Collection and Evaluation of Existing Guidelines and Awareness Materials on Aquaculture Biosecurity for Small-scale Farms in the Asia-Pacific Region

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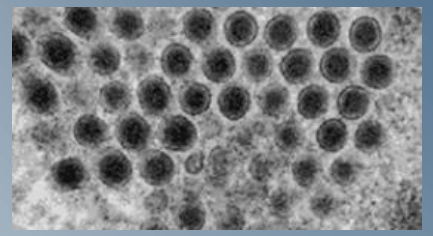
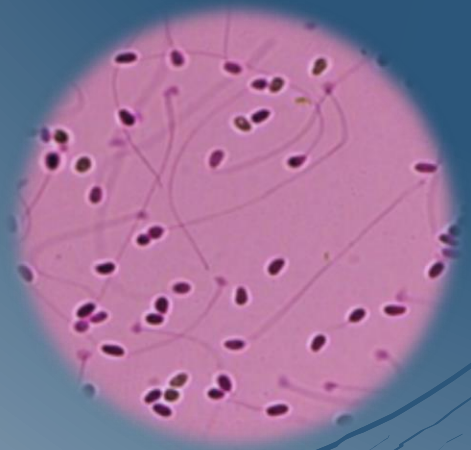
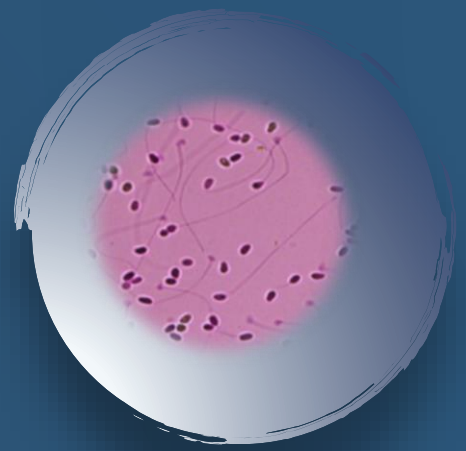
Aquaculture biosecurity is **a set of management and physical measures** designed to **reduce the risk of introduction, establishment and spread of pathogenic agents** to, from and within an aquatic animal population.

In general, the primary goal of BIOSECURITY PROGRAM IN AQUACULTURE is to prevent the introduction of any infectious organisms into the culture facilities



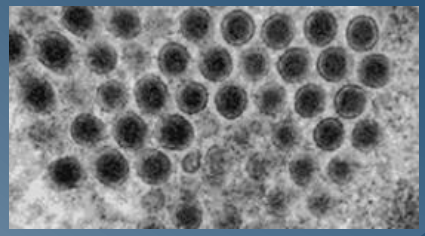


With the increasing incidence of transboundary spread of emerging and important aquatic animal diseases, AQUACULTURE BIOSECURITY has become more and more important



Implementation of biosecurity guidelines and measures in many countries in the region still face a lot of challenges, especially at the farm level.

- **Dominance of small-scale farmers: "WEAK LINK" in aquaculture biosecurity**



OBJECTIVES

- To collect and collate available information, existing regulations and awareness materials on aquaculture biosecurity from selected countries in the region;
- To identify gaps and challenges in the implementation of such documents, especially at the farm level; and,
- To develop a report to support Members in the Region in understanding how to utilise available resources or further improve their regulation, awareness materials and technical guidelines.

Countries included in the collection of important regulations and other relevant information on aquaculture biosecurity (national and farm levels):

1. Australia
2. Bangladesh
3. China
4. India
5. Indonesia
6. Malaysia
7. New Zealand
8. Thailand
9. Vietnam

All collected documents were individually assessed based on:

- Biosecurity risk analysis
- Record keeping
- Training
- Management measures to reduce disease transmission
- Emergency procedures
- Monitoring and audit
- Disease reporting
- Control measures after disease outbreak

General Information

- Most countries do not have a single regulation which address aquaculture biosecurity in general;
- Specific biosecurity measures are included in various national regulations addressing

  - Disease prevention and control
  - Best management practices
  - Strategies on animal health and the environment
  - Transboundary movement of live animals
  - Emergency response measures

General Information

Specific regulations (commodity; farm-level)

- Aquaculture Farm Biosecurity Plan: Generic Guidelines and Template (**Australia**)
- National Biosecurity Plan Guidelines for important aquaculture species (e.g. abalone, barramundi, oyster) (**Australia**)
- Good Aquaculture Practices for Marine Shrimp Farm (**Thailand**)
- Biosecure Shrimp Farming Technology (**India**)
- On-farm Biosecurity and Best Management Practices (**Indonesia**)
- Fisheries Seed Production –
- Conditions of Food Safety, Bio-security and Environment (**Vietnam**)
- Technical Guidance Document: High Level Biosecurity Management Plans Finfish/Shellfish (**New Zealand**)

Consolidated Information

- ✓ Australia
- ✓ China
- ✓ New Zealand
- ✓ Thailand
- ✓ Vietnam

- Risk Assessment
- Record keeping
- Training
- Management measures to reduce disease transmission
- Emergency procedures
- Monitoring and audit
- Disease reporting
- Control measures after disease outbreak

Aquaculture Biosecurity

Biosecurity Measures at the Farm Level (applicable for small-scale farms)

1. Record keeping

Movement:
○ Keeping and provision of all movement records of all animals in all stages (fry, fingerlings, broodstock) onto, within and from the farm. Movement documents (MD) should be kept for at least 3 years for traceability purposes.

Production operations:
○ Records of business registration and of every production step including source of feed, feeding, other production inputs, water quality, feed conversion ratio, harvest and sales; records should be kept for at least two years.

Biosecurity Measures at the Farm Level (applicable for small-scale farms)

1. Record keeping

Health:
○ Keeping records on seed quality including certificates of quarantine, origin, quantity and quality of broodstock, production time, quantity and type of food, health status, and disease control measures. Records must be kept on file and must be longer than one production cycle of each species. ○ Keeping health monitoring records of the cultured stocks (disease diagnosis, treatments/use of veterinary drugs, disease surveillance, farm visits by the CA, and overall farm hygiene); records should be kept for at least 2 years.

Biosecurity Measures at the Farm Level (applicable for small-scale farms)

2. Training

- Designation of a responsible person/staff for overseeing farm biosecurity who should be trained to understand disease risks to the farm and how to implement biosecurity and health management measures, farm level disease diagnosis and prevention, prudent use of chemicals, farm emergency procedures, and collection and disposal of diseased animals and wastes.

Biosecurity Measures at the Farm Level (applicable for small-scale farms)

3. Management measures to reduce disease transmission

Aquaculture Biosecurity

Property management

- Installation of a secure perimeter fence or otherwise well-defined boundary and lockable entrances/exits for the farm, unique and permanent identifiers/labels for all production units (for example, sheds, ponds, tanks, raceways), and other appropriate features to prevent entry of wild animals (including pets) into and escape of farmed animals from all production units .

Biosecurity Measures at the Farm Level (applicable for small-scale farms)

3. Management measures to reduce disease transmission

Personnel and visitors
○ Management of farm access for staff and visitors through provision of relevant signages and biosecurity measures prior to entry/exit (farm footwear, foot bath, hand washing facility. ○ All visitors should be briefed regarding on-farm biosecurity. Any staff or visitors who visited another farm shall not be allowed entry into the farm for at least one day, and for at least three days for those who visited a high-risk farms.

Biosecurity Measures at the Farm Level (applicable for small-scale farms)

3. Management measures to reduce disease transmission

Animals (Introduction)
○ Only healthy and disease-free fry/fingerlings should be introduced into the farm, with proof or evidence obtained from the laboratory approved by the relevant competent authority. ○ For broodstock, only those with known heath status, which is equal or better than the animals in the farm and following a documented consideration of pest and disease risk (including quarantine certificate), should be used.

Biosecurity Measures at the Farm Level (applicable for small-scale farms)

3. Management measures to reduce disease transmission

Animals (Movement)
○ Movement of animals between different farm populations should highly follow consideration of the disease risks; animals shall be tested for specific diseases, and proof or evidence of the test shall be obtained from the laboratory approved by the relevant competent authority. ○ In case of disease presence (known or unknown pathogen), precautionary measures should be implemented to avoid contact with other farm populations, while movement across protected area shall be accompanied with documents as required by laws and in line with the relevant provisions of the OIE Aquatic Animal Health Code.

Biosecurity Measures at the Farm Level (applicable for small-scale farms)

3. Management measures to reduce disease transmission

Equipment and vehicles/vessels

- Equipment, materials and tools shall be properly prepared and disinfected periodically or every before and after use, and regularly maintained to prevent the introduction of aquatic animal diseases.

- Where possible, tools and equipment should be used exclusively/separately in each production system especially when there is disease outbreak.

- Cleaning and disinfection of vehicles or vessels prior to movement between units should be carried out and documented.

Biosecurity Measures at the Farm Level (applicable for small-scale farms)

3. Management measures to reduce disease transmission

Water

- Water shall be obtained from non-polluted sources with good quality for culture operations. If necessary, water (and pond bottom) should be disinfected and filtered to eliminate pathogens and unwanted organisms prior to use.

- There should be functional water inlet and outlet for efficient farm management and prevention of contamination.

- Provision of water reservoir for stocking of culture water prior to use in culture ponds (specifically for shrimp grow-out), where the use of filtration materials and disinfectants (e.g. chlorine) can also be applied to eliminate unwanted organisms and pathogens. Reservoirs should be regularly cleaned and dried after each production cycle.

Biosecurity Measures at the Farm Level (applicable for small-scale farms)

3. Management measures to reduce disease transmission

Feeds
○ Preference on formulated feeds of high quality and sourced from approved manufacturer than live or unprocessed feeds, for better management of biosecurity risk. ○ Live/natural foods, when used, shall be tested for specific disease (as they can be potential carriers of pathogens) and adequately treated (pasteurized, irradiated or otherwise processed to a standard) to ensure safety of the product; direct feeding of fresh feeds should not be practiced.

Biosecurity Measures at the Farm Level (applicable for small-scale farms)

3. Management measures to reduce disease transmission

Waste
○ Proper management of waste containment, collection and disposal (including dead fish) shall be in place at all time and in accordance with regulatory requirements. ○ Proper wastewater and sludge treatment and disposal should be applied; in case of disease outbreak, wastewater shall be disinfected, with approved chemicals and proper duration of treatment, before discharge to prevent the risk of disease spread.

Biosecurity Measures at the Farm Level (applicable for small-scale farms)

4. Emergency Procedures

- Farm operations and management manual/document (signed by the owner or responsible personnel) should be made available and properly implemented; the farm should be prepared with relevant measures to effectively control, prevent and respond to biosecurity emergencies (including diseases).

- All staff should understand the facility's contingency plans and their own role in the event of an emergency.

Biosecurity Measures at the Farm Level (applicable for small-scale farms)

5. Monitoring and audit

- Where applicable, routine monitoring/review and audit (internal and third party) of farm/facility biosecurity plans and measures should be done.

Biosecurity Measures at the Farm Level (applicable for small-scale farms)

6. Disease reporting

- SOP for staff/farm technicians to notify the responsible manager and/or relevant authorities in the event of abnormalities, mortalities and outbreak of disease in the farm, for appropriate analysis and diagnosis, and rapidly take isolation and other control measures to prevent any spread of animal diseases .

- Where appropriate, inform neighboring farms on any disease outbreak in the farm.

Biosecurity Measures at the Farm Level (applicable for small-scale farms)

6. Control measures after a disease outbreak

- Production systems should be isolated from each other and the surrounding environment, and precautions should be taken to avoid contact with other facility populations until the cause is known and the situation resolved.

- Infected animals should be properly removed and disposed (burned, boiled or buried in limed pits), and movement of animals and materials should be prohibited.

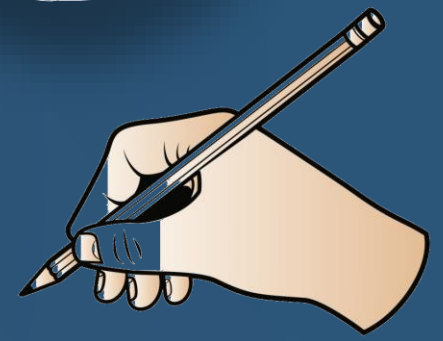
Biosecurity Measures at the Farm Level (applicable for small-scale farms)

6. Control measures after a disease outbreak

- Ponds/tanks should be disinfected with approved chemicals (for at least one month), and wastewater properly treated prior to disposal.
- Prohibition of people going in and out of areas having disease outbreak.
- Specifically for harvestable sized shrimps/fish with suspected clinical signs, the farms have to notify the competent authorities for guidance in undertaking emergency havesting of cultured stocks.

Way Forward

- ✓ Consolidation of information from Bangladesh, India, Indonesia and Malaysia;
- ✓ Summarize collected farm-level awareness materials (e.g. Indonesia, India, Thailand, Vietnam);
- ✓ Finalize the list of farm-level biosecurity measures which are applicable for small-scale farms;
- ✓ Prepare the final report of the project.



Way Forward

Objective No. 2: To identify gaps and challenges in the implementation of such documents, especially at the farm level

Interview with relevant authorities in selected countries for further assessment of implementation of biosecurity guidelines/regulations							

Not done due to COVID-19 travel restrictions

Thank You

Contoso