



Use of Channel x Blue Hybrid in U.S. Catfish Operations

The use of channel x blue hybrid catfish has become widespread in recent years. Improved methods for producing hybrid fry have created an opportunity for the catfish industry to culture the hybrid on a broad scale. Hybrid fingerlings are available for stocking on foodsize-fish operations. Attributes that have been associated with hybrid catfish include increased growth rates, improved yield, and better disease resistance.

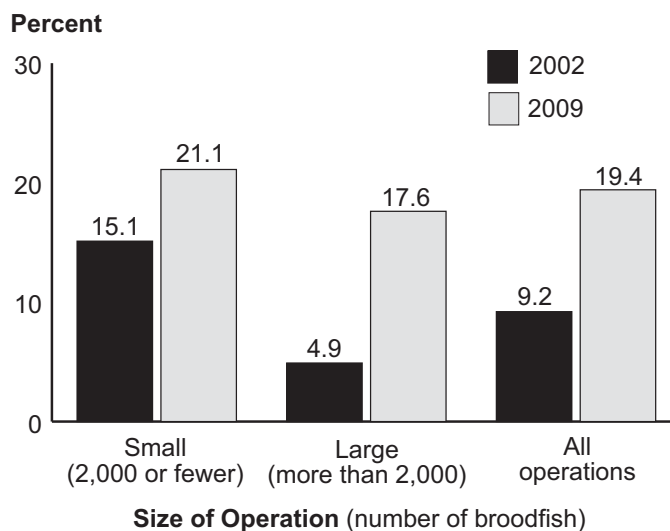
Issues with channel x blue hybrids center on harvesting problems. These fish tend to have smaller heads than channel catfish. Consequently, they become more entangled in nets during harvest and are less able to be sorted by size. As a result, channel x blue hybrids are commonly grown in separate ponds from channel catfish, and producers typically implement single-batch production for these hybrids.

In January 2010, the USDA's National Animal Health Monitoring System conducted its third national study of the U.S. catfish industry, Catfish 2010. A total of 424 producers from 4 States participated in the study. These four States were divided into two regions. The East region was defined as Alabama and Eastern Mississippi; the West region was defined as Arkansas, Louisiana, and the Mississippi Delta. Results from Catfish 2010 related to hybrid catfish are presented here.

Hybrid broodfish and fry

Operations that maintain blue catfish broodstock likely produce channel x blue hybrids. According to Catfish 2010, about one-fifth of catfish breeding operations (19.4 percent) maintained blue catfish broodstock in 2009, twice the percentage in 2002 (fig. 1). The percentage of large breeding operations (more than 2,000 broodfish) that had blue catfish tripled from 4.9 percent in 2002 to 17.6 percent in 2009.

Figure 1. Percentage of breeding operations that maintained blue catfish lines in 2002 and 2009, by size of operation

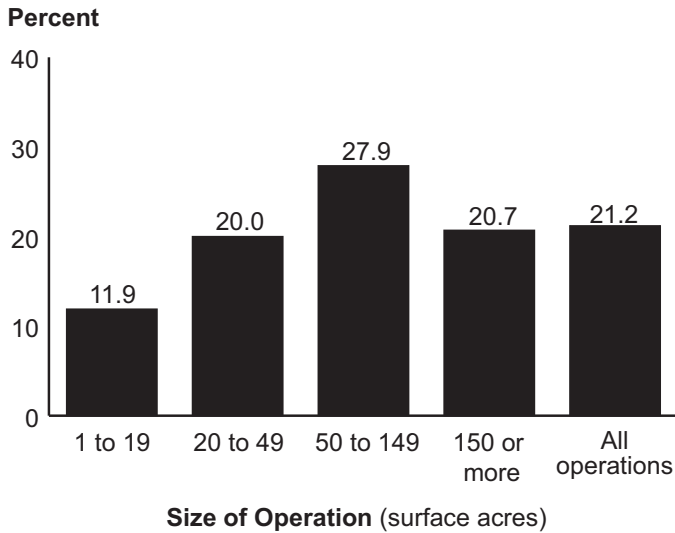


The majority of fry hatched during 2009 were channel catfish (87.1 percent), while hybrids accounted for the remaining 12.9 percent. More than 90 percent of hatcheries produced some channel catfish fry, while 9.5 percent of hatcheries produced channel x blue hybrids. Notably, 6.5 percent of hatcheries produced blue catfish fry, but these fry were a negligible percentage (less than 0.1 percent) of all fry hatched, which might indicate that these fish were to be used as broodfish rather than as foodsize fish for market.

Hybrid foodsize fish

While one of five foodsize fish operations (21.2 percent) raised hybrid catfish, hybrids represented only 5.9 percent of the inventory on January 1, 2010. A lower percentage of the smallest operations (1 to 19 surface acres) raised hybrid foodsize catfish compared with operations with 20 or more surface acres (fig. 2). Regionally, a higher percentage of foodsize fish operations in the East region raised hybrid catfish than operations in the West region (24.3 and 16.0 percent, respectively).

Figure 2. Percentage of foodsize-fish operations that had any channel x blue hybrid catfish present on January 1, 2010, by size of operation



Channel x blue hybrid foodsize fish production accounted for 7.3 percent of total water surface acreage used for foodsize fish in 2009 (table 1). The largest operations (150 or more acres) used a lower percentage of water surface acres for hybrid production than the other-sized operations. A higher percentage of total surface water acres in the East region than in the West region (10.3 and 5.9 percent, respectively) were used for growing foodsize channel x blue hybrids.

Table 1. Percentage of total water surface acres used for foodsize fish, by catfish type, size of operation, and region

Catfish type	Percent Total					Region	
	Size of Operation (surface acres)					East	West
	1-19	20-49	50-149	150 or more	All operations		
Channel	88.6	89.3	83.6	94.5	92.7	89.7	94.1
Channel x blue hybrid	11.4	10.7	16.4	5.5	7.3	10.3	5.9
Total	100.0	100.0	100.0	100.0	100.0	100.0	100.0

Harvesting hybrid catfish

In 2009, the majority of foodsize fish operations harvested channel catfish (88.3 percent), but 12.7 percent of operations harvested channel x blue hybrids (table 2). The smallest operations (1 to 19 surface acres) had a lower percentage of operations that harvested channel catfish compared with larger operations. The percentage of operations that harvested

channel x blue hybrids was similar between the two regions.

Table 2. Percentage of operations that harvested foodsize fish during 2009, by catfish type, size of operation (surface acres), and region

Catfish type	Percent Total					Region	
	Size of Operation (surface acres)					East	West
	1-19	20-49	50-149	150 or more	All operations		
Channel	77.7	90.7	88.7	92.5	88.3	89.6	86.3
Channel x blue hybrid	10.3	8.2	16.2	13.7	12.7	12.1	13.6
Either	84.6	94.3	97.5	94.3	93.6	94.9	91.5

Of the total pounds of foodsize catfish harvested during 2009, only 7.7 percent were channel x blue hybrids, whereas 92.3 percent were channel catfish. Operations with 50 to 149 surface acres had a higher percentage by weight of hybrid catfish harvested than operations in the other size categories. The percentage of pounds of hybrid catfish harvested in the East region was more than double that of the West region (11.4 and 5.1 percent, respectively).

Table 3. Percentage of total pounds of fish harvested in 2009, by catfish type and by size of operation

Catfish type	Percent Harvested					Region	
	Size of Operation (surface acres)					East	West
	1-19	20-49	50-149	150 or more	All operations		
Channel	92.8	94.7	85.6	93.3	92.3	88.6	94.9
Channel x blue hybrid	7.2	5.3	14.4	6.7	7.7	11.4	5.1
Total	100.0	100.0	100.0	100.0	100.0	100.0	100.0

Overall, the average weight of channel x blue hybrids was 2.3 pounds compared with 1.9 pounds for channel catfish (table 4). This average is influenced by the relatively high average weight of hybrid catfish harvested on large operations (2.5 pounds) and in the East region (2.7 pounds). This result might be due to the potential for hybrids to grow faster and the prevailing practice of harvesting hybrids using a single-batch method. The average weight of all catfish in the East region appeared to be higher than that in the West region.

Table 4. Average weight per foodsize fish harvested in 2009, by catfish type and by size of operation

Catfish type	Average Weight of Fish Harvested					Region	
	Size of Operation (surface acres)					East	West
	1–19	20–49	50–149	150 or more	All operations		
Channel	1.9	2.0	1.9	1.8	1.9	2.0	1.8
Channel x blue hybrid	1.8	1.9	1.9	2.5	2.3	2.7	1.9
Total	1.9	2.0	1.9	1.9	1.9	2.0	1.8

Channel catfish are primarily harvested from multibatch systems (84.1 percent operation average, and 80.8 percent pounds of fish average).

For channel x blue hybrids, the primary harvesting approach was single batch in which all fish are removed from a pond before it is restocked with new fish. The operation average* of hybrids harvested by single batch was 41.2 percent. In contrast, 81.2 percent of hybrid catfish pounds were harvested by single batch. The difference between the operation average and the percentage of pounds harvested is likely due to operations with larger inventories of hybrids harvesting a higher percentage of these fish as single batch compared with operations with smaller inventories of hybrids.

For channel x blue hybrids, the primary approach has been to implement a single-batch harvest. While the operation average was only 41.2 percent hybrids harvested from single batch, the percentage of pounds of hybrids harvested by single batch was 82.1 percent. The difference between the operation average and the fish percentage is likely due to operations with more hybrids using single batch compared with operations that raise fewer hybrids.

Hybrid disease resistance

Of the 9.0 percent of operations that raised both channel catfish and channel x hybrid catfish, the majority (85.5 percent) did not know if hybrid catfish were more resistant to disease than channel catfish. This might be because hybrid production is still relatively new to the catfish industry and there has not been enough time to adequately assess differences.

* The sum of all operation percentages divided by the number of all operations.

The percentage of operations that found channel x blue hybrids to be more resistant than channel catfish to ESC, columnaris, proliferative gill disease, and *Edwardsiella tarda* was at least double the percentage that thought channel catfish were more resistant to these diseases. Among the diseases, ESC had the highest percentage of operations (8.2 percent) responding that the hybrid was more resistant than the channel catfish.

Conclusion

More breeding operations are maintaining the catfish lines, which indicate an increasing trend for raising hybrid catfish fingerlings. About 1 of 10 producers are harvesting channel x blue hybrids. The average weight of foodsize hybrid catfish is greater than that of channel catfish, and hybrids are more likely to be produced using the single-batch method. Some producers perceive the hybrid to be more disease resistant than the channel catfish.

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