Present status and future prospects for inland aquaculture in India with special reference to the state of Maharashtra

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India
Current status of Fish Production

- India ranks 2\textsuperscript{nd} in farmed fish production after China
- 5\textsuperscript{th} in Asian Shrimp production

**Farmed Fish Production**

<table>
<thead>
<tr>
<th>Country</th>
<th>Million Tons</th>
<th>% of total production</th>
</tr>
</thead>
<tbody>
<tr>
<td>China</td>
<td>36.73</td>
<td>61.35</td>
</tr>
<tr>
<td>India</td>
<td>4.64</td>
<td>7.76</td>
</tr>
<tr>
<td>Vietnam</td>
<td>2.67</td>
<td>4.46</td>
</tr>
<tr>
<td>Indonesia</td>
<td>2.3</td>
<td>3.85</td>
</tr>
</tbody>
</table>

*Source - FAO 2012*
Trend in Fish Production (Marine & Inland)
Country wise Biodiversity Utilisation in Aquaculture

<table>
<thead>
<tr>
<th>Country</th>
<th>No. of species cultures</th>
<th>Crude Biodiversity Utilization Index</th>
</tr>
</thead>
<tbody>
<tr>
<td>S. Korea</td>
<td>51</td>
<td>0.50</td>
</tr>
<tr>
<td>China</td>
<td>29</td>
<td>0.28</td>
</tr>
<tr>
<td>Indonesia</td>
<td>23</td>
<td>0.22</td>
</tr>
<tr>
<td>India</td>
<td>13</td>
<td>0.13</td>
</tr>
</tbody>
</table>
Commercially important varieties

- **Freshwater**
  - Indian Major Carps
  - Chinese Carps
  - Magur
  - Singhi
  - Pangassius
  - Tilapia
  - Murrels
  - Frewhater Tiger Prawns

- **Brackishwater**
  - Black Tiger Prawns
  - Pacific White Prawns
Inland Fishery Water Resources

An overview of inland fishery water resources in some key fish producing states of India, in ‘000 Hectares

<table>
<thead>
<tr>
<th>State</th>
<th>Rivers/Canals (in ‘000 km)</th>
<th>Reservoirs</th>
<th>Tanks /Ponds</th>
<th>Brackish Water</th>
</tr>
</thead>
<tbody>
<tr>
<td>A.P</td>
<td>13.9</td>
<td>234</td>
<td>463</td>
<td>150</td>
</tr>
<tr>
<td>Maharashtra</td>
<td>16</td>
<td>279</td>
<td>59</td>
<td>100</td>
</tr>
<tr>
<td>West Bengal</td>
<td>2.5</td>
<td>17</td>
<td>276</td>
<td>210</td>
</tr>
<tr>
<td>All India</td>
<td>196</td>
<td>2116</td>
<td>2514</td>
<td>1686</td>
</tr>
</tbody>
</table>

* Source - Central Water Resources Information System - Sept. 2015
State-wise Fish Production-Time Series

Andhra Pradesh
West Bengal
Uttar Pradesh
Bihar
Odisha
Maharashtra
Inland Fish Production by States (2013-14) '000 tons
## Inland Fish Productivity comparison

Fish culture productivity of important cultured species

<table>
<thead>
<tr>
<th>State</th>
<th>Shrimp (P. vannamei)</th>
<th>Freshwater Fish</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Area (‘000 Ha)</td>
<td>Production (MT)</td>
</tr>
<tr>
<td>A.P</td>
<td>20.2</td>
<td>133135</td>
</tr>
<tr>
<td>Maharashtra</td>
<td>0.44</td>
<td>1503</td>
</tr>
</tbody>
</table>

* Source: MPEDA (2012-2013)
## Infrastructure comparison

### Hatcheries - IMC

<table>
<thead>
<tr>
<th>State</th>
<th>No. of Hatcheries</th>
<th>Spawn Production in Millions P.A</th>
</tr>
</thead>
<tbody>
<tr>
<td>A.P</td>
<td>22</td>
<td>550</td>
</tr>
<tr>
<td>Maharashtra</td>
<td>28</td>
<td>106</td>
</tr>
</tbody>
</table>

### Feed mills

<table>
<thead>
<tr>
<th>State</th>
<th>No. of mills</th>
<th>Production</th>
</tr>
</thead>
<tbody>
<tr>
<td>A.P</td>
<td>26</td>
<td>2.88 MMT</td>
</tr>
<tr>
<td>Maharashtra</td>
<td>0</td>
<td>0</td>
</tr>
</tbody>
</table>

Fish Seed Production by States (2013-14) Million fry

- India: 15890
- Other regions: 187, 6562
Inland Aquaculture in Maharashtra

Industry today

- Few species
- Limited formulated feed
- Manure based
- Low utilization of resources
- Poor marketing infrastructure
- Lack of processing and value addition
Infrastructure challenges - Maharashtra

- Lack of access to good quality fish seed leading to high cost and low survival of seed during transport
- Inability to check and confirm seed quality
- Too many intermediaries due to absence of near vicinity hatcheries
- High feed cost due to absence of feed mills.
- Under developed marketing channels and cold chain
- Absence of demonstration farms and training facilities
- Lack of adequate pathological and analytical labs for soil/water/disease testing
- Redundant, outdated, vague and despotic policies and regulations
Socio-economic challenges - Maharashtra

- Inter and Intra sectoral competition and conflicts (capture fisheries / agriculture /construction)
- Lack of investment and credit availability due to perceived high risk nature of business
- Unorganised sector with limited participation from qualified professionals in farming
- Government apathy towards development and advancement of the sector in the state
Path to look forward to - Maharashtra

- Urgent need for improvement in infrastructure like hatcheries/feed mills/testing labs through a cluster development approach
- Changes and improvements in regulations to encourage and support the ailing sector in Maharashtra
- Development of a robust and efficient distribution channel and cold chain
- Large scale investment and availability of credit to enable a rapid growth from current state
- Opportunity for cross border farmer-to-farmer co-operation
- Development of professional management and scientific base through technology transfer at the grass root level
- Immediate need to improve resource utilization and increase production significantly
Conclusion

- India in general and Maharashtra in particular has been complacent in developing its resources for aquaculture. Only 15% of the potential water resources are utilized, implying huge potential for the growth of this sector.
- Very strong efforts have to be made to boost aquaculture on the basis of lessons learnt by neighboring countries.
- Policies need to be opened up for cross border exchanges especially at the grass root levels. “The wheel need not be invented” AGAIN AND AGAIN.
- Apart from development of technology a holistic approach taking into consideration technical, environmental and socio-economic factors needs to be taken.