Tilapia Case Study in Trinidad and Tobago

Prepared by
Dr. Sharon Hutchinson
and Dr. Ardon Iton
in Collaboration with
Seafood Industry Development Company (SIDC)

Training Workshop on Value Chain Approach to Fisheries

Suriname, July 18th-22nd, 2016
Outline

• History of the industry
• Tilapia value chain overview
• SWOT
• Lessons learnt and opportunities for growth
History of the industry

• Tilapia production in Trinidad and Tobago was first started in 1951 with the culture of Mozambique Tilapia, *Oreochromis moissambicus*.
• Production was limited to subsistence activities in small ponds but increased by 1998, to a maximum of 26 tonnes, - aquaculture project of the state owned Caroni (1975) Limited.
• This system consisted of a hatchery, outdoor concrete tanks and 9.5 ha of earthen ponds ranging in sizes from 0.25 hectare to 1 hectare.
History of the industry

• The Bamboo Grove Fish Farm is another government-owned facility which consists of a small hatchery and 2.5 hectares of ponds.
• The Institute of Marine Affairs (IMA) has a hatchery/wet laboratory and nine small earthen ponds with a total area of 0.18 hectares.
• The Sugarcane Feed Centre (SFC) too, has 13 ponds with a total area of 0.88 hectares and a small hatchery.
Institutional Focus

July 2011
- Joint Initiative (Research and Marketing Development Agency)
- Rearing focus

2013
- Action Plan for Aquaculture
- SIDC to provide high quality feed at low cost (externally sourced)
- Feed cost = 60-65% of total production cost

2013
- Sugarcane Feed Centre – research in production systems and environmental conservation
- Live and processed fish sold to public and farmers
Institutional Focus

October 2012–September 2013

• 234 people have been trained in commercial aquaculture
• eight new commercial aquaculture farmers have been registered
• five new hatcheries have started production of tilapia fingerlings
• the tilapia hatchery facility at Sugarcane Feeds Centre expanded

2014

• SFC is purchasing tilapia from farmers and processing and marketing the fish. Goal 1.2 lb whole fish.
• launched the $215,000 Tilapia Floating Raft Cage Culture Project in Ste. Madeline, South Trinidad – Nov 2014

2014

• Construction of Processing Facility
• Processing curtailed
Incentives

• The sale of subsidized tilapia feed by the SIDC,
• Aquaculture-related training sessions offered by the FisheriesDivision of the Ministry of Agriculture, Land and Fisheries and
• the Ministry’s subsidies and incentives for aquaculture package
## Incentives

<table>
<thead>
<tr>
<th>AQUACULTURE</th>
<th>% COST</th>
<th>MAXIMUM</th>
</tr>
</thead>
<tbody>
<tr>
<td>New Ponds</td>
<td>25%</td>
<td>$25,000.00</td>
</tr>
<tr>
<td>Alternative culture system construction</td>
<td>25%</td>
<td>$25,000.00</td>
</tr>
<tr>
<td>Ponds rehabilitation</td>
<td>100%</td>
<td>$7,000.00</td>
</tr>
<tr>
<td>Water pumps, hoses and accessories</td>
<td>50%</td>
<td>$20,000.00</td>
</tr>
<tr>
<td>Aeration equipment</td>
<td>50%</td>
<td>$10,000.00</td>
</tr>
<tr>
<td>PVC pipes, valves, fittings and accessories</td>
<td>25%</td>
<td>$10,000.00</td>
</tr>
<tr>
<td>Harvesting gear and equipment etc.</td>
<td>25%</td>
<td>$10,000.00</td>
</tr>
<tr>
<td>New wells, dams, reservoir pond etc. construction</td>
<td>25%</td>
<td>$25,000.00</td>
</tr>
<tr>
<td>Wells and dams etc. refurbishment</td>
<td>15%</td>
<td>$15,000.00</td>
</tr>
</tbody>
</table>
Value Chain

Hatcheries
- Imports
- Equipment

Growers
- Feed
- Water

Processors
- Packaging
- Labelling
- Distribution

Retailers
- Packaging

Consumers
Market Prices and Costs

- **Hatcheries**
  - Feed Cost = $7.70/kg
  - Fingerling cost = $1 - $2 each
  - Fingerling mortality = 10%
  - Estimated direct variable cost = $13.97/kg

- **Growers**
  - Sale Price (Whole fish) = $28.60/kg

- **Processors – Whole to Drawn**
  - COST: ($15.64/kg)
  - Conversion factor = 0.76

- **Retailers’ Sale Price (2013)**
  - Fillet/SIDC = $66/kg
  - Chilled Fillet Average Price = $69.85, Packaging: T&S
  - Fillet Frozen Average Price = $109.42, Packaging: T&S, VP, PB, Box
  - Fillet (Breaded, Florentine, With Cilantro and lime, With Garlic and 5 spice rub) Average Price = $119.79

*Source: Seafood Industry Development Company (SIDC)*
Secondary Actors

- ADB Agriculture Development Bank
- AU Aquaculture Unit
- CARIRI Caribbean Industrial Research Institute
- CDF Ministry of Social Development and Family Planning, Community Development Fund
- CFDD Chemistry Food and Drug Division
- CFTDI Caribbean Fisheries Training and Development Institute
- CSO Central Statistical Office
- EMA Environmental Management Agency
- EMBD Estate Management Business Development
- Expor-TT Export Trinidad and Tobago
- FD Fisheries Division
- FTC Ministry of Agriculture, Land and Fisheries, Farmers Training Centre
- IMA Institute of Marine Affairs
- MALF Ministry of Agriculture, Land and Fisheries
- MOH Ministry of Health, Public Health Inspectorate
- MTI Ministry of Trade and Industry
- NAMDEVCO National Marketing and Development Company
- NEDCO National Entrepreneurship Development Company
- NESC National Energy and Science Centre
- PHI Ministry of Health, Public Health Inspectorate
- SIDC Seafood Industry Development Company
- SFC Sugarcane Feeds Centre
- TCP Town and Country Planning
- TTBS Trinidad and Tobago Bureau of Standards
- UTT University of Trinidad and Tobago
- UWI University of the West Indies
- VET Ministry of Health, Veterinary Public Health
- WASA Water and Sewerage Authority
## Available Support Services for Aquaculture Industry

<table>
<thead>
<tr>
<th>Support Services</th>
<th>Agencies Responsible</th>
<th>Services Offered</th>
</tr>
</thead>
</table>
| Provision of Aquaculture Industry Data   | FD (AU), CSO, IMA                           | CSO – Provision of industry statistics  
    |                                            | FD (AU), IMA – Collection and analysis of fisheries data                                                                                          |
| Registration/Certification               | MALF (County Offices)                       | MALF – Assignment of Farmers’ Badges to access agrosubsidies                                                                                     |
| Demos/Site Visits                        | SFC, AU, CFTDI                              | AU, SFC – Facilitates site tours  
    |                                            | CFTDI – Offers usage of Processing Facility                                                                                                        |
| Training (Technical, Business & Administrative) | SIDC, CFTDI, FTC, NEDCO, CARIRI             | SIDC – Outreach training in financial empowerment and entrepreneurship  
    |                                            | CFTDI – Training in seafood processing  
    |                                            | NEDCO, CARIRI – Business and innovation training  
    |                                            | FTC – Training in aquaculture systems                                                                                                             |
| System Design & Site Approvals           | AU, EMA, WASA, TCP                          | AU – Offers technical advice on aquaculture system designs  
    |                                            | EMA, WASA, TCP – Provides land-use approvals                                                                                                      |
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<tr>
<td>Proposal Writing &amp; Market Trends Assessment</td>
<td>SIDC, CDF, CSO</td>
<td>SIDC, CDF – Development of project proposals CSO – Provides industry statistics, trend/market data</td>
</tr>
<tr>
<td>Loan/ Funding</td>
<td>ADB, NEDCO</td>
<td>ADB – Offers loans for agribusinesses NEDCO – Provides loans for downstream business activities</td>
</tr>
<tr>
<td>Procurement of Equipment &amp; Supplies</td>
<td>MALF, SIDC, AU</td>
<td>MALF, AU – Provides access to subsidized equipment and supplies for agriculture SIDC – Sale of imported fish feed at cost price to farmers</td>
</tr>
</tbody>
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<tr>
<td>Sale of Fingerlings</td>
<td>SFC, IMA, Private farms</td>
<td>SFC – Sale of tilapia fingerlings</td>
</tr>
<tr>
<td>Veterinary Services</td>
<td>Veterinary Services</td>
<td>VET, UWI - Monitoring animal diseases</td>
</tr>
<tr>
<td>Production (Quality Management Systems)</td>
<td>CFDD, SIDC</td>
<td>SIDC – Farm Assessments, CFDD – Laboratory testing</td>
</tr>
<tr>
<td>Market Development &amp; Promotion</td>
<td>SIDC, NAMDEVCO</td>
<td></td>
</tr>
<tr>
<td>Post-Harvest Handling &amp; Storage</td>
<td>Private, farmer</td>
<td>Private/Farmer – Cold storage is outsourced or produce is stored by farmer in freezer/chiller</td>
</tr>
<tr>
<td>Transportation Provision, Quality Inspection</td>
<td>PHI</td>
<td>PHI – Ensures compliance by inspecting vehicles transporting produce</td>
</tr>
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<tr>
<td>Processing &amp; Packaging</td>
<td>SIDC, SFC, CFTDI, NAMDEVCO, CFDD</td>
<td>SIDC, SFC, CFTDI – Processing of Finfish&lt;br&gt;CFDD – Inspect product labels, laboratory evaluations</td>
</tr>
<tr>
<td>Vending/Sale</td>
<td>SIDC, TTBS, PHI, Regional Corporation</td>
<td>PHI - Quality monitoring, inspection of retail premises, sampling and testing, compliance with food safety ordinances&lt;br&gt;Regional Corporation – Maintain and manage market</td>
</tr>
<tr>
<td>Export</td>
<td>ExporTT</td>
<td>ExporTT – Provision of technical assistance to exporters</td>
</tr>
<tr>
<td>Data Collection</td>
<td>FD, SIDC, ExporTT</td>
<td></td>
</tr>
</tbody>
</table>
Competing Products
USA | Imports | Tilapia | Frozen fillets

MONTHLY SERIES

USD per KG

Metric tonnes

Volume
Unit Value
Tilapia Trade
China Exports (cont’d)

Strengths

• Inexpensive energy sources
• Moderate investments in training and infrastructure in place
• Minimal production research, but local information available for productivity and gaps
• Fish farmer organization in place to lobby for stakeholder needs
• Above-ground ponds provide better water management
Weaknesses

• Poor availability of suitable land and adequate supply of good quality water.
• Limited physical resources and capitalize on our relatively inexpensive energy sources.”
• Limited quantities of tilapia fingerling
• High cost of feed
• Limited passionate labour force,
• High cost and availability of equipment,
• Limited access and or knowledge of recent scientific advancements in the aquaculture industry to increase efficiency of the farming practice
• High dependency on imported feed
• Limited lab capability and accreditation
• Many farmers unable to reach minimum market size requirements in optimal growth period
Opportunities

• Development of a high quality feed locally utilizing as far as possible, locally sourced feed components.
• Potential for regional export.
• Incorporation of the product into new dishes, new products
• Promotion by local and regional chefs to change tastes and preferences
Opportunities

• Currently, fish is served in at least one meal per week, with an estimated use of 3 oz fish fillet per meal.
• The fish currently used is imported, and this project seeks to promote import substitution of this product in the School Nutrition Programme in Trinidad and Tobago.
• Therefore, the current estimated demand for Tilapia for replacement in a lunch meal is 18,375 lbs tilapia/week (8,352 kg/week).
Threats

• Falling global prices
• Possible increasing food costs
• Slowly changing consumer preferences/preference for local catch
• Increasing skepticism of quality of foreign-sourced fish from Asia
Thank You!

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