



## DISEASE MANAGEMENT IN AQUACULTURE

Diseases pose a major threat to aquaculture. A loss to the tune of 10-15% of production cost may be incurred due to disease problems. Hence, it is essential to take care of ponds and hatcheries to prevent the disease spread. Here we discuss on important diseases of fish, their diagnosis based of gross clinical signs and prevention, treatment and control measures from the farmers' point of view.

Mortality in fish often is noticed due to poor management of ponds and hatcheries. The pond environment, particularly the water quality in ponds and hatcheries play crucial role in causing mortality and triggering infection.

Hence, to prevent any disease or mortality problems, the following water quality parameters should be maintained in the mentioned range : pH : 7.5 to 8.5, dissolved oxygen: > 5.0 ppm, temperature: 25-30 °C, total alkalinity: 75-175 ppm, total hardness: 75-150 ppm.

Ponds need to be limed and fertilized at regular intervals to maintain optimum water quality and load of fish food organisms. The common management problems that lead to mass or large scale mortality in farms and their preventive measures are given hereunder. Further, the fish farmers are advised to contact fish health experts once any disease signs are noticed in a pond or mortality recorded, if any, to prevent further spread of infection to nearby ponds.

The major disease problems that occurs in aquaculture ponds are parasitic, fungal, and bacterial in origin. Important disease problems that generally encounters are argulosis, lerneasis, protozoan diseases caused by *Trichodina*, *Costia*, *Ichthyobodo*, Myxosporidean diseases, gill flukes such as *Dactylogyrus*, and *Gyrodactylus*; fungal diseases such as saproleginiasis, branchiomycosis, Epizootic Ulcerative Syndrome; bacterial diseases such as aeromoniasis (fin and tail rot)/red disease, edwardsiellosis and *Columnaris*. Besides these, algal blooms is a major problem that depletes the dissolved oxygen in the ponds.

### **Important indicators of disease or infection in a fish pond**

The following common symptoms are mostly seen in diseased fish due to different disease. Loss of appetite, poor growth of fish, air gulping and surfacing, flashing movement of fish and rubbing against hard objects, floating on the water surface with different abnormal postures, fin and tail rots, slow movement of fish in a pond, haemorrhages on body and/or gills

## Do's and Don'ts (Prevention is better than cure)

- Maintain optimum water quality
- Proper liming and fertilization
- Additional liming is beneficial in terms of disinfecting pond environment
- Proper stocking density
- Provision of balanced feed
- Quarterly sampling (look for external parasites, gill colouration and problems, red patches, ulcers, eye problems, scale or fin erosions, abnormal body shape and size, white cysts on body surface or gill surface, etc)
- Avoid foul smell in pond water
- Remove unwanted fish and snails
- Intermittent drying followed by disinfection of ponds between culture operations
- Stocking of quality or certified seeds in ponds
- If stocking yearlings, then collect the seed from already treated ponds with ectoparasiticides
- Stock the ponds when the water quality is good and pond having adequate fish food organisms
- Remove the infected or diseased fish during sampling and bring it to the notice of fish health workers
- Intermittent examination of water quality of the ponds during culture
- Use good quality water in hatcheries
- Remove aquatic weeds, and avoid blooms
- Use always sun-dried nets before sampling
- Don't use same net or equipments after being used in infected ponds
- Avoid entry of birds, dogs and other fish eating animals to pond premises
- Use bamboo poles to look for laying of ectoparasite eggs to undertake immediate treatment, if noticed
- Dry the weeds, snails after removal from one pond
- Burn or chlorinate the dead fish at a distant place from the pond dykes
- Don't discard dead fish on pond dykes
- Avoid plant leaves falling into the ponds
- Send the diseased fish samples (in live condition, if possible, in polythene water bags/frozen freshly dead fish) to the diagnostic laboratory for further testing and guidance

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