

ICLARM and South-South Technology Transfer: Philippine Aquaculture Technology and Indonesia

Part I

On a day in 1939 Bapak (Mr.) Mudjair began his daily routine catching small fish in the Serang River where it enters the sea on the south coast of Java. Pak Mudjair used a traditional scoop net, called a *soro*, to catch small fish for the daily needs of his family.

On that special day in 1939 however, Pak Mudjair collected a fish he had never before seen in all of his years of fish collecting. He brought a few of these fish and stocked them into his backyard ponds. He watched them every day and noted that they grew rapidly. Some time after stocking he excitedly reported to his neighbors that fish fry had appeared.

Word spread quickly that Pak Mudjair had made an important discovery. News eventually reached the local fisheries agency, of which Dr. W.H. Schuster was in charge. These were still Dutch colonial times in Indonesia.

Dr. Schuster identified Pak Mudjair's fish as an African fish known as *Tilapia*

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nearly everywhere in Java during a very short period of time, making the idea of any control measures ridiculous. Tilapia became an important protein food for the rural poor in a remarkably short time. Even the conservative Dr. Schuster, who at first was horrified to hear of the rapidity at which tilapia had spread, recommended in 1952 that *ikan mudjair* be used in rural development programs for the growing number of Javanese poor.

By the late 1950s *Oreochromis mossambicus* had become so popular in rural Indonesia that it acquired, in the world outside of Indonesia, the name "Java tilapia"! How absurd that a fish native to Africa could acquire, and keep, to this day, such a name!

In May 1950, at a meeting of the Indo-Pacific Fisheries Council in Jakarta, Dr. D.V. Villadolid, then head of the Bureau of Fisheries of the Philippines, learned of the tilapia and its great potential. On his way home from Indonesia Dr. Villadolid was given 12 tilapia fingerlings. Nine survived.

The tilapia were stocked into a 1-m² pond and later moved into larger ponds at the Dagat Saltwater Fisheries Experimental Station in Rizal Province. The tilapia reproduced at the station and fingerlings were donated to private and government fisheries institutions. A large flood hit the Rizal station in 1951 and nearly all of the captive tilapia stock escaped, seeding surface waters of the entire region. Tilapia would forever be a part of the Philippines from that day on.

From these storybook beginnings tilapia aquaculture in the Philippines and Indonesia originated.

During the 1960s tilapia aquaculture development in the Philippines and in Indonesia were quite parallel. Large populations had been established in such a short period of time through interbreeding. Stunting, rapid changes in body form and poor growth rates were inevitable. Market demand decreased as

mossambica (now *Oreochromis mossambicus*) and speculated that the fish might have escaped from an aquarium store, (a few new shops had recently opened in the area). Of course the local people didn't believe this. Appearance of the fish was certainly a gift from God.

Indeed the food and economic situation in rural Indonesia was so critical at the time that the appearance of a "fish for the poor" received much notice. Japanese occupation, followed by the war of independence, had virtually halted Javanese regional trade in the 1940s. Coastal *tambak* farmers had difficulty stocking their ponds with milkfish (*bandeng*) because fry collection was nearly impossible during wartime. Food supplies, especially protein, were dangerously low. It is no wonder that the appearance of the prolific tilapia took on great importance.

The fish became known by the name of its founder, *ikan mudjair*, as many unfamiliar imports or new animals still acquire the names of their "discoverers" or proponents in Indonesia. Hundreds of *tambaks* were stocked with the self-perpetuating tilapia during the late 1940s and early 1950s, since milkfish fingerlings were virtually unavailable. Tilapia spread

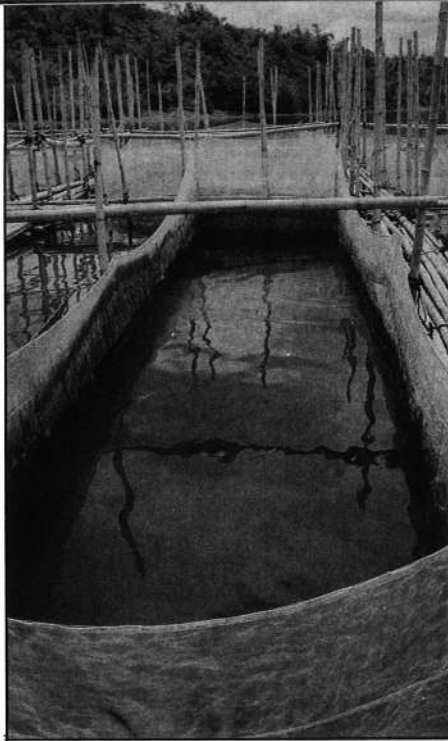


Ir. Gelar Wira Atmadja, General Manager of the IOE/ICLARM project in Bandung, Indonesia, holding a portrait of Bapak Mudjair, the discoverer of Java Tilapia in 1939.

consumer preferences shifted to the more traditional and expanding milkfish markets. From initial enthusiasm came charges of "environmental disaster" not only from the usual opportunists but also from reknown scientists. Much ridicule was heaped upon a number of scientists who, only 10 years before, had been hailed as visionaries.

Throughout the 1960s much hearsay, but little documented evidence, about the "environmental disaster" caused by the Java tilapia appeared. Stringent opposition to the spread of Java tilapia was led, to a large degree, by fisheries scientists from the developed countries.

As we look back upon these years of acrimony, debate, and transition from "old" to "new" tilapia breeds and technology seen today, one not-so-small consideration seemed to have been lost in our opinion. For the very poor in both Indonesia and the Philippines *Oreochromis mossambicus* has been and will always be a gift of immeasurable importance. No one will ever know the amount of suffering its introduction and spread have saved the poor people of Asia. To this day the much maligned fish is still an extremely important, low cost, and many times, "free" protein source for the poorest of the poor. In modern day Sri Lanka, *Oreochromis mossambicus* produces an average of 235 ± 160 kg/ha/year in 20 shallow reservoirs, accounting for 56 to 99% of the total fish yield, making the species the most important inland protein source for the poor people of that country.



A tilapia hatchery in Laguna, Philippines.

Possibly we can only see this point from the eyes of fisheries scientists in developing countries.

In 1972 Mr. Domingo Tapiador imported to the Philippines Nile tilapia (*O. niloticus*) from Thailand. This and other importations of different varieties of Nile tilapia fueled an unprecedented boom in tilapia production in the Philippines. The Nile tilapia grew faster and had a greater consumer acceptance due to its higher flesh to bone ratio. Demand increased sharply until nearly all the tilapia growers

and many of the milkfish growers in Laguna de Bay switched to Nile tilapia as prices soared.

By 1987 the Philippines was one of the largest tilapia producers in the world, producing over 50,000 t/year. Tilapia aquaculture production in the Philippines was higher than the aquaculture production of the entire African continent, original genetic home of all tilapia.

The situation in Indonesia developed quite differently. Although the Nile tilapia was imported to Java around the same time it went to the Philippines, strong market biases against any tilapia had been formed due to identical problems with genetic deterioration. In Java strong regional fish preferences for freshwater fish exist. The Sundanese in West Java prefer common carp. In East Java, Java carp (*Puntius javanicus*) is preferred. Fish preferences and biases became stronger with the deterioration of "Java" tilapia stocks. Biases did not allow market penetration for any new species, especially tilapia. In addition as family incomes have increased fewer people choose to purchase *ikan mujair*.

Part II of this article (which will come out in the January 1989 issue of *Naga*) will discuss the Indonesian Tilapia Mission to the Philippines. There, we will present in detail our findings in our search in the Philippines for a low-cost tilapia technology for Indonesia.

Lore of the Sea

Pongase

