

## Should You Attempt Fish Farming? Considerations for Prospective Fish Growers

*Louis A. Helfrich, Fisheries Extension Specialist; Department of Fisheries and Wildlife Sciences, Virginia Tech*  
*George S. Libey, Associate Professor, Aquaculture; Department of Fisheries and Wildlife Sciences, Virginia Tech*

### Introduction

Fish farming is an ancient practice that can provide many profitable opportunities today. The raising and selling of fish on a commercial basis has proven to be economically successful throughout the United States. In Virginia, fish farming is growing in popularity. Increasing recognition that fish is a healthy food, low in calories and cholesterol levels, but rich in protein has increased consumer demand in both restaurants and supermarkets. Consumption of fish products is increasing dramatically and now averages about 14 pounds/person/year in Virginia.

Fish are excellent animals to rear. They can convert feed into body tissue more efficiently than most farm animals, transforming about 70 percent of their feed into flesh. Fish also have excellent dress-out qualities, providing an average of 60 percent body weight as marketable product and a greater proportion of edible, lean tissue than most livestock. Fish can be intensively cultured in relatively small amounts of water. In Virginia,

they can be farmed at densities near 2,000 pounds/acre with careful management. Farm-reared fish offer a new alternative agricultural crop that can potentially replace those which are declining in popularity or profitability. Healthy farm-reared fish, guaranteed free of diseases, pesticides, and other harmful toxicants, are a more desirable substitute for wild fish from potentially polluted waters.

Fish farming is, like most other types of farming, a risky business that requires special knowledge, skills, and careful considerations. Some of the most important factors to consider in determining whether you should begin a fish farming business are listed below. Answering yes to all or most questions does not insure success. Similarly, answering no to all or most questions does not guarantee failure. Individuals with little or no experience in fish farming and few resources available can become successful fish farmers, but they should start small and expand slowly, and be willing to invest lots of time and effort.

# Answer Yes or No

	Yes	No	Notes
<b>Economics:</b>			
1. Do you have sufficient financial resources available?	_____	_____	_____
2. Do you own suitable land with a good source of high-quality water?	_____	_____	_____
3. Do you own enough land and water necessary for a profitable venture?	_____	_____	_____
4. Is there a high demand and sufficient market for your product?	_____	_____	_____
5. Do you have the equipment and machinery necessary?	_____	_____	_____
6. Is expected profit from fish farming greater than other land uses?	_____	_____	_____
7. Can you really devote the money, time, and labor necessary?	_____	_____	_____
8. Do you know the costs involved with the following items:			
Capital Costs	_____	_____	_____
Land & buildings	_____	_____	_____
Building ponds/raceways	_____	_____	_____
Trucks & tractors	_____	_____	_____
Plumbing & pipes	_____	_____	_____
Tanks & aerators	_____	_____	_____
Oxygen meters	_____	_____	_____
Nets & boots	_____	_____	_____
Operating Costs	_____	_____	_____
Purchasing eggs/fingerlings	_____	_____	_____
Fish feed	_____	_____	_____
Electricity & fuel	_____	_____	_____
Labor & maintenance	_____	_____	_____
Chemicals & drugs	_____	_____	_____
Taxes & insurance	_____	_____	_____
Telephone & transportation	_____	_____	_____
<b>Marketing:</b>			
1. Is there an established market for your fish?	_____	_____	_____
2. Is the market demand sufficient year-round?	_____	_____	_____
3. Do you have an alternative marketing strategy to rely on?	_____	_____	_____
<b>Physical:</b>			
1. Do you have a continuous source of clean, high-quality water?	_____	_____	_____
2. Does your soil have enough clay content to hold water?	_____	_____	_____
3. Is the water temperature optimal for the fish species reared?	_____	_____	_____
4. Do you have space sufficient to build enough ponds or raceways?	_____	_____	_____
5. Do you have good and easy pond access for feeding and harvesting?	_____	_____	_____
6. Are the pipes sufficient in size for quick draining & easy filling?	_____	_____	_____
7. Is your residence near enough for direct observation and security?	_____	_____	_____
<b>Production:</b>			
1. Have you had your water tested (chemical and bacteriological)?	_____	_____	_____
2. Do you have a reliable source of fingerlings or eggs at affordable prices?	_____	_____	_____
3. Do you have a reliable source of feed at reasonable cost?	_____	_____	_____
4. Do you have dependable labor available at affordable wages?	_____	_____	_____
5. How long is your growing season (days/year)?	_____	_____	_____
6. What's your production capacity (pounds/year)?	_____	_____	_____
7. What's the best fish species for you to grow?	_____	_____	_____
8. Are you aware of fish reproductive biology and nutritional needs?	_____	_____	_____
<b>Legal:</b>			
1. Are you aware of the federal and state laws about fish farming?	_____	_____	_____
2. Do you know where to apply for the necessary permits and licenses?	_____	_____	_____
3. Are you familiar with the personal liability concerns involved?	_____	_____	_____
<b>Risk Assessment:</b>			
1. Can you afford to lose your entire fish crop?	_____	_____	_____
2. Can you conduct water quality tests?	_____	_____	_____
3. Is fish-disease diagnostic-help readily available?	_____	_____	_____
4. Do you know about off-flavor and its causes?	_____	_____	_____
5. Is pesticide, metal, or oil contamination possible?	_____	_____	_____
6. Can you deal with poachers and vandals?	_____	_____	_____
7. Do you know where to go for information and help?	_____	_____	_____

## **Fish Farming Publications**

### **Magazines/ Newsletters**

**Aquaculture Digest**  
9434 Kearney Mesa Rd.  
San Diego, CA 92126  
Monthly--\$50/yr.

**Aquaculture Magazine**  
P.O. Box 2329  
Asheville, NC 28802  
Bimonthly--\$15/yr.

**Aquafarm Letter**  
3400 Neyrey Drive  
Metairie, LA 70002  
Bi-weekly--\$70/yr.

**Arkansas Aquafarming**  
University of Arkansas  
Cooperative Extension Service  
Box 391  
Little Rock, AR 72203  
Quarterly--Free

**California Aquaculture**  
University of California  
Cooperative Extension Service  
Aquaculture Extension  
Davis, CA 95616  
Monthly--Free

**Canadian Aquaculture**  
4652 William Head Rd.  
Victoria, British Columbia  
Canada, V8X3W9  
Quarterly--\$14/yr.

**Carolina Aquaculture News**  
P.O. Box 1294  
Garner, NC 27529  
Bimonthly--\$12/yr.

**Farm Pond Harvest**  
Professional Sportsman Pub.Co.  
Box AA  
Momence, Illinois 60954  
Bimonthly--\$10/yr.

**Fish Farmer**  
Business Press International  
205 E. 42nd St.  
New York, NY 10017  
Bimonthly--\$56/yr.

**Fish Farming International**  
Heighway House  
87 Blackfriars Road  
London SE 1814B England  
Monthly--\$35/yr.

**Fish Farming International**  
110 Fleet St.  
London EC4A England

**For Fish Farmers**  
Mississippi State University  
Cooperative Extension Service  
Mississippi State, MS 39762  
Monthly--Free

**Georgia Fish Farmer**  
University of Georgia  
Cooperative Extension Service  
Athens, GA 30602  
Quarterly--Free

**Salmonid Magazine**  
U.S. Trout Farming Asso.  
506 Ferry St.  
Little Rock, AR 72203  
Quarterly--Free

**South Carolina Aquaculturist**  
Clemson University  
Cooperative Extension Service  
Room 102, Long Hall  
Clemson, SC 29631  
Quarterly--Free

**Texas Aquaculture**  
Texas A&M University  
Cooperative Extension Service  
102 Nagle Hall  
College Station, TX 77843  
Quarterly--Free

**The Catfish Journal**  
Catfish Farmers of America  
P.O. Box 1700  
Clinton, MS 39056  
Monthly--\$20/yr.

**Timely Tips-Fisheries**  
University of Tennessee  
Cooperative Extension Service  
P.O. Box 1071  
Knoxville, TN 37901-1071  
Quarterly--Free

**Water Farming Journal**  
3400 Neyrey Drive  
Metairie, LA 70002  
Monthly--\$15/yr.

**World Aquaculture News**  
P.O. Box 150129  
Arlington, TX 76015  
Monthly--\$20/yr.

**Journals/ Technical  
Publications Aquaculture**  
American Elsevier Scientific Pub.  
Co.  
52 Vanderbilt Ave.  
New York, NY 10017  
32 issues/yr.--\$640/yr.

**Aquaculture Engineering**  
Elsevier Applied Science  
52 Vanderbilt Avenue  
New York, NY 10017  
Monthly--\$132/yr.

**Journal of Shellfish Research**  
National Shellfisheries Association  
Oyster Biology Section  
Gulf Coast Research Lab.  
Ocean Springs, MS 39564

**Journal of the World  
Aquaculture Society**  
178 Pleasant Hill  
Louisiana State University  
Baton Rouge, LA 70803

**Progressive Fish Culturist**  
American Fisheries Society  
5410 Grosvenor Lane, Suite 110  
Bethesda, MD 20814-2199  
Quarterly--\$16/yr.

**Transactions of the American  
Fisheries Society**  
American Fisheries Society  
5410 Grosvenor Lane, Suite 110  
Bethesda, MD 20814

## **Selected Fish Farming Books**

A Guide to Integrated Warm Water Aquaculture. D. Little and J. Muir. Institute of Aquaculture, University of Stirling, Stirling FK9 4LA, Scotland.

Aquaculture Engineering. 1977. F.E. Wheaton. R.E. Krieger Publishing Company, Kreiger Dr., Malabar, FL 32950.

Aquaculture: The farming and husbandry of freshwater and marine organisms. 1972. John Wiley & Sons, Inc. New York, NY.

Cage Aquaculture. 1987. M. Beveridge. Unipub, 4611-F Assembly Drive, Landham, MD 20706-4391. Phone (301) 459-7666. (\$38)

Commercial Catfish Farming. 1973. Interstate Printers and Publishers. Danville, IL.

Crustacean and Mollusk Aquaculture in the United States. J.V. Huner and E.E. Brown. AVI Publishing Co., Inc., 250 Post Road East, P.O. Box 831, Westport, CT 06881.

Fish Farming Handbook. 1980. AVI Publishing Co., Inc., Westport, Ct. 06881.

Fish Hatchery Management. 1986. American Fisheries Society, 5410 Grosvenor Lane, Suite 110, Bethesda, MD 20814.

Guidelines for Striped Bass Culture. 1976. American Fisheries Society, 5410 Grosvenor Lane, Suite 110, Bethesda, MD 20814-2199.

Principles and Practices of Pond Aquaculture. 1986. American Fisheries Society, 5410 Grosvenor Lane, Suite 110, Bethesda, MD 20814-2199, Phone (301) 897-8616. (\$39.95)

Principles of Warmwater Aquaculture. 1979. John Wiley & Sons, Inc. New York, NY.

Principles of Warmwater Aquaculture. 1979. American Fisheries Society, 5410 Grosvenor Lane, Suite 110, Bethesda, MD 20814-2199. Phone (301) 897-8616 (\$39.95)

Recent Advances in Aquaculture. J. Muir and R. Roberts. Westview Press Inc., 5500 Central Ave., Boulder, CO 80301.

The Aquaculture of Striped Bass. 1984. Maryland Sea Grant Program, 1224 Patterson Hall, Univ. of Maryland, College Park, MD 20742.

Trout and Salmon Culture (Hatchery Methods). 1980. California Fish Bulletin Number 164. University of California, Berkeley, CA 94720.

Trout Farming Handbook. 1973. Scholtum International Inc. Flushing, NY.

Water Quality in Warmwater Fish Ponds. 1984. C.E. Boyd. Auburn University, Auburn, AL 36830. (\$8)

## **Organizations**

American Fisheries Society  
5410 Grosvenor Lane  
Suite 110  
Bethesda, MD 20814-2199  
301-897-8616

### **Catfish Farmers of America**

P.O. Box 36  
Jackson, MS 39205  
601-353-7916

### **National Ornamental**

**Goldfish Growers Asso.**  
6916 Blacks Mill Rd.  
Thurmont, MD 21788  
301-272-7475

### **National Shellfisheries Association**

Edwin Thodes  
National Marine Fisheries Service  
212 Rogers Ave.  
Milford CT 06460  
203-783-4200

### **Shellfish Institute of North America**

National Fisheries Institute  
2000 M Street, NW, Suite 580  
Washington, DC 20036  
202-296-5170

### **U.S. Trout Farmers Association**

515 Rock Street  
Little Rock, AR 72202  
501-372-3595

### **World Aquaculture Society**

341 Pleasant Hall  
Baton Rouge, LA 70803  
504-388-3137