Pond Aquaculture: Production Economics and Enterprise Budgeting

Susan T. Kohler, Ph.D.
Office of Economic and Regional Development
Southern Illinois University Carbondale
Carbondale, IL
HAVE YOU MADE AN ESTIMATE OF INVESTMENT COSTS, OPERATING COSTS AND RETURNS?
WILL THE EXPECTED PROFIT PROVIDE AN ADEQUATE RETURN FOR YOUR LABOR, MANAGEMENT AND RISK?
COSTS TO CONSIDER

- Investment or capital costs
- Variable costs
- Fixed costs
Capital and construction costs that must be committed before the first fish is stocked
INVESTMENT REQUIREMENTS

- Land
- Pond construction
- Drain pipe & fittings
- Wells / water supply
- Water pumps and pipes
- Electric power lines
- Aerators
- Boat and motor
- Hauling tanks & agitators
- Truck
- Feed storage bins
- Tractor
- Mower
- Oxygen meter
- Water testing equipment
- Seines
- Dip nets
- Feed wagon/blower
- Waders and boots
- Baskets and buckets
- Storage buildings
- Miscellaneous equipment
VARIABLE COSTS

Costs which vary with the level of production
VARIABLE COSTS

- Fingerlings
- Feed
- Interest on operating capital
- Labor
- Repair & maintenance of equipment
- Electricity
- Fuel
- Chemicals
- Sales / harvest costs
- Office equipment
FIXED COSTS

Costs which once the enterprise is underway, are incurred regardless of the level of production.
**FIXED COSTS**

- Interest on investment
- Depreciation
- Permits
- Licenses
- Property taxes
- Insurance
VARIABLE-FIXED COST RATIO

Fixed Cost (15-17%)

Variable Cost (83-85%)
BREAKDOWN OF VARIABLE COSTS FOR A CATFISH OPERATION

- Feed: 64%
- Other Costs: 21%
- Fingerlings: 15%
- Chemicals: 6%
- Electricity: 5%
- Interest: 4%
- Repairs: 3%
- Misc.: 3%
MAJOR INVESTMENT AND OPERATING COSTS

- Land
- Pond construction
- Water
- Equipment
- Fingerling costs
- Feed costs
- Electricity and fuel
- Labor
LAND

- Is the land a current asset?
- What is the cost of suitable land for fish farming?
LAND

• 80-85% of the total land area will be used for ponds

• 15-20% will be in levees, drains, storage areas, etc.
POND CONSTRUCTION

- Dirt moving
- Drainage structures
- Gravel
- Vegetative cover
WATER SUPPLY

• Dependable supply of water free of fish and pollutants
WATER IS NEEDED TO:

- Fill the ponds
- Compensate for evaporation and seepage
- Improve pond water quality
WATER

• HSB culture requires more water than catfish production

• Flow rate of 35 gallons per minute per water acre
WELL SIZE

- A flow rate of 35 gallons per minute per water acre
• Greater than 80% of the equipment used on a fish farm is specialized aquaculture equipment such as aerators, feeders, harvesting equipment, and water quality testing equipment
EQUIPMENT

• One electrical aerator and one-third use of an emergency aerator per pond
HSB FINGERLINGS

• The price of one gram fingerlings over the past five years has been around $0.20 each
FEED COSTS

• Bulk feed costs average $560/ton
• Protein content derived from fish and soybean meal
• Average feed conversion is 2 to 2.5
ELECTRICITY AND FUEL

Primarily used for:

- Aeration
- Water movement
- Feeding
- Mowing
ELECTRICITY AND FUEL

- Increased aeration demands drive up fuel costs
LABOR

- Day-to-day operations
- Transferring & harvesting
- Management
LABOR

• Increased labor required to receive and transfer fingerlings, feed, monitor water quality, harvest and arrange sales and transport
RULE OF THUMB

• You can expect to spend at least $5,000 per acre before you sell your first fish

• It will probably take at least 18 months from the time you begin pond construction before any fish are large enough to harvest

Source: Catfish Farmer’s Handbook, Cooperative Extension Service, Mississippi State University
CONCLUSION

- Gain knowledge
- Plan
- Start small
- Grow with success