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# Brazilian Fish turns to genome editing technology to boost tilapia growth and sustainability

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By Responsible Seafood Advocate

## Brazilian Fish adopts genome editing to breed faster-growing, more efficient tilapia, boosting sustainability and competitiveness

Brazilian Fish, one of Brazil's largest tilapia producers, announced it will use genome editing technology to accelerate genetic improvements in its fish stocks. The technology, which allows scientists to make precise changes to DNA, is expected to speed up the development of tilapia with traits such as improved disease resistance, faster growth rates and improved feed efficiency. It marks the first commercial-scale genetically edited tilapia in Brazil.

To advance its genetic improvement efforts, Brazilian Fish has partnered with the Center for Aquaculture Technologies (CAT), a U.S.-based biotech firm specializing in genetic innovation for aquatic species. The collaboration will focus on editing specific genetic regions in Nile tilapia, targeting traits linked to faster growth and higher fillet yields.

"To develop tilapia using these advanced breeding methods, CAT scientists, working with our research



Tilapia from the same spawning showing the genetically edited animal (right) and non-edited control animal (left). There is a marked increase in growth, feed efficiency and fillet yield. Photo credit: Brazilian Fish.

and development team here at Brazilian Fish, conducted reproduction trials and produced fertilized eggs that will help create genetic improvements for better growth, yield, and feed efficiency,” said Ramon Amaral, CEO of Brazilian Fish.

“After two years of planning and research, the first animals were successfully produced. These fish are now carefully separated and ready for performance and genomic evaluations. These improved lines will benefit from further enhancement as part of the ongoing Brazilian Fish selective breeding program.”



(<https://link.chtbl.com/aquapod>).

“This achievement underscores the transformative potential of genome editing in advancing the industry, offering sustainable and responsible solutions to meet the growing global food demand,” said Dr. John Buchanan, CEO of CAT.

The company’s adoption of genome editing represents a shift toward advanced biotechnology in Brazil’s aquaculture industry. According to the company, genome editing could condense two decades of traditional breeding work into a single year, significantly accelerating genetic progress.



## GIFT tilapia: Technology for successful selected strain continues

Selective breeding across multiple generations of Nile tilapia representing varied geographic populations yielded the “genetically improved farmed tilapia,” or GIFT tilapia, in the late 1990s.



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“Improving feed efficiency is crucial because it directly impacts the sustainability and profitability of aquaculture operations,” said Buchanan. “It refers to how effectively fish can convert feed into body mass, meaning less feed is required to achieve the desired growth. Improved feed efficiency benefits the environment by reducing the overall amount of feed needed, which lowers the demand for raw materials and reduces waste – genome editing delivers this opportunity.”

Genome editing technology could significantly improve tilapia farming in Brazil, producing fish that grow faster and require less feed than those raised under current farming practices. A shorter grow-out period could reduce production costs, while improved feed efficiency could ease pressure on natural resources. Proponents also argue that these advances could ultimately benefit consumers by increasing the supply of affordable, nutritious fish.

“As a pioneering Brazilian aquaculture company, Brazilian Fish, together with CAT, will deliver a disruptive solution that will drive technological transformation in industrial tilapia farming in Brazil,” said Amaral. “In addition to providing consumers with increased access to safe and nutritious food, this initiative will promote greater sustainability and competitiveness in the sector, positioning tilapia as an even more accessible and competitive alternative to other animal proteins in the global market.”

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