Latest trends in tilapia production and market worldwide

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American Tilapia Association, Sec. Tres.

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16 September 2013
Tilapia: continuing to increase in popularity globally

- Tilapias are second only to the carps as a farmed food fish.
- But tilapia have unique characteristics that will facilitate its continued growth to someday surpass carp production.
Tilapia

• Model for how aquaculture industry should develop
• Global demand, variety of production systems and geographic regions, some vertically integrated
• Environmentally sustainable – “Green Aquaculture” (no fish meal required in the diet, no antibiotics, many farms use effluents for crops)
Subsistence and Export Commodity

• Tilapia is unique in its role as a small livestock animal grown by subsistence farmers in developing countries around the world.....

• And

• It is widely grown and exported to high value markets to be served in expensive restaurants and grocery stores

• Commodity or specialty crop - BOTH, like chicken
Tilapia: the most important aquaculture species of the 21st century

Feb 2000
ISTA 5
Global production of some major farmed fishes

Metric tons per year

Tilapia
Catfish
Salmon
World Tilapia Production of 4,207,900 mt in 2012
2008 Tilapia exports from China

Sales volume = 224,359 mt
2012 Tilapia exports from China
Farm gate prices for tilapia to Chinese farmers

Ex-farm prices for whole, live tilapia, China, 500-800 grams
Feb 2013: RMB 8.9
Global production of tilapia

- **Aquaculture**
- **Fishery**

![Graph showing the global production of tilapia from 1984 to 2012 with projected estimate for 2012.](image-url)
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US Consumption of tilapia from domestic and imported sources
Percentage of US finfish grocery sales
Feb. 2010

- Salmon
- TILAPIA
- Catfish
- Other fish
- Cod
- Haddock
- Tuna
- Flounder
- Halibut
- Swordfish
- Trout
US Tilapia consumption (imports and domestic)

- 437,000 mt of live weight (equivalent) - 2007
- 453,264 mt of live weight (equivalent) – 2008
- 465,953 mt of live weight (equivalent – 2009)
- 579,443 mt of live weight (equivalent – 2010)
- 513,361 mt of live weight (equivalent – 2011)
- 613,406 mt of live weight (equivalent – 2012)

Value of Tilapia product forms imported to the U.S.
US Sales of tilapia

- Imports to US in 2012 were $986,127,852
- US production of 28,000,000 lbs at farm
- 2012 US tilapia farm-gate sales were $84,000,000
- 2012 US Tilapia Sales estimate –
  \[ \$986,127,852 + \$84,000,000 = \$1,070,127,852 \]
Selective breeding and genetic improvements

- Excellent breeding programs
  - G.I.F.T. - Malaysia
  - Genomar - Brazil and Norway
  - Chitralada – Thailand
  - TabTim – Thailand (CP Group)
  - GIFT Excell – Philippines
  - Molobicus - Philippines
  - GIFT Bangladesh

- Several in Mexico
- YY Supermale - Philippines and Swansea, Egypt and Indonesia
Genetic improvements in tilapia

(From: Mair, G., 2002)
Tilapia Genome Project

- March 2011 - First assembly of the tilapia genome
- *Oreochromis niloticus* – Nile Tilapia
- Matching many segments to those known from other fish
- Publically available and freely accessible
- Next frontier of genetic program for tilapia
Tilapia Genome Project

The 3000 species of cichlid fish, which includes tilapia, are found in a variety of habitats in Central and South America, Africa, and India. From an evolutionary point of view, the most interesting cichlid species are the 1500 species that recently diverged in the lakes of East Africa. Remarkably, the cichlids of Lake Tanganyika have diverged into 250 species in the past 6-8 million years, and the 500 Lake Victoria species and the 700 Lake Malawi species diverged in only the past 1 million years. For the scientific community, these species provide a natural mutant screen superior to any chemical mutagenesis. The cichlids are especially diverse in tissues and systems such as the endocrine and nervous systems that are related to the neural crest, a vertebrate-specific developmental germ layer. Cichlids are also valuable model organisms for the study of sex determination evolution, speciation and behavior. The combination of a sequenced tilapia genome and the wide variety of recently evolved cichlid behaviors and morphological traits will provide a unique opportunity to study social dominance, territoriality, sexual selection, and feeding behaviors, as well as a wide variety of neural crest derived traits.

The Broad Institute has generated a high quality draft from a Nile tilapia, *Oreochromis niloticus*. The Nile tilapia is 10-15 million years diverged from the East African lake cichlids, and provides a good outgroup for the
The YY male technology

**Then**
- Normal crosses produce equal proportion of males and females

**Now**
- YY males produce only male progeny

*GMT®*
Regions of rapid production growth

- Vietnam – conversion of catfish cages to tilapia in Mekong, and culture in all regions
- Indonesia – cage culture, polycultures, rice culture
- Malaysia – government support and private sector investment
- Bangladesh – government support and private sector investment
- Brazil – lots of available water, labor, land, feed
- Thailand – better reporting, shrimp polyculture
- Mexico – continued intensification, some govt support, large and small private investments
- Sub-Saharan Africa - commercialization
Integrated Farming Systems

- Tilapia → Grapes, wheat, olives, barley, sorghum, cotton, melons, peppers

Safford, AZ                               Marana, AZ
Tilapia and citrus in Hainan, China
Desert Springs Tilapia, Hyder AZ
Polyculture Indonesia

Pante Paku, Jangka, Bireun
(klaster udang windu dan ikan nila salin)

Peurelak, Aceh Timur
(klaster udang windu dan ikan bandeng)

Banda Mulia, Aceh Tamiang
(klaster udang windu dan ikan nila salin)
Stocking and harvest schedule
Tilapia – shrimp – seaweed polyculture in Indonesia
Pathways in the use of tilapia as biomanipulator (and disease control?) in shrimp farms

- Promotion of *Chlorella* dominance
- Feeding on organic waste
- Bioturbation of sediment
- Production of natural antimicrobials

**IMPROVED SEDIMENT QUALITY**

**IMPROVED WATER QUALITY**

**SUPRESSION OF GROWTH OF V. harveyi and V. parahaemolyticus?**
Improvements in packaging
IQF Fillets in re-sealable packages
Value added meals

Lillian's
HEALTHY GOURMET

gluten free
SPICY GREEN CURRY TILAPIA
with cooked rice noodles and vegetables

Serving Suggestion
KEEP FROZEN/COOK THOROUGHLY

NET WT 12.35 OZ (350 g)

REACH IN 8 MINUTES
TUSCAN STYLE TILAPIA

topped with fresh tomatoes, black olives, parmesan cheese & pesto
ONE-STEP SEAFOOD FILLETS

Tarragon Butter Tilapia
Deep skinned tilapia fillets glazed with a delicate tarragon butter marinade. Individually vacuum packed. 12 oz. bag.

SAVORY

Grab & Go!
Savory Seafood Grille Mahi & Tilapia in 4 oz. bags are A Fresh New Way to create sales-driving, price-point promotions that your customers will love!

5 FOR $5 - OR - 10 FOR $10!
GREAT SALES ITEM!

Mahi Mahi     Tilapia

All Natural Breaded Tilapia Fillets

Excellent Price! Great Availability!
Flaky Inside! Crispy Outside!
Popular White Meated Fish
Great For Dinners, Sandwiches, and Buffets!

Retail 2lb. Box

For Prices Click Here
New product forms

Smoked tilapia

Sashimi grade tilapia
Tilapia and food service

- On almost all cruise ships
- Starting to appear on airlines
- Increasingly with schools, hospitals and prisons
- Several prisons have their own tilapia farms

Courtesy: Eric Roderick
Tilapia in Long John Silver’s and other fastfoods could double tilapia global demand.
Traditional product forms

Yangon BBQ tilapia
Byproducts - Tilapia Leather
Manolos made from discarded tilapia skin, raffia, and cork? Why not. Until now, the shoemaker hadn’t delved into the green scene, but eco-chic designer Marcia Patmos was able to change that. “They were very open and loved my suggestion of bringing sustainability into the shoes, as long as I could find the right materials that they couldn’t supply,” Patmos tells Style.com. So, she settled on natural resources and fish industry byproducts for the Spring ’12 collection. “The materials were actually very easy to work with,” Patmos adds. “Mixed together or dyed, they’re very versatile.” The heels ($975) and the flats ($645) are hitting Manolo stores next week. Patmos revealed she’s already hard at work on the next round—an ankle bootie made of vegetable tanned leather—for the the Fall ‘12 Manolo Blahnik for M.Patmos collection.

—Kristin Studeman
Tilapia Orange Juice

Ingredients: 100% Pure pasteurized orange juice and MEG-3®* (fish oil and fish gelatin).
Contains tilapia, sardine and anchovy.

*Ingredient not found in regular orange juice.
Tilapia pedicures and manicures
Global Tilapia Market Trends

Prices have been constant, only fresh fillets have increased significantly, will not see increases beyond inflation

- Fresh fillet
- Frozen fillet
- Whole Frozen
- Live

$/kg
Global Aquaculture Tilapia Sales

- For year 2000 = US $ 1,744,045,000 (FAO FishStat 2007)
- 2005 sales = $ 2,457,312,000 (FAO FishStat 2007)
- 2010 sales > $ 5,718,263,000 (FAO FishStat 2012)
Bangladesh tilapia aquaculture

Metric tons

2002 2003 2004 2005 2006 2007 2008 2009 2010 2011 2012 (est) 2013 (est)

0
20,000
40,000
60,000
80,000
100,000
120,000

Future global tilapia aquaculture
Conclusions

• Global tilapia production was 3,957,949 metric tons in 2011 (FAO, 2013), should exceed 4,207,900 MT in 2012. (6% growth)

• Constantly improving farming, processing and packaging for food safety, quality assurance, traceability, and environmental safeguards (with little, if any, increase in price).

• Other aquaculture species will follow the tilapia model.
The 10th International Symposium on Tilapia in Aquaculture (ISTA 10)
6-10 October 2013, Ramada Jerusalem Hotel

Three days of professional conference and one day tour to the North of Israel, will provide an updated and extensive vision to one of the most important aquaculture fish species in the world.

You are invited to contact us to ensure you receive more information on attending, presenting and exhibiting at the symposium.

E-mail: ista10@siamb.org.il
Conclusions

- Tilapia has long been called the aquatic chicken.
- Instead......
- The “terrestrial tilapia”
Tilapia: the most fun aquaculture species of the 21st century

http://www.youtube.com/watch?v=Bh2673ncWJg
Buy TILAPIA

Thank you!

Questions?