



RESEARCH  
PROGRAM ON  
Fish

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# WorldFish Biosecurity Check List

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Diseases are a threat to aquaculture production and profitability. Biosecurity is the establishment and implementation of a system of procedures to prevent the introduction of pathogens into a fish facility from outside the facility or into a section of the facility from another section in the same facility. Biosecurity consists of various, simple, sometimes zero-cost measures that will keep pathogens away from fish and keep fish away from pathogens. The movement of live aquatic animals has been responsible for the international spread of many serious fish diseases, often with devastating impacts on aquaculture. The genetically improved farmed tilapia (GIFT) is the flagship product of WorldFish. GIFT seeds are disseminated to farmers through a network of satellite breeding programs, multiplication centers and hatcheries. WorldFish is committed to promoting sound biosecurity in core breeding programs, satellite breeding facilities, multiplication centers, hatcheries, and farms

The purpose of this check list is to guide facility owners in the public and private sectors to: (1) undertake audits in a very systematic and structured way, (2) identify the gaps and constraints, (3) prioritise risks depending on the functional importance of the facility, and then (4) make practical and cost-effective decisions on interventions and investments to improve the biosecurity for their facility. Audit findings from a particular facility could be used to develop site specific SOPs and manuals. Undertaking self-audits and interventions for improvements will greatly enhance the ability of breeding programs, multiplication centers and hatcheries to supply pathogen free healthy stock (i.e. quality germ plasms, brood stocks, and seeds) to the tilapia industry.

The audit check list was developed by the CGIAR Research Program on Fish Agri-Food Systems (FISH) led by WorldFish. It was produced as part of the WorldFish better management practice (BMP) resources to support sustainable and responsible tilapia farming. The check list draws from information found in the public domain ([ref 1](#); [ref 2](#); [ref 3](#)) as well as WorldFish's own experiences and learnings from auditing its own breeding platforms in Malaysia, Egypt, Bangladesh and Myanmar.

## WorldFish Biosecurity check list

### for Tilapia core breeding program, satellite breeding centers, multiplication centers and hatcheries

Name of the facility: \_\_\_\_\_

Name of the facility owner, telephone, email: \_\_\_\_\_

Function of the facility: \_\_\_\_\_

Breeding program

Multiplication center

Other

Satellite breeding center

Hatchery

Address of the facility and GPS coordinates: \_\_\_\_\_

Map of the site (i.e. from google earth or a detailed annotated bird view drawing of the outdoor pond(s) or indoor hatchery with indications of the tanks, water inflow, outflow, water flow connectivity etc.): \_\_\_\_\_

Biosecurity measure	Finding(s)	Action(s)
<b>A. Facility location, surrounding area and water source</b>		
1. Presence of fish/shrimp farms/hatcheries nearby the site being audited (1 km radius)?		
2. Good quality public infrastructures (roads, reliable electricity, etc.)		
3. The biosecurity risk of the facility's water source has been considered and appropriate actions are taken to manage any identified risks (e.g. sufficient reservoir/water holding capacity to store and treat water before use)		
4. Infrastructure for decontamination of water is adequately monitored and maintained to ensure it remains effective.		
5. Water intake and outflows are separated to avoid cross-contamination.		
6. The biosecurity risk of a farm's water source has been considered and appropriate actions are taken to manage any identified risks.		

Biosecurity measure	Finding(s)	Action(s)
<b>B. Facility design/structure</b>		
7. The farm has a secure fenced perimeter or a well-defined boundary, establishing a clearly defined biosecurity buffer zone. Presence of entrances and exits to the site that can restrict vehicles and foot traffic. Those are locked during all non-visitor hours.		
8. Where practical, indicate type of facility (i.e. hatchery, grow out, nursery, etc.) and whether there clusters of holding systems that are epidemiologically separated.		
9. All production units (e.g. sheds, ponds, tanks, raceways etc.) have a unique and permanent identifier.		
<b>C. Administration</b>		
10. A staff member (with nominated backup person) is responsible for overseeing the biosecurity of the facility		
11. Periodic disease specific and general risk assessment are undertaken to ensure biosecurity measures adequately address risk of disease entry into the facility, disease spread within the facility and disease spread out of the facility		

Biosecurity measure	Finding(s)	Action(s)
12. All staffs working on the premise understand basic disease risks to the facility, the role of the facility biosecurity plan in managing disease risks and their responsibilities for its implementation, including reporting and responding appropriately to emergency disease incidents.		
13. Staff receive periodic training on aspects of the facility biosecurity plan relevant to their work and have ready access to the facility biosecurity plan and standard operating procedures (SOPs). Biosecurity is a core element of new staff induction and training.		
14. Financial resources are allocated to support all aspects of the facility's biosecurity plan including on-going operational costs and contingency funding arrangements to address emergency disease incidents.		
<b>D. Managing the routes of disease introduction and spread</b>		
<b>People</b>		
15. Staff and visitors access is managed (through access controls and signage) and the risk they present is assessed (e.g. visit of other sites, farms, hatcheries in the last 48h)		
16. A record (e.g. log book) is kept of all visitors/staff entering and leaving the premises.		

Biosecurity measure	Finding(s)	Action(s)
17. The facility has biosecurity rules that are explained to all visitors.		
18. Measures to prevent disease entry are applied to all persons entering and exiting the farm (e.g. dedicated changing areas, farm footwear and hand washing stations), and for persons moving between productions areas within the facility.		
19. Access to sensitive areas (e.g. broodstock holding facilities) is restricted.		
20. Production units (or epidemiologically compartmentalised clusters of units) are managed separately to reduce the risk of disease spread within the farm (e.g. use separate fish nets, water sources etc.). Staff are assigned to production units based on risks or <b>disinfection</b> procedures (e.g. hand washing and foot baths) are in place for moving between production units or clusters of units.		

Biosecurity measure	Finding(s)	Action(s)
21. If staff must work in multiple production units, healthy animals are visited first and <b>lower</b> health or diseased animals last, with appropriate cleaning and disinfection protocols followed between units.		
<b>Animals</b>		
22. Movement records are maintained for all animals moved onto the farm, moved between areas/units of potentially different biosecurity status within the facility and moved off site.		
23. Animals should only be introduced to the facility if they are of known health status and that status is of equal or better status than animals already present on the premise. Translocation approvals or permits are obtained if required by the receiving national and/or sub-national authority as per relevant jurisdictional requirements.		
24. If the health status of introduced animals is unknown (e.g. wild broodstock) the animals are epidemiologically isolated from animal populations already present on the premise in separate production units or dedicated quarantine facilities.		

Biosecurity measure	Finding(s)	Action(s)
25. If based on risk assessment, risks are found to be unacceptable, then newly introduced broodstock are isolated “quarantine” in order to produce high-health progeny to become broodstock		
26. Where feasible, treatment of quarantined animals is considered as preventive measure to mitigate disease risks (e.g. for external parasites). Treatments are conducted in accordance with regulatory requirements and SOPs.		
27. Movement of animals between different fish populations only occur following consideration of the disease risks and with a view to maintaining high health status.		
28. Measures are in place to prevent escape of aquatic animals.		
29. Predatory or scavenging animal populations are controlled or excluded from production facilities (e.g. net, fence)		
30. All production units have features that prevent entry of wild animals and escape of farmed animals.		

Biosecurity measure	Finding(s)	Action(s)
31. There are measures to prevent entry of aquatic animals in the water supply (e.g. mesh, filtration system)		
32. There are measures to limit entry of animals to, or aggregation near production units.		
33. Sick or dead animals are removed promptly from production units and safely disposed.		
<b>Equipment/Vehicles/Vessels</b>		
34. Equipment, vehicles or vessels brought onto the farm are assessed for biosecurity risk.		
35. Procedures and infrastructure is in place to clean and disinfect equipment, vehicles or vessels, as per identified risk.		
36. The farm has designated delivery and loading areas.		

Biosecurity measure	Finding(s)	Action(s)
37. Separate equipment is assigned for use in production units of different health status. Where equipment must be used in multiple production units it is cleaned and disinfected prior to movement between units.		
<b>Waste</b>		
38. Waste products (e.g. dead animals, water and effluent) are assessed to determine potential biosecurity risk to the production facility, neighbouring farms and the environment.		
39. Containment, handling and disposal of waste products minimise identified disease transmission risks.		
<b>Feeds</b>		
40. The biosecurity risk of feeds (i.e. commercial or homemade) is considered and appropriate actions taken to manage any identified risks.		
41. Manufactured feeds are used wherever possible in preference to live or unprocessed feeds.		

Biosecurity measure	Finding(s)	Action(s)
<b>E. Health monitoring and emergency response</b>		
<p>42. There is a health SOP for monitoring schedule. Health monitoring records are kept for different animal populations within the production facility and include details of any sickness, abnormal behaviours, clinical signs, mortality, treatments used, disease testing (diagnostic results), environmental information, as well as feeding/growth rates and any other relevant information.</p>		
<p>43. The facility has adequately resourced capability and capacity for testing/diagnostics or ready access to external testing/diagnostic services to support disease and water quality testing needs.</p>		
<p>44. There is a system of on-going surveillance and monitoring to underpin the issuing of health certification to accompany shipments of live fish leaving the facility (including for specific diseases of concern, based on the production facility/compartment freedom or batch freedom). Note: Health certification under the authority of the competent authority should be considered, regardless of importing country/facility requirements.</p>		
<p>45. If animal populations become sick, precautions are taken to avoid contact with other facility fish populations until the cause is known and it is safe to do so.</p>		

Biosecurity measure	Finding(s)	Action(s)
46. There are on-site facility procedures for responding to a suspected emergency biosecurity incident that include reporting, containment, sampling, diagnostic testing, stock destruction/emergency harvest, safe disposal of dead animals, record keeping and trace back and trace forward, decontamination of holding facilities, water and equipment.		
47. All farm staff understand the facility's emergency procedures and their own role in an emergency.		
<b>F. Documentation</b>		
48. The facility's biosecurity plan and associated SOPs are documented.		
49. SOPs: At a minimum, there are SOPs or a biosecurity manual that covers: <ul style="list-style-type: none"> <li>• Routine fish inspection</li> <li>• Routine fish sampling and testing</li> <li>• Routine water sampling and testing</li> <li>• Routine disinfection (water/tanks/ponds, people/hands/boots, equipment, vehicles, pumps/filters)</li> <li>• Routine disposal of animal/waste</li> <li>• Emergency response (including, sampling, testing, disinfection, animal disposal, decision making and communications).</li> </ul>		

Biosecurity measure	Finding(s)	Action(s)
<b>G. Review and audit</b>		
50. There is a schedule and resources for routine review of the biosecurity plan and extraordinary reviews in the event of a potential or actual biosecurity failure.		
51. All inputs to the production site (e.g. animals, people, water, equipment and vehicles) and between zones within the facility are assessed (and periodically re-assessed) for potential biosecurity risks.		
52. There is an annual (or biannual) audit of the production facility biosecurity plan (and effective record keeping of formal audits) to ensure the plan is being implemented effectively. This includes a periodic disease specific risk assessment to ensure biosecurity measures adequately address risk of disease entry into the facility, disease spread within the facility and disease spread out of the facility, including to receiving countries and other production facilities.		
53. There is periodic review of emergency response arrangements using simulation exercises conducted in conjunction with the local competent authority.		

**Auditor:**

**On behalf of the production facility:**

Signature: \_\_\_\_\_

Signature: \_\_\_\_\_

Name: \_\_\_\_\_

Name: \_\_\_\_\_

Position: \_\_\_\_\_

Position: \_\_\_\_\_

Date: \_\_\_\_\_

Date: \_\_\_\_\_

**References**

Ref 1: [http://www.agriculture.gov.au/SiteCollection documents/fisheries/aquaculture/aquaculture-farm-biosecurity-plan.pdf](http://www.agriculture.gov.au/SiteCollection%20documents/fisheries/aquaculture/aquaculture-farm-biosecurity-plan.pdf)

Ref 2: <https://mpigovtnz.cwp.govt.nz/dmsdocument/13293/loggedIn>

Ref 3: [https://www.gov.uk/government/uploads/system/uploads/attachment\\_data/file/278580/ Shellfish\\_biosecurity\\_measures\\_plan.pdf](https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/278580/Shellfish_biosecurity_measures_plan.pdf)

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## About FISH

The CGIAR Research Program on Fish Agri-Food Systems (FISH) is a multidisciplinary research program. Designed in collaboration with research partners, beneficiaries and stakeholders, FISH develops and implements research innovations that optimize the individual and joint contributions of aquaculture and small-scale fisheries to reducing poverty, improving food and nutrition security and sustaining the underlying natural resources and ecosystems services upon which both depend. The program is led by WorldFish, a member of the CGIAR Consortium. CGIAR is a global research partnership for a food secure future.

For more information, please visit [fish.cgiar.org](http://fish.cgiar.org)