

A vertical bar on the left side of the slide, consisting of several colored segments: a white segment at the top, followed by a thin black segment, a yellow segment, a thin grey segment, and a long pink segment at the bottom.

# POND CULTURE

Systems Overview, eXtension Webinar, November 8<sup>th</sup> 2011

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# Pond environment

- Typically has little short term water exchange.
- Microscopic algae produces dissolved oxygen (D.O.) in the presence of sunlight, but consumes D.O. through respiration.
- Fish feed and waste provides pond nutrients which helps produce algae or “algae blooms.”
- Pond cycles nutrients – most importantly phosphorus for algae production.
- Algae and fish populations must be managed at the same time.

Grow only what you can sell, eat or use! Find a market first!

You will need:



- A good pond site
- With proper soil types
- Enough water or adequate watershed to fill the pond
- Proper permits? Keep it legal!
- Reputable excavator
- Cost may be \$2,000 - \$7,000 per acre

# Water source?

- Groundwater is best!  
Contains the least contaminants and usually provides a consistent supply.  
20 – 50 gal./min./acre is best.

Surface water from rivers, streams, reservoirs.  
Water should be filtered.

Watershed, or runoff sources – are often not available year round.



# Pond type, size and depth?

- Levee style
- Watershed
- Hybrid of these
- Partitioned or re-circulating aquaculture ponds
- Type of pond depends on site topography
- Water source
- Species grown



# Pond construction

- Lined with compacted clay soils to retain water.
- Proper sub-soils with at least 20%–30% clay content
- Full pond access
- Road access
- Electricity
- Drain structure



# Levee ponds

- Require relatively flat land : 2 to 5% slope is best
- Has minimal watershed
- 4 to 6 feet deep to allow seining and help manage water quality.
- May be 1/2 to 20 surface acres.



# Watershed ponds

- Tend to be deeper than levee ponds
- Must allow seining
- Drawdown may be required to seine
- Water source is less reliable
- Reduce fish stocking accordingly



# Fish feeding



- Fingerlings (small fish) and adult fish are typically grown in separate ponds
- Fish are fed a diet that may range from 22% to 50% protein
- Daily feeding rates in ponds may be 1% to 10% of fish body weight or, all of the floating feed larger fish will eat in 20 - 30 minutes.

# Fish production example: KY multi-batch channel catfish



- Fish stocked: 5,000/acre
- Annual yield ~ 5,000 lbs per acre
- Annual mortality 10%?
- Food conversion ~3:1
- Maximum feed rate: 130 lbs/acre/day
- 32% protein feed fed daily

# Pond water aeration

- Aeration may be used during day or night when D.O. gets below 5 to 3 mg/L depending on the species grown.
- Aeration forces air into the water to create a D.O. zone for fish.
- May be needed when feed rate exceeds 30 lbs/acre/day.



# Approximate grow-out stocking rates of various fish species per acre



- Channel catfish: 5,000 – 7,000
- Hybrid striped bass: 3,500 - 4,500
- Largemouth bass: 5,000 - 6,000
- Freshwater shrimp juveniles: 16,000 - 24,000

# Other: Freshwater shrimp pond

- With drain and internal catch basin
- Shrimp are fed a prepared feed
- Shrimp must be harvested by draining the pond



# Crawfish pond



- Shallow ponds ~ 2 feet average depth
- Rows of flooded forage and harvest traps
- Crawfish eat the microbes associated with the decaying vegetation.

# Some disadvantages of pond culture

- Land costs
- Land intensive practice
- Construction costs
- Ponds may need renovation every 8 to 10 years
- Difficult to keep track of fish inventories
- Subject to predators and pathogens
- You must compensate for weather events, temperature, water quality and algal blooms while managing the fish.

# Some advantages of pond culture

- A low tech method of fish culture
- More forgiving than other , more intensively stocked production systems
- Pond culture works well with other farm crop operations
- Minimal labor can manage a lot of pond acreage
- Non-productive farm land may be converted to fish production ponds.

# Thank You!

