broodstock spring of 2010. Conducted studies on early spawning techniques and regular spawning techniques and iodine useage. Both attempts were successful. Iodine during water hardening resulted in 80% mortality.

2010. Purebred and hybrid walleye successfully reared utilizing fry culture techniques and formulated feed. Fish successfully moved to indoor RAS system at NADF for continued rearing. Indoor purebred walleyes moved to outdoor ponds being fed minnows to look at acceptance percentage. Some purebred walleyes were moved to outdoor ponds on commercial feed in small kiddie pools.

**Impacts:**

This project will demonstrate the feasibility of increasing the production of advanced walleye fingerlings for stocking recreational sport fisheries. It will also demonstrate the feasibility and profitability of one or more integrated systems for producing hybrid walleye from fry to final food size product in one growing season. We fully expect our studies to demonstrate that the break-even costs of hybrid walleye production will be significantly lower than current market prices for this product, thus allowing for profitable commercial production. This project will also serve as the vehicle to transfer all of the information generated to appropriate end user groups.

Information presented at 2010 WAA conference, 2010 NADF field days, and 2010 IRAS Conference

**Follow-up needed:**

2008 ADD grant period and report is finished.  
Waiting to hear on 2010 ADD grant application