

Economics of Channel Catfish Farming in Virginia

Vaughn M. Douglass and Robert T. Lackey*

*Department of Fisheries and Wildlife
Oregon State University
Corvallis, Oregon 97331

Citation: Douglass, Vaughn M., and Robert T. Lackey. 1973. Economics of channel catfish farming in Virginia. *Virginia Agricultural Economics*. 249: 2-3.

Email: Robert.Lackey@oregonstate.edu

Phone: (541) 737-0569

Web: <http://fw.oregonstate.edu/content/robert-lackey>

Economics of Channel Catfish Farming in Virginia

by

*Vaughn M. Douglass and Robert T. Lackey**

Five billion pounds of fish and shellfish are used annually for human consumption in the United States, but domestic fisheries can only supply about half of this. The American market will need around 3 billion pounds of additional fish and shellfish supplies for food markets over the next 15 years. There is great opportunity and potential for domestically-produced fish to fill some of this demand.

During the past decade, channel catfish farming has become a multimillion-dollar enterprise. Most catfish production occurs in the central Mississippi Delta Region, but the industry has recently expanded into other states. An estimated 55 million pounds of farm catfish from 55,000 to

60,000 acres were produced by the U.S. in 1970, and a market of over 300 million pounds of farm-raised channel catfish was forecast for 1973.

Virginia presently does not have a commercial, channel catfish industry. In a feasibility study, it was estimated that of the 1,500 farm ponds in Pittsylvania County, Virginia, 790 ponds were suitable for catfish production. Use of these ponds could result in the establishment of a limited catfish industry, producing an estimated 3.4 million pounds of marketable fish per year. These fish could be sold to operators of fee-fishing ponds at prices ranging from \$0.40 to \$0.60 per pound or to processors for \$0.30 to \$0.40 per pound, depending upon fish size and quality, and market supply conditions.

Two methods commonly utilized to culture channel catfish are pond and cage culture. Pond culture consists of

*Department of Fisheries and Wildlife Sciences, Virginia Polytechnic Institute and State University.

stocking fish in a suitable pond and allowing them to swim freely until they are harvested at the end of the growing season. Advantages of the pond culture method are: low initial cost, minimal equipment needs, and a less expensive food. Unfortunately, this system does have serious disadvantages: harvest must be accomplished by draining and/or seining the pond which is time consuming. Also, many fish may be lost in the mud or damaged by the harvesting operations, and often, it is difficult to harvest only the marketable portion of the fish.

Cage culture consists of planting fingerling channel catfish in cages supported by floats. The fish remain in the cages until the end of the growing season. Advantages offered by cage culture are ease of harvest and selection of the size and numbers of fish that can be removed at any time. Despite these benefits, there are disadvantages. Fish confined in cages are more susceptible to oxygen depletion; and they require an expensive, nutritionally-complete feed. Furthermore, cage culture requires a greater amount of capital outlay for equipment.

Channel catfish were experimentally cultured in ponds and cages in an attempt to determine the economic feasibility of the two methods (Tables 1 and 2). Production costs in both cases were actual costs for fingerlings, food, and equipment. Pond construction costs were excluded. Labor costs were estimated by multiplying the total number of hours required for feeding and harvesting by \$1.65. An 8-percent interest rate on the borrowed capital was used to calculate the interest charge for fingerlings, because it is the probable rate of interest that would be charged by local banks. A 4-percent rate was applied to feed and labor costs because the capital borrowed for these costs is carried for only a period of approximately 6 months. An asset that had a useful life of over 1 year was amortized at 8 percent over its expected useful life, to arrive at an annual expense.

Revenues were estimated by multiplying the two extremes of the current price range (\$0.30 to \$0.40 per pound) being paid for farm-reared channel catfish which are sold as food fish by the total pounds of catfish produced. A break-even price was calculated to give an indication of how low the market price could fall before profits would change to losses. This break-even price was determined by dividing the total annual expenses by the catfish yield.

One of the results that should be considered in making a comparison of the profitability of pond culture versus cage culture is the break-even price per pound of catfish. For pond-cultured fish, the break-even price was \$0.334 per pound, and for cage-cultured fish, it was \$0.280 per pound. Usually, the utilization of the cage-culture method results in greater costs than pond culture because capital outlay for food, labor, and equipment is greater. The results, however, are biased by the wasteful feeding and possible inefficient food conversion (amount of food converted to flesh) of the pond-cultured catfish. This resulted in a greater amount of food used and a lower yield, which increased costs and decreased returns.

Our research shows that costs and returns in catfish farming are highly variable and are greatly influenced by the

skill and managerial ability of the producer involved. Although catfish farming appears to be profitable and reasonable returns can be realized by farmers in at least the southeastern portion of Virginia, the endeavor should be approached cautiously.

TABLE 1. FINANCIAL ANALYSIS OF POND CHANNEL CATFISH PRODUCTION

Annual Expenses	
Fingerlings (2,000, 7 in., @ \$0.075 each)	\$150.00
Feed (1.28 tons, @ \$150/ton)	192.00
Labor	
Daily checking and feeding (49.3 hr. @ \$1.65/hr.)	81.34
Harvest (9.0 hr. @ \$1.65/hr.)	14.85
Equipment	
Oxygen kit (amortized at 8% for 3 yr.) (\$14 X 0.388)	5.43
Seine, 50 ft. (amortized at 8% for 3 yr.) (\$45 X 0.388)	17.46
Interest on borrowed capital (fingerlings @ 8%) (food and labor @ 4%)	12.00 11.53
Total	484.61
Returns (expected)	
1,450 lbs. fish @ \$0.30/lb.	435.00
@ \$0.40/lb.	580.00
Less Expenses	-484.61
Net returns to land management and other fixed costs before taxes/year/1.5-acre pond	
@ \$0.30/lb.	49.61
@ \$0.40/lb.	95.39
Break-Even Price (\$0.334/lb.)	

TABLE 2. FINANCIAL ANALYSIS OF CAGE CHANNEL CATFISH PRODUCTION

Annual Expenses	
Fingerlings (2,000, 7 in., @ \$0.075 each)	\$150.00
Feed (0.34 tons, @ \$240/ton)	81.60
Labor	
Daily checking and feeding (69.5 hr. @ \$1.65/hr.)	114.66
Harvesting (3.0 hr. @ \$1.65/hr.)	4.95
Equipment	
Cages (amortized at 8% for 3 yr.) (6 cages @ \$52 each X 0.388)	121.05
Feed scale (amortized at 8% for 3 yr.) (\$22 X 0.388)	8.54
Oxygen kit (amortized at 8% for 3 yr.) (\$14 X 0.388)	5.43
Polyethylene rope, 240 ft. (amortized at 8% for 3 yr.) (\$12 X 0.388)	4.65
Interest on borrowed capital (fingerlings @ 8%) (food and labor @ 4%)	12.00 8.04
Total	510.92
Returns (expected)	
1,824 lb. fish @ \$0.30/lb.	547.20
@ \$0.40/lb.	729.60
Less Expenses	-510.92
Net returns to land management and other fixed costs before taxes/year/1.5-acre pond	
@ \$0.30/lb.	36.28
@ \$0.40/lb.	218.68
Break-Even Price (\$0.28/lb.)	