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## Taiwan Tilapia-- The Fish That Became a National Treasure

Vito Lee/photos by Jimmy Lin/tr. by Minn Song

**Much about the daily life of Tai-wanese can be understood from the story of Taiwan tilapia.**

**Since its introduction in 1946, tilapia has made a considerable economic contribution, not only providing Taiwan's people with food, but also allowing the island's fish farmers to break into key markets such as Japan and the United States. Indeed, Taiwan tilapia has become an important farmed fish for both export and domestic consumption.**

**Besides its economic value, folklore about Taiwan tilapia has become an integral part of Taiwan life. Originally a foreign species, Taiwan tilapia has come to be one of Taiwan's most representative types of fish. Recently, to counter an image of being low-priced, Taiwan tilapia's rather earthy original Chinese name has been changed to the catchier "Taiwanese bream." The industry is moving to break into foreign markets, opening a new chapter in the story of Taiwan tilapia.**

In July 1968, economically struggling Kaohsiung citizen Kuo Chi-chang asked Yang Chin-hu, then mayor of Kaohsiung, for help in finding work. This news was relegated to an obscure corner of the newspapers, and did not attract many people's notice-even though Kuo was "the father of Taiwan tilapia".

The Chinese name "Wu-Kuo" for Taiwan tilapia was created from the surnames of Wu Chen-hui and Kuo Chi-chang, who introduced the fish into Taiwan. Twenty years after 1946, tilapia had become an integral part of Taiwanese life, with many people having gotten wealthy by raising tilapia. Kuo Chi-chang, though, was thwarted in his aspirations, and until his death in 2000 lived a life plagued by regret.

Success often comes serendipitously, to say nothing of the prospects

when a person is determined. During the Second World War, Kuo Chi-chang was drafted, becoming a soldier for Japan fighting in South Pacific battlefields. After the war, he became acquainted with Wu Chen-hui in a POW camp in Singapore. The two young men, both very interested in the fish farming business, pilfered some fry of Japanese tilapia, beginning the tilapia story in Taiwan.

The Taiwan tilapia, a member of the genus *Tilapia*, is a highly disease-resistant, rapidly reproducing breed of fish. Moreover, qualities such as its tender flesh and lack of hidden bones quickly made it a favorite among the public, and tilapia became a major source of protein in impoverished Taiwan after the war. In fact, tilapia originated in Africa, Central and South America, and the West Indies, and is also known as Nile tilapia or St. Peter's fish. It can be found throughout the world, and more than 2,000 species are known.

In Taiwan, tilapia is also known as the "South Pacific crucian carp," and is found in aquatic environments all over the island. "In recent years, the introduction of foreign species has attracted the notice of Taiwanese, causing them to worry about damage to native species," says William Chyi, a project assistant in the Tropical Agriculture and International Cooperation Research Institute at National Pingtung University of Science and Technology. "Tilapia is an extremely territorial species that drives out other species. However, due to its high economic value, everyone happily accepted it."

### **A fish for the masses**

Chen Ching-tung, an old fish farmer in Chiayi County's Tungshih Rural Township, has raised tilapia for 30 years. He says, "How easy was it to raise tilapia? Add fry to a hectare of fishponds, let them feed on the droppings of ducks that you raised, and in one year you'd got over 4000 kilograms of fish without breaking a sweat."

This long-standing practice of raising tilapia with other livestock kept tilapia prices low, though its bacterial counts were somewhat elevated. Tilapia makes a delicious dish commonly consumed at family meals, but its strong earthy taste and humble image cannot be shaken off.

In addition, in view of the large contribution that tilapia was making to

the nutrition of the country's citizens, other species that also belong to the Cichlidae family were constantly introduced into Taiwan, interbreeding with tilapia, which was originally the Mozambique variety (*Tilapia mossambica*). Currently, the tilapia breed most favored by the country's fish farmers is a hybrid of *Tilapia mossambica* and *Tilapia nilotica*. Compared to *Tilapia mossambica*, which grows to a length of roughly 20 centimeters, Taiwan tilapia is heftier, generally able to reach a length of 55 centimeters. Additionally, this breed better withstands cold temperatures, reproduces and grows rapidly, and offers even better quality flesh, making it a popular choice for aquaculture.

The domestic fish farming industry is gradually developing a single-sex cultivation approach. As they grow to maturity, fry in the ponds cannot breed, controlling the number of individual fish in each pond, and making physical growth of individuals more uniform. Additionally, the use of artificial feed, high-intensity rearing, and automated equipment is constantly advancing local farming techniques for tilapia. In 1991, Taiwan tilapia debuted on the Japanese market, pushing prices from NT\$14 per catty (600 grams) to NT\$20. Subsequently, the industry built upon this success, allowing tilapia to surpass milkfish and become Taiwan's most important export fish.

After prices had risen, the number of fish farmers raising tilapia increased. And with a continual stream of orders from abroad, the tilapia industry entered a boom period. Fish fillets were sterilized with ozone and then frozen with liquid nitrogen to preserve freshness and texture, then shipped overseas. "That was the golden age for tilapia," reminisces Yang Shu-fen, a Chiayi resident whose family has run fish processing plants for two generations.

In a brief time, tilapia had been transformed from a foreign species into the "national treasure fish" in the words of fish farmers. Total production reached 80,000 metric tons last year, while production value hit NT\$2.7 billion.

## **Memories and burdens**

As we enjoy eating this fish and trace its history in Taiwan, the contrast between the despair of Kuo Chi-chang and social atmosphere of the

time stir one to lament that when circumstances are not favorable, the outcome of human endeavors becomes uncertain.

In the post-war period, when material resources were lacking, industriousness and frugality were much-praised virtues. Tilapia's low cost was the most important factor behind its becoming an integral part of people's diets, and given the living standards of the time, such a consideration was inevitable. The popularity of tilapia was like the pleated skirts and military training uniforms in high school photographs—the only choice when no others were available.

Memories of eating fish tie together many details of the life of yesteryear, and the action of eating fish can reflect economic realities. After Taiwan's economy took off, citizens' dietary habits changed. People sought refinement and healthfulness in what they ate. As a result, tilapia, with its links to memories of poverty, gradually lost ground in the domestic market. In recent years, squeezed by imported aquatic products, tilapia has completely lost the dominant position it once held.

This trend is especially obvious to Huang Cheng-chieh. Having majored in pisciculture in college, his work following graduation involved purchasing aquatic products for a mass retail chain. In recent years, he has watched the fortunes of tilapia by observing consumer behavior. "At our store, we sell 100 tons of tilapia a year. Tilapia is not difficult to sell. And the profit on both fillets and fresh whole fish is decent," he says.

"However, the impression that these fish eat feces is probably still too fresh in people's minds. Prices remain depressed, and the fish is considered strictly a low-price product. And the more urbanized an area is, the poorer are the sales."

Export sales accounted for more than half of last year's 80,000 tons of production, reaching 50,000 tons. Although demand for tilapia on the international market continues to rise, competition from southeast Asian nations and China "has forced prices very low," says Chen Chun-hsu, a nephew of old fish farmer Chen Chin-tung. Born in 1976, Chen Chun-hsu returned to his hometown to raise fish with his elder brother Chen Tsung-chieh after the factory where he had been working closed down.

"Just after I came back last year, the price for the fish was more than

NT\$30 per catty. Now it's fallen to NT\$21," he says.

It's April, and it is still overcast in Chiayi and Tainan Counties, which are usually basking in sunshine at this time of the year. With the price for tilapia continuing to decline, depression continues to hover over the Chen family, as well as the 6,400 hectares of fish farm ponds scattered through Yunlin, Chiayi, Tainan, Taoyuan and Ilan Counties.

### **An image it can't escape**

The scene shifts to Hsuehchia Township in Tainan County. Fish wholesaler Chiang Chao-jung stands on the bed of a truck, watching as workers and fish farmers catch fish in the ponds. He casually grabs a grown fish with reddened tail flukes, saying to the farmer: "What did you give them to eat? Why are they all in heat?" causing everyone to burst out in laughter.

Like the symbiotic relationships that develop in any business, the fish sellers, farmers, and processing plants in the fisheries industry know each other well. Good personal relationships are after all an important factor to consider when doing business. Amongst these people, shipping or placing an order can be accomplished with a phone call-there's no need for drafting contracts.

Two weeks before, Chiang Chao-jung, who takes an average of 100,000 catties a day, agreed on a price of NT\$23 per catty with a fish farm owner. But on the day the fish were harvested, the processing plant was only willing to pay NT\$21 per catty.

"Catch a catty and you lose NT\$2. 100,000 catties and you lose NT\$200,000. But not catching them is not an option, because if the price keeps dropping, what then?" Chiang Chao-jung points out, "It's natural that fish prices rise and fall, but the drop of around NT\$10 since last year-that's a really scary thing to see."

Processing plant owner Yang Shu-fen, who has worked with Chiang Chao-jung for more than ten years, says, "After profits in Japan and America fell, everyone placed their hopes on the European Union. But last year traces of antibiotics were detected in tilapia shipped to the EU,

and since then no-one has dared to try that market again."

## **Breaking into the EU market**

With its preference for high-quality goods, the European market typically sees fish prices 20% or more higher than in the US or Japanese markets, making it a source of hope for Taiwan's fish farmers. The technology of the fish farming industries in southeast Asian countries and China lags behind Taiwan's, so if Taiwan can establish a beachhead in Europe its chances of escaping the current price competition will correspondingly increase.

"The key to breaking into the European market is to control the use of drugs. From the producers to people handling transport and processing, all of the players in the tilapia industry must mobilize," states Frank Chiang. Looking back, the mass death that afflicted tilapia throughout Taiwan in 1991 prompted fish farmers to begin large-scale use of antibiotics such as chloramphenicol. Moreover, as the population density within fishponds increased, with more than 30,000 fry commonly placed in a single pond, the problem of drug use became one that could never be satisfactorily resolved.

"After the incident where drug traces were found, the EU asked us where-feed, fry, pond environment, processing, or transport-the problem was occurring, but up to now there has been no definitive answer," says Shih Yuan-yuan, a researcher at the Taiwan Tilapia Association. "For a long time, fish farmers have cut corners, and the government has not been strict with enforcement. As a result, everything including feed and the process of transporting harvested fish may have been tainted by those drugs prohibited by the European Union."

Shih Sheng-lung, deputy director of the department of aquaculture and coastal fisheries at the Council of Agriculture's Fisheries Agency worries that slow progress in production management in the fisheries industry will be the greatest obstacle to entering the EU market. "To break into the European market requires a cooperative effort. Nothing can be amiss, and the more advanced an industry, the greater the transparency demanded. However, fish farmers are generally unwilling

to report on issues such as the use of drugs and their production costs. If the situation does not improve, production workflow management will not be successful, while the government's policy is also not meeting the fish farmers' needs."

## **Returning to market mechanisms**

To support fish prices, the Fisheries Agency is preparing to initiate a "floating-rate purchasing and processing mechanism" with plans to follow the model used in purchasing free-range chicken during the bird flu epidemic at the beginning of this year. A thousand tons of tilapia will be purchased and processed into fishmeal.

"The floating rate purchase mechanism entails the government entering the market and buying up tilapia when the producer's price is lower than the production cost of NT\$19 per catty. However, has this NT\$19 at-cost price been calculated reasonably?" questions Shih Yuan-yuan. There is a long record of false reporting on costs when fish farmers are surveyed, leading to difficulties in formulating and enforcing the policy.

"In particular, this type of price subsidy generally fails to distribute benefits evenly. In the end, vendors have to use personal connections to obtain subsidies. And this in fact leads to the exclusion of superior fish farmers," stresses Shih.

"Rather than spending so much on big subsidies, it would be better to provide help with resolving the issues of drug residues and difficulty in getting water," says Chen Chun-hsu. Farmers in Chiayi County's Tungshih Rural Township have long tapped underground aquifers, and similar fish farming areas exist throughout Taiwan. As more and more farmland is withdrawn from crop production, they recommend that water not needed for fallow crop land be diverted for use by fish farms, while at the same time placing stricter regulations on the use of underground water. In this way, the subsidence caused by tapping these aquifers can be controlled."

In the neighboring county, shipper and marketer Chiang Chao-jung seconds Chen Chun-hsu's suggestion: "As for everything else, market mechanisms should be restored. Non-viable operations should be allowed to fail, and overall soundness will be increased. That's the best

plan for the long term!"

## **New name, new start**

"What many people don't realize is that past agricultural policy gave preferential treatment to rice production. Better land and water sources were reserved for rice cultivation," Shih Sheng-lung states.

"Inexpensive tilapia could only be raised in areas that nobody wanted."

If the curse of the hardy, abundant, and inexpensive tilapia in the domestic market is its "poor man's fish" image, the greatest obstacle to foreign sales is the intractable problem of drug residues. This is especially true for the EU market, with its stricter testing standards.

"A crisis is also an opportunity. Last year, shipments were rejected by the EU, which just added to the problem of declining fish prices. The industry has already reached a consensus on completely resolving this drug issue," points out Frank Chiang, who has for many years provided guidance to tilapia farmers.

To fully escape the cheap fish label, the Fisheries Agency and the industry have given tilapia a new Chinese name, "Taiwanese bream."

"The name change was of course made for marketing purposes," points out Li Yi-tao, who only last year took over as director of the private-sector Taiwan Tilapia Promotion Association. "However, marketing isn't only a matter of running some ads. We must return to the supply chain, monitoring for drug traces beginning with fry, feed, the fishpond environment and the shipping process, all the way to the processing plants."

"In its calls for quality, the EU has set a high standard, and other countries will follow suit," says Shih Sheng-lung. Familiar with all the areas where tilapia is raised in Taiwan, he has visited Tainan, crossing the Pachang River to reach Yentsai Village. There, he and Chen Chun-hsu look at aerial photographs of this village, exploring how to improve the aquaculture environment in ways ranging from water resource protection to fishpond consolidation. In a low living room with its shrine to the Earth God, the entire Chen family has congregated. Fish farmers from the neighborhood also join in. Because fish prices have remained

depressed this year, while feed prices are expected to rise, the discussion is punctuated by complaints and expressions of encouragement.

## **Passing the torch**

In the fish products processing plant in Chiayi County's Yichu Industrial Park, Yang Shu-fen changes into white work clothes, escorting a Japanese customer as he views the production line area. In a plant that has received certification according to Japanese standards, slaughtered tilapia are placed on a conveyor belt, and after passing through the production line, emerge as tempting sashimi slices. Freshness packaging is imprinted with Chinese characters identifying the fish as being of premium quality and then the fish is prepared for the freezer.

"This industry has not changed in more than ten years," says Yang. "All the technology and the production process, including sterilization with ozone and using liquid nitrogen to quick-freeze the fish, have been used since way back." It's a traditional industry that's looking a little long in the tooth. The plant has 70 workers on its payroll. Though it once closed down because of a sharp drop in fish prices, within three months the old employees came back begging for their jobs back, and the plant started running again.

"Industrial upgrading is painful, but for Taiwan's fish farmers, this fish is irreplaceable," she says. "Milkfish cannot tolerate the cold, and oceanic fish cannot be bred in large numbers. The barriers to eel farming are too high."

During the past 60 years, an industry has developed around one type of fish which arrived in Taiwan as smuggled bounty. Since then, Taiwan tilapia has seen its name changed continually, seen selective breeding applied to improve its stock. As the industry has developed, Taiwan tilapia has continued to expand its territory. Of Taiwan's 52 main rivers, only two have not become part of its domain.

Imbued with such an indomitable life force, whatever name Taiwan tilapia goes by, its story is bound to have more chapters in store.

