Aquaculture: The Fastest Growing Farm Industry

When settlers arrived in this country several hundred years ago, they found a land rich in animals that could be hunted to supply them with food. As more settlers arrived, the wild food supply diminished and the people either had to turn to agriculture or move West into unsettled regions. You know the rest of the story: agriculture soon became our principal source of food.

Today, an analogous situation exists in the world's oceans. Fish have been hunted to the point where we are unable to significantly increase the catch. In fact, since 1975, the world's catch has increased little. This is because most commercial fishing areas have reached their maximum sustainable yield; the catch cannot be increased without reducing the fish population's ability to reproduce and replenish their numbers. In addition, pollution and competition from sport fishing interests aggravate the situation.

Aquaculture, or fish farming, is the only way to make up the deficit and satisfy an increasing demand for fish products. Aquaculture is now the fastest growing agricultural industry in the United States, increasing by more than 20 percent annually in the 1980's.

Aquaculture is just beginning to have an impact on U.S. fish supplies. In 1986, approximately 620 million pounds of aquacultural products were produced by private operations. The main contributors that year were catfish (327 million pounds), crawfish (98 million pounds), salmon (75 million pounds), and trout (5 million pounds), along with bait fish and tropical fish. The catfish industry has grown rapidly from a total of 3 million pounds processed in 1969 to 16 million pounds in 1975 and 295 million pounds in 1988. (Consumption from live haulers, fee fishing, and direct purchases are not included in these catfish processing figures.)

Commercial production and processing are highly concentrated in Mississippi (accounting for almost 80 percent of production), Arkansas, Alabama, Louisiana, and other southeastern States. In addition to catfish, there are many more species of farm-raised aquaculture products produced for sale in the Nation.
Case Study: The Gvillos

In 1979, Curtis and ReJeana Gvillo of Moundville, AL, made the biggest decision of their lives—to buy a farm. After finishing college and working 2 years with an agribusiness firm, Curtis had a strong desire to make his living by farming. Having grown up on an Illinois family farm, where the predominant enterprises were soybeans and corn, he was optimistic about making a go of it on the couple’s newly acquired farm.

ReJeana, a West Alabama native, had also grown up in farming and shared Curtis' enthusiasm and commitment to make a go of it. The couple purchased a farm from ReJeana’s great uncle near Moundville.

During the first couple of years, Curtis tried a variety of traditional enterprises—cotton, soybeans, wheat, corn, and stocker cattle. Although Curtis was on top of his operation from a managerial standpoint, he recognized that financial distress was never far away. ReJeana was also aware of the dilemma. “We were both putting in long hours and cutting living expenses, and Curtis' mother, Dorothy Gvillo, was even pitching in, but things were not improving,” ReJeana said. Their production and financial records confirmed their worries.

Seeking an Alternative

Curtis reluctantly admitted that in many of the traditional enterprises, other regions of the country had a competitive advantage. (See Part II, Chapter 9 on competitive advantage.) What could he produce and be competitive with, he asked himself.

Catfish production had crossed his mind; he knew of catfish farmers in the area. They had friends and relatives who produced catfish or worked in the processing plants. With some skepticism, Curtis began investigating the catfish business. When he asked producers about the requirements for success, it became clear that certain basic ingredients were required: suitable sites for ponds, adequate water supply, available markets, access to capital, and “know-how.” The biggest difficulty would be in making the adjustment to aquaculture from the traditional enterprises that he preferred and felt comfortable with. “I knew this was a different ball game,” Curtis said.

Taking the Plunge

In 1981, the Gvillos built their first catfish pond—covering a 23-acre area. The construction was paid for mostly through the sale of timber from the pond site. But being surrounded by successful catfish farmers doesn’t necessarily guarantee success, as the Gvillos soon found out. Curtis admitted that they may not have been serious enough about catfish the first year. After the first crop was sold to a processor, the Gvillos discovered that they had just broken even.

However, Curtis knew what had gone wrong: They had started with fingerlings that were too small. As a result, they sold their fish too early, and many of the smaller ones were rejected as unmarketable. But they didn’t make that mistake again. Since then, they have kept their catfish until a profitable price was offered. They never sell before they feed more than two pounds of feed for each fish, thereby guaranteeing that all fish are marketable.

Relationship with Lender

The catfish business, like many other types of farming, is capital-intensive. In addition to the costs for pond construction, operating money required to
produce a crop of fish can easily be more than $2,000 per acre. The Gvillos learned a hard lesson about the risk involved in growing catfish. In 1985, Curtis decided to expand his catfish acreage. Rather than building more ponds on his own land, he decided to rent a 25-acre pond that could be put into production. Curtis reluctantly admitted that at that time he believed soybeans would make a comeback and he didn’t want to sacrifice any cropland.

After the expense of getting the pond into production, his first crop of fish was doing well—that is, until a few weeks before they were ready for harvest. It was a sad day for Curtis and ReJeana to find an entire pond of fish mysteriously dead.

Curtis had always been up front and businesslike with his banker. He knew arrangements had to be made regarding the disaster. On the drive to the bank the next day, he began thinking the worst—that he would have to liquidate some of his assets to cover the loss. But to Curtis’ relief, his banker was understanding and arrangements were made without disrupting his farming operation. The banker had several other catfish accounts and was aware of the risks involved.

**Total Commitment**

By 1988, the Gvillos had several years of experience under their belts. They had made many mistakes while learning the business, but catfish had become the mainstay of their farming operation. They had phased out of row crops and focused on catfish, a cow-calf operation, and a small amount of wheat. By now, they were committed to catfish as their primary enterprise.

They built three more ponds on the farm, adding 40 acres to production. This brought their acreage in catfish production to 90 acres (rented and owned) for 1989. “We could have stopped, felt comfortable, and made an adequate living. Now we have bet the farm again, but I have the confidence we can make it work,” Curtis said.

**Husband and Wife Team**

Curtis and ReJeana have been true partners in their farming operation from the beginning. Early on, ReJeana was involved in all aspects—operating the combine and hay baler, as well as helping to make decisions. “I knew almost as much about the operation as Curtis did,” she said. In the past few years, ReJeana has not been as involved in the daily management routine, mainly because the couple has two small children and she is a full-time teacher. “I still consider myself as part of a team, however,” she said. “I view my role now as more of a sounding board for Curtis. He consults with me on new...
ideas and keeps me informed on major decisions. After all,” she said with a smile, “I have a great deal of confidence in Curtis’ judgment and his ability to manage our operation.”

**Changing Work Patterns**

At the end of one of their first successful years, Curtis and ReJeana compared the hours required to grow row crops with the time required for their fish operation. They were shocked to discover the far greater amount of time it took to turn a profit with row crops. Unfortunately, much of the work on a catfish operation must be done at night, something that most farmers, including Curtis, never planned on. It has been difficult for him to adapt to the rigorous night work.

During late spring, summer, and early fall, the level of oxygen in the ponds can fall dangerously low at night. This is something that requires continual monitoring. Emergency aeration is often used in critical situations. Many nights, Curtis can be found catching a few winks in his pickup truck as he stays close to his investment. Some daytime work, such as feeding, is also required to keep the fish healthy and growing. “It’s real easy to see that fish farming can cause burnout,” Curtis said. He hopes to avoid this by eventually adding some labor to help with specific areas as more catfish acres are added.

**Diversifying into Carp**

“‘Waste not, want not’ was impressed upon me when I was growing up,” Curtis said. “When I saw all the grass carp used for weed control in catfish ponds being destroyed during harvest for lack of a market, I knew someone, somewhere, wanted to eat these fish. So, I began making contact with Asian restaurants.”

These contacts developed into a market. Today Curtis is known locally as the “Carp Man,” and farmers in the area don’t throw away grass carp anymore. In fact, they stock grass carp regularly, along with the related bighead carp, to sell to Curtis, who in turn ships the fish by air from Birmingham to various cities in the United States. Curtis said the carp market has allowed him to learn that there are many markets for fish in the United States and that the fish marketing infrastructure is highly developed.

The Gvillos credit their success to diversification—both in production and marketing. At first, all they knew to do was to take their catfish to the local processor. Today, however, their mar-
Evaluating various strains of catfish for such factors as growth rate, disease resistance, and feed conversion are part of the work of reproductive physiologist Cheryl Goudie and geneticist Gary Carmichael. The research is part of a joint effort with scientists at Memphis State University and the U.S. Fish and Wildlife Service's Southeastern Fish Cultural Laboratory at Marion, Alabama.

(USDA Photo by Barry Fitzgerald, 88BW2286-7)

New Technologies

Even though aquaculture is in its infancy, advances in pond design, aeration techniques, and harvesting equipment have given a big boost to the industry's growth and profitability. Genetic engineering, improved feeds and therapeutics, better water quality and conservation, and new product development all offer the potential for more efficient production. Some serious problems—such as disease and bird control—still loom. But the Gvillos are banking on these problems being solved through product research and development.

Future Strategies

The next big challenge at "Old South Fish Farm" will be to produce more fish per surface acre of water by stocking fingerlings after each harvest of large fish. This will be done 2 or 3 times a year in a procedure called "topping off." Yields and efficiency should increase, making the operation more productive and profitable while offering a marketing edge. Over time, the Gvillos hope to become more efficient as the rented ponds are eliminated in favor of ponds built close together on their own farm.

The Gvillos haven't forgotten how diversification helped them become successful. This year they are stocking hybrid striped bass in one pond as an experiment to see if they can grow them profitably on a larger scale, mixing them with their other products.

Curtis foresees the day when he will have 200 acres of water on his own land. This would provide an opportunity for the children to come into the business if they choose. Curtis and Re-Jeana also envision a new house overlooking their ponds in the not-too-distant future.

The outlook for continued aquaculture development in the Southeast is excellent. The combination of warm climate, relatively abundant water, good soils, stagnant wild fish supplies, and increasing consumer demand all indicate the potential for solid growth.

Part II/Strategic Management