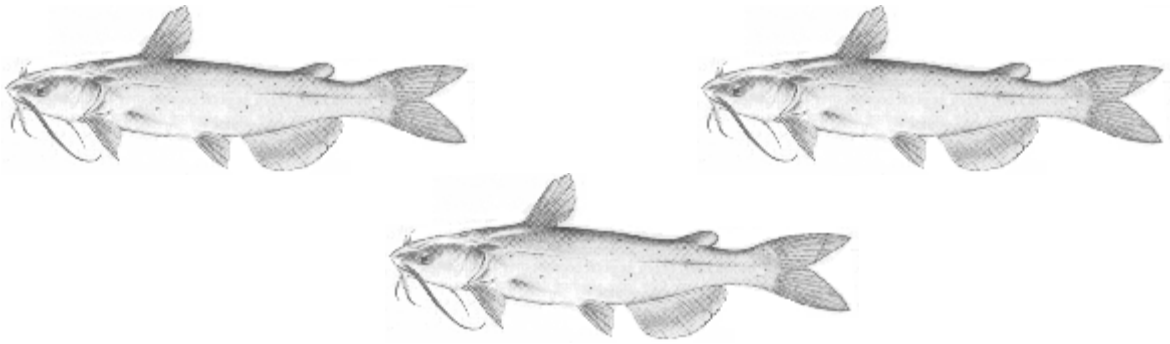

Fish-Farm
Business Plan Workbook

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ILLINOIS Small Business Development Center
Department of Commerce and Community Affairs

C-FAR
Illinois Council on Food and Agricultural Research

NCRAC

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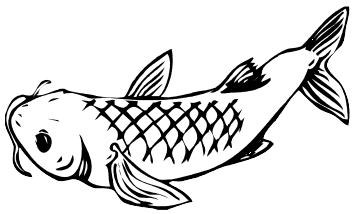
Developed in cooperation with the Southern Illinois University Carbondale, Office of Economic and Regional Development (Small Business Development Center and Community and Business Services Program), the U.S. Small Business Administration, the Illinois Department of Commerce and Community Affairs, and the North Central Regional Aquaculture Center (NCRAC) as a service to small businesses.

This Fish Farm Business Plan Outline and Workbook has been prepared through a joint venture between the Small Business Development Center (SBDC) and Community and Business Services Program (CBS) within the Office of Economic and Regional Development at Southern Illinois University Carbondale (SIUC). Funding was provided by the Small Business Development Center, the Illinois Council on Food and Agricultural Research (C-FAR) and the North Central Regional Aquaculture Center (NCRAC). This workbook is intended to serve as a guide to assist us in helping you write your fish farm business plan. After completing this workbook, you should have a clearer understanding of your business concept and the requirements and commitment it will take to turn your concept into a reality. You will also be more prepared to discuss your project with others such as bankers or investors.

It is important to remember that a Business Plan serves two primary purposes: (1) to be your "road map" in setting up and managing your business and (2) to support a loan request. To develop a good business plan, you need to write down the answers to quite a few questions. This guide will take you through the process. It may be necessary to alter the contents of the workbook to suit the particular circumstances involved in your business. Some areas may not relate to your business concept at all and some areas may require additional information.



Becoming an entrepreneur involves a deep financial and emotional commitment. There is more to owning your own business than just writing a business plan. It's important to remember that you are risking your money and perhaps your financial security. Lending institutions and/or investors are also sharing the risk in your business venture and your business plan is the necessary tool they will use to evaluate their willingness to assume that risk. Many small businesses fail and often this is due to inadequate planning. While others can help with the planning effort, only you really know what you want your business to be. The Illinois Small Business Development Center and the Rural Enterprise and Alternative Agricultural Development Initiative (READI) Program located at the Dunn Richmond Economic Development Center, are here to assist and counsel you through the business planning process.

Throughout the 12 state NCRAC region, information can be obtained from the following Extension contacts:

Mr. Mike Plumer	Illinois
Mr. Brian Miller	Indiana
Dr. Joe Morris	Iowa
Mr. Charles Lee	Kansas
Dr. Don Garling	Michigan
Mr. Jeff Gunderson	Minnesota
Dr. Robert Pierce, II	Missouri
Mr. Paul Jarvis	North Dakota
Ms. Laura Tiu	Ohio
Mr. Jerry Mills	South Dakota
Mr. Fred Binkowski	Wisconsin

See **Attachment A** for specific contact information for the NCRAC region.

In Illinois, aquaculture technical assistance can be obtained from:

Dan Selock, Aquaculture Specialist
Office of Economic and Regional Development
Southern Illinois University
150 E. Pleasant Hill Road
Carbondale, IL 62901-6891
Phone: (618) 536-4451
E-Mail: dselock@siu.edu

Illinois Fish Farmers Co-Op
5565 State Rt. 154
P.O. Box 235
Pinckneyville, IL 62274
Phone: (618) 357-FISH (3474)
E-Mail: iffc@hotmail.com

Dr. Christopher C. Kohler, Director
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Southern Illinois University
Carbondale, IL 62901-6511
http://131.230.57.1/fishweb/coopfish.htm

Additionally, aquaculture information can be found on The Aquaculture Network Information Center website at http://aquanic.org/

Executive Summary

The introduction to the business plan is called the Executive Summary and provides an overview of the business plan in one page or less.

This section provides the banker or investor a “first impression” of your business concept. Although it appears near the front of the plan **it is most effectively written after the rest of your plan is completed**. We recommend that you work closely with your business counselor in preparing this very important component of your business plan.

The Executive Summary should include:

- The name and address of the fish farm.
- The owner(s) names.
- Mission statement of the business.
- Brief description of the business to be conducted.
- Legal form of the business.
- Product(s) and/or service(s) to be offered.
- Purchase terms, if buying an existing business.
- Requested loan amount and how the loan will be repaid.
- How the loan amount will be spent (broken down into broad categories).
- Amount and form of owner(s) equity (owner’s investment in the business).
- Expected outcome of business operations.

The following sections of this document will help you gather the necessary information for your business plan. The information can then be summarized for the **Executive Summary**.

- Fill in the name and address of the fish farm.

- Fill in the owner(s) names.

- Fill in the business' Mission Statement.

Business Description and Product(s) and/or Services Offered

This section describes the type of business, the product(s) and/or services(s) offered.

Describe your fish farm. Be sure to include location, total acreage, acres of water, size of ponds, species of fish raised, and whether this will be a pond- or cage-culture operation.

General Business Conditions

This section should include general business conditions affecting your fish farm and future outlook for the aquaculture industry. Following is some general background information on the aquaculture industry. Use the contact information in the beginning of this document to obtain specific information for your state or region.

Industry Information

Aquaculture is the cultivation and marketing of aquatic animals or plants in a controlled environment for all or part of their life cycle. The aquaculture industry in the United States is one of the fastest growing segments of the agriculture market today. Last year (2000) alone nearly one billion pounds of fish were produced in the US with a market value of $978 million. The growth potential for the aquaculture market is at its strongest level ever. The demand for fish is increasing due to the ever-increasing health consciousness of the American consumer. Per capita consumption of fish in the US has increased from 13 pounds per person in 1980 to 16 pounds per person in 2000. These increases in demand are beginning to stress the world's natural fisheries, which are generally considered to be at or near their maximum sustainable yield, thus increasing the demand for the fish raised in aquaculture facilities.

Describe any additional general industry information you wish to include in your business plan as well as any general business conditions affecting <u>your</u> fish farm.

Site Selection

Considerable thought and planning should go into selecting sites for commercial fish production ponds. Construction costs, ease and cost of operation, and productivity can be greatly affected by the site selected. Selection of a site at times would seem to be a simple matter but after considering all of the variables involved it rarely is as simple as it would seem.

One of the first factors to consider is the availability of water at your proposed site. There are various sources of water including wells, springs, reservoirs, streams, and runoff water. For commercial fish-farming, a well or spring with about 700 gallons per minute capacity is the optimal choice for a 20 water acre fish farm. With the use of streams and reservoirs, there is a possibility of wild fish entering ponds and/or herbicide/pesticide contamination problems that can be avoided with a well. Another option is to build what is called a watershed pond, which utilizes hilly areas for the watershed and natural valleys that are dammed for ponds. For this style of pond, a watershed area of 5-15 acres is neccesary for each water acre of ponds. Another abundant source of water in some areas are the surface coal mine final cut lakes that were left behind from mining operations. They are becoming a popular alternative to standard ponds when used in combination with netpens or cages to contain the fish.

Soil characteristics are the next consideration. Clay-type soils are most desirable due to their ability to hold water. Soil core samples should be taken to ensure adequate clay content. In many states, your local Soil Conservation Service Office can assist with this procedure.

The topography of the area will determine the type of pond you can build and how much earth moving will be neccesary. In a hilly area, runoff ponds tend to work the best, whereas on flat land, it is less expensive and easier to build levee-type ponds. When selecting a site, considerations regarding drainage must be made for all ponds, as they must be drained by gravity flow for pond management purposes.

Climatic conditions will affect your decision concerning what fish species are suitable for culture in your area. Contact your local aquaculture specialist for information on appropriate species.

There are many other issues involved with site selection and pond construction that must be addressed. A good source for additional overview information is the READI Aquaculture website at www/siu.edu/~readi/ and the Aquaculture Network Information Center website at http://aquanic.org/. For more in depth information regarding site selection and pond construction techniques, contact your local USDA Service Center.

Describe your location including the topography, water supply and soil type. Include any aspects that make it especially suitable for a fish farm.

Other Possible Influences On Your Business.

Other issues that are not necessarily within the control of the business must also be addressed. Many of these issues may directly affect your sales both positively and negatively. Complete the following sections as they apply to your business.

• Describe the economic factors that will affect your product or service. *(Examples include: economic trends, spending trends, taxes, inflation, interest rates, etc.)*

• Describe any legal or governmental factors that will affect your business. *(Examples include: potential changes in laws or ordinances, IRS, OSHA, EPA, Health Department, ADA, and zoning regulations.)*

• Describe any environmental factors that will affect your business. *(Examples include: raw material availability, weather, pollution, and waste management.)*

History of the Business

If the business plan is to be used to support the purchase or expansion of an existing fish farm, a history of the business is required. Details should include years in existence, current owner, current location, types of species raised, market share, strengths, weaknesses, and financial information for the past three to five years.

Distribution Strategy

A distribution strategy answers the following questions: How are you going to get your product to your customer? How will the crop be sold? How are you going to price your crop? Below are some examples of ways to move your product to your customer. Your strategy may involve one or more of these techniques.

- Sales to a Processing Plant or Cooperative
- Contract Sales
- Phone Sales
- Trade Shows (Licensure Required)
- Internet Sales (Licensure Required)
- Sales off of the Farm (Licensure Required)
- Sales on the Farm
- Other

Target Market

The key element of a successful marketing plan is to know your customers – their likes, dislikes, and expectations. The fact sheet, Marketing Illinois Aquaculture Products, (Attachment B) provides helpful information for this section. By identifying these factors, you can develop a marketing strategy that will allow you to attract customers and fulfill their needs. Your target market is the group or groups who are most likely to buy your product or service.

Use the following suggestions to define your target market.

Type of Customer	% of Business
• Processing Plant/Cooperative	
• Retail Consumer	
• Restaurant and Grocery	
• Organizations	
• Other	
• Total (must equal 100%)	**100%**

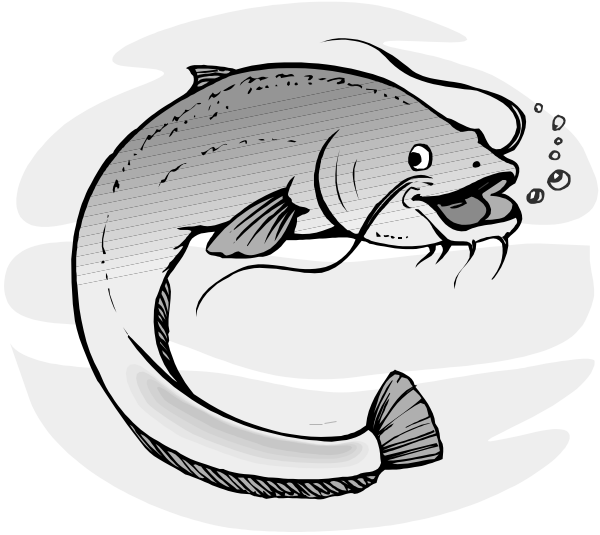
Describe the marketing and distribution strategies for your fish farm.

Management and Operations

The purpose of this section is to describe the legal form and organization of the business, skills available within management to successfully run the business, employee wages/salaries, employment schedules, and other considerations necessary to successfully operate and manage the business.

Business Organization

Discuss the legal form of the business (Sole-Proprietorship, Partnership, Corporation, Limited Liability Company (LLC) and the reasons for choosing this form of organization). Refer to the Fact Sheet, Organizational Structures Available to Agriculture Businesses (Attachment C) for helpful information. Include "Assumed Name Act" registration, Partnership Agreements, LLC, or Incorporation Certificate(s) as appropriate. List the names of all principals involved in the business.



Personnel

Discuss key persons and tasks for which they will be responsible. Be sure to include the major managerial and record keeping functions of the business.

Include resumes of owners and key personnel. The resume should include past-related employment experience, professional training and education, related certificate/degree(s) held, and other personal information related to business operations. Be sure to highlight your business related experience. Use additional sheets as needed.

Sample Resume Form

Personal Information	
Name	
Address	
Telephone #	

Education	
High School	
College	
Technical	

Work Experience		
Dates Employed *(from - to)*	Employer	Positions/Duties

Operational Considerations

The purpose of this section is to provide information that deals with operation of the business such as: employees, schedules, insurance, suppliers, professional services, licenses, etc.

Develop a Personnel Hiring & Pay Schedule.

Job Title	Duties	Qualifications	Salary ($)	Hiring Date

Develop a Work Schedule. The work schedule shows work coverage for the scheduled operating hours of the business. A sample schedule and worksheet schedule are provided below.

Job Title	Sun.	Mon.	Tue.	Wed.	Thur.	Fri.	Sat.	Total Hours/ Week

Calculate the monthly cost for employee salaries and wages.

[a] **Job Title**	[b] **Wage Rate**	[c] **Hours/Week**	[d] **Weekly Wages** Column [b] x Column [c]	[e] **Monthly Wages** Column [d] x 4
Total Monthly Wages				

Total Monthly Payroll Tax **Multiply total monthly wages by an estimated 15%.**	

Insurance Needs

Identify the potential risks of loss inherent to your business. These risks form the basis for your business insurance needs. Some of the typical types of business insurance are listed below:

- Workers Compensation
- Fire or Structural Damage
- Business Liability
- Vehicle Coverage
- Loss & Theft of Building Contents
- Glass & Sign Breakage
- Business Interruption
- Care, Custody & Control

After considering your insurance needs and regardless of whether you deal with independent agents, insurance brokers or work directly with insurance companies, be certain that you've done some comparison shopping before you sign up. Some sources of information on business insurance are listed below.

- Your State's Department of Insurance (e.g. Illinois Department of Insurance) – *Maintains experience information on insurance companies.*
- Best's Key Rating Guide – *Maintains financial strength information on insurance companies.*
- Local insurance agencies – *Check yellow pages for listings.*

Include copies of your insurance carriers' cost quotes.

Insurance Company	Type of Insurance	Upfront Cost	Monthly Cost
Total Insurance Costs			

Identify Major Suppliers

Include information on suppliers of fry, fingerlings, feed, equipment, etc. Include their address, their product lines, and any special credit terms.

Supplier	Address & Phone #	Products/Services/Terms

Identify Professional Consultants

List of professional services providers to be utilized (e.g., attorneys, accountants, consultants, etc.), the type of services to be rendered, and anticipated costs.

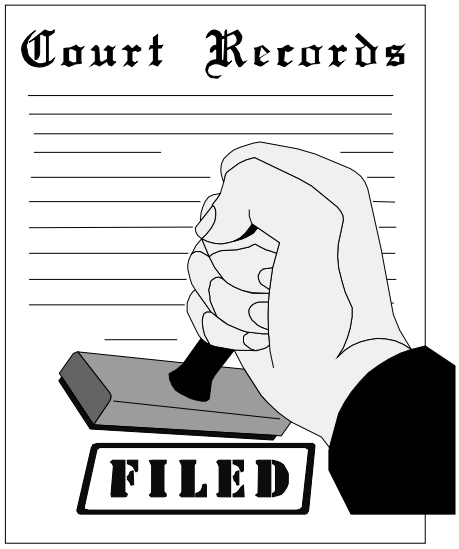
Type	Name	Address & Telephone #	Start-up Costs ($)	Recurring Costs ($)
Accountant				
Attorney				
Other (list)				
Other (list)				
Total Professional Fees				

Provide a List of Required Licenses, Permits, and Registrations

Provide information on required special licenses, permits, and registrations if applicable (e.g., EPA permit, state professional license, vehicle license, food handler's certification, Assumed Name Act Registration, etc.). Provide a copy of the required Licenses/Permits/Registrations if available.

NOTE: For example, in Illinois you do not legally own and cannot legally sell the fish you raise until you have acquired an Illinois "Aquaculture Facility Permit." Without the permit, all fish in the State of Illinois belong to the State. Call the IDNR Aquaculture Coordinator, (309) 968-6837, for an application.

Name of Permit/License	Issuing Agency	Valid Time Period	Start-up Costs ($)	Recurring Costs ($)
Total Permit and License Cost				



Financial Plan Checklist

For any type of loan request the financial section of the business plan must include the following:

- **Historical Information on Existing Business** - Three (3) years of past income tax returns, financial statements (Balance Sheets & Income Statements), and aging of accounts receivable/payable should be included.

- **Personal Income Tax Returns** - Three (3) years of personal income tax returns of the principals involved in the business are required. A principal is an individual or entity who owns or will own 20% or more of the business.

- **Financial Projections** – A five (5) year projection of financial data is suggested in most aquaculture loan requests including Pro Forma Balance Sheet, Cash Flow Statement, Income Statement, and Ratio Analysis. The first year cash flow should be shown on a monthly basis and shown quarterly for the second through fifth years. (**See note below**).

- **Personal Financial Statement** - This form must be completed for each principal who owns or will own more than 20% or the business, or who have a significant say in the operations of the business.

- **Letters of Commitment** - If the plan includes multiple loans, each loan must be documented in commitment letters. Loans from financial institutions must have language indicating the loan amount, the specified term and interest rate, collateral, any other conditions attendant to the loan, and the fact that the loan is approved (loan approval can be contingent on securing other financing).

Note: **The SBDC can help prepare the financial projections if the following worksheets in this workbook have been completed.**

Two resources (Attachment D: Costs of Producing Catfish on Commercial Farms in Levee Ponds in Arkansas and Attachment E: Enterprise Budgets for Yellow Perch Production in Cages and Ponds in the North Central Region) provide information on enterprise budgets, including investment and production costs for catfish in ponds and yellow perch in cages and ponds. These are useful documents to review prior to completing the following worksheets.

Fish Farm Establishment Cost Worksheet

Using the suggested categories, complete the following table. For your planning purposes, actual current price quotes are needed.

Item	Source If you already own the asset be sure to include it in the Equity Investment Worksheet on page 26.	Cost ($)
Land		
Pond Construction (Earth moving, drainage structure, gravel, vegetative cover)		
Well Construction/ Water Supply		
Road Work		
Feed Storage Bin		
Office Building		
Electric Line & Switch Boxes		
Harvesting Dock		
Other		
Other		
Other		
Total Fish-Farm Establishment Costs (Excluding Labor)		

Equipment and Tool Worksheet

List equipment, fixtures, furniture, vehicles, tools and other fixed assets that are needed for the business and their associated costs. (Written quotes should be provided including item name, model number, cost, and installation expense when possible). If leasing equipment, include a copy of the lease agreement. Items below are listed as possible equipment needs.

Item Description	Source *If you already own the asset be sure to include it in the Equity Investment Worksheet on page 26.*	Cost ($)
Tractor		
Trucks		
Boat, Motor and Trailer		
Aerators (two HP per acre)		
Mower		
Generator		
Vehicle		
Air Blower and Hose		
Cage, Cover and Floatation		
Feed Hoppers and Blowers		
Back-up Aerator (PTO Driven)		
Water Quality Test Kit		
Shop Equipment		
Office Equipment		
DO Meter		
Live Haul Tank		
Radio Communications System		
Seines		
Other		
Other		
Total Cost of Equipment and Tools		

Equity Investment Worksheet

List all assets (land, buildings, equipment, fixtures, and cash) **you now own** that had an original value greater than $500.00 that will be used in the business.

Helpful Tip!

*Banks and lending agencies usually require **at least** a 20% investment by the owner into the project.*

Item Description	Year Acquired	Purchase Price ($)	Current Value ($)	Amount still owed on the asset ($)	Name of Lienholder
Land: *(Include acreage and address)*					
Building(s): *(Include type & address)*					
Equipment: *(Include Model # & Serial #)*					
Cash Investment					
Total Equity Investment					

Sources and Uses of Funds Worksheet

	Uses of Funds	**Total Cost**
1.	Fish Farm Establishment Costs *(From Page 24)*	
2.	Equipment & Tools *(From Page 25)*	
3.	Insurance–Upfront Cost *(From page 20)*	
4.	Licenses/Fees-Upfront Cost *(From page 22)*	
5.	Professional Fees-Upfront Cost *(From Page 21)*	
6.	Utility & Telephone Deposits	
7.	Cash/Working Capital	
8.	Other *(Specify)*	
9.	Other *(Specify)*	
10.	Other *(Specify)*	
	Total Uses of Funds	

	Sources of Funds	**Total Amount**
1.	Equity Investment	
2.	Financing Requested	
3.	Other *(Specify)*	
	Total Sources of Funds	

Sales Projections

Include sales projections for your fish farm. Check with an aquaculture extension contact or expert for a realistic projection based on the size of your operation, species to be raised and culture system you are planning to use.

	Year 1	Year 2	Year 3	Year 4	Year 5
January					
February					
March					
April					
May					
June					
July					
August					
September					
October					
November					
December					
Total Sales					

Monthly and Annual Operating Expense Worksheet

	Item	Monthly Amount	Annual Amount
1.	Accounting & Legal Services	($)	
2.	Chemicals	($)	
3.	Employee Salaries/Wages	($)	
4.	Employee Payroll Tax	($)	
5.	Insurance	($)	
6.	License & Fees *(permits, vehicles, etc.)*	($)	
7.	Machine Maintenance/Repair	($)	
8.	Rent *(property)*	($)	
9.	Supplies	($)	
10.	Taxes *(Property Tax)*	($)	
11.	Travel	($)	
12.	Utilities &Telephone	($)	
13.	Miscellaneous	($)	
14.	Fish Feed	($)	
15.	Medicated Feed	($)	
16.	Fry	($)	
17.	Other *(specify)*	($)	
18.	Other *(specify)*	($)	
19.	Owner's Withdrawal	($)	

PERSONAL FINANCIAL STATEMENT

U.S. SMALL BUSINESS ADMINISTRATION

As of:

Name	**Business Phone**
Residence Address	**Residence Phone**
City, State, & Zip Code	
Business Name of Applicant/Borrower:	

ASSETS	(Omit Cents)	**LIABILITIES**	(Omit Cents)
Cash on Hand & in Banks	$ -	Accounts Payable	$ -
Savings Accounts	$ -	Notes Payable to Banks & Others	$ -
IRA or Other Retirement Account	$ -	Installment Account (Auto)	
Accounts or Notes Receivable	$ -	Mo. Payment	$ -
Life Insurance-Cash Surrender Value Only		Installment Account (Other)	
(Complete in Section 8)	$ -	Mo. Payment	$ -
Stocks & Bonds		Loan on Life Insurance	$ -
(Describe in Section 3)	$ -	Mortgages on Real Estate	
Real Estate		(Describe in Section 4)	$ -
(Describe in Section 4)	$ -	Unpaid Taxes	
Automobile - Present Value	$ -	(Describe in Section 4)	$ -
Other Personal Property		Other Liabilities	
(Describe in Section 5)	$ -	(Describe in Section 4)	$ -
Other Assets		**TOTAL LIABILITIES**	$ -
(Describe in Section 5)	$ -	**NET WORTH**	$ -
TOTAL ASSETS	$ -	**TOTAL LIABILITIES & NET WORTH**	$ -

Section 1. Source of Income		**Contingent Liabilities**	
Salary	$ -	As Endorser or Co-Maker	$ -
Net Investment Income	$ -	Legal Claims & Judgments	$ -
Real Estate Income	$ -	Provision for Federal Income Tax	$ -
Other Income (Describe below)	$ -	Other Special Debt	$ -

Description of Other Income in Section 1

Section 2. Notes Payable to Bank & Others

Name & Address of Noteholder(s)	Original Balance	Current Balance	Payment Amount	Frequency (monthly, etc)	How Secured or Endorsed
	$ -	$ -			

PERSONAL FINANCIAL STATEMENT: Page 2

Section 3. Stocks & Bonds

Number of Shares	Name of Securities	Cost	Market Value Quotation/Exchange	Date of Quotation/Exchange	Total Value

Section 4. Real Estate Owned

	Property A	**Property B**	**Property C**
Type of Property			
Address			
Date Purchased			
Original Cost			
Present Market Value			
Name & Address of Mortgage Holder			
Mortgage Account Number			
Mortgage Balance			
Monthly Payment Amount			
Status of Mortgage			

Section 5. Other Personal Property and Other Assets

Section 6. Unpaid Taxes

Section 7. Other Liabilities

Section 8. Life Insurance Held

I authorize SBA/Lender to make inquiries as necessary to verify the accuracy of the statements made and to determine my creditworthiness. I certify the above and the statements contained in the attachments are true and accurate as of the stated date(s). These statements are made for the purpose of either obtaining a loan or guaranteeing a loan. I understand FALSE statements may result in forfeiture of benefits and possible prosecution by the U.S. Attorney General (Reference 18 U.S.C. 1001).

Signature: **Date:** **Social Security Number:**

Signature: **Date:** **Social Security Number:**

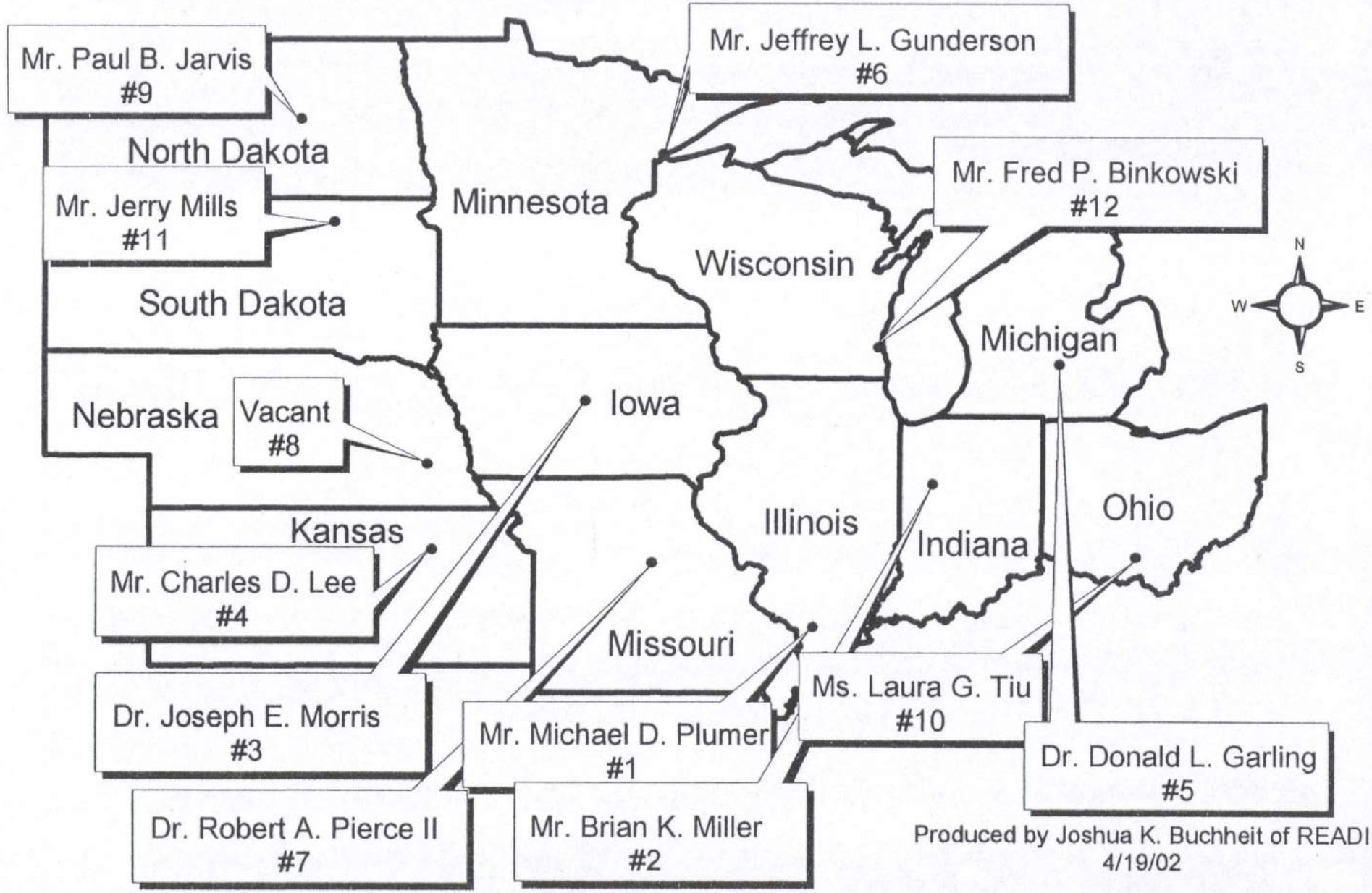
Congratulations!!

You have now completed most of the information needed for your business plan

ADDITIONAL RESOURCES/ATTACHMENTS

A. NCRAC Extension Contacts
B. Marketing Illinois Aquaculture Products
C. Organizational Structures Available to Agriculture Businesses
D. Costs of Producing Catfish on Commercial Farms in Levee Ponds in Arkansas
E. Enterprise Budgets for Yellow Perch Production in Cages and Ponds in the North Central Region

North Central Region State Aquaculture Extension Contacts



North Central Region State Aquaculture Extension Contacts

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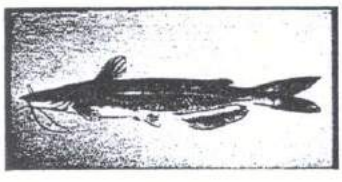
MARKETING ILLINOIS AQUACULTURE PRODUCTS

Dan Selock, Aquaculture Specialist
Office of Economic and Regional Development, SIUC
July, 2000

Marketing can be defined as providing the right *product*, at the right *time*, to the right *place*, at the right *price*, and with *promotion*. Studies have shown that the customer must be kept in mind during the marketing process, instead of only the product. In other words, good marketing is concerned with those activities that anticipate consumers' needs and direct the flow of goods and services from producers to consumers accordingly. This occurs to satisfy the needs of consumers and accomplish either the economy's or the firm's objectives.

The "marketing concept" says that *a firm should focus all its efforts on satisfying its customers, at a profit.* The goal should be to produce and sell what the customer wants instead of what is easiest or most convenient to produce. Give the customer what THEY WANT (market-oriented), instead of WHAT YOU WANT TO PRODUCE (production-oriented).

Marketing is doing the work needed to answer the questions of *who, where, when, what, and how.* It takes time, effort, planning, and creativity. Sometimes it's hard work, other times it's fun.



The Four P's of aquaculture marketing are:

PRODUCT – The product may include live fish eggs, fry, fingerlings, and food size fish; processed fish may include in-the-round, whole-dressed, fillets, steaks, strips, fresh, frozen, smoked, value-added, etc.

PLACE – Where you sell your product; a target market; a natural market (people you know);a local market (within a 50 mile radius); a farmers' market (in most cities); and an extended market (regional).

Opportunities for live fish include sales to custom processors, pay lakes, live fish haulers, private pond and lake owners, the Illinois Department of Natural Resources (IDNR) for stocking purposes, at farmers' markets, and feed and seed dealers for "Fish Stocking Day" (in Illinois, a "Retail Fish Dealer's License" at $10 per year is required).

Opportunities for processed fish sales include local grocery stores, restaurants, fish markets, taverns, institutions, such as schools, hospitals, nursing homes, senior citizen centers, retirement homes, and local clubs and organizations, i.e. the Kiwanis, Elks, Moose Lodge, Masons, Lions, Shriners, Knights of Columbus, Fire Department, Boy Scouts, and churches (seasonal fish fry).

Other places include local businesses, such as car dealerships, banks, lumberyards, and sports equipment suppliers.

PRICE – Research the price that others are receiving for a similar product. Channel catfish in Illinois generally sells from $0.85 to $1.25 per pound live, $1.95 to $2.50 per pound whole-dressed, and $3.25 to $4.50 per pound filleted. Tilapia in Illinois generally sells from $1.25 to $2.00 per pound live. Hybrid striped bass generally sells from $2.50 to $3.50 per pound live. Big head carp generally sells for $0.85 per pound live. And freshwater shrimp in Illinois generally sells for about $7.50 per pound live.

* You do not legally own and cannot legally sell the fish you raise in Illinois, until you have acquired an Illinois "Aquaculture Facility Permit." Without the permit, all fish in the State of Illinois belong to the State. Call the IDNR Aquaculture Coordinator, (309) 968-6837, for an application.

PROMOTION – Illinois aquaculture products may be promoted as fresh or frozen, grain fed, farm raised, locally grown, and "Illinois Product" labeled (official IL Dept. of Ag. logo). One should try to highlight:

1. *QUALITY*
2. *SERVICE*
3. *PRICE...*

You can only accomplish two of these three objectives well. One criteria must be limited in order to do the other two as well as possible.

Products are different in only two ways:

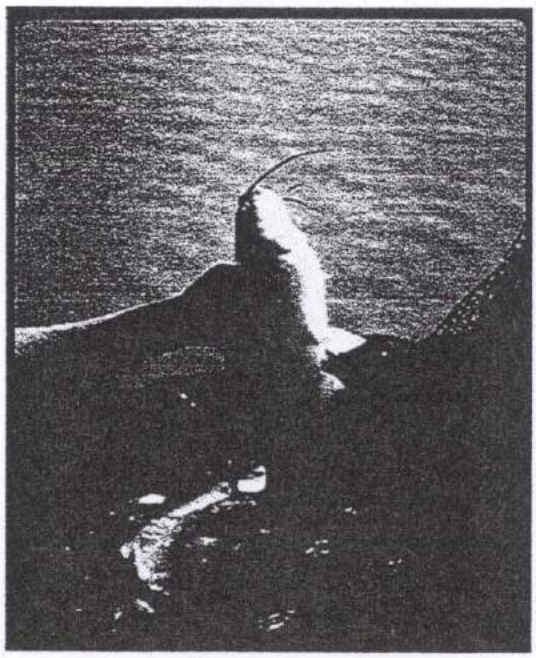
DIFFERENTIATED VALUE

Examples of "differences in value" are high quality, good service, something new or different, fresh, safe, clean, wholesome, healthy, low calorie, fashionable, polyunsaturated etc.

PRICE

Different prices may be described as competitive, on sale, a bargain, full value, etc.

Buyers are generally looking for a quality product with consistent and uniform characteristics that has been properly handled. There must also be an adequate volume of the product throughout the year or season. Buyers like to be notified of the availability of a product in advance. And they look for dependable performance in filling orders.



A few ideas for individualized marketing are:

A. Always sell a good product.
B. Begin a mailing list and use it to notify about your peak season.
C. Offer a known product.
D. Entice the lazy purchaser by offering customization, i.e. value-added products.
E. Entice the bargain hunters with "good deals."
F. Establish and display the days and times during which sales will be made and don't alter the hours for anyone unless you realize that you will then be obligated to do so for everyone.
G. Be patient with customers, "The customer is always right."
H. Don't over-spend on advertising.

Marketing aquaculture products is no different than marketing other agriculture products. Marketing is as important as production, financing, cash flow, and other profit determining factors. Before beginning production or selecting a specific marketing alternative, some general marketing principles should be considered and a marketing strategy developed.

A Marketing Strategy involves three elements:

A. Determine the present situation.
B. Determine the final marketing goals and/or objectives. They must be specific, obtainable, measurable, and on a time line.
C. Develop a logical plan for getting from the present situation to the final goals.

Determining the present situation often involves the most effort and time. A thorough assessment of the marketplace for product supply, demand, and market trends is imperative. The entrepreneur must also define his personal financial circumstances for levels of risk and ability to carry debt. A determination of which marketing alternatives are available and the use of enterprise budgets, time lines, and cash flow spread sheets are beneficial. The alternative you use must also be compatible with other personal and business goals.

Determining final marketing goals is important so one does not "drift aimlessly" through potential sales opportunities. Always relate goals to operating cost and know how much different levels of operation will cost. Then establish goals that will at least cover costs. The level that goals exceed operating costs will depend on the willingness to accept risks and other personal and business goals.

Take the time to consider all reasonable marketing alternatives and develop a marketing plan. Evaluate each alternative in terms of labor and financial requirements, as well as, advantages and disadvantages. The selection of a specific combination of marketing alternatives should be tailored to the market assessments, individual financial circumstances, and the size of the operation.

After a marketing strategy has been developed, write it down, hypothetically test it, and modify as needed. Think of all things that could happen. Once a final strategy has been selected, follow it.

ILLINOIS AQUACULTURE MARKETING ALTERNATIVES

A. Food Fish
B. Fingerlings
C. Bait Fish
D. Pay Lake Stockers
E. Ornamental Fish and Plants
F. Wetland Plants

An example of a Marketing Alternative may be in the form of a Pay Lake Facility:

The facility usually needs to be within about 50 miles of around 50,000 people. There is an increasing demand for fishing opportunities and per capita consumption of fish products. A premium price is paid for the experience as well as the product.

The facility manager must first research and determine the prospective fishermen's preferences for fish species, sizes to catch, and surroundings. The appropriate bait and tackle should be available at the facility as well as concessions for snacks, beverages, and light meals. Restrooms (maybe with showers) and sometimes camping spaces are available. Shaded areas and tables and/or benches are usually necessary.

Good parking next to an all weather road is recommended and large signs near a busy road with directions are helpful. The daily hours of operation should be posted on the signs. Pay Lake facilities are usually open from early morning to dark during spring, summer, and fall.

The fishermen should be charged by the pound of fish caught and by an entrance fee, just in case no fish are caught. Be sure to keep accurate records of costs and income, stocking densities, time of stocking, catch rates, and customer needs.

Pay Lake operation requires dealing with the public and long hours, seven days a week, about eight months of the year.

Good Fishing!!

READI
Rural Enterprise and Alternative Agricultural Development Initiative
Farm-Based Enterprise
Community Economic Development Research and Technical Assistance
Enterprise Network Research and Technical Assistance

Acknowledgement: This fact sheet was supported in part by a grant from the Illinois Council on Food and Agricultural Research (C-FAR) and the Office of Economic and Regional Development, Southern Illinois University Carbondale.

June 2001
Revised from Publication 103, North Central Regional Aquaculture Center, June, 1992 and SIUC Fisheries Bulletin, Number 12, January, 1991.

Prepared by
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A production of Rural Enterprise and Alternative Development Initiative (READI) a component of Illinois Farming Alternatives and Rural Revitalization Methods (I-FARRM) program. I-FARRM is a Strategic Research Initiative of the Illinois Council on Food and Agricultural Research (C-FAR) and Southern Illinois University Carbondale.

Introduction

There are approximately 1.9 million farms in the United States, ranging in size from small part-time farms with gross sales of less than $10,000 per year to very large operations with annual sales in excess of $1,000,000 per year (USDA, Census of Agriculture, 1997). Regardless of size, all farms are a form of business. Individuals selling agricultural products need to be aware of the various organizational structures available to them, including sole proprietorships, partnerships (general and limited), corporations (regular and subchapter-S), and limited liability companies (LLC). The specific circumstances of the farm business dictate which of these structures is most suitable. For example, large farms with numerous employees and a large capital requirement may find it advantageous to consider a more formalized structure, such as a corporation. This paper reviews the various forms of organizational structures that can be utilized in agricultural businesses and presents the advantages and disadvantages of each structure.

Organizational Structures

Sole Proprietorship

Most farms in the United States are organized as sole proprietorships. Under this organization the farmer is considered self-employed. Management decisions are solely under the control of the farmer. Equity capital for the operation is limited to that available to the sole proprietor. With this organizational structure, personal and business assets are jointly at risk in the operation. Liability is not limited to only that which is invested in the business. The farmer has total liability for obligations, whether incurred personally or through the farm business. If a farmer is sued for a farm accident, their home and personal assets may also be in jeopardy. This is an increasingly risky situation for a farm business that may be a part-time venture, and in which a substantial amount of personal assets are involved.

A sole proprietorship is the simplest form of business organization as far as start-up and record keeping are concerned, but it has its disadvantages. Sole proprietorships have been described as a hindrance to estate planning, farm transfer, and farm efficiency (Barry et al., 1983). However, if the farm operation will cease upon the death of the sole proprietor, it is the simplest structure to liquidate. Alternative organizational structures should be considered if "continuity of life" of the business is a concern.

Farm efficiency varies with the age of the sole proprietor (Harl, 1984). In the early years of an operation efficiency is low, as assets are being accumulated. Mid-way in the operation as the farmer's net worth increases and increased leverage is risked, the farm is at

The contents of this bulletin reflect the opinions of the authors. Readers should consult with their legal and/or tax advisers concerning the applicability to their individual situations of the forms of organizational structures discussed in this bulletin.

peak operating efficiency. But as the years go on and retirement is considered, the operator becomes more conservative and is less willing to assume risk, thus efficiency generally declines. This cyclic pattern can be avoided by transferring the estate during the time of its peak efficiency. In most cases, however, transfer of assets such as land, buildings, livestock, machinery, etc., does not normally occur until the owner's death (Barry et al., 1983).

Landlord-tenant arrangements may be a practical alternative for older farm operators. Under this alternative, the landlord still maintains ownership but through rental. This option allows the conversion of farm income to investment income. Rental income is not considered "earned income"; therefore, it is not subject to social security tax nor does it reduce social security benefits (Harl, 1984). This option is also attractive if several heirs are involved but not all are interested in continuing the operation.

Partnership

This arrangement is similar to a sole proprietorship, except that it consists of two or more persons as co-owners. In agriculture, parent/child partnerships have been popular. There are two types of partnerships: general and limited. In a general partnership, each partner shares in the ownership, management, and liability of the farm business. Each partner is equally liable for any and all obligations of the business whether incurred personally or by a partner. The individuals, not the partnership, are the taxpayers as is the case in a sole proprietorship (IRS, 2000). No legal agreements are required to establish a general partnership. This informal arrangement may be dissolved with the same ease with which it was formed. One co-owner may dissolve the partnership.

The main advantage of the partnership arrangement is the increase in equity capital brought to the business as additional partners enter into the operation. But, with this increase in equity capital, comes a loss of total management control.

Partnerships have disadvantages when considering estate planning and transfer. If a partnership is dissolved, property transfer becomes complicated (Barry et al., 1983). In the event of the death of a partner, the survivors are generally required to liquidate the business and distribute the assets (Harl, 1984). If a partner is planning for continuity of the business upon death, an agreement with that stipulation should be drawn up. That certainly would be the case in a parent/child partnership. However, if additional partners are involved, they are not obligated to accept an additional general partner, especially if the added partner is a minor (Harl, 1984).

A limited partnership is made up of both limited and general partners. The limited partners share in the business's profits and losses, but are not involved in management. The general partner views the limited partner as an additional source of equity capital without the obligation of sharing management decisions. The limited partner's risk and liability

are only to the extent of their investment in the business (Harl, 1984). Therefore, for limited partners, the business is an investment in which they have neither management responsibility nor the unlimited liability of a general partnership or sole proprietorship. The limited partner is essentially trading a voice in management for limited liability (Barry et al., 1983).

Corporation

Corporations are the most rapidly growing type of farm business organization and have the highest average farm sales (USDA, 1998). A corporation is a legal entity. The rights of a corporation are similar to those of individuals (Barry et al., 1983). Corporations can enter into contracts, own real and personal property, and can sue or be sued independently of the stockholders. Ownership of a corporation is held as shares of stock which are claimed on the net worth of the business (Barry et al., 1983). The two primary classes of stock are preferred and common.

Management and control of a corporation are shared among the following three groups: the stockholders, the board of directors, and the officers. The stockholders make basic decisions while the board of directors set the policies for the corporation. The officers make the day-to-day decisions. The individual may manage and operate the farm just as any business manager would but does so as an employee of the corporation (Lee et al., 1988). Although the stockholders own the corporation, the corporate structure provides a means of separating ownership from management and of protecting both parties from liabilities associated with the corporation (Barry et al., 1983). Accordingly, unlike sole proprietorships or partnerships, stockholders are not personally liable for actions of the corporation (Frey and Behrens, 1981). Liability is limited to the individual investments of the stockholders. A corporation is the best organizational structure as far as protection of personal assess is concerned. A corporation, like a partnership, provides a means by which related or unrelated individuals may combine their funds and operate a business. However, in the case of a corporation, the organization is considerably more structured and legally binding.

A corporation can be organized to exist perpetually or for a term of years (Harl, 1984). It is legally created and can only be terminated through the legal process. Incorporation of the farm business can help to hold the farm together through generations. Death of a stockholder, including the head of the farm business, does not result in the dissolution of the business. Likewise, any stockholder can sell their shares without breaking up the business. The stock can simply be transferred to a new owner. Estate planning is also simplified, because stock shares can be transferred to heirs more easily than titles to land and buildings.

As far as organization and taxation are concerned, two types of corporations exist. They are the regular or subchapter-C corporation and the pseudo or subchapter-S

Regulations concerning incorporation must be adhered to strictly; otherwise, the stockholders stand the risk of having "the corporate veil pierced". In that case individual stockholders are personally liable for the actions of the corporation.

A limited liability company (LLC) combines the best features of a corporation and partnership.

corporation (Barry et at., 1983). When structured as a C corporation, the corporation is the taxpayer. Earnings and profits are distributed to the shareholders as dividends and the dividends are taxed as ordinary income. Stockholders do not directly share in the losses of the corporation.

The subchapter-S corporation was authorized in 1958 (Barry et al., 1983), especially for small businesses, including agriculture. In order for stockholders to request subchapter-S classification the following criteria must be met: 1) only one class of stock, 2) less than 35 initial stockholders, and 3) consent of all stockholders to the subchapter-S choice (Frey and Behrens, 1981). A husband and wife are treated as one stockholder. If a corporation ceases to meet the requirements of an S corporation, it is terminated (Harl, 1984a). The corporation charter may also be revoked if it is the desire of greater than half of the stockholders. The primary difference between a C and an S corporation, besides the class of stock, is taxation. The S corporation is taxed as a partnership (IRS, 2000). Both profits and losses are passed on to the stockholders. As is the case with a limited partnership, the officers of the corporation are compensated before the remaining profits are distributed.

The corporation is the most involved as far as organizational costs and record keeping are concerned (Harl, 1984a). Articles of incorporation are required, officers must be elected, and a board of directors formed. Most states require stockholders to meet at least once annually and annual fees and taxes may be imposed on the corporation. In many instances, federal, state, and social security taxes have actually increased following incorporation. Regulations concerning incorporation must be adhered to strictly; otherwise, the stockholders stand the risk of having "the corporate veil pierced". In that case individual stockholders are personally liable for the actions of the corporation.

Limited Liability Company

A limited liability company (LLC) combines the best features of a corporation and partnership. The members have limited liability like a corporation while income and losses are passed through to the individual members like in a partnership. The LLC itself is not a taxable entity.

The primary advantage of a limited liability company is limiting the liability of its members. Unless personally guaranteed, the members are not liable for the debts or obligations of the limited liability company. In a partnership or sole proprietorship, creditors may seize personal assets of the participants to pay debts of the business (Sullivan, 1998).

Additionally, (1) pass-through taxation is available, meaning that (generally speaking) the earnings of an LLC are not subject to double taxation but are treated like the earnings from partnerships, sole proprietorships and S corporations, and (2) the members have greater flexibility in structuring the limited

liability company than is ordinarily the case with a corporation, including the ability to divide ownership and voting rights in unconventional ways while still enjoying the benefits of pass-through taxation (Sullivan, 1998). Limited liability companies are not eligible to participate in tax- postponed reorganizations under I.R.C. §368 (www.fourmilab.ch/ustax/ustax.html). Another significant disadvantage of a LLC is the high cost of creating the organization.

While limited liability companies have not been in existence in this country for nearly as long as corporations, there is less law interpreting the limited liability company statutes and the rights of limited liability company members. Therefore, it is very likely that the development of the law will be similar to the law as it has developed over the years in the case of corporations (Sullivan, 1998).

Summary

The issues concerning the choice of organizational structure for farm businesses are: 1) source of equity capital, 2) liability, 3) management control, 4) continuity of the operation, and 5) taxation. The most suitable choice for a given farm business depends upon how one or more of these factors affect the financial and personal well being of the individuals involved.

In the case of sole proprietorships, the primary advantage is total management control. Equity capital is limited to that available to the sole proprietor.

Type of Company	Liability	Operations	Management	Raising Capital
Sole Proprietorship	Unlimited	Simple	Proprietor	Difficult
General Partnership	Partners	Simple	Partners	Varies
Limited Partnership	Partners	Medium	Partners	Varies
Corporation	No	Difficult	Board	Stock
S-Corporation	No	Difficult	Board	Stock
Limited Liability Company	No	Medium	Members	Possible

The sole proprietorship offers little protection of personal assets that are not a part of the operation. It is the least effective in maintaining the operation at peak efficiency. Transfer of assets and estate planning are also difficult.

The general partnership is similar to a sole proprietorship but it involves more than one individual. The primary advantage of the general partnership over the sole proprietorship is the additional source of equity capital. There is no further liability protection and in fact, risk increases because each partner is liable for the actions of the other. Additionally, management must be shared. This can be a disadvantage unless partners are involved in different aspects of the operation. It has no advantages over the sole proprietorship concerning continuity or estate planning.

The limited partnership also provides an additional source of equity capital. Its advantage over the general partnership concerns the issues of management and liability. A limited partner does not dilute the management of an operation. The departure of a limited partner does not affect the business as greatly as the departure of a

Because agriculture is such a diverse business activity, no single structure can meet the needs of individuals for all situations.

general partner. More paperwork is involved in a limited partnership compared to a general partnership or sole proprietorship. It offers no advantages for estate planning or continuity of the operation.

The most formalized organizational structure is the corporation, either subchapter-C or S. Unless the operation is very large, most farmers wishing to incorporate will most likely choose the subchapter-S format. The primary advantages are limited liability of participants and continuity of the operational. Since all profits are passed on to stockholders as income, there are few if any tax advantages. On the other hand, very large corporations may benefit from C corporation status. This is the only organization structure in which the individual is not the taxpayer. Tax laws have been designed to make the C corporation structure beneficial only for large operation with numerous employer and large capital requirements.

The limited liability company is a blend of some of the best characteristics of corporations, partnerships and sole proprietorships. It is a separate legal entity like a corporation but it is entitled to be treated as a partnership for tax purposes and therefore carries with it the "flow through" or "transparent" tax benefits that corporations do not have. It is very flexible and simple to run and, like a sole proprietorship, there is no statutory necessity to keep minutes, hold meetings or make resolutions that can trip up many corporation owners. The downside to an LLC is that you don't get the free transferability of ownership, perpetual existence, and the ability to be totally owned by a single individual that you'd get with a corporation. That is the trade off you make to get the partnership tax status and greater management flexibility.

Agriculture is a business, and as is the case for any other business, individuals should use the organizational structures that offer them the most advantages. Because agriculture is such a diverse business activity, no single structure can meet the needs of individuals for all situations. Therefore, individuals involved in the business of agriculture should weigh the pros and cons of the various organizational structures and make decisions that best meet their needs.

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This report is one in a continuing series that provides information about Alternative Agriculture. Copies of this information can be obtained by visiting the READI Web Site at: www.siu.edu/~readi or write to Office of Economic and Regional Development, Southern Illinois University Carbondale, 150 E. Pleasant Hill Rd., Carbondale, IL 62901-6891 or call 618 536-4451 or email readi@siu.edu to request a copy.

ETB252

Costs of Producing Catfish on Commercial Farms in Levee Ponds in Arkansas

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COOPERATIVE EXTENSION PROGRAM,
University of Arkansas at Pine Bluff,
United States Department of Agriculture
and County Governments Cooperating

Contents

Acknowledgments

These 1996 budget updates were developed with funding from the Catfish Bargaining Association. Another version of these were published in the document: Engle, C. R., and P. J. Kouka. 1996. *The Effects of Inflation of the Cost of Producing Catfish.* Arkansas Cooperative Extension Service. Little Rock, Arkansas.

Introduction

The catfish industry has grown dramatically over the past decade. The total volume of catfish processed in 1995 exceeded 445 million pounds and represented an increase of over 200 percent since 1983 (USDA 1996). Arkansas has been a key catfish-producing state since the inception of the industry in the 1960s. Many credit Edgar "Chip" Farmer of Dumas, Arkansas with being the first commercial catfish farmer in the United States. The catfish industry in Arkansas has grown over time and reached 30,000 acres in 1996.

John Waldrop of Mississippi State University developed the first comprehensive estimates of the costs of raising catfish in the Mississippi Delta region (Keenum and Waldrop 1988; Giachelli et al. 1982; and Burke and Waldrop 1978). Enterprise budgets such as those published by Waldrop demonstrate costs at a particular point in time under a set of very specific assumptions.

The budgets presented here follow the generalized format used by Waldrop. Costs have been updated to be in accordance with 1996 values and production practices.

Production Practices

Three farm situations were defined in the original Waldrop budgets and were used in these budgets also. Situation I was a 160-land acre farm with approximately 140 acres of water. Situation II was a 320-acre farm with 284 water acres and Situation III was a 640-acre farm with 569 acres of water.

The original Waldrop budgets were developed to correspond to costs and yields associated with the top 10 percent of catfish farms. This implies an intensive level of production. Fish are assumed to be stocked each spring at approximately 5,000 fish/acre with an annual survival of 80 percent. Harvested fish were assumed to have an average weight of 1.25 lb for an annual yield of 5,000 lb/acre/yr. Waldrop's 1988 budgets also assumed that the top 10 percent of catfish farms achieved yields of 5,000 lb/acre/yr. While industry yields have increased over time, there is no indication of dramatic improvement in average yield over the last several years.

Investment Cost

Required investment items for catfish production include the following: land, pond construction, water supply, feed storage and office buildings, and equipment (Table 1). Land values in Arkansas were $1,000 per acre in 1996. Earth-moving costs, the largest component of pond construction, increased to $0.70/cubic yard in 1996. Well and water supply costs have increased by 63 percent since 1988. Building costs increased by approximately 10 percent over this time period. There has been a distinct increase in the cost of equipment items between 1988 and 1996 (Table 2). Dissolved oxygen meter prices increased by 34 percent, prices of PTO-powered and electric aerators increased by 8 percent, and feed bin prices increased by 2 percent over this period.

Table 1. Estimated Investment Requirements for Catfish Production, Three Farm Situations, Arkansas Delta Region, 1996

Item	Farm Size[a] 160-acre	320-acre	640-acre
	---------- dol ----------		
LAND[a]	163,000	323,000	643,000
POND CONSTRUCTION			
Earth moving ($0.70/cu. yd.)	117,440	223,290	447,203
Drainage structure	10,185	20,369	40,739
Gravel ($8.00/cu. yd.)	6,897	13,937	27,875
Vegetative cover	1,562	2,861	5,730
SUBTOTAL	136,084	260,457	521,547
WATER SUPPLY (well, pump, motor and outlet pipe)	50,000		100,000
	200,000		
FEED STORAGE	10,400	20,800	26,000
OFFICE BUILDING			
20' x 40'	18,000	n.a.	n.a.
30' x 50'	n.a.	29,000	n.a.
40' x 60'	n.a.	n.a.	45,000
EQUIPMENT	228,630	413,510	801,520
TOTAL INVESTMENT	606,114	1,146,767	2,237,067
INVESTMENT PER WATER SURFACE ACRE[b]	4,329	4,038	3,932
INVESTMENT PER LAND ACRE	3,788	3,584	3,495

[a]Valued at $1,000/acre.

[b]Based on 140, 284 and 569 water acres, respectively.

A spread sheet program is available upon request to "personalize" the economic data in this publication for your operation. Contact H. Steven Killian at (870) 265-8055 for a copy of the program, or write to:

Arkansas Cooperative Extension Program
523 Highway 65 and 825
Lake Village, AR 71653
Attn: H. Steven Killian

The software is set up in Lotus 1-2-3.

Table 2. Equipment Cost, Useful Life and Annual Depreciation

Item	Initial Cost Per Unit	Farm Situation (number of units required)	Years of Useful Life
Tractors			
45-65 hp, new	$18,800	I(1); II(2); III(4)	12
1/2 used	9,400	I(1); II(3); III(5)	6
3/4 used	4,700	I(1); II(2); III(5)	3
90-100 hp, new	39,028	I(1); II(2); III(4)	12
Trucks			
1/2 ton	15,000	I(1); II(1); III(2)	5
1/2 ton (4 x 4)	19,000	I(1); II(3); III(5)	5
3/4 ton	25,000	III(1)	5
2 1/2 ton boom	20,000	III(1)	10
4-wheeler	5,000	I(1); II(1); III(1)	5
Computer and printer	4,500	I(1); II(1); III(1)	4
Oxygen meter, accessories	1,000	I(1); II(3); III(6)	3
Electric floating aerators			
10 hp	3,750	I(2); II(4); III(8)	5
15 hp (rebuilt)	3,744	I(8); II(16); III(32)	
PTO-driven aerators			
Paddlewheels	2,800	I(2); II(4); III(8)	10
Double intake pumps	2,500	I(1); II(1); III(2)	10
PTO-driven low-lift pump	3,800	I(1); II(1); III(2)	10
Mower, side-mount, 6 ft.	5,000	I(1); II(1); III(2)	6
Bush hog	3,000	I(1); II(2); III(3)	7
Sickle	3,500	II(1); III(2)	4
Radio communication system			
Mobile units	1,300	II(1); III(2)	10
Base unit	1,800	III(1)	10
Seines, 970-ft.			
1/2 inch mesh	4,500	I(1); II(1); III(1)	5
5/8 - 1 inch mesh	2,500	III(1)	5
2 inch mesh	1,800	III(1)	5
Hydraulic takeup reel, trailer	4,000	I(1); II(1); III(1)	10
Livehaul tank (2 compartment)	3,500	I(1); II(1); III(1)	10
Feeder w/electronic scales			
6,000 lb capacity	10,000	I(1)	10
9,000 lb capacity	12,250	II(1); III(2)	10
Storage bins			
20-ton capacity	5,200	I(2); II(4); III(5)	20
Boat, motor, trailer	6,600	I(1); II(1); III(1)	10
Shop equipment	15,000	I(1); II(1); III(1.7)	10
Office equipment	1,200	I(1); II(1.3); III(1.75)	10

Costs of 6,000 lb feeders increased by 54 percent, truck prices by 29 percent, and tractor prices by 21 percent since 1988.

Total investment in catfish production was $606,114, $1,146,767, and $2,237,067, respectively, for the 160, 320 and 640 acre farms (Table 1). Investment per water surface acre was $4,329, $4,038 and $3,932 and investment per land acre was $3,788, $3,584 and $3,495 for the small, medium and large farms, respectively.

Annual Ownership Costs

Table 3 presents annual ownership costs for the three farm sizes. These consist of depreciation (annual charge to account for loss in value due to wear and tear of use) and interest charges on the investment. Interest is used to charge for the use of these resources to account for income that would have been received from use of these resources in some other productive capacity.

Annual ownership costs were $95,301, $181,151 and $355,216 for the small, medium and large farms, respectively (Table 3). Per acre, these costs were $681, $638 and $624 for the three farm sizes.

Operating Costs

Feed

Feed is one of the largest cost items, representing approximately 52 percent of operating costs and 43 percent of total costs in the 1996 catfish production budgets. Feed prices are influenced strongly by changes in the commodity markets for feed ingredients and reflect changes in the price of soybeans, wheat, corn, and fish meal, among others. Figure 1 shows the fluctuations in prices of catfish feed from 1977 to 1996. Over the 19-year period, the lowest average annual price of catfish feed was $204/ton in 1977 and, excluding 1996, the

Figure 1. Average Catfish Feed Prices, 1977-1996

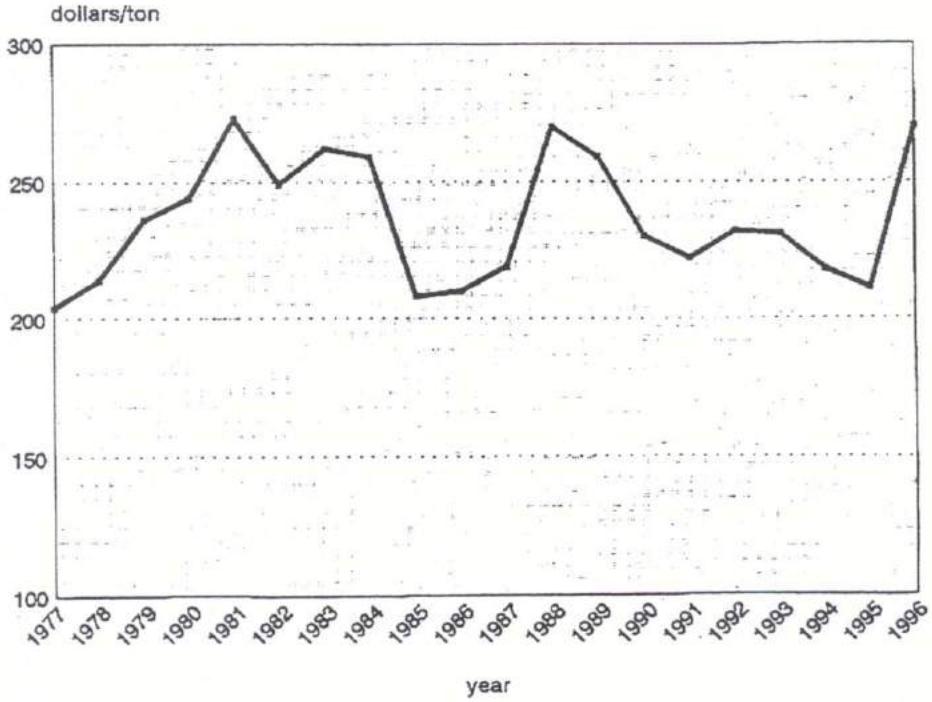

Table 3. Estimated Annual Ownership Cost for Catfish Production Facilities and Equipment, Three Farm Situations, Arkansas Delta Region, 1996

Item	Farm Size[a]		
	160-acre	320-acre	640-acre
DEPRECIATION[a]			
Ponds	13,608	26,046	52,155
Water supply[b]	5,000	10,000	20,000
Office building	900	1,450	2,250
Feed storage	520	1,040	1,300
Equipment	32,533	60,517	119,012
INTEREST ON INVESTMENT[c]			
Land	17,930	35,530	70,730
Pond construction	7,485	14,325	28,685
Water supply	2,750	5,500	11,000
Equipment	12,575	22,743	44,084
TAXES AND INSURANCE	2,000	4,000	6,000
TOTAL	95,301	181,151	355,216
ANNUAL OWNERSHIP COSTS PER ACRE[d]	681	638	624

[a] Computed by the straight line method with zero salvage value for depreciable items.

[b] Useful life expected to be 10 years.

[c] Charged at 11% on the total value of land with all other depreciable items charged at 11% on average investment (one-half of the investment value).

[d] Based on 140, 284 and 569 water acres, respectively.

highest was $273/ton in 1981. Catfish feed prices increased rapidly in 1996, reaching $280/ton at the mill. Farmers were booking feed at prices of approximately $290/ton for 1997. The 19-year average price of feed was $234/ton.

The feed conversion ratio in the 1988 budgets was assumed to be 2.0. This was increased to 2.2 in the 1996 budgets.

The catfish industry has advanced technologically over time, but external factors and production problems have resulted in higher (poorer) feed conversion ratios. Among the contributing factors are off-flavor, fish lost to depredating birds, market-driven production requiring year-round harvest, multiple-size fish populations and high stocking densities to produce high yields to reduce the ownership cost per pound of catfish produced.

Catfish Fingerling Prices

Catfish fingerling prices were obtained from hatcheries that have operated and sold fingerlings over time. Fingerlings commonly sell for $0.0125/inch for 5- to 6-inch fingerlings. Smaller fingerlings commonly sell for $0.01/inch.

Wage Rates/Labor Costs

Minimum wage rates established by the federal government have risen since 1975 and have not decreased over this period. The minimum wage rate remained stable from 1981 to 1989, increased to $4.25/hr in 1991, and remained at that level until 1996. New legislation in 1996 mandated additional increases in the minimum wage rate to reach $5.15/hr in 1997.

Labor costs across the entire economy have increased due to increases in the minimum wage rate over time. However, the true cost to the catfish industry may in fact be higher if reports from farmers of the difficulty hiring quality labor are true. If labor hired on farms in 1996 at higher wage rates is not as efficient, the overall increase in costs will be that much higher.

Interest Rates

Interest rates have demonstrated a downward trend in recent years and, in 1995 and 1996, reached even lower levels. Interest rates are forecast to continue at relatively low levels over the next several years. However, if the economic growth in the U.S. slows dramatically, the Federal Reserve may be prompted to increase the federal funds rate, which would in turn put upward pressure on other interest rates.

Catfish production has become more and more intensive over time. The 1988 Waldrop budgets assumed a six-month production period and interest on operating capital was charged over this period. However, in the 1996 budgets, this time period was increased to nine months to account for the longer, more intensive production cycle.

Other Costs

Given the increased age of many catfish ponds, additional expenses were incurred in 1996 for pond renovation and levee maintenance. Electric costs have increased due to the increased number and use of aerators in the industry. There are greater costs associated with water quality monitoring that reflect changing management philosophies directed more towards

management of ponds to prevent problems rather than to treat problems after they occur. On the other hand, chemical costs are down as the industry uses fewer chemical treatments and less medicated feed than previously. Additional costs are being incurred in accounting and legal fees as well as bird scaring ammunition.

Total Operating Costs

In all, total operating costs for the three farm sizes were $418,325, $842,932 and $1,613,718 for the 160, 320 and 640-acre farms, respectively (Table 4). On a per-acre basis, the operating costs were $2,988, $2,968 and $2,836, respectively, for the small, medium and large farms, respectively.

Total cost per pound increased to $0.734, $0.722 and $0.692 for the three farm sizes for a yield of 5,000 lb/acre/yr (Table 5). Operating cost was $0.598, $0.594 and $0.567, respectively, and ownership costs per pound were $0.136, $0.128 and $0.125 for the small, medium and large farms, respectively.

Sensitivity Analyses

Enterprise budgets are developed based on average static prices selected to represent a price level for that particular production input at that point in time. However, prices vary and these price variations can have dramatic effects on the final estimate of profitability. Sensitivity analyses were conducted to analyze the effect of the variations in price of critical economic variables and to provide a basis for accounting for price instabilities.

Sensitivity Analysis of Feed Prices

Feed price sensitivity analysis was conducted using feed prices that ranged from $200 to $350/ton for yields of both 5,000 lb/ac/yr (Table 6) and 4,000 lb/ac/yr (Table 7). Using the current feed price of $280 per ton as the base compared to the current booking rate of $290/ton, total cost per pound of catfish increased by 1.6 to 1.7 percent. If feed prices were to increase to $300/ton, cost would increase by 3.1 to 3.5 percent, depending on farm size. For a $30/ton increase from $280 to $310/ton, costs would increase by 4.8 to 5.2 percent, depending on farm size.

Feed conversion ratios vary from farm to farm depending on management practices, off-flavor occurrence and pressure from depredating birds. To account for this variation, a sensitivity analysis was conducted of feed conversion ratios for yields of 5,000 lb/ac/yr (Table 8) and 4,000 lb/ac/yr (Table 9). Feed conversion ratios ranging from 1.6 to 2.8 were substituted into the budgets in increments of 0.1. Each change of 0.1 in feed conversion resulted in a change of approximately 2 percent in total cost per pound of catfish. The initial analysis of 1996 costs assumed a feed conversion ratio of 2.2. If industry-wide feed conversion ratios are higher (poorer), then costs per pound to raise catfish are higher than estimated. Conversely, if industry-wide feed conversions are lower (better) than 2.2, costs of producing catfish are lower.

Table 4. Estimated Annual Operating Costs for Production, Three Farm Situations, Arkansas Delta Region, 1996

Item	Farm Size[a]		
	160-acre	320-acre	640-acre
REPAIRS AND MAINTENANCE	12,000	20,000	36,000
POND RENOVATION	7,200	13,000	23,000
ALL FUEL (electricity, diesel, gas, and oil)	18,698	37,995	76,000
CHEMICALS	485	985	2,000
TELEPHONE	2,000	2,500	3,100
WATER QUALITY	??	450	2,000
FINGERLINGS	42,000	85,200	136,560
FEED[a]	215,600	437,360	876,260
LABOR	36,660	85,000	182,963
MANAGEMENT	21,000	35,000	60,000
HARVESTING and HAULING[b]	28,000	56,800	85,350
ACCOUNTING/LEGAL	1,800	2,400	3,500
BIRD SCARING AMMUNITION	1,000	2,000	4,000
INTEREST ON OPERATING COST[c]	31,882	64,242	122,985
TOTAL OPERATING COSTS	418,325	842,932	1,613,718
OPERATING COSTS PER ACRE[d]	2,988	2,968	2,836

[a] $280/ton.

[b] Harvesting and hauling were $0.04/lb for the small farm and $0.03/lb for the larger farms.

[c] Charged at 11% for 9 months.

[d] Based on 140, 284 and 569 water acres, respectively.

Table 5. Summary of Costs of Catfish Production, Three Farm Situations, Arkansas Delta Region, 1996

Item	Farm Size[a]		
	160-acre	320-acre	640-acre
Annual Ownership Cost	95,301	181,151	355,216
Annual Operating Cost	418,325	842,932	1,613,718
TOTAL ANNUAL COST	513,626	1,024,083	1,968,934
TOTAL ANNUAL COST PER ACRE	3,669	3,606	3,460
Ownership Cost Per Pound	0.136	0.128	0.125
Operating Cost Per Pound	0.598	0.594	0.567
TOTAL COST PER POUND[a]	0.734	0.722	0.692

[a] Based on harvested pounds of 700,000; 1,420,000; and 2,845,000 for the 160-acre, 320-acre and 640-acre farms, respectively.

Table 6. Sensitivity Analysis of Feed Prices at a Yield of 5,000 lb/acre/year, 1996 Costs

	160-acre farm[a]		320-acre farm		640-acre farm	
$/ton	Oper. Cost/lb	Total Cost[b]/lb	Oper. Cost/lb	Total Cost/lb	Oper. Cost/lb	Total Cost/lb
200	0.502	0.638	0.498	0.626	0.472	0.597
210	0.514	0.650	0.510	0.638	0.484	0.609
220	0.526	0.662	0.522	0.650	0.496	0.621
230	0.538	0.674	0.534	0.662	0.508	0.633
240	0.550	0.686	0.546	0.674	0.520	0.645
250	0.562	0.698	0.558	0.686	0.531	0.656
260	0.574	0.710	0.570	0.698	0.543	0.668
270	0.586	0.722	0.582	0.710	0.555	0.680
280	0.598	0.734	0.594	0.722	0.567	0.692
290	0.610	0.746	0.606	0.734	0.579	0.704
300	0.621	0.757	0.617	0.745	0.591	0.716
310	0.633	0.769	0.629	0.757	0.603	0.728
320	0.645	0.781	0.641	0.769	0.615	0.740
330	0.657	0.793	0.653	0.781	0.627	0.752
340	0.669	0.805	0.665	0.793	0.639	0.764
350	0.681	0.817	0.677	0.805	0.651	0.776

[a]Water acres are 140, 284, and 569 acres, respectively.

[b]Ownership costs are $0.136, $0.128, and $0.125/lb for the 160, 320 and 640-acre farms, respectively.

Table 7. Sensitivity Analysis of Feed Prices at a Yield of 4,000 lb/acre/year, 1996 Costs

	160-acre farm[a]		320-acre farm		640-acre farm	
$/ton	Oper. Cost/lb	Total Cost[b]/lb	Oper. Cost/lb	Total Cost/lb	Oper. Cost/lb	Total Cost/lb
200	0.628	0.798	0.623	0.783	0.590	0.746
210	0.643	0.813	0.638	0.798	0.605	0.761
220	0.658	0.828	0.653	0.813	0.620	0.776
230	0.673	0.843	0.668	0.828	0.635	0.791
240	0.688	0.858	0.683	0.843	0.650	0.806
250	0.703	0.873	0.698	0.858	0.664	0.820
260	0.718	0.888	0.713	0.873	0.679	0.835
270	0.733	0.903	0.728	0.888	0.694	0.850
280	0.748	0.918	0.743	0.903	0.709	0.865
290	0.763	0.933	0.758	0.918	0.724	0.880
300	0.776	0.946	0.771	0.931	0.739	0.895
310	0.791	0.961	0.786	0.946	0.754	0.910
320	0.806	0.976	0.801	0.961	0.769	0.925
330	0.821	0.991	0.816	0.976	0.784	0.940
340	0.836	1.006	0.831	0.991	0.799	0.955
350	0.851	1.021	0.846	1.006	0.814	0.970

[a]Water acres are 140, 284, and 569 acres, respectively.

[b]Ownership costs are $0.136, $0.128, and $0.125/lb for the 160, 320 and 640-acre farms, respectively.

Table 8. Sensitivity Analysis of Feed Conversion Ratios at a Yield of 5,000 lb/acre/year, 1996 Costs

	160-acre farm[b]		320-acre farm		640-acre farm	
FCR[a]	Oper. Cost/lb	Total Cost[c]/lb	Oper. Cost/lb	Total Cost/lb	Oper. Cost/lb	Total Cost/lb
1.6	0.507	0.643	0.503	0.631	0.476	0.601
1.7	0.522	0.658	0.518	0.646	0.491	0.616
1.8	0.537	0.673	0.533	0.661	0.507	0.632
1.9	0.552	0.688	0.548	0.676	0.522	0.647
2.0	0.567	0.703	0.563	0.691	0.537	0.666
2.1	0.582	0.718	0.578	0.706	0.552	0.677
2.2	0.598	0.734	0.594	0.722	0.567	0.692
2.3	0.613	0.749	0.609	0.737	0.582	0.701
2.4	0.628	0.764	0.624	0.752	0.598	0.723
2.5	0.643	0.779	0.639	0.767	0.613	0.738
2.6	0.658	0.794	0.654	0.782	0.628	0.753
2.7	0.673	0.809	0.669	0.797	0.643	0.768
2.8	0.689	0.825	0.685	0.813	0.658	0.783

[a]Feed conversion ratio (pounds of feed required to produce 1 pound of gain).

[b]Water acres are 140, 284 and 569 acres, respectively.

[c]Ownership costs are $0.136, $0.128 and $0.125/lb for the 160, 320 and 640-acre farms, respectively.

Table 9. Sensitivity Analysis of Feed Conversion Ratios at a Yield of 4,000 lb/acre/year, 1996 Costs

	160-acre farm[b]		320-acre farm		640-acre farm	
FCR[a]	Oper. Cost/lb	Total Cost[c]/lb	Oper. Cost/lb	Total Cost/lb	Oper. Cost/lb	Total Cost/lb
1.6	0.634	0.804	0.629	0.789	0.595	0.751
1.7	0.653	0.823	0.648	0.808	0.614	0.770
1.8	0.671	0.841	0.666	0.826	0.634	0.790
1.9	0.690	0.860	0.685	0.845	0.653	0.809
2.0	0.709	0.879	0.704	0.864	0.671	0.833
2.1	0.728	0.898	0.723	0.883	0.690	0.846
2.2	0.748	0.918	0.743	0.903	0.709	0.865
2.3	0.766	0.936	0.761	0.921	0.728	0.876
2.4	0.785	0.955	0.780	0.940	0.748	0.904
2.5	0.804	0.974	0.799	0.959	0.766	0.923
2.6	0.823	0.993	0.818	0.978	0.785	0.941
2.7	0.841	1.011	0.836	0.996	0.804	0.960
2.8	0.861	1.031	0.856	1.016	0.823	0.979

[a]Feed conversion ratio (pounds of feed required to produce 1 pound of gain).

[b]Water acres are 140, 284 and 569 acres, respectively.

[c]Ownership costs are $0.136, $0.128 and $0.125/lb for the 160, 320 and 640-acre farms respectively.

Sensitivity Analysis of Increased Minimum Wage

Recently passed legislation authorizes an increase in the minimum wage rate of $0.90 per hour over the next several months. This overall increase represents a 21 percent increase in the minimum wage rate. Increases in minimum wage have historically been passed along to other labor costs and generally stimulate a rise in wages throughout the economy. A sensitivity analysis was conducted to assess the effect of a 21 percent increase in labor cost on the cost of producing catfish.

In the event that only labor, not management, costs would increase in response to the increase in minimum wage, cost of producing catfish would increase by 1.6 to 2.2 percent (Table 9). If both labor and management costs increase by 21 percent, production costs will increase by 2.5 to 2.6 percent.

Sensitivity Analysis of Yield Changes

Reported yields in the catfish industry vary greatly. Many farmers indicate that they can achieve yields of 7,000 lb/acre in certain ponds. However, other ponds on the same farm treated in substantially the same manner, will only produce yields of 2,500-3,000 lb/acre. Some of this difference is due to disease problems, oxygen problems or off-flavor problems that result in fish losses, delayed harvest or reduced average yields across the farm.

Yields were varied in this analysis from 3,000 lb/acre to 7,000 lb/acre. Table 10 shows that, as yields increase, the cost of production decreases. In fact, if yield of catfish could be increased from 5,000 lb/acre to 5,500 lb/acre, the cost of producing catfish would decrease by 9 percent.

Table 10. Sensitivity Analysis of the Effect of Yield on Catfish Production Cost, 1996 Costs

Yield (lb/ac/yr)	160-acre farm			320-acre farm			640-acre farm		
	Own. Cost	Oper. Cost	Total Cost	Own. Cost	Oper. Cost	Total Cost	Own. Cost	Oper. Cost	Total Cost
	dollars/lb								
3,000	0.227	0.996	1.223	0.213	0.989	1.202	0.208	0.945	1.153
3,500	0.190	0.854	1.048	0.182	0.848	1.030	0.178	0.810	0.988
4,000	0.170	0.747	0.917	0.159	0.742	0.901	0.156	0.709	0.865
4,500	0.151	0.664	0.815	0.142	0.660	0.802	0.139	0.630	0.769
5,000	0.136	0.598	0.734	0.128	0.594	0.722	0.125	0.567	0.692
5,500	0.124	0.543	0.667	0.116	0.540	0.656	0.114	0.516	0.630
6,000	0.113	0.498	0.611	0.106	0.495	0.601	0.104	0.473	0.577
6,500	0.105	0.460	0.565	0.098	0.457	0.555	0.096	0.436	0.532
7,000	0.097	0.427	0.524	0.091	0.424	0.515	0.089	0.405	0.494

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Issued in furtherance of Extension work, Act of September 29, 1977, in cooperation with the U.S. Department of Agriculture. Dr. J. W. McCray, Dean/Director, Cooperative Extension Program, University of Arkansas at Pine Bluff. The Arkansas Cooperative Extension Program offers its programs to all eligible persons regardless of race, color, national origin, sex, age, or disability, and is an Equal Opportunity Employer.

Contents

Acknowledgments

These 1996 budget updates were developed with funding from the Catfish Bargaining Association. Another version of these were published in the document: Engle, C. R., and P. J. Kouka. 1996. *The Effects of Inflation of the Cost of Producing Catfish*. Arkansas Cooperative Extension Service. Little Rock, Arkansas.

Enterprise Budgets for Yellow Perch Production in Cages and Ponds in the North Central Region, 1994/95

by

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Technical Bulletin Series #111

In cooperation with USDA's Cooperative State Research, Education and Extension Service

USDA Grant #93-38500-8392
Purdue University 1993 Crossroads Initiative
May 1997

Executive summary

This study reports the results of an investigation into the costs of culturing yellow perch for the food fish market in the North Central Region (NCR). Enterprise budgets were developed for both cage and pond production systems at two size levels, 5,000 and 50,000 pounds of production. Because only a handful of established yellow perch aquaculture operations currently exist in the NCR, hypothetical production systems were modeled. Production values used in the budgets (e.g., feed conversion ratio, death loss, stocking rate) were based on the expert opinion of research and extension personnel at various universities in the NCR who are familiar with yellow perch.

The production costs developed in this study suggest that larger systems, which can capture economies of size in investment and input costs, are likely to be economically feasible. The breakeven prices (cost per pound) for the larger cage and pond operations were similar and averaged about $2.00 per pound. This price is near the bottom of the range of monthly average wholesale market prices for yellow perch in the round reported by Lake Erie processors.

Smaller operations are much less likely to be economically feasible, especially if annual ownership costs per pound are high. (Ownership costs are annual costs associated with the ownership of capital investment items, such as levee ponds, and include interest, depreciation, repairs, taxes, and insurance.) This is the case for the small pond operation that has a breakeven price of $3.48 per pound. Annual ownership costs for this operation are $1.20 per pound compared to $0.12, $0.36, and $0.45 per pound for the larger cage, smaller cage, and larger pond operations, respectively. Smaller operations with reasonable per pound ownership costs might be profitable at high-end market prices (around $3.00 per pound). The small cage operation fits this category with a breakeven price of $2.80 per pound. These operations are more sensitive to adverse price and cost movements than larger operations. However, they can improve their likelihood of success by increasing the size at which they market their perch and by controlling operating costs, especially by decreasing input prices for feed and fingerlings.

Operating costs are similar for both types of production systems. Economies of size also exist for operating costs, but the effect is not as strong. Fingerlings and feed account for over 60 percent of total costs in all but the small pond operation. Transportation costs can dramatically affect delivered feed prices. Shipping costs are often determined more by shipment volume and ingenuity in arranging transportation and less by length of haul.

Despite the importance of size economies, it is not yet known which size of operation will yield the most profitable economies of size in either cage or pond production systems for yellow perch. A manager must take into account revenues as well as costs in determining the optimal size, input mix, and product mix of an enterprise. The lowest cost of production (or the highest amount of production) does not alone determine the most profitable operation.

Sensitivity analysis showed that changes in fingerling prices, feed prices, and market size of the fish have larger impacts on breakeven prices than do changes in the feed conversion ratio and death loss. In particular, fingerling price can have a substantial effect on enterprise profitability since yellow perch are marketed at such low weights.

Costs at other points in time and for other locations in the NCR may differ from the production costs estimated in this study. To provide guidance on the cost impacts of these potential differences, sensitivity analysis was conducted with alternative values for key budget variables (e.g., feed price, death loss, market price). Additionally, tables were developed containing estimates of delivered prices for feed and fingerlings at various locations in the NCR.

The cost and profitability estimates made in this study must be regarded as preliminary rather than conclusive. As the industry matures, historical data accumulate, and optimal culture methods and production systems are identified, these preliminary production cost estimates can be revised to incorporate the new information. In conjunction with better market information, expectations of industry profitability can also be updated.

While preliminary, the budgets produced in this study are useful for several purposes: 1) as a demonstration of the investment requirements, annual inputs, and costs necessary to undertake yellow perch cage and pond culture in the NCR in small and moderate sized systems; 2) as a basis for comparing costs among different sizes and types of production systems, locations, or species; 3) as a foundation for further budget development; 4) as a springboard for discussion among producers and university/government staff in various disciplines; 5) and as a guide for directing research toward those areas most likely to enhance the profitability of yellow perch aquaculture in the NCR.

Series Editor: Joseph E. Morris, Associate Director,
North Central Regional Aquaculture Center

Originally published by Iowa State University, Ames, Iowa

The complete document can be found at:

http://aquanic.org/publicat/usda_rac/tr/ncrac/tb111.pdf