UNIVERSIDAD DE ANTIOQUIA
1803

Recent developments of the tilapia production in Latin America and commercialization and market potentials

Revista Colombiana de Ciencias Pecuarias

La evolución reciente de la producción de tilapia en América Latina y la comercialización y el mercado potencial

Os recentes desenvolvimentos da tilápia produção na América Latina e de comercialização e de mercado potenciais

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Diversification and vertical integration are characterizing the tilapia explosion in Latin America. During the last decade Latin America presented one of the fastest growth rates in tilapia culture. In 1985 the region contributed with less than 5% of the world production. In 1995 this rate increased to 10% or a little more than 150.000 mt (metric tons), and by 2005 this participation increased to more than 20% due to massive growth in almost every Latin American country, especially Brazil, Colombia, Mexico, Ecuador, Honduras, Cuba, and Costa Rica, where annual growth is usually exceeding two-digits. Today tilapia is commercially produced and marketed in every Latin American country, except a few Caribbean islands and Chile, which turned to be a major tilapia investor in both South and Central America. The local market for tilapia has grown very quickly in several countries, and Mexico and recently Colombia are major regional importers of frozen 3-5 oz. Chinese tilapia fillet. USA is still the major destination of fresh fillets exported from this region.

Tilapia value chain in the region is turning to be vertically integrated by several merges and acquisitions, and quite effective to cope with such fast growth and the competition from China. Some characteristics are briefly presented:

1. Genetics and breeding —scattered small breeding programs, mostly based in mass selection, the source of quality breeders are still in the few South East Asian breeding programs.
2. Breeder multipliers —a few public institutions in several countries are trying to develop their own breeding programs and multiply breeders, but most vertical integrations in the region are not relying in such attempts.
3. Hatcheries and sex reversal —in general smaller than in Asia, but producing better quality (artificial incubation, sex-reversal and larger sizes are rules) and more expensive (triple the average Asian market price) fingerlings.
4. Juvenile production —in high demand due to the fast growth of cage systems, several farmers are specializing in this activity in Latin America.
5. Grow-out —very diverse, mainly focused in green-water lower production costs (for local and export markets) and high quality and safety (also using huge cages aiming the fresh-fillet export business); organic tilapia is a major trend in the region in order to face increasing competition among the major players; there is today a lack of product in almost every country of the region and this phase will be further detailed.
6. Transportation/distribution —both seeds and market fish are transported to very large distances typical of this continent; locals markets do not consume live fish such as in Asia.
7. Processing —very large and high-tech processing plants are established as a key and central part in the vertical integrations, but an increasing number of small and medium size plants are being established not only for a more sophisticated

local market but to integrate with larger players in less accessible grow-out areas.

8. Export/local markets —tilapia local market worldwide is about 80%, but this region is an exception, presenting the highest world share of tilapia for export, about 40% of the crops.

Production systems vary from the very extensive ranching operations where fry are stocked in huge reservoirs such as abandoned big shrimp ponds or hydroelectric dams to be later captured all the way to hyper-intensive raceway systems and microbial flocks with densities of over 50 kg/m^3. Mexico and Brazil are the major tilapia players in the region, both in 2006 exceeding the 100.000 mt. figure (4th and 5th in the World rank) with an industry based in small-scale scattered farmers. Ecuador, Honduras and Colombia are probably on top-ten tilapia producers by 2006. While production in Brazil and Ecuador is green-water pond based in a large variety of conditions and production systems, in Mexico and Cuba stocking and harvesting from reservoirs is the major source of tilapia. Still in Mexico and Cuba, as well as in Colombia, Honduras, Nicaragua, and some limited areas of Brazil the industry is shifting to cage culture in these same reservoirs. Several environmental problems have been reported in cage culture over the last few years in the region with massive losses overnight (more than 2.200 tons since 2003 in major night-time disasters caused by excess of rains or cold fronts).

Polyculture with devastated by viral diseases *vannamei* shrimp is another current trend in Brazil, Ecuador, Colombia, Mexico, and Peru due to improvement in shrimp survival and quicker return in investments. Brazil, Costa Rica, Colombia, Panama, El Salvador, Venezuela, and Jamaica have developed intensive small pond culture systems with a mix of high flow rates and paddlewheel aerators. Honduras is increasing production rapidly with a mix of cage culture, intensive ponds and integration with shrimp farming. Nile tilapia has been the major species except in Colombia and Ecuador where reds are still dominant, but the regional trend of replacing reds for Nile may shift in both countries.

Several factors contributed for this massive growth of tilapia culture in Latin America, especially the USA appetite for fresh tilapias. Tilapia is being marketed into a fisheries depleted category "white fish meat". There are already problems in supplies of farmed tilapia all over the continent, and prices are being recently raised after two stable decades in this market niche also due to the recent devaluations of the American Dollar.

For 99.4% of USA fresh fillet imports are supplied by Latin America. Tilapia is now the 2nd most important aquaculture species in Latin America (soon to be number one) and the 3rd aqua farmed product imported by USA. Ecuador is responsible for almost ½ of such exports, while Honduras comes second with 30%, Costa Rica with 16% and Brazil with 5%. Brazil shall increase exports to USA dramatically in the coming years, while Colombia and Mexico were major exporters to US, but exports levels decreased while production increased targeting the local markets. Average price of fresh fillets was US$ 6.06/kg in 2005, and the region exported US $ 140 million in the same year, benefiting more than 200.000 people directly involved in the value chain.

Future production trends in Latin America include intensification in virtually every country, production may stabilize 80-85% *Oreochromis niloticus*, and the remaining 15-20% Red hybrid strains, *O. aureus* and *O. mossambicus* mostly for hybridization. Production might be 50-60% in ponds, 20-25% in cages, and 5% for the intensive systems. Larger integrations and processors will play an increasingly dominant role in the tilapia value chain of this region. Polyculture with shrimp will become common in most shrimp farming areas.

Tilapia culture in Latin America is believed to be today 400.000 mt. and may reach 500.000 mt. by 2010 and 1.000.000 mt. by 2020, increasing the participation of the region to one third of the world production using current growth figures in Asia and Latin America. Processing and low-cost "value-added" products will intensify in several countries of the continent, especially in Ecuador, Brazil, Colombia, and Mexico. Local consumption levels will only grow significantly if tilapia prices decrease as offer increase due to export excesses, as it happened with chickens (a very similar industry and vertical integration model for tilapia in the continent).