Aquaculture and Trade of Tilapia in China

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The Palace of the Golden Horses Hotel, KUALA LUMPUR
An old myth in China

carp leaping over the dragon's gate
Tilapia’s dragon gate

Diaoyutai State Guesthouse
China’s Tilapia Aquaculture

PRODUCTION PROFILE
Role of tilapia in freshwater fish aquaculture

- salmon
- puffer fish
- longsnout catfish
- pond smelt
- noodle fish
- rainbow trout
- sturgeon
- white Achama
- freshwater eel
- channel catfish fish
- freshwater grouper
- yellow catfish
- rice eel
- freshwater perch
- yellow eel
- cat fish
- snakehead fish
- black carp
- wuchang fish
- tilapia
- crucian carp
- common carp
- bighead carp
- silver carp
- grass carp

**Categories distribution of aquaculture production of freshwater fish in 2013**

<table>
<thead>
<tr>
<th>Fish</th>
<th>Output/MT</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>tilapia</td>
<td>1,657,717.00</td>
<td>7%</td>
</tr>
<tr>
<td>total</td>
<td>23,710,707.00</td>
<td></td>
</tr>
</tbody>
</table>

China Fishery Statistical Yearbook, MOA, 2014

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Tilapia aquaculture production (by region, 2013, in tonnes)

Geographic distribution of China’s tilapia aquaculture sector (2013)

<table>
<thead>
<tr>
<th>Province</th>
<th>Output/MT</th>
</tr>
</thead>
<tbody>
<tr>
<td>Guangdong</td>
<td>700,219.00</td>
</tr>
<tr>
<td>Hainan</td>
<td>354,582.00</td>
</tr>
<tr>
<td>Guangxi</td>
<td>286,046.00</td>
</tr>
<tr>
<td>Fujian</td>
<td>126,844.00</td>
</tr>
<tr>
<td>Yunnan</td>
<td>123,356.00</td>
</tr>
<tr>
<td>others</td>
<td>66,670.00</td>
</tr>
<tr>
<td>total</td>
<td>1,657,717.00</td>
</tr>
</tbody>
</table>

China Fishery Statistical Yearbook, MOA, 2014
Main tilapia production areas

Share of tilapia production by provinces in 2013:
- Guangdong: 42%
- Hainan: 21%
- Guangxi: 17%
- Fujian: 8%
- Yunnan: 8%
- Others: 4%

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Production trend of main tilapia farming areas (2006-2013)

<table>
<thead>
<tr>
<th>Year</th>
<th>Guangdong</th>
<th>Hainan</th>
<th>Guangxi</th>
<th>Fujian</th>
<th>Yunnan</th>
</tr>
</thead>
<tbody>
<tr>
<td>2006</td>
<td>53.05%</td>
<td>14.20%</td>
<td>14.47%</td>
<td>8.71%</td>
<td>2.15%</td>
</tr>
<tr>
<td>2007</td>
<td>52.29%</td>
<td>15.91%</td>
<td>13.89%</td>
<td>7.91%</td>
<td>3.65%</td>
</tr>
<tr>
<td>2008</td>
<td>46.64%</td>
<td>19.52%</td>
<td>14.83%</td>
<td>8.54%</td>
<td>3.95%</td>
</tr>
<tr>
<td>2009</td>
<td>46.42%</td>
<td>19.58%</td>
<td>15.33%</td>
<td>8.58%</td>
<td>3.77%</td>
</tr>
<tr>
<td>2010</td>
<td>46.86%</td>
<td>18.82%</td>
<td>16.10%</td>
<td>8.22%</td>
<td>4.44%</td>
</tr>
<tr>
<td>2011</td>
<td>44.83%</td>
<td>20.41%</td>
<td>16.61%</td>
<td>8.11%</td>
<td>5.35%</td>
</tr>
<tr>
<td>2012</td>
<td>42.80%</td>
<td>21.38%</td>
<td>17.08%</td>
<td>7.93%</td>
<td>6.39%</td>
</tr>
<tr>
<td>2013</td>
<td>42.24%</td>
<td>21.39%</td>
<td>17.26%</td>
<td>7.65%</td>
<td>7.44%</td>
</tr>
</tbody>
</table>
Yunnan: a new player

- Suitable climate for tilapia
  - far south west of china
- Cage farming
  - rich in reservoir resources
  - hydroelectric stations
- The 5th biggest in terms of output
  - 123,356 tons (2013)

Recent years, aquaculture has become a fast growing sector in Yunnan especially for tilapia
Cage farming in Yunnan


http://www.shuichan.cc/news_view-192197.html
Guangdong

- **Western Guangdong (Maoming)**
  - 1/3 of total province
  - 1/8 of total China
  - 1/12 of world

- **Intensive (exporting oriented)**
  - 1 harvest/year
  - 2 harvest/year
  - 3 harvest/2 year

- **Oversee markets**
  - USA
  - Mexico

( Wang Y, 2014)
Hainan

- **Production areas**
  - wenchang, 70% of total province
  - and qionghai

- **Intensive (export-oriented)**
  - 2~2.5 harvest/ year
  - 3 harvest per year ongoing?

- **Hainan Tilapia Sustainability Alliance (2014)**
  - launching **regional tilapia brand**
Guangxi

- **Intensive**
  - 1 harvest per year
  - **Nanning**, the largest tilapia markets
    - The average daily consumption of tilapia amount to 5 tons
    - Market size: 650~750g

- **Semi-intensive**
  - Qinzhou, Fangchenggang
  - Polyculture with carp
    - Salt water: fish and shellfish (shrimp/crab)
    - Freshwater: fish and fish

- **Traditional**
  - Hepu (Beihai)

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China tilapia industry chain

Production
- Export oriented (Intensive)
- Domestic oriented
  - Polyculture
  - Traditional
  - Cage culture

Processing
- Frozen products (fillets/value added/whole)
- Surimi based products (by cuts)
- Frozen products value-added/pre-cooked (by cuts)
- Miscellaneous traditional/novel
- Live fish (local market mainly)

Marketing
- oversea markets
  - overseas markets
  - family
  - Canteen
  - restaurant
  - foodservice
  - domestic markets

Value adding chain
Two track of China's seafood safety system

• Exporting market: **Developed**
  – Export Oriented System (EOS).
    • AQSIQ: General Administration of Quality
    • Supervision, Inspection and Quarantine of the People’s Republic of China
  – Whole chain traceability

• Domestic market: **Developing**
  – Highly Diversity and Complex
China Food Safety System

State Council

Food Safety Commission

MOA
Ministry of Agriculture

HFPC
Commission of Health and Family planning

CFSA
Center for food safety risk assessment

CFDA
China Food and Drug Administration

AQSIQ
General Administration of Quality Supervision, Inspection and Quarantine

Import/export supervision of food product

primary production, slaughter, GMO

food Safety Risk Assessment

food safety standard

Processing, distribution, consumption and enforcement

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exports volume slowing down
oversea markets diversifying

INTERNATIONAL TRADE
International markets

distribution of main exporting markets (2012)
Concentration ratio of oversea market

Markets distribution by value (%)

Russia
Mexico
USA

Zhang Hong-yan, et al. 2014
Distribution of export regions

shear of exports by value (%)
### Share of main oversea markets for each producer(%) ,2013

<table>
<thead>
<tr>
<th>Province</th>
<th>North America</th>
<th>EU</th>
<th>Russia</th>
<th>Mexico</th>
</tr>
</thead>
<tbody>
<tr>
<td>Guangdong</td>
<td>45</td>
<td>5</td>
<td>21</td>
<td>56</td>
</tr>
<tr>
<td>Hainan</td>
<td>33</td>
<td>47</td>
<td>22</td>
<td>31</td>
</tr>
<tr>
<td>Guangxi</td>
<td>19</td>
<td>28</td>
<td>9</td>
<td>9</td>
</tr>
<tr>
<td>Fujian</td>
<td>2</td>
<td>19</td>
<td>48</td>
<td>3</td>
</tr>
<tr>
<td>others</td>
<td>1</td>
<td>1</td>
<td>0</td>
<td>1</td>
</tr>
</tbody>
</table>
highly differentiated in both products and consumers

DOMESTIC CONSUMPTION
Consumption pattern in China

- **culture**
- **what**
  - frozen value-added/pre-cooked
  - surimi based (by cuts)
  - miscellaneous (by cuts, backbone, skin...)
- **where**
  - family
  - canteen
  - restaurant
  - foodservice
- **how**
  - Chinese cuisine
  - Japanese cuisine
  - Western cuisine
  - Miscellaneous exotic cuisine

**export oriented**
- export processing
  - domestic oriented
  - Live fish (local market)
Domestic potential demand of tilapia

- **Live fish consumption**
  - farming area, inland mainly
    - Guangxi, Yunnan, Sichuan, Guizhou
  - traditional Chinese cuisine

- **Processed products consumption**
  - first/near-tier cities
  - coastal, good developed
    - Beijing, Shanghai, Guangzhou

- **Premium products (Izumidai)**
  - sushi and sashimi grade tilapia
lack of top-grade quality tilapia

ISSUES AND SOLUTION
Strategic Core: Quality

- Sustainable
- Safety
- Traceability
- Ethic
- Purity, maturity...
- Wholesomeness

Quality

- Energy (basic)
- Nutrition (health)
- Sensory (pleasure)

- Shelf-life (stability)
- Convenience (quickly and easily)
- Availability (resources available)
- Price (affordable vs expensive)

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Comprehensive solution

- germplasm, fine varieties
- seed production
- aquaculture eco-friendly
- post-harvest handling
- Value-adding

Brand Building
Tilapia industry chain

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Whole chain strategy

- Broodstock
- Aquaculture
  - water quality
  - fish feed
- Harvesting
  - live handling
- Processing
  - value adding
- Distribution
  - live transport
  - cold chain
- e-service (Alibaba)
turning from quantity-benefit to quality-benefit
reducing reliance on exporting
enhancing efforts to develop domestic markets

TRENDS AND PROSPECTS
Upgrade of tilapia industry

Environmental pressure increasing

Unsustainable Quantity-oriented

Upgrading

Sustainable Quality-oriented

Brand Building experienced export-oriented system

High quality
Balance

Sustainable

Quantity

Quality

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Thank you very much