
Workforce Education & Training for Environmentally & Economically Sustainable Great Lakes Aquaculture

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Workforce Education & Training Opportunities

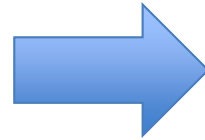
- University of Wisconsin-Sea Grant Institute
 - Funded: 10/1/13 – 9/30/15
 - Co-Investigators
 - Chris Hartleb & Greg Fischer (UWSP)
 - Fred Binkowski (UWM)
 - Larry Wawronowicz (Lac du Flambeau, BLSCI)
 - Collaborators
 - Jim Held & Ron Johnson (UW-Ext)



Objectives



- Develop 9 short courses
- Deliver those short courses using a hybrid approach:
 - Online video lectures
 - In-person 2-4 day workshops
- Topics range from introductory to advanced



Business Plan & Site Selection

- Starting or expanding a business
 - Online
 - Economic and financial analysis
 - Enterprise budgets
 - Balance sheets
 - Income statements
 - Cash flow budget
 - Business feasibility
 - Workshop
 - Develop your business plan
 - Site selection
 - Including use of WI Aquaculture GIS model
 - Fish type and/or production type considerations
 - Environmental & economic sustainability



Permitting & Regulations

- Online
 - Overview federal, state, Tribal, & local permitting & regulations
 - Water use
 - Great Lakes Compact impact
 - Discharge
 - Construction
 - Operation
 - Processing
 - Sales
- Workshop
 - Reasons & needs for permits & regulations
 - Individual assessment
 - Goal of sustainably, environmentally sound & economically viable



Marketing

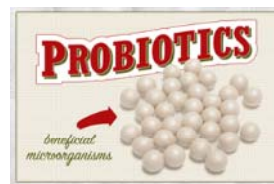
- Online
 - Overview of Sea Grant & HACCP in safe & secure seafood
 - Aquaculture-specific marketing
 - Resources
 - Analyzing market potential & trends
- Workshop
 - Develop marketing plans
 - Wholesale, retail, value-added, fee fishing goals
 - Individual market analysis



Feeding & Nutrition

- Online
 - Review nutrition for herbivores, omnivores and carnivores
 - Review feeding practices
 - Recent advances in feed formulations

- Probiotics
- Microencapsulated
- Plant meal-based

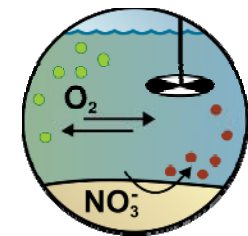


- Workshop
 - Demonstrate newer diets with success stories
 - Show examples of probiotics & plant meal diets
 - Participants will develop feeding schedules & feeding practices for their systems



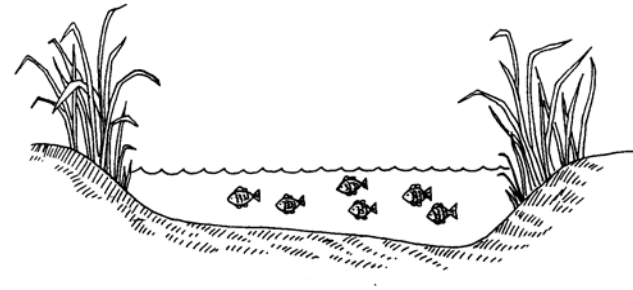
Fish Health & Diseases

- Online
 - Biosecurity programs
 - Fish disease management
 - Biological & medical nature of fish diseases
 - Approved drug therapy program
- Workshop
 - Develop risk management & biosecurity tools for farm
 - Water quality management
 - Fish health inspection step-by-step
 - Treatment options (partnership with veterinarian)



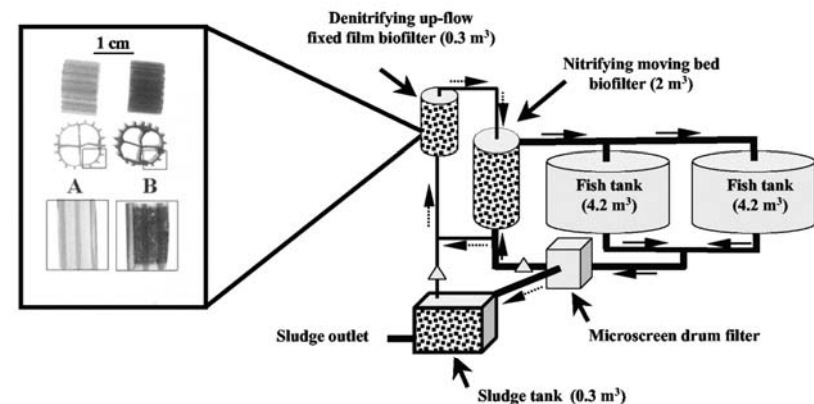
Pond Culture & Water Quality

- Online
 - Pond construction & filling
 - Water supply
 - Food chain principles
 - Monitoring water quality
 - Biology of pond cultured fish for northern climate species
- Workshop
 - Example using walleye: fingerlings to extended growth
 - Pond fertilization application
 - Stocking
 - Water quality monitoring
 - Aquatic vegetation control
 - Harvesting



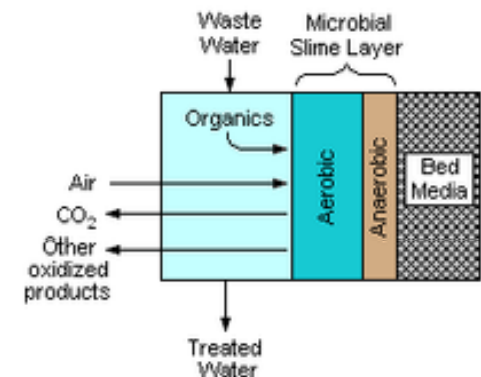
Cool & Cold Water Fish in Recirculating Aquaculture Systems

- Online
 - RAS components: required and optional
 - Functions and advancements
- Workshop
 - Rearing tank design advances
 - Harvesting from RAS
 - Waste removal
 - Solids capture and filtration



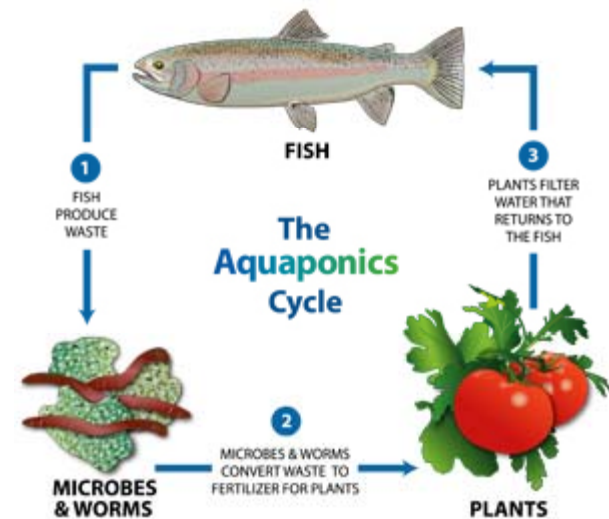
Principles of Biofiltration

- Online
 - Review how biological filters facilitate microbial transformation of nitrogenous waste
 - Role of biofilters in aquaculture & aquaponics
 - Media choices
 - RAS startup time based on filters
- Workshop
 - Examine properties of dissolved waste
 - Examine biological/microbial transformation process
 - Management of biofilters
 - Measure water quality factors



Aquaponics

- Online
 - Fundamentals of aquaponics
 - Component ratios
 - Fish and plant biology
 - Fish health
- Workshop
 - Biotic and abiotic requirements of aquaponics
 - Commercial fish culture in aquaponics
 - Fish health management
 - Integration of aquaculture & aquaponics



UW-System Economic Development

- Funded: 7/1/13 – 6/30/15
- Co-investigators:
 - UW-Stevens Point
 - UW-Extension
- Aquaculture Business Incubator
 - Continuing education
 - On-farm training
 - Workshops
 - Technology transfer
- Aquaponic Innovation Center
 - Collaborations
 - Professional certificate program
 - Workforce training



Be Involved!



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UW
Extension

