

Good Aquaculture Practices (VietGAP) and Sustainable Aquaculture Development in Viet Nam

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Abstract

The shrimp (black tiger and white leg shrimp) and catfish industries in Viet Nam continue to experience increasing growth due to rapid aquaculture development. However, disease outbreaks become a major issue. Moreover, seafood consumers at present are likely to be more concerned about how the products are produced and how to control/manage aquatic animal health instead of treatment. Hence, the main objective of this abstract is to focus on one of the solutions to address these problems/issues and ensure sustainable aquaculture development in Viet Nam.

Keywords: Viet Nam, disease outbreaks, aquatic animal health, sustainable aquaculture

Current status of aquaculture in Viet Nam

During the last decade, fisheries production in Viet Nam has significantly increased in volume (Figure 1) and export value. In 2011, total fisheries production from aquaculture and capture fisheries combined reached 5.25 million tons and the export value was at USD 6.18 billion. In 2012, production from aquaculture reached 5.8 million MT while and capture fisheries recorded 6.05 million MT. The export values were 6.13 and USD 6.8 billion, respectively, contributing 4% to the gross domestic product (GDP). Total fisheries production also accounted for about 40% of the country's animal protein production, and created approximately 4 million jobs. In 2013, aquaculture accounted for the majority of the fisheries output (3.34 million MT), 2% higher compared with 2012. Thus,

the fisheries sector plays an important role in the national economy and rural development.

In Viet Nam, the most important aquaculture species by volume is Pangasius (*Pangasianodon hypophthalmus*) (38%), followed by traditional freshwater fish species (28%) and brackishwater shrimp (16%) (*Penaeus monodon* and *P. vannamei*). Freshwater species are cultured for domestic consumption while shrimp and pangasid catfish are processed mainly for export. Figures 2 and 3 show the annual culture area and production of black tiger shrimp and white leg shrimp. Table 1 shows the annual data on the culture areas and production of Tra catfish.

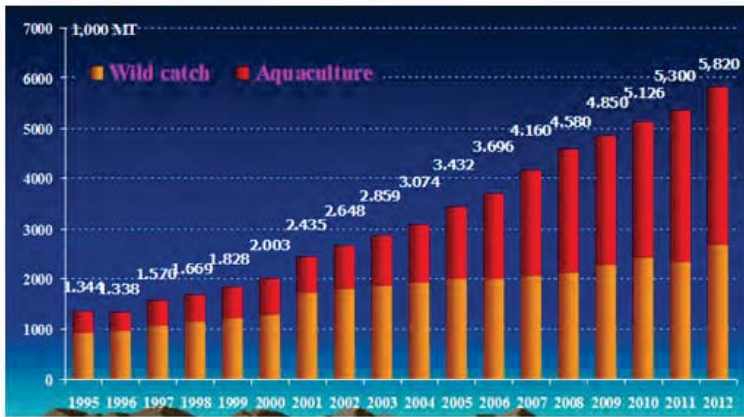


Figure 1. Development of fisheries sector in Viet Nam.

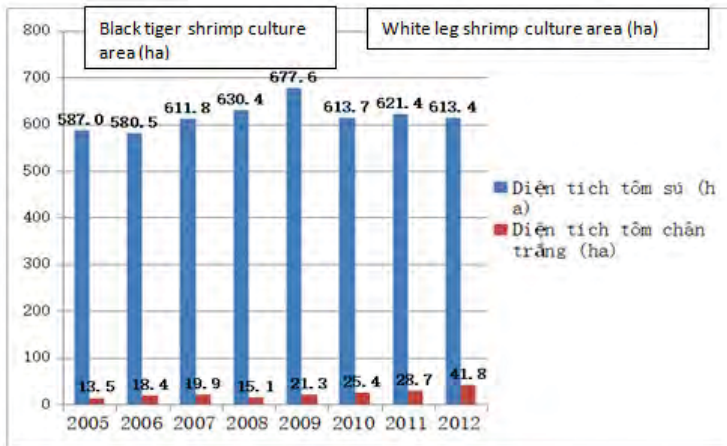


Figure 2. Culture area for black tiger and white leg shrimp in Viet Nam, 2005-2012 (Source: Directorate of Fisheries, Ministry of Agriculture and Rural Development).

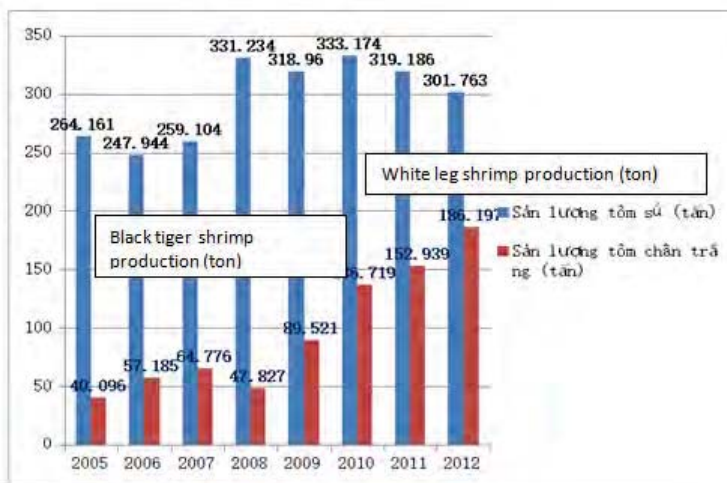


Figure 3: Production of black tiger shrimp and white leg shrimp in Viet Nam, 2005-2012 (Source: Directorate of Fisheries, Ministry of Agriculture and Rural Development).

Table 1. Culture area of Tra catfish, Viet Nam, 2010-2013 (Source: Directorate of Fisheries, Ministry of Agriculture and Rural Development).

| | 2010 | 2011 | 2012 | 2013 |
|------------------------|-----------|-----------|-----------|-----------|
| Area (ha) | 5,420 | 5,430 | 5,910 | 5,735.3 |
| Production (tons) | 1,141,000 | 1,195,000 | 1,280,500 | 1,093,718 |
| Productivity (tons/ha) | 211 | 220 | 274 | 191 |

Tra/catfish were originally raised in a family’s pond for daily consumption. When Viet Nam opened its doors to the world market, Tra/catfish became a commercial product and is now exported around the world. People in the Mekong Delta have shifted the business of raising Tra from small to large scale. Many farms and special areas of hundreds of hectares have been established for the production of Tra. Scientific and technological applications in raising Tra have become popular in each farm.

In 2001, the Tra output in the Mekong Delta was only 100,000 tons. The number increased to over 1 million tons in 2009, yielding a turnover of USD 1.4 billion. Recent data in 2014 note that yield is more than 1.17 million tons providing USD 1.8 billion of

export turn over. Many fish farmers have become rich because of farming Tra. The pictures below depict the key activities in the culture and processing of Tra for domestic and export consumption.

Disease

In 2012, a total of 657,523 ha of brackishwater surface area were used for aquaculture, but after a maximum of 2 months of culture, around one-sixth (100,776 ha) of the total area suffered serious losses due to infectious diseases called early mortality syndrome (EMS). The use of veterinary drugs and disinfectant in aquaculture for disease prevention, and the intensification of production led to the emergence of resistant strains of bacteria.



Figure 4. Tra catfish are carefully selected before reproduction.



Figure 5. Tra catfish farming is widely adopted in Cuu Long River Delta in southern Viet Nam.



Figure 6. Tra catfish being harvested.



Figure 7. Harvesting and packaging of catfish in farms.



Figure 8. Processing catfish for export at IDI Aqua-products Processing Factory in An Giang Province.



Figure 9. Processing catfish fillets before freezing.



Figure 10. Packing catfish for export.

Thus, research on the use of probiotics for aquaculture has increased with the demand for environment-friendly sustainable aquaculture. The benefits of such supplements include improved feed value, enzymatic contribution to digestion, inhibition of pathogenic microorganisms, anti-mutagenic and anti-carcinogenic activity, and increased immune response. These probiotics are harmless bacteria that

help the well-being of the host animal and contribute, directly or indirectly, to protect the host animal against harmful bacterial pathogens. Last year, Dr Lightner (Arizona University) announced the pathogenic agent for shrimp as the early mortality syndrome (EMS). Viet Nam successfully controlled the EMS disease in shrimp. Areas affected by disease infestation in shrimp from 2010-2013 are as follows:

Table 2: Shrimp culture areas affected by diseases, Viet Nam, 2010-2013.

| Year | Total area affected by disease (ha) | Black tiger shrimp culture area affected by disease (ha) | White leg shrimp area affected by disease (ha) | Note |
|----------------------------------|-------------------------------------|--|--|---------------------------|
| 2010 | 60,000 | 57,150 | 2,850 | |
| 2011 | 96,610 | 92,576 | 3,590 | |
| 2012 | 100,776 | 93,708 | 7,068 | EMS/AHPNS account for 46% |
| 1 st 6 months of 2013 | 33,039 | 28,556 | 4,483 | |

For catfish, there are no significant records on disease outbreaks.

Aquaculture legislation and management

Viet Nam has shown a large potential for aquaculture. In 1999, production was 480,810 tons while in 2013, it reached 3.34 million and thus higher than capture fisheries output. The government gives aquaculture development a priority as it has a very positive impact on food security and development of rural communities. The Government of Viet Nam has made many laws, decrees, decisions, circulars as well as national technical standards which more or less directly support and regulate the Pangasius industry. In response to the recent crisis of the Pangasius industry, the Ministry of Agriculture and Rural Development (MARD) of Viet Nam drafted in 2013 a decree on the management of production

and consumption of Pangasius. This draft decree focused on the regulation of the whole value chain of production, processing and export, to avoid the imbalance in supply and demand and to improve production. The draft decree included clear regulations on aquaculture zoning, conditions for seed, feed and grow-out production, as well as for processing plans and export. The lowest regulated or floor price for pangasius export products, policies for credit and investment were also mentioned. However, during the approval hearing, more emphasis on the management of production and export has been noted as these have recently been shown to be a more relevant issue that needs to be addressed. A revised version of the decree is expected to be re-submitted during the first quarter of 2014.

Aside from the Good Aquaculture Practice in Viet Nam (called VietGAP) that created a major recent change in aquaculture performance and in the coming period, the Agriculture Restructuring Plan will focus on sustainable development and value chain improvement. The details will be presented in the next section of this paper.

VietGAP – solution for sustainable aquaculture development in Viet Nam

In order to ensure the sustainable development of aquaculture in general, and shrimp and Tra catfish raising in particular, many solutions have to be considered as follows:

- Master plan development: local authorities need to develop a master plan for the local fisheries industry;
- Infrastructure investment: develop the irrigation canal (separate inlets and outlets) in congested aquaculture area;
- Aquaculture restructuring plan: link farmers, suppliers, processing enterprises;
- VietGAP: promote the adoption of VietGAP in aquaculture
- Technology enhancement: prioritize new, clean and environment-friendly technologies; create new value-added products;
- Administrative reform
- Trade: marketing promotion

VietGAP was introduced for the following reasons, namely: (a) pollution issues and disease outbreaks caused by the fast growing aquaculture sector; (b) food safety for consumers; (c) introduction

of many international standards causing confusion and neglecting the small-scale producers; and (d) sustainability of the industry. Hence, the concept of VietGAP for aquaculture emerged and became a national standard applied in the aquaculture industry from the grow-out stage to the postharvest stage.

Under the Government's policy on VietGap development in aquaculture, the country would foster its application in breeding key export commodities like Tra catfish, tiger prawn, and white-leg shrimp. The VietGAP standard is a single aquaculture module which complies with existing legislation and allows the application of VietGAP standard to different species.

The structure of VietGAP for Aquaculture is divided into five parts. These five parts have a total of 68 critical points that should be met before VietGAP is achieved. These five parts are: 1) general requirements, 2) food safety and quality; 3) animal health and welfare; 4) environmental integrity; and 5) socioeconomic aspects.

VietGAP for Aquaculture was based on the Code of Conduct for Responsible Fisheries of the Food and Agriculture Organization (CCRF of FAO). The general principle, technical guideline on aquaculture certification (FAO - Feb, 2011); general principal, structure and certification regulation as stipulated in the ASEAN GAP for shrimp; and structure with 4 main components. There are other recognized standards such as GlobalGAP, Aquaculture Stewardship Council or ASC, Global Food Safety Initiative or GFSI, ISO and Codex.

VietGAP for aquaculture is supported by a number of government regulations including:

- a) Prime Minister Decision No. 01/2012/QĐ-TTg: Issue the Policies on encouraging the application of Good Agricultural Practices in Agriculture, Forestry and Aquaculture
- b) Minister decision No. 1503/QĐ-BNN-TCTS: Issue the National Standard on Good Aquaculture Practices in Viet Nam (VietGAP)
- c) Minister decision No. 1617/QĐ-BNN-TCTS: Issue Guidelines for the application of VietGAP standards for pangasius (*P. hypophthalmus*), tiger shrimp (*P. monodon*) and white leg shrimp (*P. vannamei*); and
- d) Circular No 48/2012/TT-BNNPTNT on Regulations on the certification of aquaculture, crops and livestock products produced in accordance with application of good agricultural practice

When farmers adopt VietGAP, they can easily upgrade to other certificates required by importing countries and gain wider acceptance in both domestic and international markets. Government agencies are mandated to look for more markets that accept VietGap-certified products.

Conclusions

With the principle that states “prevention is better than cure”, sustainable aquaculture development connects closely with market-oriented development. VietGAP is a comprehensive solution for controlling the quality of input materials and water, maintaining good health of aquatic animals, ensuring better life for

laborers or farmers, as well as maintaining the integrity of the environment.

Source Documents

1. Prime Minister Decision No. 01/2012/QĐ-TTg: Issue the Policies on encouraging the application of Good Agricultural Practices in Agriculture, Forestry and Aquaculture.
2. Minister decision No. 1503/QĐ-BNN-TCTS: Issue the National Standard on Good Aquaculture Practices in Vietnam (VietGAP).
3. Minister decision No. 1617/QĐ-BNN-TCTS: Issue Guidelines for the application of VietGAP standards for pangasius (*P. hypophthalmus*), tiger shrimp (*P. monodon*) and white leg shrimp (*P. vannamei*).
4. Circular No 48/2012/TT-BNNPTNT on Regulations on the certification of aquaculture, crops and livestock products produced in accordance with application of good agricultural practice.
5. Annual reports on current status of brackishwater shrimp culture in 27 coastal provinces (Directorate of Fisheries, MARD).
6. Annual reports on current status of catfish culture (Directorate of Fisheries, MARD).
7. Monthly aquatic animal disease statistic report (Department of Animal Health, MARD).
8. Final version of Decree on the Management of Production, Processing and Consumption of Pangasius.