AQUACULTURE IN VIETNAM: PRESENT STATUS & STRATEGIC PLAN

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Present situation of Aquaculture in Vietnam
Production and farming areas

Aquaculture production (000 tons)
Areas of aquaculture farms (000ha)
Aquaculture Structure in 2012

- **Total Aquaculture production**: 3,273,018 MT

- **Brackish and Marine aquaculture** (32%):
  - Farming areas: 763,708 ha
  - Production 1,043,000 MT

- **Freshwater aquaculture** (68%):
  - Farming areas: 431,659 ha
  - Production 2,229,000 MT
## Important brackish and marine Aq. species!

<table>
<thead>
<tr>
<th>Species</th>
<th>Northern Part</th>
<th>Central Part</th>
<th>Southern Part</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Black tiger Shrimp</strong> <em>(Penaeus monodon)</em></td>
<td>X</td>
<td>X</td>
<td>XXX</td>
</tr>
<tr>
<td><strong>White shrimp</strong> <em>(Litopenaeus vannamei)</em></td>
<td>XX</td>
<td>XX</td>
<td>X</td>
</tr>
<tr>
<td><strong>Clam</strong> <em>(Meretrix lyrata &amp; M. meretrix)</em></td>
<td>X</td>
<td></td>
<td>XXX</td>
</tr>
<tr>
<td><strong>Oyster</strong> <em>(Crassostrea spp.)</em></td>
<td>X</td>
<td>X</td>
<td>X</td>
</tr>
<tr>
<td><strong>Blood cockles</strong> <em>(Anadara granosa)</em></td>
<td></td>
<td></td>
<td>X</td>
</tr>
<tr>
<td><strong>Sea bass</strong> <em>(Lates calcarifer)</em></td>
<td>X</td>
<td></td>
<td>XXX</td>
</tr>
<tr>
<td><strong>Muddy Goby</strong> <em>(Pseudapocryptes elongatus)</em></td>
<td>X</td>
<td></td>
<td>XX</td>
</tr>
<tr>
<td><strong>Mud crab</strong> <em>(Scylla paramosaim)</em></td>
<td>XX</td>
<td>XX</td>
<td>XX</td>
</tr>
<tr>
<td><strong>Groupers</strong> <em>(Ephenelus sp)</em></td>
<td>XX</td>
<td>XXX</td>
<td>X</td>
</tr>
<tr>
<td><strong>Cobia</strong> <em>(Rachycentron canadum)</em></td>
<td>XX</td>
<td>XX</td>
<td>X</td>
</tr>
<tr>
<td><strong>Mollusk</strong> <em>(Lutraria spp.)</em></td>
<td>X</td>
<td>X</td>
<td></td>
</tr>
<tr>
<td><strong>Pearl oyster</strong> <em>(Pieria martensii)</em></td>
<td>X</td>
<td>X</td>
<td>X</td>
</tr>
</tbody>
</table>
Aquaculture production composition (2011)

- Shrimp production, 496, 16%
- Marine finfish, 81, 3%
- Mollusks, 180, 6%
- Others marine fish, 221, 7%
- Traditional carps and others, 850, 28%
- Tilapia, 65, 2%
- Giant freshwater prawn, 8.5, 0%
- Pangasius, 1,151, 38%
Development of the key cultured species

[Bar chart showing the production of various cultured species from 1999 to 2010. The species include Molusks, Marine Fish, Pangasius, Whiteleg shrimp, and Tiger shrimp. The chart indicates a significant increase in production over the years.]
Shrimp aquaculture

- 30 Provinces
- 656,425 ha & 495,657 MT

Areas (ha) | Production (MT)
---|---
White leg shrimp | 33,049 (5%)
Tiger shrimp | 176,451 (36%)

623,377 | 319,206
Pangasius aquaculture (11 provinces)

<table>
<thead>
<tr>
<th>Province</th>
<th>Areas (ha)</th>
<th>Production (ton)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Đồng Tháp</td>
<td>1,663</td>
<td>333,000</td>
</tr>
<tr>
<td>An Giang</td>
<td>960</td>
<td>251,000</td>
</tr>
<tr>
<td>Cần Thơ</td>
<td>937</td>
<td>163,444</td>
</tr>
<tr>
<td>Bến Tre</td>
<td>650</td>
<td>126,750</td>
</tr>
<tr>
<td>Vĩnh Long</td>
<td>485</td>
<td>113,374</td>
</tr>
<tr>
<td>Hậu Giang</td>
<td>190</td>
<td>47,707</td>
</tr>
<tr>
<td>Tiền Giang</td>
<td>207</td>
<td>41,000</td>
</tr>
<tr>
<td>Trà Vinh</td>
<td>178</td>
<td>32,596</td>
</tr>
<tr>
<td>Sóc Trăng</td>
<td>167</td>
<td>27,400</td>
</tr>
<tr>
<td>Kiên Giang</td>
<td>27</td>
<td>6,966</td>
</tr>
<tr>
<td>Tây Ninh</td>
<td>25</td>
<td>5,500</td>
</tr>
<tr>
<td>Total</td>
<td>5,509</td>
<td>1,150,737</td>
</tr>
</tbody>
</table>

(S. S. De Silva and N. T. Phuong, 2011)
Export product structure (2012) (by value)

- Frozen shrimp: 36.5%
- Pangasius: 28.4%
- Mollusks: 9.5%
- Other fishes: 14.5%
- Other crustacean: 1.9%
- Tuna: 9.3%
Current aquaculture technology

• Intensive: pangasius, white leg shrimp, marine fish
• Semintensive: tiger shrimp, tilapia
• Organic/ extensive system: giant prawn
• Integrated system: VAC system, traditional fish
Aq. production relates to the common water bodies

- Mollusk culture 26.566 ha, 158.277 MT
- Cage culture: tilapia, pangasius, common caps, sturgeon, lobster ... in river, lakes, reservoir, coastal bay:

<table>
<thead>
<tr>
<th>Cages (number)</th>
<th>Production (MT)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total</td>
<td>Total</td>
</tr>
<tr>
<td>107,190</td>
<td>154,477</td>
</tr>
<tr>
<td>FW</td>
<td>FW</td>
</tr>
<tr>
<td>21,098</td>
<td>138,705</td>
</tr>
<tr>
<td>M&amp;B</td>
<td>M&amp;B</td>
</tr>
<tr>
<td>86,092</td>
<td>15,771</td>
</tr>
</tbody>
</table>
Management

- Quality control of input elements: seed, feed, probiotics, chemical and drugs (Circular 26)
- Farming conditions (Circular 44, 45)
- Farms assessment and classification (Circular 14)
- Encourage/ Promotion of GAP application and certification (PM Decision 01)
- National environment monitoring program
Aquafeed production and use

- 130 aquafeed plans, appx. 4000 products
- Annual production of 2.925 mill MT of manufactured pellets (85.6% demand)
- Imported: 7.9%
- Homemade feed: 6.5%
- Feed cost: 60-85%
- FCR: increasing
# Feed cost and FCR increasing?

## Feed cost (Mill VND/ kg)

<table>
<thead>
<tr>
<th></th>
<th>2005</th>
<th>2010</th>
<th>2013</th>
</tr>
</thead>
<tbody>
<tr>
<td>Shrimp</td>
<td>15-16</td>
<td>20,5-29,2</td>
<td>28-37,2</td>
</tr>
<tr>
<td>Pangasius</td>
<td>5,6-6</td>
<td>9,8-13</td>
<td>11,9-17,1</td>
</tr>
</tbody>
</table>

## FCR

<table>
<thead>
<tr>
<th></th>
<th>2005</th>
<th>2008</th>
<th>2012</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pangasius</td>
<td>1,4 - 1,6</td>
<td>1,5 – 1,8</td>
<td>1,6 – 2,0</td>
</tr>
<tr>
<td>Shrimp</td>
<td>1,0 – 1,3</td>
<td>1,2 – 1,35</td>
<td>1,3 – 1,5</td>
</tr>
</tbody>
</table>
Vietnam Aquaculture
Towards 2020: Sustainable development and improve trading value!
Potential and opportunity

- Demand: World population reach 9.2 billion by 2050: Need >110% seafood increase
- 3260 km coastal line
- More than 1 mill ha ponds for aquaculture farming
Vietnam Aquaculture Plan Toward 2020: Prime Minister Decision No. 1690/QD-TTg

- Development Goal:
  - Ensure food security
  - Increase export value

- Targets:
  - 7,000,000 MT of fisheries
  - 4,500,000 MT from aquaculture
  - 5.5 billion USD from exporting of aquaculture
  - 2.5 million of jobs in aquaculture
Priority for Aquaculture:

- Planning and zoning (revising)
- Key species: Shrimp, pangasius, clam/oyster, tilapia
- Mariculture development (offshore)
- Sustain the inland Aq. areas, improve the intensive systems
- Encourage GAP practice
- Diversification in species, technology, farming system
Priority programs

• Marine aquaculture program to 2020

• Tilapia aquaculture program to 2020

• Human resource capacity building program to 2020

• Research and technology transfer program period 2010-2020

• National Aquaculture Planning & Zoning
  – Marine aquaculture planning
  – Establishment of 5 Regional fishery centers
Constrains and challenges

• Low trading value!
• Unsustainable production & imbalance in supply – demand (pangasius crisis)!
• High feed cost & high FCR – high production cost!
• Environment deterioration – outbreak of disease?
Constrains and challenges

- Outbreak of shrimp diseases: EMS/ white sport/ yellow head ...
  - 2011: 97.000 ha
  - 2012: 94.000 ha
  - 2013 (end of May) 23.838 ha

- Mass mortality of clam:
  - High density ?
  - Environment/ CC ?
How to sustain production and Environment integrity?

- For closed systems (ponds, RAS, tanks...): better control of sewage/effluents discharged from ponds?
- For aquaculture systems in natural water bodies: cage/pen culture in reservoir, river, coastal bays: how to avoid/mitigate pollution?
- ...

What we are expecting?

- Modeling ACC for better Aquaculture Planning & Zoning/ appropriate policy for sustainable development?
  - Simple demonstration
  - Resources
Thank you!