



# **Best Aquaculture Practices Standards for the Tilapia Industry:**

## ***Certification for Greater Sustainability***

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ON TILAPIA IN AQUACULTURE**

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# The New Market Perspective

Consumers want more assurance about quality and safety of their seafood.

Certification addresses:

- Environmental and social responsibility
- Seafood safety
- Provides traceability



# What is Certification?

Procedure by which a third party provides written or equivalent **assurance that a product, process or service conforms to specified requirements.**

Certification may be based on a range of inspection activities, including continuous inspection in the production chain.

# What Drives Certification?

- **The Market!**
- Consolidation has led to more powerful buyers who wish to protect their brands.
- Certification is a mechanism for major buyers to influence production practices throughout the supply chain.





# Certification as a Solution

In 2003, the Economist Magazine stated in their special report on The Blue Revolution:

*“An internationally recognized certification scheme is urgently needed to alert consumers to the sustainability (or otherwise) of the farmed fish they are eating...only then will it be clear how green is the blue revolution”*



# **Market-Driven Certification Programs Are Growing in Many Industries**

- **Cocoa**
- **Coffee**
- **Ferns and cut flowers**
- **Fruits**
- **Tea**
- **Lumber**
- **Palm oil**
- **Seafood**

# Seafood Programs

## Organizations providing 'recommendation lists' to consumers:

- Australian Marine Conservation Society (AMCS)
- Greenpeace
- Marine Conservation Society UK (MCS)
- Monterey Bay Aquarium (MBA)
- NOAA Fisheries Fish Watch
- The North Sea Foundation: Goede Vis
- Sustainable Fisheries Partnership (SFP)
- World Wide Fund for Nature (WWF) International, and WWF Hong Kong, etc.

## Standard-setting, certification and eco-labelling schemes:

- Friend of the Sea (FOS)
- Marine Ecolabel Japan (MEL-Japan)
- Marine Stewardship Council (MSC)
- **Global Aquaculture Alliance (GAA)**
- Global GAP
- Naturland
- Soil Association; RSPCA UK, etc., etc.

## National Programs:

- Iceland
- Thailand
- Bangladesh

# Attributes of Certification Standards Development

- Multi-stakeholder
- Consensus-based
- Transparent and inclusive
- Achievable
- Science-based
- Continuously improved
- International guidelines: FAO, ISO, GFSI...



# **Global Aquaculture Alliance (GAA)**

- **An international, non-profit trade association dedicated to advancing environmentally and socially responsible aquaculture.**
- **GAA recognizes that aquaculture is the only sustainable means of increasing seafood supply to meet the food needs of the world's growing population.**
- **Through the development of its Best Aquaculture Practices (BAP) certification standards, GAA is a leader standards-setting organization for aquaculture seafood.**



Feeding the World Through  
Responsible **Aquaculture**



# GAA Programs

- **Fact-based Communications**
  - Advocate magazine
  - Website ([www.gaalliance.org](http://www.gaalliance.org))
  - Electronic newsletter
- **Advocacy**
- **Networking**
- **Certification Standards (BAP)**
- **Data Collection**
- **Meetings**
  - **Global Outlook for Aquaculture**
  - **Leadership (GOAL)**



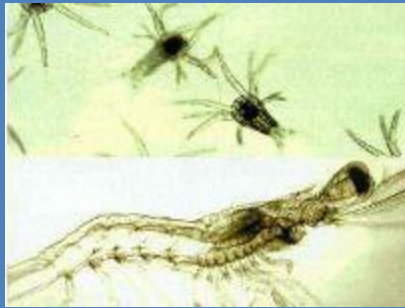
# GAA's Best Aquaculture Practices

- Standards for Hatchery, Farm, Feed Mill, and Processing Plant
- Standards in place for:
  - Shrimp
  - Channel catfish
  - Tilapia
  - Pangasius
  - Salmon, mussels, others in process
- ISO certified inspection bodies
- GFSI benchmarked
- Consumer-facing Ecolabel



The Responsible  
Seafood Choice.

# Current BAP Standards



hatchery



feed mill



processing plant



farm

[www.gaalliance.org/bap/standards.php](http://www.gaalliance.org/bap/standards.php)

# BAP Standards Under Development



salmon



mussels



marine fish

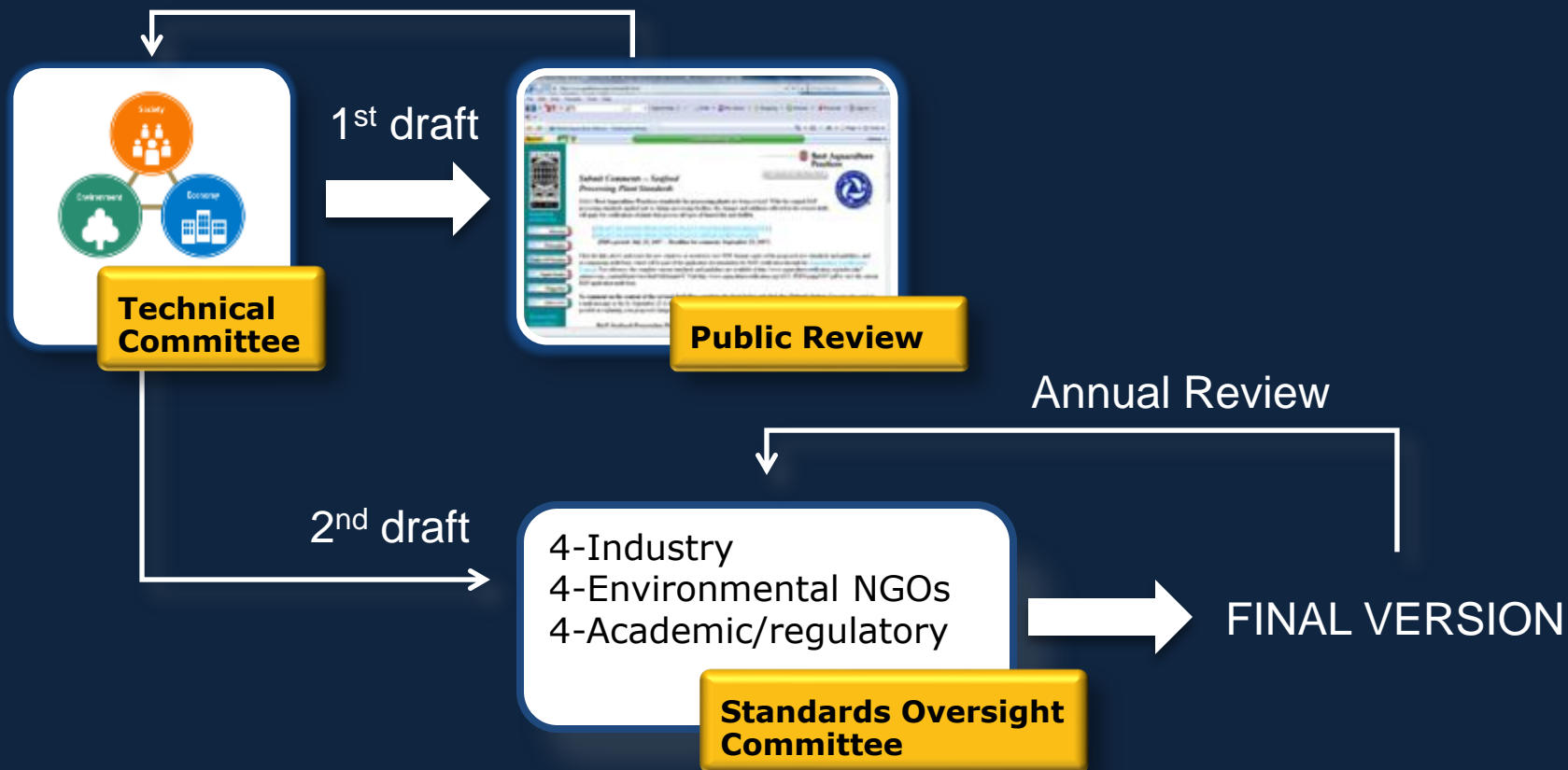


# **Process of Development of BAP Standards**

- **Standards Oversight Committee**
  - 4 NGOs, 4 Industry, 4 Academic/Policy
- **Technical committees**
- **Public comment period**
- **Continual revisions**
- **Committed to compliance with:**
  - **FAO Guidelines for Aquaculture Certification**
  - **Global Food Safety Initiative**







# Standards Development Process



# BAP Standards Focus on Key Issues

<b>Community</b>	Property Rights and Regulatory Compliance
	Community Relations
	Worker Safety and Employee Relations
<b>Environment</b>	Sediment and Water Quality
	Fishmeal and Fish Oil Conservation
	Control of Escapes and Use of GMOs
	Predator and Wildlife Interactions
	Storage and Disposal of Farm Supplies
<b>Animal Welfare</b>	Health and Welfare
	Biosecurity and Disease Management
<b>Food Safety</b>	Control of Residues and Contaminants
	Harvest and Transport
<b>Traceability</b>	Record-Keeping Requirement

# BAP Standards Address the Entire Production Chain

	Production Chain			
	Hatchery	Farm	Feed	Processing
				
Environmental	✓	✓	✓	✓
Social	✓	✓	✓	✓
Food Safety	✓	✓	✓	✓
Traceability	✓	✓	✓	✓

# **BAP Standards: Certification Mechanism**

- Independent inspectors/auditors and certification body
  - No conflict of interest
  - 3rd party
- Allow for farm cluster certification
- Chain of custody/traceability




# BAP Certification Process

- Training
  - Auditors of processing plants, farms, feed mills, and hatcheries
  - Facility operators
- Audits
  - Conducted by ISO 65 inspection bodies
- Food Safety
  - BAP Standards are compliant with GFSI benchmarking
  - Food safety testing by ISO certified labs
- Online and internal traceability



# BAP Traceability Database



User: TIM KAY  
Company: Qingdao Seafoods  
[Logout](#)


Home Received Create Sent Configuration Advanced Help

## Pollock

- [Tesco](#)
- [Pollock](#)
  - [Bread Crumbs](#)
  - [Alaskan Pollack](#)
  - [Alaskan Pollack](#)

Zoom All Detailed Simple Map Satellite Hybrid

Tesco  
Lot No: OR-06-2008  
Common Name: Pollock  
Scientific Name: *Theragra chalcogramma*  
[more info](#)



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# Certified Facilities Can Use BAP Mark on Retail Packaging



**The Responsible  
Seafood Choice.**

# Tilapia Farm Certification

**Tilapia Farm Facilities wanting to become BAP certified shall complete the following steps:**

---

1. Review Certification Application Form and BAP Standard for Tilapia Farms.
2. Return completed application form to the BAP office.
3. Registration of Applicant, Signing of Facility Agreement, and Payment of Inspection Fees.
4. Inspection (audit) Process.
5. Client pays BAP program fees.
6. Check ACC website for company listings.
7. Use of the BAP logo.
8. Maintain records and input online verification data.
9. Recertify each year.

**[www.aquaculturecertification.org](http://www.aquaculturecertification.org)**



# Best Aquaculture Practices for Tilapia



Promotion of responsible practices in the tilapia industry.



Global standards that comply with the requirements for environmentally friendly and socially equitable practices.



Promote sustainability and comply with government regulations and consumer demands.





# GAA Develops Standards for Best Aquaculture Practices



## Community

- Community rights
- Child labor and worker safety



## Environment

- Habitat
- Effluents
- Salinization



## Animal Welfare

- Tilapia Husbandry



## Food Safety

- Drug and Chemical Management
- Microbial Sanitation
- Traceability



Community



Environment



Animal Welfare



Food Safety

## Standard 1

### Property Rights and Regulatory compliance



Shall comply with local and national laws and environmental regulations.



Provide current documentation that demonstrates legal rights for land and water use, construction, operation and waste disposal.



Community



Environment



Animal Welfare



Food Safety



## Standard 2

### Community Relations

Shall not block access to public areas, common land, fishing grounds or other traditional natural resources used by local communities.





Community



Environment



Animal Welfare



Food Safety

## Standard 3

### Worker Safety and Employee Relations



Tilapia farms shall comply with local and national labor laws to assure adequate worker safety, compensation and, where applicable, reasonable on-site living conditions.



Provide legal wages



Safe working environment



Adequate living conditions



Community



Environment



Animal Welfare



Food Safety

## Standard 4

### Wetland Conservation and Biodiversity Protection



Tilapia culture ponds shall not be located in mangrove or other wetland areas where they displace important natural habitats.



Farm operation shall not lessen biodiversity or cause other ecological damage in surrounding ecosystems.





Community



Environment



Animal Welfare



Food Safety

## Standard 5

### Effluent Management

Tilapia farmers shall monitor their discharges to confirm compliance with BAP effluent water quality criteria

Water quality variables  
Concentration Limits



Avoid water quality deterioration in mixing zones.



Minimize loads of pollutants discharged into receiving water bodies.



Community



Environment



Animal Welfare



Food Safety

## Standard 5 Effluent Management

Water quality criteria for land-based farms

Unit	Limits
pH (standards units)	6.0-9.5
Total suspended solids (mg/L)	100 or less
Soluble phosphorus (mg/L)	0.5 or less
Total ammonia nitrogen (mg/L)	5 or less
5-day biochemical oxygen demand (mg/L)	50 or less
Dissolved oxygen (mg/L)	4 or more
Chloride discharge into freshwater (mg/L)	800





Community



Environment



Animal Welfare



Food Safety

## Standard 5 Effluent Management

Water quality monitoring in lakes and reservoirs with tilapia cage or net pen culture

Variable	Sample depth	Frequency
Temperature	Vertical profile, 1m int.	Monthly
Dissolved oxygen	Vertical profile, 1m int.	Monthly
pH	Equal to cage mid-depth	Quarterly
Chlorophyll a	Equal to cage mid-depth	Quarterly
5-day biochemical oxygen demand	Equal to cage mid-depth	Quarterly
Secchi disk visibility	NA	Weekly
Soluble phosphorus	Equal to cage mid-depth	Quarterly
Total ammonia nitrogen	Equal to cage mid-depth	Quarterly
Phytoplankton abundance and species	Equal to cage mid-depth	Annually







Community



Environment



Animal Welfare



Food Safety

## Standard 6

### Conservation of global resources: fishmeal and fish oil

Tilapia farms shall accurately monitor feed inputs and minimize the use of fishmeal and fish oil derived from wild fisheries.



$$\text{Fish in:Fish out ratio} = (\text{FMI} + \text{FOI}) / (\text{YFM} + \text{YFO}) \times \text{FCR}$$

Typically fish in: fish out ratio for tilapia: >1



Community



Environment



Animal Welfare



Food Safety

## Standard 7

### Soil and Water Conservation

Construction and operation of tilapia farms shall neither cause depletion of ground-water in surrounding areas nor salinization of soil or water.



Avoid ponds construction in highly permeable, sandy soil.



Do not discharge effluents into freshwater areas.



Avoid excessive pumping of freshwater aquifers and monitor to determine if aquaculture use is contributing to a decline in the water level.



Monitor chlorine concentration in freshwater wells near the farm.



Control erosion.



Dispose of sediments in a responsible manner.



Community



Environment



Animal Welfare



Food Safety



## Standard 8

### Escapes, non-native stocks and genetically modified organisms

Minimize escapes of farm stock and comply with government regulations regarding the implementation of native and non-native stocks and the use of GMOs.





Community



Environment



Animal Welfare



Food Safety

## Standard 9

### Storage and Disposal of Farm Supplies



Proper containment, storage and disposal of lubricants and chemicals in responsible manner.



Proper sanitation procedures for paper and refuse and waste management.



Proper labeling and use of chemicals to eliminate potential hazards to water and environment.



Suppliers should provide reliable information on the products they use.



Community



Environment



Animal Welfare



Food Safety

## Standard 10 Tilapia Husbandry

Tilapia producers shall demonstrate that all operations on farms that involve fish are designed and operated with animal welfare in mind, and that the employees are trained to provide appropriate levels of husbandry.



Design facilities for humane holding, transport and rearing of fish.



Eliminate unnecessary animal stress and suffering.



Establish effective farm level monitoring for water quality, feed, production parameters, stock health, chemical use; and adopt strategies for maximizing efficiency of their use.



Appropriate temperatures at harvest and during transport.



Rapid diagnosis and treatment of disease for fish mortality management.



Humane slaughter and removal of infected and dead fish.



Community



Environment



Animal Welfare



Food Safety

## Standard 11

### Drug and Chemical Management



Banned antibiotics, drugs, hormones or other chemical compounds shall NOT be used.



Other therapeutic agents shall be used as directed on product labels for control of diagnosed diseases, not prophylactic purposes.







Community



Environment



Animal Welfare



Food Safety

## Standard 12

### Microbial Sanitation



Human waste and untreated animal manure shall be prevented from contaminating pond waters.



Domestic sewage shall be treated and not contaminate surrounding areas.



Community



Environment



Animal Welfare



Food Safety

## Standard 13

### Harvest and Transport



Tilapia shall be harvested and transported to the processing plant or other market in a manner that minimizes:



Stress



Physical damage



Contamination



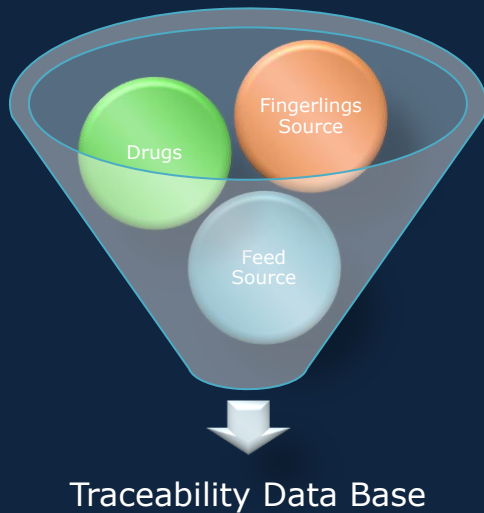
Maintains temperature control



# Traceability

## Record-Keeping Requirement

Product traceability is a very crucial component of the BAP program. It ultimately assures that all steps in the production process are complying with environmental, social and food safety standards.



## Data required for each culture unit for each production cycle:



Identification number of culture unit



Volume or surface area



Stocking rate



Source of fingerlings



Antibiotic and drug use



Herbicide, algicide or other pesticide used



Harvest date



Harvest quantity



Processing plant or purchaser



# Current BAP-Certified Facilities & Finished Product Quantities

- Hatcheries: 28
- Farms: 251
- Processing plants: 138
- In 2010: 24 new plants and 92 new farms
- Shrimp: 464,409 MT
- Catfish: 55,449 MT
- Tilapia: 140,474 MT



**Since 2007, we have certified over 660,000 MT of finished products.**

# EXAMPLES OF BAP-CERTIFIED TILAPIA FACILITIES IN CHINA

ACC No.	FACILITY
F1077	HQ Sustainable IOM Farm Group 1
	Wenchang City, Hainan Province, P.R. China
	Zheng Qingzhen Tanniu; Fuyongyi Tanniu; Fuguohong Tanniu
F10206	Zhuhai Yihai Aquatic Co., Ltd.,
	Doumen, Zhuhai, Guangdong, China
F10118	Liang Jianqiang Tilapia Farm of Gaoyao City Evergreen Aquatic Product
	Science and Technology Co., Ltd. Gaoyao, Guangdong, China
F10111	Wchuan Tilapia Farm Base-Zhanjiang Guolian Aquatic Products Co., Ltd.
	Zhanjing, Guangdong, China
F10110	Shanwei Cathay Food Freezing and Processing Co., Ltd. - IOM Farm Group 2
	Hongyang - Guangdong; Pin An Dong - Guangdong
F10105	Zhuhai Jiayi Aquatic Limit Company, Ltd. - Qianwu Farm
	Zhuhai, Guangdong, China
F10104	Yang Sei Taishan Mingsheng Aquafarm Co., Ltd
	Shunde Town, Foshan City, Guangdong, China

E201



FROM  
TAIWAN

楊氏水產  
Yang Sei Seafoods

# YANG SEI SEAFOODS



楊氏水產

Yang Sei Seafoods







TILAPIA



From  
TAIWAN

楊氏水產  
Yang Sei Seafoods

E201



楊氏水產

From  
TAIWAN

Yang Sei Seafoods

# 海南蔚蓝海洋食品有限公司

Hainan Sky-Blue Ocean Foods Co.,Ltd



*Hainan  
Tilapia*

- © Superior Quality
- © Food Safety
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HACCP



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# **BAP Market Endorsement**

- **Approximately 70% of major retailers in the U.S. support BAP certification:**
  - Walmart, Sam's Club
  - Target
  - Darden Restaurants
- **Program growing in Canada and U.K.:**
  - Sobey's
  - ASDA
  - Lyons Seafood
  - The Cooperative

# BAP Certification Drivers: Corporate Partners



# NEW GAA WEBSITE:

[www.gaalliance.org](http://www.gaalliance.org)





global aquaculture

Feeding the World Through Responsible **Aquaculture**

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### The Global Aquaculture Alliance

is an international, non-profit trade association dedicated to advancing environmentally and socially responsible aquaculture. GAA recognizes that aquaculture is the only sustainable means of increasing seafood supply to meet the food needs of the world's growing population.

Through the development of its Best Aquaculture Practices certification standards, GAA has become the leading standards-setting organization for aquaculture seafood.





#### The Advocate



GAA's Global Aquaculture Advocate magazine presents informative articles on efficient and responsible aquaculture practices and technology. Now available free in electronic form to GAA members!

#### GOAL Conference



**GOAL 2010**  
October 17-20 - Kuala Lumpur, Malaysia

#### GAA News

[BAP Standards Oversight Committee Approves Feed Standards, Considers IOMs](#)  
Continued progress in standards development and market reach was reported at the March Standards Oversight.

[GAA Expands E-Communications for 2010](#)  
The Global Aquaculture Alliance is updating its



**Digital version of the GAA magazine  
is available free for download**

**[www.gaalliance.org](http://www.gaalliance.org)**





global aquaculture  
**the alliance**  
通过责任水产养殖  
供给世界



Wholesome Seafood.  
Responsibly Produced.

**Best Aquaculture  
Practices Certification**

虾 · 罗非鱼  
叉尾鲷最规范水产养殖标准已推出

*and coming soon.....*

鲑鱼 · 贝类养殖标准即将推出

全球水产养殖  
通过责任水产养殖，  
供给世界。  
几乎全球消费的每两条鱼中，  
就有一条为养殖的。  
随着对水产品需求量的增加，  
水产养殖产品将  
在水产品供应总量中占更大比例。  
BAP认证是水产养殖单位  
推行责任水产养殖的保证。



