

## Comparative Analysis of the ASEAN and Philippine Code of Good Aquaculture Practices for Food Fish

Zaireen B. Cleofe, Melissa L. Astillero, Edna Lynn C. Floresca, and Karen Kristine A. Roscom, PFT, PhD

The Philippine aquaculture sector is vital, contributing 52.88% (2.25 million metric tons) of the total fisheries production in 2021. Despite the high production volume, the industry still faces numerous challenges: improper aquaculture practices, mass fish kills, overfeeding, disease, inadequate water supply, difficulty in sourcing good-quality fingerlings, marketing challenges, and stringent safety standards (DA-BFAR, 2022a; DA-BFAR, 2022b; SEAFDEC, 2022). To address these challenges, the DA-BFAR established the Fisheries Administrative Order (FAO) No. 214 S. 2001, *Code of Practice for Aquaculture*. Consequently, the DA-BAFS developed the Philippine National Standards (PNS) on the Code of GAqP (PNS/BAFS 135:2014), which is harmonized with the ASEAN GAqP for Food Fish 2014.

The 2022 revision of the ASEAN GAqP, which merged its Food Fish and Shrimp standards, prompted the review and amendment of PNS/BAFS 135:2014. This regional harmonization aims to streamline requirements and support ASEAN's goal of functioning as a single market and production base.

The DA-BAFS Standards Research Division (SRD) conducted a desk review from January to May 2024 to compare the existing PNS/BAFS 135:2014 against the new ASEAN GAqP 2022 provisions. The comparison found that while many current PNS GAqP provisions remain relevant, significant amendments are necessary to fully integrate the new regional requirements, ensuring the competitiveness and compliance of Philippine aquaculture exports in ASEAN and global markets.



**BACKGROUND**

The aquaculture industry has addressed the growing demand for fish, serving as an alternative source of seafood amid shortages in supply from capture fisheries and the prevalence of overfishing. Aquaculture significantly contributes to food security, protein supply, livelihood enhancement, income generation, employment, and economic development in Southeast Asia (Global Seafood Alliance, 2019; Southeast Asian Fisheries Development Center [SEAFDEC], 2022; Association of Southeast Asian Nations [ASEAN], 2015).



In the Philippines, aquaculture accounted for 52.88% (2.25 million metric tons) of total fisheries production in 2021. DA-BFAR’s priority commodities—seaweeds, milkfish, tilapia, shrimps or prawns, and shellfish—shared the bulk of the volume (DA-Bureau of Fisheries and Aquatic Resources [BFAR], 2022).

Despite the high production volume, the aquaculture sector still faces numerous challenges. This includes improper aquaculture practices, which can lead to problems such as siltation, mass fish kills, overfeeding, disease, inadequate water supply, difficulty in sourcing good-quality fingerlings, and marketing challenges (DA-BFAR, 2022a; DA-BFAR, 2022b). Additionally, importing countries have set standards for the safety of exported aquaculture products, ensuring they are free from antibiotic residues, contaminants, or food hazards, and are particular about the methods and environments in which these products are cultivated, which require farmers to practice responsible aquaculture and advocate environmental sustainability (SEAFDEC, 2022).

The implementation of Good Aquaculture Practices (GAqP) is one of the strategies of DA-BFAR to address these challenges, increase production and food sufficiency, and ensure food security for Filipinos (DA-BFAR, 2022a; DA-BFAR, 2022b). The DA-BFAR established the Fisheries Administrative Order (FAO) No. 214 S. 2001 Code of Practice for Aquaculture pursuant to Section 27 of the Philippine Fisheries Code of 1998 (RA 8550). On the other hand, the DA-Bureau of Agriculture and Fisheries Standards (DA-BAFS) developed Philippine National Standards (PNS) on Code of GAqP (PNS/BAFS 135:2014), which is harmonized with ASEAN GAqP for Food Fish 2014 as part of the Philippines’ commitment to the Association of Southeast Asian Nations (ASEAN) Roadmap for ASEAN Community 2009-2015.

The ASEAN GAqP for Food Fish was revised in 2022 to merge with the ASEAN Shrimp GAP. This is to harmonize the GAqP programs within the ASEAN region and transform ASEAN into a single market and production base in accordance with the ASEAN Economic Community (AEC) blueprint. As a result, the DA-BAFS Standards Development Division planned to review and amend the PNS/BAFS 135:2014 to align its provisions with the ASEAN GAqP for Food Fish 2022.

To support the review and amendment of the PNS, the DA-BAFS Standards Research Division (SRD) conducted this study to evaluate the provisions of the PNS/BAFS 135:2014 Code of GAqP against the ASEAN GAqP 2022. Data collection was conducted from January to May 2024 through a review of the ASEAN GAqP and PNS Code of GAqP. A data matrix was prepared to systematically organize, analyze, and compare all provisions of both standards. The gathered data will be used to develop the updated PNS Code of GAqP and serve as a reference to promote responsible and sustainable farming practices that ensure food safety, animal welfare, and environmental integrity.

***The Philippine standard on the Code of Good Aquaculture Practices (GAqP) needs updating to consider the changes in the ASEAN GAqP for Food Fish, which aims to enhance the GAqP programs across member countries and achieve the ASEAN Economic Community’s vision of establishing a single market and production base in the region.***

**KEY FINDINGS**

The study generated comparative tables highlighting the similarities and differences between the ASEAN GAqP and PNS GAqP. The data were collected through a detailed review of both standards, focusing on the following practices: site selection, culture management, facilities and sanitation, environmental management, personnel health and hygiene, labor and community, and traceability and record keeping. Based on these comparisons, recommendations were provided on whether to retain or amend existing provisions of the PNS GAqP.

**1. Site selection**

**a. Location:** Both the ASEAN and PNS GAqP standards require aquaculture farms to be located in areas with minimal pollution and highlight the importance of obtaining an Environmental Impact Assessment (EIA). The ASEAN standard allows farm locations where pollution can be mitigated to acceptable levels in accordance with national laws. It also stated that an EIA, if required by law, should be conducted before approval of the farm establishment. Meanwhile, the PNS recognized other types of environmental reports and provided other specific regulatory documents.

**b. Layout and design:** Both standards emphasized that facility design must prevent contamination and maintain hygienic conditions. The ASEAN GAqP highlighted that contamination prevention should be extended to operations and maintenance and cited potential sources of contamination (e.g., workers, sewage or toilets, domestic animals, machinery oil, and others). The PNS GAqP had specific provisions on design requirements for designated livestock areas, septic tanks, toilet facilities, and equipment storage for feed, seed, and harvested fish.

**2. Culture management**

**a. Source of stock:** Both standards stressed the use of healthy seeds for farming. The ASEAN GAqP specified the use of hatchery-produced seed and the responsible practices for collecting wild seeds in compliance with national laws. The PNS GAqP emphasized only that stocks should be clinically healthy and did not provide guidance on seed sourcing practices.

**b. Feeds and feeding practices:** Both standards require that feeds be registered with the competent authority, properly labeled and stored, and handled to prevent contamination. The ASEAN GAqP clearly stated that feeds must be free from unsafe levels of contaminants and prohibited substances. It required procedures to prevent spoilage, mold growth, and feed contamination. The PNS GAqP required BFAR to test feeds for specific contaminants, such as aflatoxin and chloramphenicol, and indicated that feed additives, premixes, and compound feed must be registered with the Department of Health - Food and Drug Administration (DOH-FDA). Additionally, imported feeds shall be monitored by BFAR in compliance with national regulations, Codex standards, or trading partners.

**c. Water and soil quality management:** Both standards state that water quality must be suitable for fish production, which is safe for human consumption. However, the ASEAN GAqP did not explicitly specify testing requirements, whereas the PNS GAqP required water quality verification through testing. For soil quality management, the ASEAN GAqP has no guidelines, whereas the PNS GAqP includes specific provisions for NPK soil analysis and laboratory testing to ensure informed chemical use.



**d. Health management, welfare and biosecurity:**

Both standards included disease prevention measures and notification systems during outbreaks. Both also required the use of registered substances (e.g., biological inputs, veterinary drugs, chemical substances) from authorized sources, following the instructions on the manufacturer’s label and using veterinary drugs with expert supervision. The ASEAN GAqP clearly specified adherence to the OIE Aquatic Animal Health Code for the management and movement of aquatic animals, and adopted a holistic health management approach. The PNS GAqP focused on specific approaches such as biosecurity measures and safe removal of sick and dead fish and eggs. Other specific provisions found in the ASEAN GAqP, but not in the PNS GAqP were routine health monitoring for early detection of health issues, careful consideration of species used in polyculture to mitigate disease risks, and emphasis on training farm workers and managers in effective aquatic animal health and welfare management.

**e. Harvesting, post-harvest handling and transport:**

Both standards emphasized the importance of water and ice quality during harvesting to avoid contamination, farmers’ awareness of hygiene, and appropriate harvesting and post-harvest handling practices to minimize contamination and damage. However, the ASEAN GAqP provided more comprehensive guidance on workers’ training in hygienic practices and on specific measures to manage bivalve mollusks to prevent contamination. The PNS GAqP outlined specific measures for harvesting practices (i.e., temperature control, equipment cleanliness, and waste management) and detailed requirements for the transportation of produce.



*It was observed that some provisions of the PNS GAqP are still relevant and may be retained. However, there are significant updates to the ASEAN GAqP that need to be adopted in the PNS to ensure its alignment with regional standards.*

**3. Facilities and Sanitation:** Both the ASEAN and PNS GAqP emphasized the importance of maintaining hygienic conditions in aquaculture facilities, proper storage of chemicals and wastes, and responsible waste disposal and cleanliness practices. The ASEAN GAqP mentioned various sources of contamination and outlined general maintenance practices. On the other hand, the PNS GAqP provided measures to manage the contamination sources identified by the ASEAN GAqP.

**4. Environmental management:** The ASEAN GAqP had several provisions lacking in the PNS GAqP including habitat rehabilitation of previous aquaculture operations, mitigating measures on practices that cause environmental damage, regular monitoring of environmental quality, training for farm workers on environmental management, efficient water resource management, responsible use of exotic species risk assessment of genetically modified aquatic organisms, and aquaculture input management to minimize environmental impacts.

**5. Personnel health and hygiene:** The ASEAN GAqP did not have provisions on personnel health and hygiene. In contrast, the PNS GAqP provided specific requirements, such as annual medical examinations, exclusion of personnel who could contaminate products from working, and the wearing of suitable, clean clothing. It also stated that workers must wash their hands before starting work, cover wounds with waterproof bandages, and avoid smoking, spitting, eating, or drinking in work and storage areas.



**6. Labor and community:** Both the ASEAN GAqP and the PNS GAqP had provisions that prohibited child labor in compliance with national regulations, advocated against gender discrimination, ensured adherence to national laws on wages and benefits, and emphasized safe working conditions and amenities for farm workers, equal rights and access to community resources, and minimizing potential adverse impacts of farms on local communities. However, the ASEAN guidelines went further by emphasizing the responsible treatment of workers in compliance with national labor regulations and relevant International Labour Organization (ILO) conventions, promoting general safe work conditions aligned with Occupational Health & Safety (OHS) conventions, and providing more

comprehensive guidelines and specified legal compliance requirements related to accessing public land and water resources.

**7. Traceability and record keeping:** Both the ASEAN and PNS GAqP required a comprehensive record-keeping in aquaculture operations. The ASEAN GAqP followed a 24-month retention period for specific records, which is not stated in the PNS. The ASEAN GAqP provided the categories of data to be recorded (i.e. activities related to food safety, environmental monitoring, and animal health and movement), while the PNS outlined specific activities for record-keeping.

A summary of the comparison between ASEAN GAqP on Food Fish and PNS on Code of GAqP is presented in the table below.

Section	ASEAN GAqP on Food Fish (2022)	PNS on Code of GAqP (PNS/BAFS 135:2014)
<b>Site selection:</b> <i>Location</i>	Both Standards mentioned that aquaculture farms should be located in areas with minimal pollution.	
	Stated that an environmental impact assessment (EIA) should be conducted if required by law	Recognized other types of environmental reports and other regulatory documents such as EIA report, license to operate or business permit, risk assessment report, vicinity map, and farm map
<b>Site selection:</b> <i>Lay-out and design</i>	Both Standards stated that facility design must prevent contamination and maintain hygienic conditions	
	<ul style="list-style-type: none"> <li>Emphasized that preventing contamination should be extended to operation and maintenance</li> <li>Cited potential sources of contamination</li> </ul>	Specified design requirements for designated livestock areas, septic tanks, toilet facilities, and equipment storage for feed, seed, and harvested fish
<b>Culture management:</b> <i>Source of stock</i>	Both Standards recommended the use of good quality/healthy seedstocks.	
	Specified the use of hatchery-produced seed and responsible practices for collecting wild seeds in compliance with national laws	Not specified
<b>Culture management:</b> <i>Feeds and feeding practices</i>	Both Standards required feeds to be registered with the competent authority, properly labeled and stored, and handled to prevent contamination.	
	Mentioned feeds must be free from unsafe levels of contaminants and prohibited substances	Specified the testing of feeds and monitoring if imported feeds by BFAR

Section	ASEAN GAqP on Food Fish (2022)	PNS on Code of GAqP (PNS/BAFS 135:2014)
<b>Culture management:</b> <i>Water and soil quality management</i>	Water quality must be suitable for fish production, which is safe for human consumption.	
	<ul style="list-style-type: none"> <li>• Did not specify the conduct of water testing</li> <li>• No guidelines on soil quality management</li> </ul>	<ul style="list-style-type: none"> <li>• Required water quality verification through testing</li> <li>• Included provisions for NPK soil analysis and laboratory testing for soil condition</li> </ul>
<b>Culture management:</b> <i>Health management, welfare and biosecurity</i>	<ul style="list-style-type: none"> <li>• Included disease prevention measures, and notification systems during outbreaks</li> <li>• Required the use of registered substances from authorized sources</li> </ul>	
	Specified adherence to the OIE Aquatic Animal Health Code for management and movement of aquatic animals	Focused on specific approaches such as biosecurity measures, and safe removal of sick and dead fishes and eggs
	Provided provisions on routine health monitoring for early detection of health issues, careful consideration of species used in polyculture, and emphasis on training farm workers and managers	Not specified
<b>Culture management:</b> <i>Harvesting, post-harvest handling and transport</i>	Both Standards emphasized the importance of water and ice quality during harvesting to avoid contamination, farmers' awareness of hygiene, and appropriate harvesting and post-harvest handling practices to minimize contamination and damage.	
	<ul style="list-style-type: none"> <li>• Provided comprehensive guidance on workers' training on hygienic practices and specific measures for managing bivalve mollusks to prevent contamination</li> <li>• No guidelines on the transport of harvested fish</li> </ul>	<ul style="list-style-type: none"> <li>• Outlined specific measures on harvesting practices (e.g. temperature control, equipment cleanliness, and waste management)</li> <li>• Enumerated detailed requirements for the transport of produce</li> </ul>
<b>Facilities and Sanitation</b>	Both the ASEAN and PNS GAqP emphasized the importance of maintaining hygienic conditions in aquaculture facilities, proper storage of chemicals and wastes, and responsible waste disposal and cleanliness practices.	
<b>Environmental management</b>	Provided provisions on habitat rehabilitation of previous aquaculture operations, mitigating measures on practices that cause environmental damage, regular monitoring of environmental quality, training for farm workers on environmental management, efficient water resource management, responsible use of exotic species, risk assessment of genetically modified aquatic organisms, and aquaculture input management to minimize environmental impacts	Only mentioned the availability of screens and barriers, and the installation of trapping devices to prevent the escape of cultured species
<b>Personnel health and hygiene</b>	No provisions on personnel health and hygiene	Provided specific requirements such as annual medical examinations, exclusion of personnel who could contaminate products from working, and wearing of suitable and clean clothing

Section	ASEAN GAqP on Food Fish (2022)	PNS on Code of GAqP (PNS/BAFS 135:2014)
<b>Labor and community</b>	Both Standards had provisions that prohibited child labor in compliance with national regulations, advocated against gender discrimination, ensured adherence to national laws on wages and benefits, and emphasized safe working conditions and amenities for farm workers, equal rights and access to community resources, and minimizing potential adverse impacts of farms on local communities.	
<b>Traceability and record keeping</b>	Both the ASEAN and PNS GAqP required a comprehensive record-keeping in aquaculture operations	
	<ul style="list-style-type: none"> <li>Followed a 24-month retention period</li> <li>Provided categories of data to be recorded</li> </ul>	<ul style="list-style-type: none"> <li>Did not specify timeline for record retention</li> <li>Outlined specific activities for record-keeping</li> </ul>

## RECOMMENDATIONS/CONCLUSION

Based on the gathered data, below are the recommendations that DA-BAFS SDD may consider in the amendment of PNS on Code of GAqP:

### 1. Site selection:

**a. Location:** The PNS may adopt the ASEAN GAqP's provision on farm location where pollution can be effectively managed, and incorporate supplementary measures for assessing the viability of pollution control. The PNS GAqP may also require an EIA before the approval of aquaculture operations, as mandated by law.

**b. Lay-out and design:** The PNS may adopt the ASEAN GAqP approach, integrating operation and maintenance considerations into the facility design to prevent contamination and maintain hygienic conditions.

### 2. Culture management:

**a. Source of stock:** The PNS may adopt the detailed provisions of the ASEAN GAqP on seed sourcing practices, encompassing both hatchery-produced and wild seeds.

**b. Feeds and feeding practices:** The PNS may consider adopting the following ASEAN GAqP provisions:

- feeds shall not contain unsafe levels of contaminants nor use prohibited substances;

- procedures in preventing feed contamination that align with international standards;
- feed handling and storage practices that shall effectively prevent spoilage, mold growth, and contamination.

**c. Water and soil quality management:** The PNS may retain its provisions on the conduct of testing for water quality verification, requirements for soil analysis for NPK, and evidence of laboratory analysis for soil conditions.

**d. Health management, welfare, and biosecurity:** The PNS may incorporate the provisions on adherence to the OIE Aquatic Animal Health Code for the management and movement of aquatic animals and products as provided in the ASEAN GAqP. The PNS may also include provisions on responsible species selection in polyculture systems and training farm workers and managers on effective aquatic animal health and welfare practices.



**e. Harvesting, post-harvest handling, and transport:** The PNS may adopt the comprehensive guidelines provided in the ASEAN GAqP, specifically the implementation of workers' training programs on maintaining hygienic practices during post-harvest handling, including the measures for managing bivalve mollusks to prevent contamination. For transportation, the PNS may retain its existing provisions.

**3. Facilities and Sanitation:** The PNS may adopt the ASEAN GAqP provisions enumerating the sources of contamination and general maintenance practices, responsible construction and disposal procedures. The existing provision for managing sources of contamination of the PNS may be retained.

**4. Environmental management:** The PNS may consider adopting the detailed environmental management guidelines stated in the ASEAN GAqP.

**5. Personnel health and hygiene:** The PNS may retain its provisions on mandatory annual medical examinations, exclusion of personnel who could contaminate products, and the required wearing of suitable and clean clothing. It may also retain provisions on the enforcement of protocols requiring workers to wash their hands before starting work, to cover wounds with waterproof bandages, and to refrain from smoking, spitting, eating, or drinking in work and storage areas.

**6. Labor and community:** The PNS may include the specific provisions from the ASEAN GAqP that focus on the responsible treatment of workers in accordance with national labor regulations and relevant ILO conventions. Furthermore, the PNS may incorporate provisions to ensure compliance with national laws on worker benefits and working conditions, OHS standards for farm work, and access to public land and water resources.

**7. Traceability and record keeping:** The PNS may consider adopting the 24-month retention period for relevant records (i.e., data on food safety, environmental monitoring, and animal health and movement) stated in the ASEAN GAqP.



**Authors:** Zaireen B. Cleofe, Melissa L. Astillero, Edna Lynn C. Floresca, RCh, and Karen Kristine A. Roscom, PFT, PhD  
**Technical Content and Layout:** Nikki Rose G. Alegre  
**Editors:** Mary Grace R. Mandigma, PFT, and Katrina M. Maniling, PFT

Download the full-text of this paper by scanning the QR code or by visiting [bit.ly/TBGAqP](http://bit.ly/TBGAqP)