

FISH DISEASE AND HEALTH MANAGEMENT

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In terms of the number and variety of species, aquaculture is developing rapidly. The current trend development direction of aquaculture is the intensification and commercialization of aquaculture produce. As in other agricultural sectors, the possibility of major disease problems varies with Aquaculture activities have intensified and expanded. The disease is considered to be the main constrain of the cultivation of many aquatic species prevents the economic and social development of many nations. Many diseases such as epizootic ulcerative syndrome(EUS), skin erosion, gill damage, tail and fin rot, etc., Are very common in farmed fish. In the pond aquaculture system, the stocking density is high, and the feed's irregular supply is extremely prone to disease outbreaks. Most pond fish farmers do not have a good understanding of fish health and disease issues in the system. Many fish diseases are caused by environmental damage, and they can be prevented through proper management.

Fish diseases can be separated into 4 general sorts, including bacterial infections, fungal infections, parasite or protozoan infections, as well as physical diseases and wounds.

- **Bacterial diseases:** Bacterial diseases usually appear as red streaks or spots or swelling on the abdomen or eyes. These are best treated with antibiotics such as penicillin, amoxicillin, or Erythromycin.
- **Fungal diseases:** Common fungal infections usually look like gray or white fluffy patches.
- **Parasitic disease:** The most common parasitic disease called "Ich" can be treated most effectively by the appropriate dose of copper or malachite green. Most treatments use copper as an ingredient. Many water treatments (such as "Aquari-Sol") will also contain copper as an ingredient. If treated using antibiotics or copper, remember to remove all carbon from the filter system.

- **Physical discomfort:** Physical discomfort is usually caused by the environment. Poor quality water conditions may cause the fish to panting, not eat, jump out of the fish tank, etc. Tank teammates problems can cause fins to be bitten and bitten.

Type of Fish Diseases

Bacterial

- Fin Rot
- Pop-Eye
- Cloudy Eye
- External Infections
- Fish TB
- Dropsy
- Septicemia
- Swim Bladder Disease
- Enteric Red Mouth

Parasitic

- Argulus
- Anchor Worm
- Black Spot - Black Ick
- Ergasilus
- Flukes
- Nematoda
- Leeches
- Uronemamarinum

Protozoan

- Velvet or Rust
- Marine Velvet
- Brooklynella/Clownfish Disease
- Costia
- Hexamita
- Ich - White Spot
- Marine Ich - Crypt/Marine White Spot
- Neon Tetra Disease
- Glugea and Henneguya
- Chilodonella

Fungal

- Fungus
- Ichthyosporidium

Viral

- Herpesvirus disease
- Epitheliomacpapillosum (Fish Pox)
- Infectious Hematopoietic Necrosis (IHN)
- Viral Hemorrhagic septicemia
- Spring Viremia of Carp (SVC) and
- Swim Bladder Infection virus (SBI)

Non-infectious

- Congenital Abnormalities
- Injuries
- Constipation
- Tumours
- Head and Lateral line Erosion 'Hole-in-the-head' Disease
- Eye Problems
- Swim-bladder Disease

Health is a limiting factor in aquaculture

The current trend of aquaculture development is the intensification and commercialization of aquatic products. Like other agricultural sectors, the possibility of major diseases high with the strengthening and expansion of aquaculture activities. More and more problems have occurred due to viruses, bacteria, fungi, parasites, and other undiagnosed and emerging pathogens. The disease has now become a major obstacle. This situation can be attributed to various multifaceted and highly interconnected factors such as the increasing globalization of trade in live aquatic animals and their products; this strengthen aquaculture by planting fish, after larvae, fry and fry translocation, fish species development, and expansion of ornamental fish trade; strengthening of the ocean stocking through aquatic animals raised in hatcheries; and in coastal areas; misunderstandings and misuse of specific pathogen-free (SPF) populations (eg. shrimp); unexpected negative interactions between farmed and wild fish populations; poor or lack of effective biosecurity measures; slow

awareness of emerging diseases; climate change; all other human-mediated movements
aquaculture commodities.

However, once the pathogen or disease pathogen is introduced and established as a natural in the environment, there is little or no possibility of treatment or eradication. Although the consequences "Trickle" infections from wild to farmed populations have predictable consequences due to accessibility. The consequences of host culture spread to wild populations under breeding conditions are hard to predict.

Fish Health Management

This requirement recognizes that it applies to two related aspects of fish health management for aquaculture operations, these are:

- Trans-boundary movement of fry, fingerlings, and market size fish should be carried out in ways to reduce the risk of transmission of fish pathogens; and
- Aquaculture farms should adopt effective farm and fish health management support health measures and vaccines.

Trans-boundary diseases are highly contagious and can spread quickly across national borders. Cause serious socio-economic and public health consequences. Expansion of fish seed trade for farming and the live reef food fish trade without proper quarantine and health measures, Increase the risk of pathogen transmission. Provisions of the FAO technical guidelines for aquaculture development, the transfer of eggs, fingerlings, and adults between watersheds or large bodies of water should be avoided. Introduced species are usually preferred because they attract higher prices and have expensive export potential.

Where possible, governments should assist in ensuring that the sale of fish seeds and parents are not disease:

- Requirement to maintain the breeding and disease history of broodstock and seeds transfer or export in the country.
- Require the use of approved chemicals and drug use before and during seed transportation and marketable fish and develop guidelines for the certification of transboundary seed movement.

Most disease outbreaks occur within the first 2 to 12 weeks after the initial placement of the cage. And it depends on the condition of the arriving fish, the size of the fish, and the species involved. Regular monitoring of the health of farmed fish is important for effective disease prevention caused by infectious microorganisms or stress and early detection of health problems. Main areas that need to be considered for disease prevention and control include:

- Poor handling and transportation techniques can cause stress, reduce water quality and cause trauma
- Transmission of diseases during transportation of contaminated water
- The spread of diseases caused by breeding multiple species from different places close contact and regularly expose newly introduced larvae to existing pathogens
In the cage
- Poor feed handling and storage of garbage fish or artificial feed

The socio-economic impact of high costs on small-scale aquaculture nursery operators, the use of disease prevention and treatment plans should be considered for higher benefits. Governments, non-governmental organizations, and regional institutions should promote, outreach and technical support activities have increased farmer's, and aquaculture industry's awareness of aquaculture health management issues include:

- Technical training for farm managers and workers, including monitoring and early detection of diseases in fish and measures to be taken once diseased fish are found, determine
- Provide diagnostic services to identify pathogens that are already present in pathogens the cultivation environment and the method of submitting specimens for inspection;
- Common diseases of fishes and their prevention and treatment.

The prevention of routine diseases should be included in the transportation at the same time packing fish seeds for new seed/fish farm management activities. The main principles of disease treatment and control are:

- Establish an accurate diagnosis;
- Choose appropriate environmentally responsible treatment; and

- Evaluate management practices and identify areas that are critical to preventing the future break out.

In terms of risks to human health, any chemicals or drugs used should be acceptable. The environment and the final market should be easily available and, importantly, must be used correctly.

Responsible Approach

- Trans-boundary movement of fry, fingerlings, and fish, market-scale fish should be conducted in a way that minimizes the risk of transmission of fish pathogens.
- Use of Existing International Code of Practice dealing with trans-boundary movement and the use of introduced species in aquaculture used as a framework for the formulation of regulations related to tropical latitudes and species. The existing database should be used to identify and determine risks from imported species.
- Reproductive history and disease history should maintain aquaculture stocks to promote disease-free breeding stocks and seed exchange in domestic and export.
- The aquaculture farm should use eggs or seeds free of specific pathogens (including eggs supplied to the backyard nursery)
- Governments, NGOs, and Regional agencies should promote outreach, extension, and technical support activities in order to raise farmer's and aquaculture industry's awareness of sanitation management issues, including Technical training, diagnostic services, and disease prevention and treatment.
- Fishermen, exporters, and farms should adopt effective fish health management measures to ensure fish health.

Aquaculture farms should take effective preventive measures to prevent, treat and control diseases through the following methods:

- Reduce the pressure that may cause injury during handling and transportation,
- Implement good handling and storage practices for trash fish and artificial feed
- Establish effective and accurate diagnostic procedures
- Choose treatments that meet acceptable environmental and human health risks
- Evaluate management practices and identify key prevention areas

- Recognize the socio-economic impact: Adopting disease prevention, and treatment plans should offset the potential higher benefits.

Good Aquaculture Health Management Practices

A health management plan has several requirements and must cover all aquaculture industries' activities. At the production level, the requirements for a healthy environment include strong health seeds and young fish, proper nutrition, proper waste management, optimal water quality, and monitor regularly. On the farm site, keeping good records is essential. It should cover all aspects of farm operations. Farmers should be trained to understand the importance and value of this approach. Information that determines the course or nature of a disease outbreak can provide accurate and fast information to diagnose and make wise management decisions for intervention and control. Keeping records essential to aquaculture and can go a long way in supporting effective health and productivity management work.

A good farm configuration file should contain the following information:

- Conduct treatment;
- Clinical signs (behavior, appearance);
- Farm layout (inflow, outflow, pond connection);
- Breeding animals (species, number, origin, age group);
- Yield (per pond, each cage, each farm, normal survival rate);
- Nutrition (live food, processed food, source, feeding method);
- Management practices (continuous stocking, closed operation, stocking density);
- Mortality data (affected locations, cages, ponds and approximate percentages and Numbers); and
- Unusual events (abnormal weather changes, higher-than-average mortality rates, lower-than-average yields, Land use activities, runoff, overflow, abnormal growth, spawning events).

In addition to keeping records regularly, it should also be continuously monitored and updated Information (new animals in the farm, replacement of feed, connection of new ponds and new farms upstream).

Conclusion

Solving health problems through active planning and passive planning has become a major requirement for aquaculture production and product trade. Asia-Pacific region's current strategy emphasizes responsible health management to minimize the risk of disease invasion; it is brought about by the movement of live aquatic animals and their products. The risk of major disease invasion and emerging diseases will continue to threaten the sector unless appropriate and effectively implemented health management measures maintain; the government and the private sector will face more costs in terms of production losses and the effort required. Control and eradicate diseases, funds that could have been better used to prevent the entry of diseases system. Focus on prevention, better management practices, and maintaining healthy fish may be more important than paying attention to why the fish is sick. Health management is a shared responsibility, and the contribution of each stakeholder is essential to the health management process.

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