The Status, Challenges and Prospect of Mariculture Industry in China

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Outline

- Status of mariculture development in China
- Characteristics
- Challenges & problems & strategy
- Some consideration
Fishery plays an important role in economic development in China

- Total aquatic production reached **59.077 million** tons, which account for one third of the world total.
- Aquaculture in total reached **42.88 million** tons, account for more than 70% of the world total.
- The total volume of export and import reached **3.80 million** tons, with a value of **18.98 billion** yuan, ranks the first among agricultural products.
Among the total production, Marine capture 12.67 million tons, Marine aquaculture 16.43 million tons, freshwater capture 2.29 million tons, freshwater aquaculture 26.44 million tons, pelagic fishery 1.22 million tons.
Algae, crustacean, shellfish and fish are the four main cultured species, with shellfish taking the larger share. Mariculture has become a fast growing pillar industry in agriculture.
Characteristics

A great diversity of farmed species

- 鱼类 (Fish) >50
- 贝类 (Shellfish) >30
- 甲壳类 (Crustacean) >10
- 藻类 (Seaweeds) >5
- 其它 (Others) >5
- 总计 (Total) >100
A great diversity of farming modes

A variety of mariculture modes are developed and/or innovated according to local circumstances, such as:

- pond culture
- intertidal zone culture
- land-based indoor and/or outdoor tank culture
- net-cage culture
- off shore raft culture

... ...
Pond culture
Raft culture of seaweeds and shellfish
Indoor fish farming
Abalone farming in indoor tanks
Sea cucumber farming
Problems, Challenges & strategy in mariculture

Environmental challenges

Disease prevalence

Lack of genetically improved new variety
Problems & challenges

- Environmental challenges
  - green algae bloom
  - jellyfish bloom
  - outbreak of seastars
  - red tide
Bays and wetlands were developed for mariculture purposes.
Problems & challenges

- **Diseases prevalence**
  Based on related investigation, annual economic loss resulted from disease problems is over 10 billion yuan (RMB) in aquaculture in recent years.

- **verified pathogen including:**
  virus, bacteria, fungi, parasites, … …
Statistical data shown that the economic loss was over 300 million Yuan RMB for the disease outbreak of scallop *Chlamys farreri* in 1998.
Problems & challenges

- Lack of genetically improved new variety

Aquaculture is largely based on the use of unimproved/wild species and strains. According to a related statistics, the total number of aquatic new varieties in China approved by National Certification Committee for Aquatic Varieties during 1996-2012:

<table>
<thead>
<tr>
<th>Category</th>
<th>Species</th>
<th>%</th>
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</thead>
<tbody>
<tr>
<td>Selective bred</td>
<td>46</td>
<td>39.66</td>
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<tr>
<td>Hybrids</td>
<td>41</td>
<td>35.34</td>
</tr>
<tr>
<td>Introduced</td>
<td>29</td>
<td>25.00</td>
</tr>
<tr>
<td>Total</td>
<td>116</td>
<td>100</td>
</tr>
</tbody>
</table>
How to build a sustainable developing mariculture industry?
sustainability: the only way to be pursued for mariculture development

- Basic theory research
- Technological innovation
- Management
Integrated Multi-Trophic Aquaculture--IMTA

IMTA in Sungo Bay, Yellow Sea of China

Feeding

Phytoplankton

Filtering shellfish

Seaweed culture

Cultivation of abalone

Hydrodynamic

Dissolved nutrients
Environment friendly mariculture

Move to offshore waters to alleviate the impact of mariculture activity on the inshore environment.
Environment friendly mariculture

Artificial reefs

Ship shaped reef

Roof shaped reef
Artificial reefs are constructed for improving the habitats, and the enhancement of valuable economic species are performed.
Selective breeding is a good way to improve the genetic traits and anti-disease ability.
Restocking the sea

Stock enhancement is conducted in China in recent years in large scale for Rebuild the natural population.
Management on Mariculture industry

- Management of the release of hatchery reared juveniles for stock enhancement;
- Revolution of the legislation and policy on the mariculture certification, classification on the mariculture area, etc.;
- Seafood safety and quality control system etc.
Some consideration

- A sustainable developed aquaculture means that it ensures not only the quality and output, also may develop in a way of sustainability.
- As one of the important marine economic sectors, mariculture will play an even bigger role in sea foods production in the future;
- Technological innovation is necessary, and IMTA will be a choice for sustainability;
- International cooperation is vital for the sustainable development of mariculture industry worldwide.
Thank you for your attention!