
Farmers, State

Services Create

New Industry

By Thomas L. Wellborn, Jr.

In Mississippi a truck driver pulls a lever and watches 15,000 pounds of channel catfish slide down a chute into a large holding vat at a processing plant. In Georgia two men finish taking the last channel catfish out of a seine they have just pulled through a 1-acre pond. And in Idaho a farmer has just fed 10,000 pounds of channel catfish which are being raised in 60-foot-long dirt raceways.

Fish farming, or aquaculture, although more than 3,000 years old, is a relatively new industry in the United States. Trout, crawfish, and oysters, as well as several other species, are being farmed for food in the United States. But the really big success story is the production of channel catfish as a farm crop. Although the catfish industry is centered in the Mississippi Delta, catfish are farmed from California and Idaho to Georgia and South Carolina.

Work was done in the 1920's and 1930's in Kansas and Oklahoma by J.B. Dose, J.M. Murphee and others on how to produce channel catfish fingerlings. But it wasn't until the late 1950's in Arkansas that commercial production of channel catfish as a food crop really started. By 1966 Arkansas had 9,750 acres of channel catfish in production. Texas, Louisiana, Alabama, and Georgia also had acreage in catfish production.

The first pond built in Mississippi specifically for raising food-size channel catfish was a 40-acre pond built in Sharkey

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Although fish farming, or aquaculture, is more than 3,000 years old, it is a relatively new industry in the United States. This "farmer" is harvesting channel catfish near Monticello, Ark.

Tim McCallie

County 1965 by W.T. "Billy" McKinney and Raymond Brown of Anguilla. Tom L. Reed III of Belzoni, Humphreys County, was the second farmer in Mississippi to go into catfish production with three 10-acre ponds built in 1966.

Mississippi, Arkansas Lead

From that start in 1965, the farm-raised channel catfish industry in Mississippi—the number one catfish-producing

State—has grown to 62,289 acres in December 1982. The State also has two catfish feed mills and six major catfish processing plants. Arkansas is second in production of farm-raised channel catfish, with about 9,300 acres; Alabama third, with about 8,200 acres.

When Tommy B. Taylor came to Humphreys County, Mississippi, as county agent for the Mississippi Cooperative Extension Service in the fall of 1965,

cotton was king. After Tom L. Reed III and others in Humphreys County started raising catfish, they requested Taylor's help. Through Taylor's efforts, State Extension administrators recognized the potential for fish farming in Mississippi and the need to provide educational programs and technical aid to this fledgling industry.

The Mississippi Cooperative Extension Service, with the help of the Mississippi Agricultural and Forestry Experiment Station, Mississippi State University, conducted the first educational workshop on water quality management for catfish farmers in the State in the fall of 1969, taught by the author.

The first annual Catfish Producers Workshop was organized and held at Mississippi State University in 1971. Since then the State Extension Service has held workshops, seminars, and demonstrations to train farmers in all aspects of catfish farming, from fingerling production to use of microcomputers for recordkeeping and management purposes.

Little was known about producing food-size channel catfish in 1965, so many developments in the early years were a result of trial and error by innovative catfish farmers. Farmers tried all sizes of ponds up to 120 acres.

20-Acre Pond Standard

In 1972 an experiment station analysis of the cost-size relationships in producing channel catfish in the Mississippi Delta showed that a pond built on 20 land acres (about 17.7 water acres) was best in terms of economics and management. Since then the "20-acre" pond has, for the most part, become the standard sized production unit in Mississippi.

The idea of raising channel catfish for food first occurred to "Billy" McKinney when he read an article in a farm publication. After talking it over with his neighbor, Raymond Brown, and with W.F. "Skinner" Anderson of Yazoo City, one of the early catfish fingerling producers in Mississippi, McKinney and Brown built a 40-acre catfish pond. They stocked it with 2,000 fin-

Acres of Catfish Ponds in Mississippi

	<i>Water Acres in Production</i>		<i>Total</i>	<i>Percent Increase</i>
	<i>Food Fish</i>	<i>Fingerlings</i>		
May 1977	15,182	1,969	17,151	-
Mar. 1979	22,541	2,171	24,712	44.1
Dec. 1980	36,437	3,932	40,369	63.4
Dec. 1981	50,688	5,249	55,937	38.6
Dec. 1982	56,191	6,098	62,289	11.4

gerlings per acre in the early summer of 1965.

With the help of Gear Research personnel from the U.S. Fish and Wildlife Service Farming Experiment Station, Stuttgart, Ark., they harvested their first crop of farm-raised channel catfish in January 1966. They sold part of their crop, about 10,000 pounds of catfish, to Howard Heck, Kaw Valley Fish Farms, Lawrence, Kans., who processed the fish for sale. The catfish were transported to Kansas by a minnow farmer who had a large fish hauling truck.

For the next several years almost all the catfish produced by Mississippi catfish farmers were sold to live haulers.

Stocking rates in the first 6 to 8 years of the catfish industry in Mississippi stayed at about 1,500 to 2,500 fingerlings per acre. Ponds were usually stocked in late winter or early spring. Catfish were fed through the summer, the ponds drained and all the catfish harvested in late summer or fall.

Problems Develop

By the late 1960's problems began to develop in selling farm-raised catfish because of increased production, lack of processing facilities, lack of marketing efforts and availability of catfish only in fall and winter. Although some catfish processing plants were already operating in other States, the first catfish processing plant in Mississippi was organized and built in 1968 in Morgan City.

Lack of processing and suitable market outlets and a sporadic supply of catfish continued to plague the industry until about 1974. A change in production methods initiated by Paul Smith, Yazoo City, enabled farmers to supply catfish throughout the year. That substantially improved market potential of this new crop.

Because of this change it can be said that farm-raised catfish became an "industry" in 1974. The change from clean-cropping—harvesting all catfish in the pond at one time—to multiple harvesting or topping throughout the year had a significant impact on the industry.

Production in the early years ranged from about 1,500 to as much as 2,300 pounds per acre.

Pounds of Farm-Raised Channel Catfish Sold to Processors

Year	Round Weight Processed in Millions of Pounds	Percent Yearly Increase
1975	16.1	—
1976	18.9	17.4
1977	22.1	16.9
1978	30.2	36.7
1979	40.6	34.4
1980	46.5	14.5
1981	60.1	29.2
1982	99.4	65.4

From *Catfish Processors Report*, Crop Reporting Board, USDA.

At that time catfish farmers were not able to feed more than 30 pounds of feed per acre a day without causing water quality problems due to lack of suitable management techniques. Another problem that helped hold down production in the early years was a lack of high quality catfish feed.

Farmers Lead Way

A meeting at Silver City in 1972 discussed forming a cooperative to build a catfish feed mill. As a result the Producers Feed Mill was built in Isola and started producing catfish feed of uniformly high quality in 1974. Feed was formulated according to the best knowledge available at that time, and its quality became quickly apparent through improved growth and decreased feed conversion rates.

Probably no other single factor had a greater impact on the catfish industry in Mississippi than the building of this catfish feed mill wholly owned and controlled by catfish farmers, although managed by MFC Services. Catfish farmers were now assured of having high quality feed available when needed.

In 1969 a fisheries scientist chided catfish farmers for trying and adopting new ideas as soon as they were conceived, rather than waiting for research and experimental testing programs to prove their value. Yet catfish farmers led the way in developing new techniques that allowed them to produce catfish year-round and at rates considered



Tim McCabe

Productivity is up in Mississippi, thanks to development of new techniques in raising catfish. Production increased from 1,500 pounds per acre in the

late 1960's to about 3,500 pounds annually in 1982. Many farmers are harvesting well over 5,000 pounds per acre.

impossible or uneconomical by researchers just a few years previously.

Production per acre in Mississippi has increased from about 1,500 pounds per acre in the late 1960's to about 3,500 pounds annually in 1982, with many farmers getting well over 5,000 pounds per acre. These rates have been achieved by a good program of monitoring ponds for oxygen, un-ionized ammonia, and nitrite, and taking prompt corrective measures to prevent water quality problems from developing; and by increased stocking rates and using multiple harvesting rather than clean-cropping.

Producers Form Co-op

In Mississippi the acreage in production of channel catfish increased between 1977 and 1982 from 17,171 acres to 62,289. This rise in acreage and in production per acre created marketing problems for catfish farmers, starting in mid-1981 and lasting through 1982. Existing processing plants were not able to develop new markets fast enough to take care of the increased poundage of channel catfish being raised by Mississippi catfish farmers.

A number of catfish farmers realized in 1979 there would soon be a problem of overproduction and formed a corporation, with features of a cooperative, to build a new farmer-owned catfish processing plant. The plant, with a capacity of 60,000 pounds per day, was built in Indianola and went into production in April 1981. Delta Catfish Processors, Inc. now has a capacity to process 250,000 pounds of catfish per day.

All the catfish processing plants in the United States have done an excellent job in developing new markets for farm-raised channel catfish. In the past 8 years the poundage of farm-raised catfish processed has increased from 16.1 million pounds in 1975 to 99.4 million pounds in 1982.

Catfish farmers have proved that raising high quality animal protein in water is not only feasible in the United States but profitable. Mississippi catfish farmers produced about 140 mil-

lion pounds of food-sized channel catfish in 1982. At a 60 percent dress-out this amounts to 84 million pounds of low calorie, low fat, and high quality animal protein available for consumption by American consumers.

Catfish farming is a success story, particularly in Mississippi. It has had a tremendous economic impact on a whole region, the Mississippi Delta, which comprises the northwest section of the State. The catfish industry in the delta employs directly more than 3,000 people on catfish farms, in catfish feed mills and in processing plants, with an annual payroll exceeding \$30.8 million. This does not include all the people employed in support industries that supply the equipment and chemicals needed by the catfish farming industry.

Why Mississippi?

The catfish farming industry concentrated in Mississippi for several reasons:

- 1) Flat land that holds water well and abundant ground water that can be pumped at reasonable cost,

- 2) The support that Mississippi State University provided the catfish industry through Extension education programs since 1969 which have trained farmers in all aspects of catfish farming, the Extension disease diagnostic services for fish farmers, and the research programs that apply basic research findings to actual commercial fish



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Processing plants, such as this one in Arkansas, helped bring nearly 100 million

pounds of farm-raised catfish to market in 1982—up from 16 million pounds in 1975.

farms, feed mills, and processing plants,

3) Catfish farming has been profitable, and

4) Probably the most important reason, hard-working farmers who weren't afraid to try something new and had the faith and determination to see a fledgling industry through difficult times.

"Billy" McKinney—who along with Tom Reed and Raymond

Brown started the farm-raised catfish industry in Mississippi—now raises channel catfish on 460 acres in Sharkey County. Brown, McKinney's partner in building the first catfish pond, now farms 600 acres of catfish in the county. Reed, the second catfish farmer in the State, now produces catfish on 1,640 acres in Humphreys and Yazoo Counties.

25,000 at Catfish Festival

More than 25,000 people from at least 25 States attended the Eighth Annual World Catfish Festival in Belzoni (Humphreys County) on April 9, 1983. This gives an idea of the popularity of channel catfish and what has been done through efforts of the catfish industry and the Mississippi Extension Service to promote and market this new farm crop. In 1982 in Humphreys County, where cotton was king in 1964, catfish generated \$52 million in farm income, while cotton generated only \$30 million in farm income.

Not only has catfish farming become a big business producing high quality protein for consumption, but raising channel catfish in farm ponds for recreation has also caught the fancy of tens of thousands of people throughout the country.

Ponds are being stocked at the rate of 50 to 300 per acre in combination with largemouth bass and bluegill. And as many as 1,500 channel catfish per acre are being stocked for a single species fishery by many ponds

that owners use not only for recreation but to provide food for their families.

Besides channel catfish, other aquatic species are producing high quality protein for consumption by the American consumer. Crawfish are being raised in Louisiana (about 80,000 acres), Texas (about 5,000 acres), Arkansas (about 500 acres), and Mississippi (about 1,000 acres). Production averages about 600 to 800 pounds per acre annually industry-wide. Most of the crawfish produced is consumed locally.

Trout are being raised in 14 States on 263 farms. Idaho is the largest producer of trout, with 36.6 million pounds raised from September 1980 to August 1981. Total trout production during that time was 42.9 million pounds.

Annual production of aquatic species raised in the United States for human consumption is estimated at about 300 million pounds. This is a significant amount of protein produced from our aquatic resources, and it is certain that production of aquatic animals for human consumption in the United States will continue to increase in the future.

Anyone interested in starting an aquacultural enterprise should obtain all the information available on that particular enterprise, particularly with respect to marketing, distribution, site selection, quantity and quality of water available, and cost of production. Information about aquaculture opportunities can be obtained through the local Cooperative Extension Agent in each county.

Further Reading

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