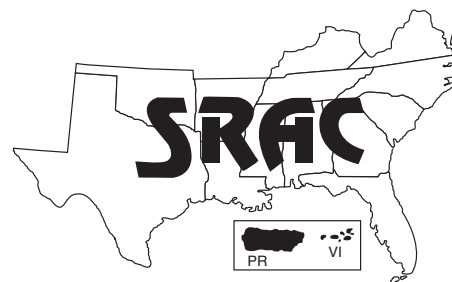


## Southern Regional Aquaculture Center



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# Small-Scale Marketing of Aquaculture Products

Siddhartha Dasgupta and Robert Durborow<sup>1</sup>

Small-scale aquaculture is becoming more prevalent in states where it has not been a traditional agricultural practice. The key to success in small-scale aquaculture is skillful marketing, because too often farmers focus mainly on production without considering whether the markets available to them will pay a profitable price. The recipe for a successful small-scale aquaculture business is to identify marketing opportunities and then develop market-based production and marketing plans.

## Advantages and disadvantages of small-scale production

Small-scale aquaculture has certain inherent advantages. It usually requires less investment and has lower operational costs than large, commercial production (Quagraine, 2006). Small-scale aquaculture can often use existing farm resources, such as ponds, trucks and barns, with little additional investment. It can also use existing human resources (family labor). That makes it a fairly easy business to start, with little economic risk. In some cases, it can be incorporated into an agricultural enterprise as a part-time or hobby project. There are also several disadvantages. Small-scale production has higher per-unit production costs and higher break-even prices than large-scale operations.

This makes the products of small-scale aquaculture less competitive. There also can be difficulties in marketing these products. Large-scale aquaculture industries in the United States have established marketing channels, such as processing plants and live haulers. Buyers often seek very specific product qualities and prices and have certain delivery specifications. Knowing what buyers need helps large-scale producers focus on products that meet the demands of the market, which makes marketing relatively simple. Small-scale producers, however, may not have established markets, and the prices paid by large-scale buyers are usually below the break-even prices of small-scale farms. Consequently, small-scale farmers have to discover niche markets that pay a greater share of retail prices (or

price premiums for specialized products) to remain profitable.

Table 1 includes examples of different small-scale aquaculture markets, with information about their characteristics and limitations. Other data in this fact sheet were collected by surveying aquaculture professionals across the U.S., mostly in the southern region or states bordering the southern region. Some price data are included, although prices are subject to change.

## Small-scale products

While large-scale aquaculture seems to specialize in a few product types (channel catfish, baitfish, etc.), a variety of products is produced on small-scale farms, including food fish (channel catfish, hybrid striped bass, largemouth bass, tilapia), catfish for fee fishing,

**Table 1.** Characteristics of small-scale aquaculture markets.

Market type	Volume per delivery	Frequency
Channel catfish sold to live haulers destined for processing plants	20,000 lbs per truck	Year round
Channel catfish sold to live haulers destined for fee-fishing lakes	2,500 lbs minimum	Monthly from Apr. to Oct.
Catfish, tilapia, bass sold to smaller live haulers using 1-ton truck/trailer combinations	500 lbs minimum	Monthly, year round
Freshwater prawns and tilapia sold at the pond bank	500-1,000 lbs maximum	Sept. to Oct. of each year
Fish sales directly from producer to restaurants and local retailers	25-100 lbs per buyer	Every week or twice a month

<sup>1</sup> Kentucky State University

baitfish (golden shiners, rosy red minnows), crustaceans for food and bait (freshwater prawns, crawfish), and ornamental fish and crustaceans (koi, goldfish). This is because markets that are profitable for small-scale producers tend to want small amounts of a large variety of products. These are common products of small-scale producers.

- Kentucky — channel catfish, largemouth bass, rainbow trout, freshwater prawns, koi, baitfish
- Virginia — freshwater prawns, channel catfish, hybrid striped bass, rainbow trout
- North Carolina — channel catfish, freshwater prawns, hybrid striped bass, koi
- Texas — channel catfish, tilapia, hybrid striped bass, crawfish
- Alabama — catfish, tilapia, bass, bluegill, crawfish, shrimp, ornamental fish
- Arkansas — bass, crawfish, freshwater prawns, turtles

## Live product sales

Sales to live haulers are attractive to producers because live haulers might purchase the entire production at the farm (without the need for producers to transport their products to the market) and farmers get paid at the point of purchase. Small-scale channel catfish farmers in Kentucky, Arkansas, Tennessee and Texas have been selling to live haulers for a number of years at prices higher than those paid by processing plants; most of these fish were destined to stock fee-fishing operations. These live haulers seek 2-pound fish in sufficient volume to fill their trucks (minimum load is 2,000 to 2,500 pounds of fish for tractor trailers), and prefer farms that can sustain a consistent supply.

Current marketing information indicates that live haulers are also transporting food fish from small-scale farms to markets. In Indiana, almost all hybrid striped bass (2008 sales price \$3 per pound) and tilapia (2008 sales price \$2 per pound) are grown on small-scale farms and sold to live haulers, who re-sell the fish to grocers and restaurants in the Chicago area. In Kentucky, live haulers purchase largemouth bass and rainbow trout from small-scale producers both for food

and for recreational pond stocking.

The hauling capacity of commercial live haulers varies considerably; some use large tractor-trailer systems that carry up to 20 tons of water, while others use smaller flatbed trucks that haul 5 to 10 tons of water. Some small-scale live haulers in states such as Kentucky, Indiana, Illinois and Missouri use pickup trucks/gooseneck trailers and buy smaller volumes of a variety of fish such as largemouth bass, hybrid striped bass, catfish, tilapia, bighead carp and grass carp to supply retailers and restaurants in metropolitan areas. These live haulers are better able to service small farms because they require less fish per load (200 to 500 pounds) and prefer farms that have several types of fish for sale, which is more likely to be true of small-scale aquaculture.

Some enterprising producers haul their own fish. Baitfish farmers in Kentucky sell 10 to 20 pounds of minnows per week per farmer during spring and summer to local bait shops. Farmers in Alabama, Kentucky, Missouri and North Carolina haul small quantities of sport fish to live fish dealers who sell them for private pond stocking. Farmers in Alabama, Kentucky, Missouri, North Carolina and Virginia haul ornamental fish, such as 4- to 6-inch koi, to pet shops and private pond supply stores at prices ranging from \$1.50 to \$4.00 per fish (2008 price). Small-scale farmers also haul their fish to ethnic grocery stores and restaurants. Grocers who sell live fish usually have holding tanks and farmers make regular deliveries to these customers.

Producers considering starting their own live hauling operation should know the following.

- A ½-ton pickup truck will haul 100 gallons of water in the bed.
- A ¾-ton truck will haul up to 250 gallons.
- A 1-ton truck can haul up to 400 gallons.
- A 1-ton truck with a gooseneck trailer can haul up to 1,000 gallons of water.
- If a hauling tank is wider than 4 feet, baffles should be installed in the tank for safety.
- The loading rate for fish is 1 to 3 pounds of fish per gallon of water,

depending on fish size and species.

- Fish should be loaded into trucks during cooler times of the day.
- Evaporated salt (non-iodized) should be mixed in the transportation water at 3 to 6 parts per thousand. Live hauling tanks must be oxygenated and the use of fine-pore diffusers reduces oxygen expenditure.

Certain government permits are required for live hauling and sales. Some states require a live fish transportation permit (check with your state's department of wildlife and fisheries regulation). Drivers must carry documentation showing the origin of their live fish, such as a sales receipt from the farmer who supplied the fish or a propagation permit if the live hauler is selling his/her own fish. Fish originating from Great Lakes states must have appropriate VHS certification. To operate in these states, contact the state agency for wildlife and fisheries regulation. Some states require farmers to have business licenses if they sell live fish directly to consumers.

Table 2 is an example enterprise budget for a small-scale live hauling operation that supplies largemouth bass to four restaurants in a neighboring city at 50 pounds per week per restaurant for 16 weeks per year. Largemouth bass was chosen for this example because this high-value fish is not available from typical restaurant food suppliers, yet it is well accepted by many consumers and highly favored by chefs. Thus, there is opportunity for a small-scale distributor to enter the restaurant supply chain with this product. Table 2 shows the operating and fixed costs associated with a small-scale live hauling operation. Clearly, the truck and equipment costs (\$38,900) are substantial, so prospective live haulers should consider investing in this enterprise only if careful market research shows that there are unsupplied and undersupplied markets that are feasible and profitable to serve. Table 2 can be generalized into other scenarios where producers could sell small amounts of live aquaculture products to local restaurants and retailers.

The profitability of small-scale live hauling depends on finding buyers such as bait shops, pet stores, restaurants or grocery stores that will pay a

competitive price. There is potential for success, however, because small markets with limited demand are not well-served by larger live haulers. Consult with your state's Extension aquaculture specialist to find out if live sales would be profitable before you make any production and marketing plans.

## On-farm sales

Many small-scale farms are profitably selling fish and crustaceans directly to consumers at the pond bank. Most freshwater prawn growers in Kentucky, Indiana, North Carolina, Tennessee and Virginia sell their product to waiting customers within a few hours of harvesting their ponds. The prices they receive range from \$6 to \$10 per pound (2001–2008 prices). In North Carolina, live crawfish are sold to consumers at the pond bank or at roadside stands. Some prawn farmers in Kentucky polyculture tilapia with

prawns in floating cages; the fish are often sold whole at the pond bank for \$3.00 to \$3.50 per pound (2003–2008 prices). In Virginia, farmers sell cage-cultured channel catfish (during summer) and rainbow trout (during winter) at the pond bank for an average of \$1.05 per pound and \$2.25 per pound, respectively (2008 prices).

Food festivals are another venue for on-farm sales; farm products are cooked and sold to consumers at the farm. Prawn farmers in Kentucky, Missouri, Ohio and Tennessee have held on-farm food festivals where freshly harvested crustaceans are cooked and sold to waiting crowds. The North Carolina Crawfish Producers Association holds several promotional boils at farmers' markets each year. During such events, other farm products are for sale as well. While the advantages to this marketing practice are clear, a major disadvantage involves the financial risk. Some food festivals have

failed because of inclement weather and poor attendance. More information about food festivals, including economic results, is available from Dasgupta (2003).

The costs associated with on-farm sales must be added to the cost of production to determine the product's price. Table 3 lists costs associated with selling 1 water-acre of freshwater prawns to consumers at the pond bank. These costs could be subdivided into operating and fixed costs associated with harvesting (labor, fuel, maintenance and equipment costs for truck, seine, baskets and water pump), holding product (labor, ice and equipment costs for holding tanks), and selling product (advertisement, telephone, labor and cost of a scale). Table 3 can be generalized for other aquaculture products sold on the farm.

Advertisement, customer feedback, and product differentiation are very

**Table 2.** Annual enterprise budget for a small-scale live hauling operation selling largemouth bass to four local restaurants at 50 pounds per week for 16 weeks per year. Interest rate = 10% per annum.

Item	Quantity	Units	Price	Value
<b>Revenue:</b>				
Live largemouth bass (sold by live hauler)	3,200	lbs	\$8.00	\$25,600
<b>Variable costs:</b>				
Live largemouth bass (bought by live hauler)	3,700	lbs	\$4.00	\$14,800
Fuel	320	gallons	\$2.00	\$640
Labor	64	man-hours	\$10.00	\$640
Telephone	4	months	\$10.00	\$40
Oxygen	16	tanks	\$30	\$480
Salt	320	lbs	\$0.50	\$160
Maintenance				\$336
Annual permits				\$60
Total annual operating expenses				\$17,200
Interest on operating costs				\$573
<b>Fixed costs:</b>				
	<b>Value</b>	<b>Lifespan</b>	<b>Depreciation</b>	<b>Interest</b>
4x4 truck (1 ton) 33% charged to live hauling business	\$33,000	10 years	\$1,089	\$545
Fish hauling tank	\$3,780	15 years	\$252	\$189
Chute (\$180) and latches (\$200)	\$300	15 years	\$20	\$15
Diffuser grid and hoses	\$350	3 years	\$117	\$18
Dissolved oxygen meter	\$700	5 years	\$140	\$35
Agitators	\$220	3 years	\$73	\$11
Water pump	\$550	3 years	\$183	\$28
<b>Total annual fixed costs</b>				<b>\$2,715</b>
<b>Annual profit</b>				<b>\$5,112</b>
<b>Returns to labor</b>				<b>\$5,752</b>

**Table 3.** Costs of harvesting and selling freshwater prawns from a single 1-acre pond.

Item	Quantity	Units	Price	Value
<b>Variable costs:</b>				
Labor	40	man-hours	\$10	\$400
Fuel	10	gallons	\$2	\$20
Ice	1,000	lbs	\$0.17	\$170
Advertisement				\$100
Telephone	4	months	\$10	\$40
Sales license				\$10
Maintenance				\$44
Total variable costs				\$784
<b>Fixed costs:</b>				
	<b>Value</b>	<b>Lifespan</b>	<b>Depreciation</b>	<b>Interest</b>
Seine	\$450	5 years	\$90	\$23
Baskets	\$100	2 years	\$50	\$5
Water pump	\$550	5 years	\$110	\$28
Two holding tanks	\$1,000	10 years	\$100	\$50
Scale	\$190	5 years	\$48	\$10
Pickup truck (1% of value charged to harvesting activities)	\$200	10 years	\$20	\$10
<b>Total equipment cost and annual fixed costs (= \$534)</b>	<b>\$2,490</b>		<b>\$408</b>	<b>\$126</b>

important for successful on-farm sales. Farmers have used local newspapers, roadside billboards and radio stations to advertise upcoming harvests. Advertisements must include contact information, farm location, products, available dates and prices. While expensive, advertisement is essential for beginning farmers who want to create a customer pool. In many areas it is important to advertise in Spanish also to reach potential Hispanic clientele.

To enjoy continued success in this market, producers must have satisfied customers. Insightful producers ask their buyers what they like and dislike about the products. Price is usually the main thing customers dislike, but others could be product size, farm location, harvesting schedule, etc. With this feedback producers should "fine tune" their products to satisfy their customers' preferences. Current trends indicate that customers who will travel to a farm to buy fresh food usually support local production, care about food quality, and prefer environmentally friendly farming practices. Accordingly, producers should differentiate their products by promoting the low environmental impact of their farms, which can be achieved by limiting chemical use and controlling farm effluent discharges. Using local feed is another product differentiation tool;

for example, in Kentucky, tilapia and prawn farmers could opt for distillers' grains as a feed ingredient, which can be obtained from local distilleries. These methods are necessary to engender the customer loyalty that is crucial for pond bank sales.

### Wholesale sales

The economics of production usually dictate that small-scale farms need to receive retail prices to be profitable. However, some small-scale aquaculturists are selling profitably to wholesale buyers. This is encouraging because wholesale marketing has lower transactions costs and requires less market intelligence than retail or direct marketing options.

In Kentucky, seafood wholesalers and distributors servicing restaurants in major metropolitan areas purchase whole hybrid striped bass on ice from local producers at prices that make small-scale aquaculture profitable. In Texas, a large-scale hybrid striped bass producer is acting as a wholesale buyer and distributor for several small-scale bass producers. The fish are then sold whole on ice to retailers and restaurants in metropolitan areas. One caveat to these success stories is that small-scale producers may find they can sell profitably to wholesalers only if their

products have few commonly available substitutes. Hence, bass could be sold profitably to wholesalers but not freshwater prawns (close substitute for marine shrimp) or channel catfish (close substitute for imported catfish, Basa and Tra).

Small-scale producers can cooperate to take advantage of economies of scale, which makes it easier to profit at wholesale prices. For example, in North Carolina a hybrid striped bass cooperative sells whole boxed fish to wholesale buyers in the northeastern U.S. and Canada.

A new group of wholesale buyers that has emerged recently is small-scale processing plants. These are typically one-room operations employing family members and farm workers to hand process limited volumes of fish and crustaceans. While most of these processing plants use products grown by the plant owners, many also purchase products from local farmers. Typically, these processors buy channel catfish, tilapia, trout and freshwater prawns from local producers and sell the processed products to local restaurants or directly to customers via their own retail store or at farmers' markets.

Many small-scale producers and processors are acting as wholesalers/distributors in selling products to res-

taurants. They take advantage of the tendency of chefs in fine restaurants to feature locally grown foods. In Kentucky, some restaurants in Louisville and Lexington have shown a strong interest in products such as fresh hybrid striped bass and largemouth bass, fresh paddlefish and fresh tilapia. These products are supplied to them by local producers and a local seafood distributor. In Kentucky and Tennessee, restaurants near traditional sport fisheries have a customer demand for fresh catfish fiddlers (headed and gutted fish), striped bass and bluegill, which they buy from local producers. In Virginia, local restaurants are purchasing whole hybrid striped bass and rainbow trout directly from producers.

One obvious question is: How profitable is it for a producer to make regular restaurant deliveries? Using an actual fish distribution scenario from Kentucky, Table 4 provides an annual enterprise budget for distributing 200 pounds per week (50 pounds per week to four restaurants) of whole largemouth bass at a price of \$6 per pound for 48 weeks per year. The operating costs include the costs of fish, fuel, labor, ice, telephone and maintenance. The fixed costs include the costs of a light-duty pickup truck (used 1 day per week), packaging

material, and a small scale. This budget shows an annual return to labor for this small-scale enterprise of more than \$10,000. Table 4 can be generalized for other producer-to-restaurant product delivery scenarios.

Producers should realize that local wholesale buyers are usually very selective. They want specific species, sizes and product forms, and they want delivery at pre-specified times. For example, restaurants may want 50 pounds of fresh gutted hybrid striped bass that are 1 pound in size delivered to them twice monthly on Fridays. To succeed in these markets, sellers must fill buyers' requirements exactly.

### Other marketing options

Some producers have small-scale hatcheries and nurseries that produce fish fingerlings (e.g., channel catfish, tilapia, feed-trained largemouth bass, etc.) and juvenile crustaceans (freshwater prawns and Australian red claw crayfish) for sale to other aquaculture producers. Some of these small-scale hatcheries have their own "fish truck" operations and haul sport fish fingerlings to farm supply stores on an advertised schedule, where they sell to individual pond owners for recreational stocking purposes.

Some producers have opened their own pay-fishing ponds. A Virginia farmer has partitioned 1 acre of an 8-acre pond using plastic netting. The 1-acre area is the fee-fishing site and it is stocked with fish that are grown in cages in the remaining 7-acre pond area. A few producers are selling ornamental aquatic plants to garden pond supply stores and garden centers. Others are supplying restaurants with fresh tilapia as well as herbs and vegetables grown in greenhouse aquaponics systems, where the effluent water from fish tanks is used to nourish vegetables and herbs.

### Opportunities and challenges

Many state departments of agriculture have marketing programs that promote locally grown products. These state departments, along with aquaculture marketing specialists at local land grant universities, can help prospective farmers target appropriate products and markets. These professionals have information about the products and markets currently available within the state and about government-sponsored programs to assist with agricultural marketing. They should be able to tell you what products buyers prefer, what

**Table 4.** Annual enterprise budget for a small-scale fish delivery operation selling largemouth bass on ice to four local restaurants at 50 pounds per week for 48 weeks per year. Interest rate = 10% per annum.

Item	Quantity	Units	Price	Value
<b>Revenue:</b>				
Whole largemouth bass	9,600	lbs	\$6.00	\$57,600
<b>Variable costs:</b>				
Whole largemouth bass	9,600	lbs	\$4.00	\$38,400
Fuel	960	gallons	\$2.00	\$1,920
Labor	192	man-hours	\$10.00	\$1,920
Ice	9,600	lbs	\$0.17	\$1,632
Telephone	12	months	\$10	\$120
Maintenance				\$200
Total annual operating expenses				\$44,192
Interest on operating costs				\$4,419
<b>Fixed costs:</b>				
	<b>Value</b>	<b>Lifespan</b>	<b>Depreciation</b>	<b>Interest</b>
Vehicle (14% of value charged)	\$1,400	10 years	\$140	\$70
Ice chests	\$80	2 years	\$40	\$4
Scale	\$200	5 years	\$40	\$10
<b>Total annual fixed costs</b>				<b>\$304</b>
<b>Annual profit</b>				<b>\$8,685</b>
<b>Returns to labor</b>				<b>\$10,605</b>

prices are paid, and what it costs to access the markets. Since "trial-and-error" is a very expensive business strategy, using these professional resources makes economic sense.

The key to successful small-scale aquaculture is finding unserved or poorly served markets (Quagraine, 2006). Some of the most lucrative markets are in live sales, because buyers who want live organisms tend to pay a higher price for them and have a limited supply. And because the holding and transportation of live aquatic animals is very costly, farms located near buyers have a competitive advantage over farms farther away. Live sales also avoid the costs of processing and packaging.

On-farm sales, farmers' market sales and restaurant sales all can be profitable. However, on-farm sales require an investment in advertising and product differentiation, and unless a farm is close to a population center, on-farm sales may not be practical.

With farmers' markets the producer will have market membership fees, gate and booth fees, costs of product transportation and storage, etc. A recent study showed that most customers at farmers' markets prefer processed fillets over unprocessed fish, which can be cost prohibitive to many small-scale farmers. However, there is strong demand for fresh catfish and tilapia fillets in Kentucky's farmers' markets at prices that would make small-scale production and processing profitable (Dasgupta, 2008).

Restaurant sales can be profitable because many restaurants seek unique local products to make their menus more exotic (Tables 2 and 4). Experienced marketers know that chefs want the local products to be sufficiently different from the seafood that food service distributors usually provide. Kentucky's catfish farmers tried in vain to sell fresh fillets to restaurants, because chefs could obtain frozen imported fillets, a close substitute product, at a much lower price. However, if a unique product is offered, many chefs are willing to pay a premium price. Hence, farmers should research the market to learn which aquaculture products are unique enough to command premium prices.

## A marketing plan

A marketing plan has the following components: 1) cover sheet, 2) executive summary, 3) strengths/weaknesses/opportunities/threats (SWOT) analysis, 4) products and markets description, 5) marketing strategy, 6) financial forecasts, and 7) measurements of progress (Kime et al., 2004). Table 5 contains an outline of a marketing plan. More information is available from the United States Small Business Administration: [www.sba.gov/smallbusinessplanner/manage/marketandprice/SERV\\_MARKETINGPLANS.html](http://www.sba.gov/smallbusinessplanner/manage/marketandprice/SERV_MARKETINGPLANS.html)

Marketing plans not only help producers be more focused in their aquaculture businesses, but also help them secure business loans.

The cover sheet contains the name and contact information for the farm, the

date of the plan, and the name of the person who prepared the plan.

The executive summary is a brief description of the products being sold, the markets being addressed, the marketing strategies being used, and the firm's expectations about the amount of product that can be sold and at what price. Example: "This farm sells live/freshly killed whole hybrid striped bass and tilapia to wholesalers and end users, respectively. The goal is to sell 500 pounds of bass per month (from July through December) to a local wholesaler/distributor for \$2.75 per pound. The tilapia will be sold to Hispanic consumers during the September/October harvest season at \$3.00 per pound. The main marketing goal is to work closely with the wholesaler/distributor and regional restaurant chefs to increase the demand for fresh

**Table 5.** Outline of a marketing plan for a small-scale aquaculture farm.

Item	Topics
Cover sheet	Name and contact information of the farm. Name of person preparing the plan and date of plan.
Executive summary	Summarize the following information: 1) What products are being sold? 2) What markets are being addressed? 3) What quantity of products are expected to be sold and at what prices? 4) What marketing strategies are being used?
SWOT analysis	1) What are the strengths and weaknesses of the firm? 2) What opportunities and threats are posed by the business environment and markets and that can affect the firm?
Objectives	Outline a few (5 or fewer) goals that this marketing plan will address. The goals must each be practical, measurable, and have a completion date.
Marketing strategy	Formulate a plan for implementing the above objectives by investigating: 1) Who are the firm's target customers and what do they value? 2) What products does the firm offer? 3) Who are the firm's competitors? 4) Are the firm's products unique from their competitors' products? 5) How are the firm's products distributed, packaged, and priced? 6) How does the firm promote/advertise the products and obtain feedback from customers
Financial forecasts	1) How much will it cost to implement the above strategy? 2) How will the earnings change due to the above strategy? 3) Using enterprise budgets, cash-flow statements, income statements and balance sheets, forecast the effects of the marketing strategy on the firm income, cash flow position, and equity of the firm.
Measurement	Indicate if the firm is already making progress towards achieving its indicated objectives and when it should realize all its objectives.

hybrid striped bass by 10 percent per year over the next 5 years."

The SWOT analysis describes the strengths, weaknesses, opportunities and threats of the current marketing situation. Example:

- Strengths—1) existing farm ponds that could be adapted for aquaculture; 2) heated greenhouses that could be used for seed stock production; 3) restaurants or farmers' markets within a 4-county radius that will buy locally grown food.
- Weaknesses—1) products are too costly to compete with seafood available through large-scale wholesalers, food service distributors, and grocers; 2) production capacity is less than 1,000 pounds per year, which limits marketing options; 3) the farm is totally dependent on out-of-state feed mills, adding significantly to feed shipping costs.

Carefully consider all factors that could be strengths or weaknesses in terms of successful marketing.

Under Opportunities and Threats, list factors external to the business that can help or block the firm's marketing opportunities. Example:

- Opportunities—1) large Hispanic population willing to purchase live fish such as tilapia and catfish; 2) local seafood wholesaler/distributor who is willing to feature locally grown products; 3) proximity to many metropolitan areas that have markets for live seafood, farmers' markets, etc.
- Threats—1) large volumes of lower-cost seafood available to wholesalers, retailers and restaurants; 2) increasing grain and fuel prices may make feed and freight costs excessive in the future, etc.

A marketing strategy can be formulated by answering these questions:

- Who are our customers and what do they value?
- What products do we offer?
- Who are our competitors?
- Are our products unique from our competitors' products?
- How are our products packaged and distributed?
- How are our products priced?
- How do we promote our products

and obtain feedback from our customers?

Here is an example marketing strategy:

- 1) Our target customers are a local wholesaler/distributor and local Hispanic consumers.
  - a. The wholesaler/distributor wants a minimum of 500 pounds of whole 1.5- to 2-pound hybrid striped bass (HSB) on ice delivered monthly.
  - b. Hispanic consumers want 1.25- to 2.00-pound live tilapia. Both groups of buyers want dependable service and prefer to have a relationship of trust with the farmer.
- 2) We offer pond-grown, unprocessed, fresh HSB on ice and cage-cultured tilapia sold live. The HSB are available year-round, but tilapia are available from September to October of each year.
- 3) Our competitors are:
  - a. Local competitors include two HSB producers and five tilapia producers in the state who can supply live fish.
  - b. Regional competitors include large-scale HSB producers in Mississippi, Arkansas and Indiana who are the primary suppliers of this product in the North Central, Southeastern and Eastern regions of the U.S. There are no large-scale regional competitors for live tilapia that can supply live fish to people in our county and surrounding counties.
  - c. International competitors include suppliers of frozen whole-gutted tilapia and tilapia fillets from Latin America and Asia. Their products are carried by seafood wholesalers, retailers/grocers and restaurants in our state. However, they cannot supply fresh fish locally.
- 4) Are our products unique from our competitors?
  - a. HSB and tilapia produced by us are very similar to the fish produced by our local competitors. Our tilapia can be differentiated from the perspective of taste: We purge our live fish in clean water before sale, while all our

local competitors sell their product directly from the pond.

- b. Our tilapia is a very different product than that provided by our international competitors. Our fish are alive at the point of sale and are superior in taste, texture, odor and appearance to frozen imported tilapia. Our fish, averaging 2 pounds, are also larger than the gutted tilapia available from grocery chains such as Wal-Mart.
  - c. Our HSB are not physically different from HSB grown by our regional competitors. However, because we are closer to the wholesale buyer, we can provide fish that have the "just caught" freshness our regional competitors can't deliver. Our proximity to the buyer also makes it likely the wholesaler will rely more on us in the case of a supply shortfall.
- 5) How are the products distributed and packaged?
    - a. Our HSB are packed as whole fish on ice in large Styrofoam coolers. There is a 2-inch layer of crushed ice beneath and on top of the fish. The coolers have small holes to drain melted ice. Each month, coolers with HSB are loaded on a pickup truck and driven to the wholesale buyer located 100 miles from the farm.
    - b. Our tilapia are kept in purging tanks and are sold live. Buyers are encouraged to bring their own coolers with ice or buy a Styrofoam cooler from us. The fish are chill-killed in ice-water, at the point of sale, and packed in coolers on ice.
  - 6) Our products are priced according to the prevailing market prices and production costs. We negotiate a price with the wholesale buyer for HSB on an annual basis. We keep track of our expenses and break-even prices to ensure that the contract price exceeds the break-even price by at least 10 percent. Tilapia is priced at the break-even price plus at least 10 percent. We also check prices of live tilapia from our local competitors to keep our prices comparable.

7) We promote our HSB to the wholesaler/distributor by publishing a color brochure with pictures of our farm, ponds and harvested fish. The brochure highlights our experience in HSB farming and our environmentally friendly farming practices. The brochure also promotes our rapid delivery service because of our proximity to major metropolitan areas. Since the wholesaler's primary business is providing high-quality foods to restaurants, we mail brochures to all fine restaurants in the wholesaler's territory and encourage them to purchase HSB from the wholesaler/distributor. Since Hispanics are our main tilapia buyers, most tilapia promotions are done with these consumers in mind. We place an annual radio advertisement, in Spanish, with all Hispanic radio stations in a four-county region. The ad is broadcast weekly during the month before harvest. We distribute flyers, printed in Spanish and English, through retail stores and community centers. The flyers contain information on harvest dates, farm location and telephone number. We obtain feedback from our customers by doing face-to-face interviews each fall. The results are used to making stocking decisions for the following year.

The next part of the marketing plan is a 3-year financial forecast showing the effect of implementing the marketing strategy and goals on the firm's finances. In the above example, the financial statements must show the effects of increasing HSB sales by 10 percent annually for the next few years. Realizing this marketing goal will affect the farm's fixed resources (e.g., more pond

space might be necessary), variable costs (e.g., higher stocking, feeding, marketing and energy costs), and revenue. Financial forecasts are performed by developing enterprise budgets, cash-flow statements, income statements and balance sheets. More information about these tools can be found in Bevers et al. (2006) and Pena et al. (1998). The financial forecasts are used to develop projected sales, estimated revenue and production costs, estimated payback period, average annual net income, break-even price, average annual rate of return, and "what if" scenarios based on actual sales being better or worse than expected sales.

Measurements of progress are the final portion of a complete marketing strategy. These measurements will indicate if the business is "on track" with respect to its marketing goals and expected financial state. Examples of such measurements would be the percentage change in sales and income, total assets/liability/equity, actual payback vs. estimated payback period, etc. These measures are used to determine whether there is a steady increase in annual sales, whether all liabilities are being paid in a timely manner, and whether there is a sufficient increase in owners' equity in the farm business.

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