1 Scope

This Code of Good Aquaculture Practices (GAqP) covers practices that aim to prevent or minimize the risks associated with aquaculture production (mariculture, coastal aquaculture or brackishwater culture, and freshwater culture). This Code covers the following aspects of aquaculture production namely: a) food safety (e.g., traceability), b) animal health and welfare (e.g., biosecurity), c) environmental integrity, and d) socio-economic.

This Code applies to aquaculture facilities, such as, but not limited to, hatcheries, nurseries, fish cages, fish pens, fishponds, and seaweed and mollusks farms, which may be owned by individuals, corporations, and/or producer associations. This consists of compliance with technical and legal requirements.

2 Normative References

The following documents are referred to in the text in such a way that some or all their contents constitute the requirements of this document. The latest edition of the referenced documents (including any amendments) applies.

Bureau of Agriculture and Fisheries Standards (BAFS)-Department of Agriculture (DA). (2022). Veterinary Drug Residues in Food — Maximum Residue Limits (PNS/BAFS 48:2022).

Department of Environment and Natural Resources. (2019). *DENR Administrative Order No. 2019-09: Updated national list of threatened Philippine fauna and their categories.* https://bmb.gov.ph/downloads/WRD/WC/WC2020/stat_and_lists_of_wildlife/fauna/dao-2019-09.pdf

3 Terms and Definitions

For the purpose of this standard, the following terms and definitions apply:

3.1
animal health and welfare
how an animal is coping with the conditions in which it lives. An animal is in a good state of welfare if (as indicated by scientific evidence) it is healthy, comfortable, well nourished, safe, able to express innate behavior, and if it is not suffering from unpleasant states such as pain, fear, and distress (World Organization for Animal Health, 2016)

3.2
aquaculture facilities

include permanent or semi-permanent systems or structures for breeding, treatment, and raising of organisms. Aquaculture facilities may exist both in marine waters, inland water environments, and as terrestrial production systems (Food and Agriculture Organization of the United Nations, n.d.)

3.3
biosecurity
set of management and physical measures designed to reduce the risk of introduction, establishment, and spread of animal diseases, infections or infestations to, from, and within an animal population (World Organization for Animal Health [WOAH], 2018). It is also defined as an overall program that uses a combination of physical barriers and directed actions in a specific way that should prevent the introduction of, or limit the spread of infectious disease (ASEAN Sectoral Working Group for Livestock)

3.4
competent authority
official government agency having jurisdiction (Codex Alimentarius Commission [CAC], 2006). Also refers to the bureau or agency mandated by law with responsibility and competence for ensuring and supervising the implementation of sanitary and phytosanitary (SPS) measures, regulations, or standards (DA-BAFS, 2023)

3.5
food safety
assurance that food will not cause harm to the consumer when it is prepared or eaten according to its intended use (Republic of the Philippines, 2013)

3.6
land-based facilities
ncludes the natural and man-made environmental features within which infrastructure is developed for the breeding and culture of freshwater organisms for food and economic purposes (BFAR, 2012)

3.7
traceability
ability to follow the movement of a food through specified stage(s) of production, processing and distribution. It facilitates knowledge regarding the identity, history and source of a product, or of material contained within a product. It also facilitates knowledge regarding the destination of a product, or any ingredients contained within it (CAC, 2006)

3.8
veterinary drugs
any substance applied or administered to any food-producing animal, such as meat or milk-producing animals, poultry, fish, or bees, whether used for therapeutic, prophylactic, or diagnostic purposes or for modification of physiological functions or behavior (CAC, 2017)

4 General Principles

4.1 Food safety

Aquaculture activities should be conducted in a manner that ensures food safety by implementing appropriate national or international food safety standards and regulations including those defined by Codex CAC (ASEAN, 2022).

4.2 Animal health and welfare

Aquaculture activities should be conducted in a manner that assures the health and welfare of farmed aquatic animals, by optimizing health through minimizing stress, reducing aquatic animal disease risks, and maintaining a healthy culture environment at all phases of the production cycle (ASEAN, 2022).

4.3 Environmental integrity

Aquaculture should be planned and practiced in an environmentally responsible manner in accordance with applicable national and international rules and regulations. Ensuring environmental integrity requires that environmental impacts of planning, development, and operational practices for aquaculture are addressed (ASEAN, 2022).

4.4 Socio-economic aspects

Aquaculture should be conducted in a socially responsible manner, within national rules and regulations, having regard to the International Labour Organization (ILO)-convention on labor rights not jeopardizing the livelihood of aquaculture workers and local communities. Aquaculture contributes to rural development, enhances benefits and equity in local communities, alleviates poverty, and promotes food security. As a result, socio-economic issues should be considered at all stages of aquaculture planning, development, and operation. The importance of corporate social responsibility from aquaculture to local communities should be recognized (ASEAN, 2022).

5 Site Selection

5.1 Location

5.1.1 Aquaculture facilities should be located in environmentally suitable and sustainable areas where the risk of contamination is minimized or where sources of pollution can be controlled or mitigated according to national law and regulations.

5.1.2 Proof of compliance with existing environmental regulations by the competent authority shall be available.

5.1.3 Proof of legal rights, privileges or ownership of the farm area (e.g., license to operate or business permit from the local government unit) and its location map shall be available.

5.2 Layout and design

5.2.1 Aquaculture facilities should be used primarily for aquaculture purposes only. Livestock and poultry production should be done in distinct areas within the farm where risks of contamination are minimized.

5.2.2 Wild and domesticated animals should not be allowed in the production area or its vicinity to prevent fecal and other hazardous contamination. However, they may be permitted under strict conditions, provided that measures are in place to prevent contamination.

5.2.3 Farm design and layout should prevent cross-contamination and damage to existing aquatic habitats.

5.2.4 Drainage system of septic tanks and toilet facilities should be well installed and constructed to prevent contamination of farm facilities.

5.2.5 Equipment, such as cages and nets, should be designed and constructed to ensure minimal physical damage to fish during growing and harvesting and to allow for adequate cleaning and disinfection.

5.2.6 Equipment, such as containers and vehicles for feed, seed and harvested fish/crustaceans, should be designed and constructed to allow for adequate cleaning and disinfection.

5.2.7 Aquaculture facilities should integrate biosecurity measures to prevent cross contamination and disease outbreak

5.2.8 For land-based facilities, a reservoir pond for incoming water and settling pond for effluents should be available. However, a reservoir pond may not be necessary if the farm has adequate measures in place to ensure sufficient water supply and proper water management.

5.2.9 For land-based facilities, buffer zones should be observed in accordance with existing regulation.

5.2.10 Aquaculture facilities should be designed, operated and maintained in ways that prevent contamination from workers, sewage/toilets, domestic animals, machinery oil/fuel and other possible sources in order to maintain hygienic conditions

6 Facilities, Sanitation, and Waste Management

6.1 Facilities

6.1.1 Disposal facilities for solid and liquid wastes should be in suitable and confined areas, and waste disposal shall be in compliance with existing regulations.

6.1.2 Fuel and chemical substances (e.g., sanitizer, fertilizer and reagents) should be stored in a storage facility and separated according to manufacturer's instructions and as specified on the label.

6.1.3 Regular repair and maintenance should be undertaken to preserve the good physical condition of the facility.

6.1.4 Infected or aquatic animals affected by a disease or dead aquatic animals should be collected immediately and disposed of properly through the establishment of a mortality pit and fish cemetery, among others.

6.2 Sanitation

6.2.1 Aquaculture facilities and their surroundings should be maintained in a clean and hygienic condition.

6.2.2 Containers, equipment and farm facilities should be maintained in good condition to avoid contamination.

6.2.3 Adequate procedures for cleaning and disinfection of containers, equipment and farm facilities should be in place and implemented.

6.2.4 Cleaning materials and disinfectants should be properly handled to prevent contamination or pose no environmental hazards.

6.3 Waste Management

6.3.1 Aquaculture facilities construction and waste disposal should be conducted daily and responsibly in accordance with applicable sanitation regulations. The farm should take appropriate measures to: a) dispose of solid wastes and garbage in an environmentally sound way; and b) dispose of dead aquatic animals in a hygienic manner especially after disease outbreak.

7 Personnel Health and Hygiene

7.1 Workers should be trained on farm-level hygienic practices to ensure awareness of their roles and responsibilities for protecting aquaculture products from contamination and deterioration throughout the production cycle. This includes the following protocol:

7.1.1 Workers shall undergo an annual medical examination to ensure they are fit to work.

7.1.2 Workers who have shown signs of medical problems or conditions that may pose health risks shall be excluded from handling fishery products until deemed certified fit to resume work.

7.1.3 Workers should wear suitable and appropriate working clothes and protective gear. In areas and conditions where risk is high, protective gear shall be used.

7.1.4 Workers shall wash their hands each time before commencing work.

7.1.5 Wounds should be covered with waterproof bandages and clean, waterproof gloves or boots.

7.1.6 Smoking, spitting, or drinking alcoholic beverages in the working and storage premises shall not be allowed.

8 Farm Management

8.1 Farm preparation

8.1.1 Aquaculture facilities preparation practices should minimize risk for cross-contamination.

8.1.2 Prohibited chemicals or biological substances listed in Annex A (List of banned antimicrobials in food-producing animals) shall not be used in aquaculture farm preparation.

8.1.3 Fertilizers, prebiotics, and probiotics should be used in accordance with the manufacturer's instruction and/or recommendation of the competent authority.

8.1.4 Stocking density should be optimum to the species and to the culture system involved.

8.2 Water management

8.2.1 Water used for aquaculture should be properly filtered, settled, aerated, and maintained as suitable for the production of aquaculture species which is safe for human consumption.

8.2.2 Basic water quality parameters should conform with the existing standards set by the competent authority and be regularly monitored to ensure suitability and safety. The specific water quality requirements for each species are specified in the species-specific GAqP.

8.3 Feeds and feeding

8.3.1 Where commercial feed is used, aquaculture operations should include procedures for avoiding feed contamination.

8.3.2 Commercial feeds shall be obtained from a company registered and monitored by the the competent authorities

8.3.3 Samples of commercial feeds should be inspected, monitored and tested for aflatoxin and chloramphenicol by the competent authority.

8.3.4 Feed ingredients, additives, premixes and compound feeding stuffs should be obtained from a company registered and monitored by the competent authorities.

8.3.5 Imported formulated feeds shall be obtained from a company registered by the competent authority in compliance with existing regulations and in conformity with the existing standards.

8.3.6 Feeds should be stored properly in a cool, dry place to prevent spoilage, mold growth and contamination.It should be organized to facilitate a first-in, first-out (FIFO) release and use.

8.3.7 Medicated and non-medicated feeds should be stored separately to minimize the risk of feeding to non-target animals.

8.3.8 The content of additives and veterinary drugs should comply with the existing regulations and conform with the existing standards.

8.3.9 Packages should be properly labeled with the description of composition, storage conditions, manufacturing date, expiry date, feeding rate, and other necessary guidance in adequate language.

8.3.10 Feeding practices should minimize the risk for biological, chemical, and physical contamination of feeds and animals.

8.3.11 Feeding practices should prioritize the maintenance of water and sediment quality to prevent nutrient overloading and minimize waste.

8.3.12 Non-commercial feeds such as but not limited to live feeds, farm-formulated feeds, and natural food should be of good quality and suitable for the species.

8.3.13 If non-pelleted feeds or fresh feeds (trash fish, chicken entrails, etc.) are used in the farm as fish feed, the protocol on the preparation and administration of such shall be provided.

8.3.14 Probiotics and other biological inputs shall be registered with, and approved by, the relevant competent authorities.

8.4 Harvesting, postharvesting, and transport

8.4.1 Harvesting and postharvesting

8.4.1.1 Harvesting and postharvesting equipment and paraphernalia should be cleaned and sanitized. Such equipment should be stored properly.

8.4.1.2 Harvesting should be planned in advance and timed to prevent fishery products from being exposed to unduly high temperatures.

8.4.1.3 Harvested aquatic animals should be quickly and hygienically handled, using practices that do not cause contamination and physical damage to the product.

8.4.1.4 Practices should ensure that the viability of live aquatic animals is not unduly affected by extreme temperatures, physical damage, or undue stress (if applicable).

8.4.1.5 For products intended to be sold chilled or frozen, practices should ensure rapid and humane slaughtering of harvested aquatic animals to minimize stress and preserve the quality of the product.

8.4.1.6 Water and ice used during harvesting should be of quality suitable for the production of food.

8.4.1.7 Postharvest operations should be carried out quickly, hygienically and without damage to the product.

8.4.1.8 Food additives and chemicals, which are used in contact with products, shall be in compliance with prevailing legal requirements.

8.4.1.9 Postharvest wastes should be collected in designated areas and disposed of properly to minimize risk of cross contamination.

8.4.1.10 For postharvest operations, clean and uncontaminated water should be available and used in sufficient amounts for handling and cleaning operations.

8.4.1.11 For postharvest operations, ice shall be made from potable water and sourced from approved establishment by the competent authority.

8.4.1.12 For postharvest operations, ice should be received, handled and stored under good sanitary conditions, which minimize risks of contamination.

8.4.1.13 Harvested aquatic animals should be properly chilled and maintained at a temperature range of 0°C to 4°C to preserve freshness, quality, and safety.

8.4.1.14 Fishery products placed on the market for further processing before human consumption should be pathogen-free.

8.4.2 Transport

8.4.2.1 Fishery products should be transported in clean, sanitized, and well-maintained materials, with protocols to prevent contamination from environmental sources such as air, soil, water, oil, and chemicals.

8.4.2.2 Live aquatic animals should be transported under conditions which recognize their welfare and do not adversely affect their viability.

8.4.2.3 Aquatic animals intended to be sold chilled for human consumption shall be transported in containers designed to maintain a consistent temperature of 0°C to 4°C throughout the entire transport period.

8.4.2.4 Containers used for transporting fishery products with ice should be designed to allow melted water to drain away from the product, ensuring optimal quality and hygiene.

8.4.2.5 All prohibited additives and chemicals shall not be used in contact with fishery products (chilled or frozen)/live animals.

9 Animal Health and Welfare

9.1 Farm operators should develop and implement an aquatic animal health plan, following the existing protocols of the competent authorities for the health and management of aquatic animals.

9.2 Slaughtering of aquaculture animals for disease control purposes should be authorized by the competent authority, and measures for the notification and control of diseases of aquatic animal origin should be effectively implemented.

9.3 Farm operators shall adhere to the risk-based animal health surveillance program, which includes both passive and active schemes conducted by the competent authority, to ensure effective monitoring and management of aquatic animal health.

9.4 Aquatic animals, wild-sourced or captive propagated by registered hatcheries, should be of good quality and clinically healthy, as confirmed through screening and testing by the competent authority and its recognized laboratories before stocking.

9.5 All veterinary drugs and chemicals for use in aquaculture shall comply with national regulations, as well as international guidelines, if applicable. If veterinary drugs and chemical treatment is necessary, farm operators shall follow the instructions on the manufacturers label or as advised by competent authority.

9.6 Substances requiring prescription shall only be used under supervision by a qualified expert. Non-prescription substances should be used according to manufacturer's instructions and as specified on the label.

9.7 Veterinary drugs, medicated feeds, chemicals and biological substances should be properly stored according to instructions.

9.8 Veterinary medicines should be used in a responsible manner and in accordance with applicable national legislation or relevant international agreements/guidelines that ensure effectiveness for animal health with consideration of public safety and protection of the environment.

9.9 Treatment and control of diseases with authorized veterinary drugs should be carried out only on the basis of a proper diagnosis.

9.10 Observation of withdrawal periods and residues should be verified with available records and by adequate testing.

9.11 A quarantine protocol should be established and implemented for the treatment and containment of diseased aquatic animals.

9.12 Proper handling and disposal procedures for diseased aquatic animals shall be implemented to ensure effective disease control and prevent the spread of pathogens.

9.13 For farms administering chemicals, withdrawal periods shall be followed. Veterinary drug residues shall be within the limits set in the PNS/BAFS 48:2022 (Veterinary Drug Residues in Food — Maximum Residue Limits).

9.14 Movement of aquatic animals and aquatic animal products should take place in accordance with existing national regulations to prevent the entry or transfer of diseases and infectious agents pathogenic to aquatic animals while avoiding unwarranted sanitary measures.

9.15 Farm operators should formulate and implement biosecurity measures, in adherence to the recommended protocol of the competent authority, to prevent entry of disease into the farm and/or control its spread within the farm.

9.16 Farm operators should maintain a suitable culture environment throughout the production cycle of the species being raised to promote aquatic animal welfare.

9.17 Farm operators should develop and implement handling protocols during sampling, harvesting, quarantine, and disease treatment to promote aquatic animal welfare.

9.18 Use of species in polyculture or integrated multitrophic aquaculture should be carefully considered in order to reduce potential risk of disease transmission.

10 Environmental Integrity and Sustainability

10.1 Screens and barriers should be available to limit the incidence of escape to the natural environment of cultured species.

10.2 Aquaculture activities shall be limited to a maximum of 10% of the total area designated for aquaculture use to ensure sustainable resource utilization and maintain the carrying capacity of the ecosystem.

10.3 Trapping devices should be installed in areas where potential escapes could happen to reduce the risk of such an event.

10.4 The use of lethal methods to eradicate predators, particularly those classified as vulnerable, threatened, or endangered under DENR Administrative Order No. 2019-09 (Updated National List of Threatened Philippine Fauna and their Categories), and relevant international conventions, including the International Union for Conservation of Nature (IUCN) Red List, shall be prohibited.

10.5 Environmental Impact Assessments (EIA) should be conducted, as prescribed by the national and local regulations, prior to the approval of establishment of aquaculture facilities.

10.6 Location of aquaculture farms should be in accordance with local and national plans and regulations on environmental protection.

10.7 The site of aquaculture facilities shall be evaluated and permitted based on its proximity to ecologically sensitive or protected areas such as mangrove forests, coral reefs, and other biodiversity hotspots. The farm shall also adhere to zoning laws set by local government units (LGUs).

10.8 Rehabilitation of damaged natural surroundings caused by aquaculture operations should be encouraged

10.9 Effective mitigation measures should be taken if the current practices are damaging habitat/environment.

10.10 Regular monitoring of farm environmental quality should be carried out.

10.11 Measures should be adopted to promote efficient water management and use, as well as proper management of effluents to reduce impacts on surrounding land, and water resources.

10.12 Where possible, good quality, hatchery produced stocks should be used for culture. When wild-sourced stocks are used, they should be collected using responsible practices or in accordance with national laws and regulations where they exist.

10.13 Exotic species cultured in controlled conditions may only be used when the competent authority has conducted a risk assessment and determined that their introduction poses an acceptable level of risk to the natural environment, biodiversity, and ecosystem health.

10.14 Any exotic species shall be disposed of in a manner that prevents their release into the natural environment

10.15 Where genetic material of an aquatic organism has been altered in a way that does not occur naturally, science-based risk assessment should be used to address possible risks on a case-by-case basis.

10.16 Farm workers and managers should be trained in environmental management and mitigation of impact to ensure they are aware of their responsibilities in protecting the environment.

11 Socio-Economic Aspects

11.1 Workers should receive fair treatment, salaries, mandatory benefits, and incentives consistent with national rates and in accordance with existing laws, regulations, and any related agreements or arrangements between the employer and the workers.

11.2 Living quarters of stay-in labor should be safe, clean, good habitable condition and convenient.

11.3 Potable water in adequate supply and appropriate suitable toilet facilities should be available and properly maintained.

11.4 Aquaculture facility operations should observe the rights of host local communities minimizing potential adverse impacts on public land, infrastructures, fishing grounds, and water resources following existing laws and regulations.

11.5 Workers should not be discriminated against on the basis of gender, race, religion, culture, age, etc.

11.6 Training on Occupational Health and Safety (OH&S) should be conducted for the workers to ensure safer farm work conditions.

11.7 An adequate quantity of first aid kits should be available and easily accessible at the production area, and laborers should be able to demonstrate awareness of and apply various first aid measures.

11.8 Harmonious, productive and mutually beneficial relationships with the local community should be maintained to foster responsible business social responsibility.

11.9 Proactive anti-child labor policy should exist in the farm and shall be compliant with the existing regulation and other applicable regulations.

12 Traceability and Record Keeping

12.1 Records keeping of the following records should be kept and maintained for at least 24 months for traceability purposes:

a) source of stocks
b) type, origin, and use of feeds and feed ingredients.
c) movement of animals
d) occurrences of diseases
e) harvesting
f) buyers of final products
g) pond management activities
h) water quality monitoring
i) use of inputs
j) management of effluents
k) habitat rehabilitation
l) environmental monitoring

Annex A
(Normative)

List of banned antimicrobials in food-producing animals

Regulations	
BFAR Administrative Circular No. 256, series of 2015	Declaring malachite green and gentian violet as health hazards and prohibiting their use in food fish production and trade
DA Administrative Order (AO) No. 14, series of 2003	Ban on the use in food animals of beta-agonist drugs used in humans as bronchodilator and tocolytic agents
Department of Health (DOH) and DA Joint AO No. 2, series of 2000	Declaring ban/phase out of the use of nitrofurans in food-producing animals
DOH AO No. 4-A and DA AO No. 1, series of 2000	Banning and withdrawal of olaquindox and carbadox from the market
DOH AO No. 91 and DA AO No. 60, series of 2000	Declaring ban on the use of chloramphenicol in food-producing animals

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