

AQUACULTURE BIOSECURITY

INCOMING AQUATIC ANIMALS



HOW AQUATIC ANIMAL MOVEMENT AND HANDLING CAN SPREAD DISEASE

Adding or moving infected animals or animal products (e.g., germplasm, eggs) onto an aquaculture farm or hatchery is a significant risk factor for introducing and spreading infectious diseases. Animals from outside sources (especially those not regularly screened for pathogens) pose a risk to resident stock. This handout describes actions to reduce pathogen transfer during aquatic animal movement and handling.



HOW TO MANAGE AND PREVENT INFECTIOUS DISEASE INTRODUCTION

Health of Incoming Animals

Infected animals may not always show signs of illness and can spread pathogens through body excretions, such as mucus or feces. Proper care, handling, and movement of animals and their transport water can help to prevent pathogen transmission at your facility.

- Purchase or obtain aquatic animal stocks from disease-free sources.
- Limit the frequency and number of new animal introductions and the number of sources or suppliers.
- Ask the supplier about animal disease history, testing, veterinary inspection results, and on-site biosecurity measures.
- When possible, obtain specific pathogen-free (SPF) animals since they are raised in biosecure facilities, monitored, and tested to be free from certain pathogens.
- Inspect animals upon arrival at your farm for visible health issues, such as external lesions, poor body condition, lethargy, or abnormal behaviors.
- Disinfect eggs before shipping or immediately after arrival to the farm or hatchery.
 - Follow all local, State, and Federal guidelines.



Quarantine Incoming Animals On Arrival

Quarantine is the strict separation of new animals with an unknown health history. The quarantine period helps identify, manage, and contain pathogens before they spread. This is critical before adding new animals to the current stock and helps “new” animals acclimate to farm conditions.

- Quarantine all animals brought onto the farm immediately upon arrival.
 - Quarantine times vary depending on the pathogens of concern. Talk with an aquatic animal health professional about the best quarantine time and protocol for your species.
- Establish quarantine areas/systems in a physically separate location away from resident stock. Ideally, this is a separate building or isolated location on site.
 - Water supplies, as well as handling and cleaning equipment, should also be kept separate and not shared with other areas on the farm.
 - Post signage identifying quarantine areas.
- Treat incoming animals with approved therapeutants (e.g., freshwater, salt, formalin) before placing them in quarantine. The prophylactic use of antibiotics is prohibited. Test quarantined animals for specific pathogens of concern.
- Monitor quarantined animals regularly, ideally daily, for signs of infectious disease.
 - Keep daily records so any changes can be promptly detected. Ensure farm personnel are trained to recognize sick animals.
 - Contact your aquatic animal health professional when signs of disease are observed. Follow any instructions to collect sick or freshly dead animals for testing.
- Restrict traffic in quarantine areas. Access should be limited to trained employees.
 - Assign one employee to care for quarantined animals.
 - If this individual cares for other animals on the farm, those in quarantine should be fed and cared for last.
- Place disinfectant foot baths, handwashing stations, dedicated coveralls, and footwear at entry and exit points for use by personnel to reduce pathogen spread.
- Quarantine any aquatic animals taken offsite (e.g., sales, exhibitions) and returned to the farm; pathogen exposure may have occurred during the event.



Farm Management Procedures

On-site procedures, such as handling dead or diseased animals and waste products, can reduce pathogen risks. All employees should be trained in husbandry and diseases for aquatic species kept on the site. Monitoring and evaluating production records can help to detect subclinical infections or identify disease problems (e.g., sudden versus gradual increases in death rate).

Remove Dead or Ill Animals Promptly

- Monitor all animals on the farm regularly, daily if possible, for signs of disease.
 - This should include visual inspections and periodic laboratory testing. Increase inspection frequency during periods of higher risk (e.g., water temperature fluctuations, known disease issues).
- Promptly remove and separate animal(s) showing signs of illness until testing, euthanasia, or depopulation can occur.
 - Place affected animals in an isolation area (ideally a separate building or location away from the production area).
 - Keep water supplies and handling and cleaning equipment separate and avoid use on other areas of the farm.
 - If water systems must be shared (not ideal), isolate tanks or other containment units (e.g., recirculating or other systems) away from production areas.
 - Contact your aquatic health professional to determine the cause of death or illness.
- Post signs informing personnel of animal containment units with disease or undergoing treatment.
- Dispose of dead animals promptly to prevent exposure to others in the same unit.
 - Ensure disposal methods are carried out in a biosecure manner to avoid cross-contamination of other farm areas.
 - Prevent carcass access by wildlife, pests, or vermin.
 - Follow all local and state regulations for carcass disposal to avoid environmental hazards.



Remove and Manage Waste Products

- Manage waste products (e.g., feces, uneaten feed) to minimize growth of pathogens and prevent contamination of other surfaces or equipment in the production area. Manage wastewater or transport water, containers, and associated equipment in a similar biosecure manner.

Personnel Training

- Train all employees to recognize signs of illness or distress for species kept on the site and ensure they know who to inform when signs are noticed.
- Ensure all personnel working with the animals understand proper husbandry practices and how to limit stress when handling the animals.
- Provide biosecurity training to all employees and review procedures and protocols regularly (at least annually).

Record Keeping

- Keep thorough records for animal origins, introductions, production parameters, water quality, vaccination, illness and mortalities, and treatments.
- Monitoring and evaluating production records can help to detect subclinical infections or identify disease problems (e.g., sudden versus gradual increases in death rate).

BIOSECURITY ASSESSMENT CHECKLIST

Use the following checklists to identify biosecurity actions you currently use or can use to manage and reduce risk for pathogen introduction through animal movement and handling.

Health of Incoming Animals

YES	NO	BIOSECURITY QUESTION
Y	N	Are aquatic animals purchased or obtained from disease-free sources?
Y	N	Is the frequency and number of new animal introductions limited when possible?
Y	N	Do you limit the number of sources or suppliers used to obtain animals?
Y	N	Before purchasing live animals, do you ask the supplier about their disease history, veterinary inspection, and biosecurity measures?
Y	N	Do you require disease testing or veterinary inspection before purchase?
Y	N	Do you purchase specific pathogen-free (SPF) animals when available?
Y	N	Do you inspect animals upon arrival at your farm?
Y	N	Are eggs disinfected (per local, State, and Federal guidelines) before shipping or immediately after arrival at the farm or hatchery?

Quarantine Procedures

YES	NO	BIOSECURITY QUESTION
Y	N	Are all incoming animals quarantined immediately upon arrival to the farm and before placement with on-farm stock?
Y	N	Do you work with your aquatic animal health professional to determine quarantine periods appropriate for the animal, life stage, and potential pathogens?
Y	N	Do you have a quarantine area(s) or system(s) located away from production areas?
Y	N	Are signs posted to identify the quarantine area?
Y	N	Do quarantine areas have a dedicated water system?
Y	N	Are you able to isolate tanks or other containment units within RAS or other systems?
Y	N	Do quarantine areas have dedicated equipment (i.e., not used for other locations on the farm) or is equipment thoroughly cleaned and disinfected before use at other locations?
Y	N	Do you treat incoming animals with approved therapeutants (e.g., freshwater, salt, formalin) before placing them in quarantine? [Note: The prophylactic use of antibiotics is prohibited.]
Y	N	Are quarantined animals monitored daily for signs of illness?
Y	N	Are quarantined animals tested for specific pathogens if appropriate or required?
Y	N	Is access into the quarantine area restricted, with access limited to trained employees only?
Y	N	Are foot baths, handwashing stations, dedicated coveralls, and footwear provided for essential personnel at quarantine entry and exit points?
Y	N	Are quarantine animal areas cared for last (after resident stock)?
Y	N	Are any returning animals (e.g., taken to sales, exhibitions, etc.) quarantined upon return to the farm and before introduction to the current stock?



Farm Management Procedures

YES	NO	BIOSECURITY QUESTION
Y	N	Do you monitor all animals on the farm regularly for disease?
Y	N	Do you increase inspection frequency during periods of higher risk?
Y	N	Do you promptly remove and separate animals showing signs of illness?
Y	N	Do you have an animal isolation area located away from production areas?
Y	N	Are you able to isolate tanks or other containment units within RAS or other systems?
Y	N	Do you investigate causes of illness or disease with your aquatic health professional (e.g., testing or necropsy)?
Y	N	Do you promptly remove and dispose of any dead animals in a biosecure manner?
Y	N	Are signs posted informing personnel of tanks or units with disease or undergoing treatment?
Y	N	Are dead animals disposed of in a way that prevents access by wildlife, pests, or vermin?
Y	N	Do you manage waste products, shipping water and containers, and associated equipment to prevent cross-contamination of other production areas?
Y	N	Are farm personnel trained to limit stress when handling animals?
Y	N	Are farm personnel trained to recognize signs of illness or distress for species and age groups grown on the farm?
Y	N	Are farm personnel informed of who to contact on-site when signs of illness or distress are seen?
Y	N	Do you maintain thorough animal health and production records to monitor for subtle or emerging disease issues?

FOR MORE INFORMATION

Find additional resources on the [Aquaculture Farm Biosecurity website](#), including disease transmission pathway tip sheets, videos, biosecurity assessment questions, a biosecurity plan template, and farm biosecurity signs.



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Incoming Animals Tip Sheet · 2025 · Page 5