Unit XII

FISH HEALTH MANAGEMENT

Introduction

- A health management program and a disease emergency plan are essential documents on farms. As many farmers have recognized, the frequency and severity of disease outbreaks in ponds seem to depend on a number of factors
- The first point to appreciate is that not all diseases are infectious. For example, some are caused by toxins, others by nutritional imbalances.
- Infectious disease outbreaks in ponds depend on particular interactions between the host, the pathogen and the pond environment

Principles of fish health management

- Minimizing stress in cultivated fishes
- Confinement of disease outbreak to affected ponds
- Minimizing losses from disease outbreak.

General preventive measures

Increasing the internal resistance of fish is important in the prevention of diseases.

- Selection of healthy fish seeds.
- Proper density and rational culture.
- Proper pond management
- Qualitatively uniform ratio and quality food
- Good water quality
- Prevention of fish body from injury

Common symptoms of diseases

- Unusual movements
- Abnormal and unhealthy look
- Discoloration
- Film like covering on the skin
- Swelling or spots on the skin
- Pale gills, white and red spot on gills
- Excess slime secretion

Sources of infectious diseases

- **Primary source**
  - **Sick fish serves as a primary infectious source**
  - **The pathogen infects through direct contact or by discharge of disease causing agents into the water.**
- **Secondary source**
  - **Water coming from diseased ponds, contaminated silt, feeds and gears.**

Natural resistance of fish to infectious diseases

- Surface mucous membrane of fish Lysozyme secreted from the cell can kill bacteria.

- Digestive enzymes which can kill pathogens.

- The phagocytotic function of white blood cells, Lymphoid cells, reticulo-endothelial cells of spleen, liver and blood vessel can eliminate foreign body as well as pathogenic micro-organisms.

- Blood of fish contains bactericidin which can eradicate all kinds of pathogenic bacteria.

Type of diseases

Parasitic

Bacteria, fungi, protozoans, worms, leeches and copepods

Non-parasitic

Disorders associated with nutritional deficiency and sudden changes in abiotic and biotic factors

Common symptoms are

(a) Changes from normal behaviour,
(b) Signs of reduced vitality,
(c) Lack of appetite and failure to feed,
(d) Presence of lesions or sores.

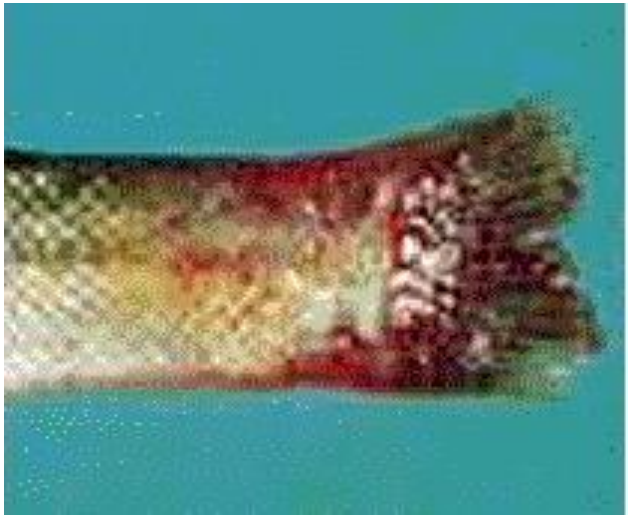
BACTERIAL DISEASES

Fin and tail rot

Causative organisms: *Aeromonas, Pseudomonas* and *Vibrio*

Symptoms: White line on the margin of the fin; fin rays become brittle and start breaking.

Treatments: 1 minute dip treatment in 500ppm copper sulphate solution.



Dropsy

Causative organisms: *Pseudomonas punctata*

Symptoms: Accumulation of fluid inside the body cavity; scale protrusion; exophathalmic condition.

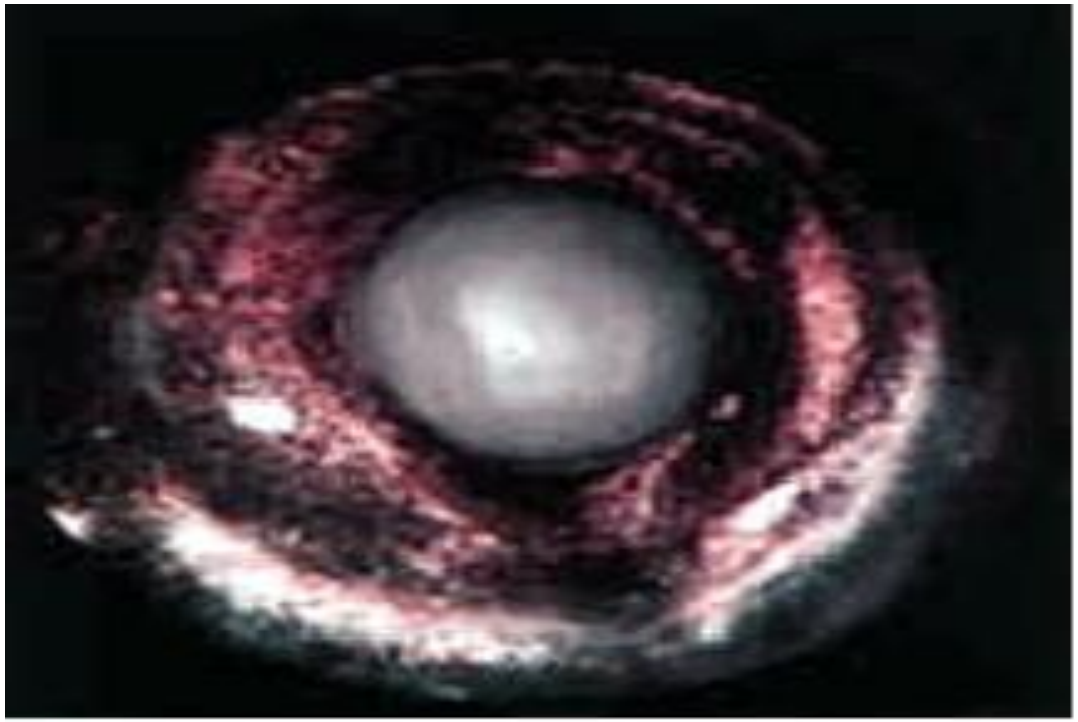
Treatments: Dip treatment in 5ppm potassium permanganate solution for 2 minutes.

Eye disease

Causative organisms: *Aeromonas liquifaciens*

Symptoms: Cornea of eye becomes vascularised and later becomes opaque; eye ball gets decayed.

Treatments: Chloromycetin (8-10 mg/litre) bath for 1 hour for 2-3 days.



FUNGAL DISSEASES

Water – mold disease (Saprolegniasis)

Causative organisms: *Saprolegnia parasitica*

Symptoms: Dies after ulceration or exfoliation of skin followed by haemorrhage, blindness, tufts of white hair like out-growth in the affected region.

Treatments: Dip treatment for 3 seconds in 1:10,000 solution of malachite green or for 5-10 minutes in 3% common salt solution or potassium permanganate.

PROTOZOANS

Ichthyophthiriasis (White-spot disease)

Causative organisms: *Ichthyophthirius multifilis*

Symptoms: Small whitish-cysts of about 1mm diameter on the skin, gills and fins.

Treatments: 5 days bathing in 2ppm methylene blue, hourly dip treatment in 1:5,000 formalin solution for 7-10 days.

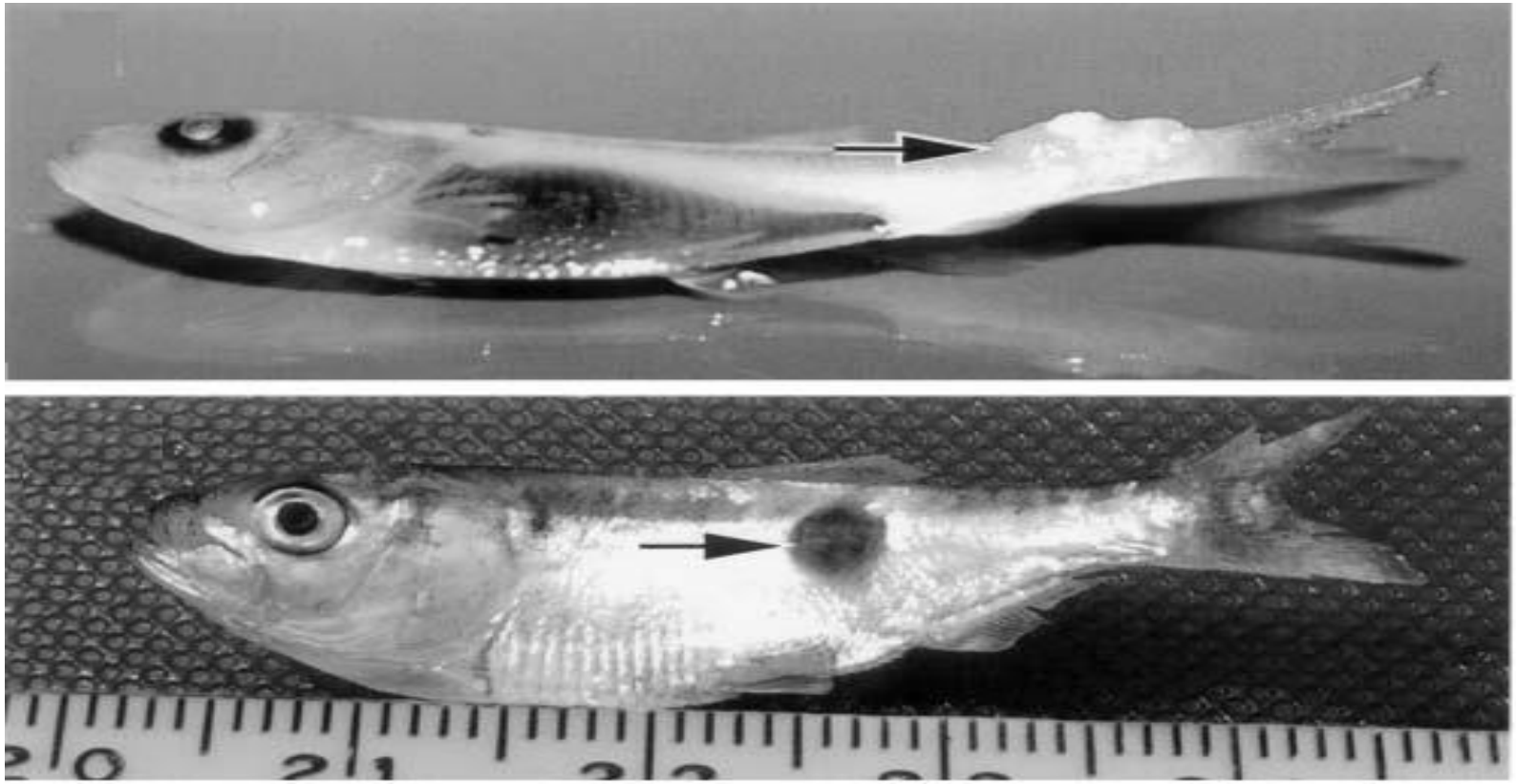
Ichthyophthirius multifilis

Boil disease

Causative organisms: *Myxobolus pfeifferi*

Symptoms: Large boils varying from the size of a nut to that of a hen's egg on several parts of body.

Treatments: Bath in 3% common salt solution or in 1:2,500 formalin solution for 10 minutes.

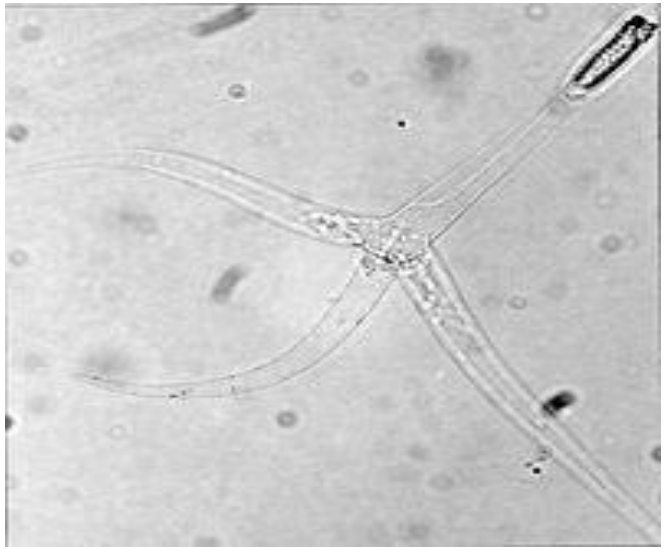


Whirling disease

Causative organisms: *Myxobolus cerebrails*

Symptoms: Caudal bend, deformity of the oral region and blackening of tail
region.

Treatments: Destroy all infected fish by applying quicklime (pond disinfectant) at the rate of 2t/ha.



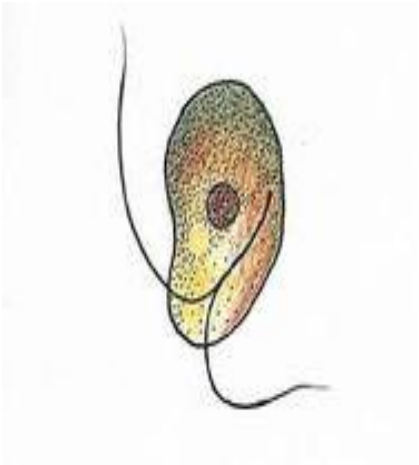
Myxobolus cerebralis

Costiasis

Causative organisms: *Costia necatrix*

Symptoms: Bluish-coating on the skin, lesions as irregular patches.

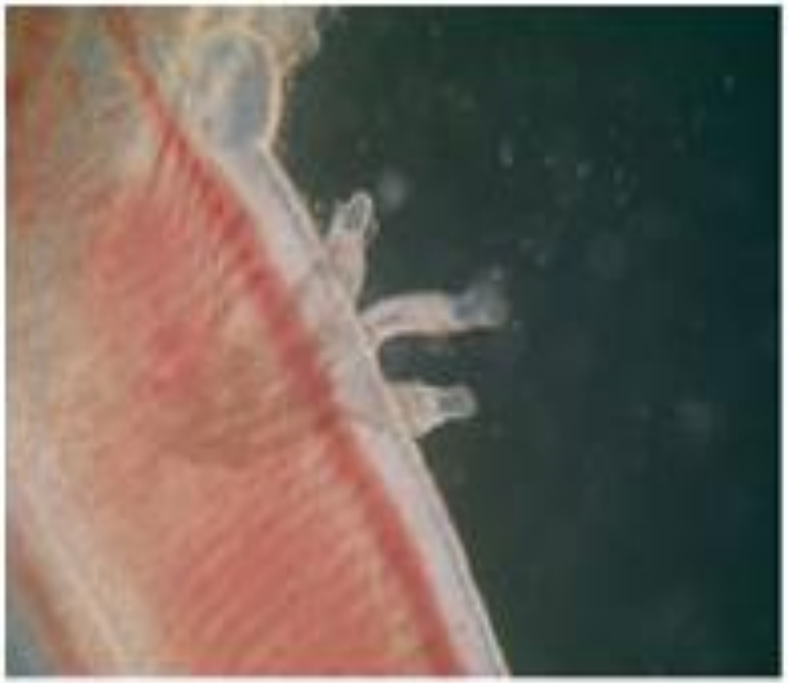
Treatments: Bath in 3% common salt solution or in 1:2,500 formalin solution for 10 minutes.



TREMATODES

Gyrodactylosis

Causative organisms: *Gyrodactylus* sp.
Symptoms: Fading of colours, drooping of scales, peeling of skin.
Treatments: Dip treatment in 5% common salt solution or in 1:5,000 formalin solution for 5 minutes.

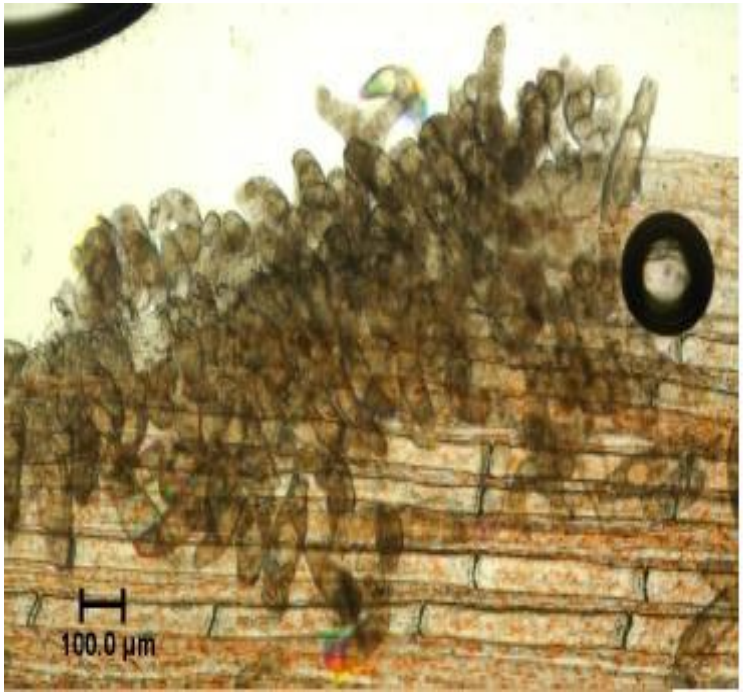


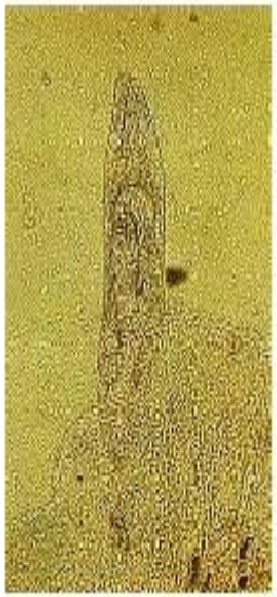
Dactylogyrosis

Causative organisms: *Dactylogyrus* sp.

Symptoms: Fading of colours, drooping of scales, peeling of skin.

Treatments: Dip treatment in 5% common salt solution or in 1:5,000 formalin solution for 5 minutes.





Diplostomiasis (Black-spot disease)

Causative organisms: *Diplostomulum* sp.

Symptoms: Small black nodules of about 1-5mm diameter in the affected region.

Treatments: Dip treatment in 3:1,00,000 picric acid for 1 hour, Di-*n*-butyl tin oxide at the rate of 250mg/kg fish.

CESTODES

Ligulosis

Causative organisms: *Ligula* sp.

Symptoms: Dull, sickly and with parts of alimentary canal swollen or completerly choked by cestode cysts or worms.

Treatments: Dip treatment in 3:1,00,000 Picric acid for 1 hour, Di-*n-butyl* tin oxide at the rate of 250mg/kg fish.

NEMATODES

Causative organisms: *Philometra* sp., *Camallanus* sp.

Symptoms: Dull, sickly and with parts of alimentary canal swollen or completerly choked by round worms.

Treatments: Dip treatment in 3:1,00,000 Picric acid for 1 hour, Di-*n-butyl* tin oxide at the rate of 250mg/kg fish.

ACANTHOCEPHALA
Causative organisms: *Acanthogyrus* sp.
Symptoms: yellowish white fibro epithelioma on lip, skin and fin
Treatments: Quick lime

HIRUDINEA
Causative organisms: *Hemiclepsis* sp.
Symptoms: Abnormal movements of the fish due to irritation as the parasites feed on the blood of host.
Treatments: Dip treatment in 1:1,00,000 solution of glacial acetic acid

COPEPODS

Disease : -

Causative organisms: *Argulus* sp.,., *Lernea* sp.,

Symptoms: Loss of scales and presence of red spots, damage of gills.

Treatments: Half an hour treatment in 500ppm formalin solution, mechanical removal by forceps followed by a bath in weak potassium permanganate solution for 2-3 minutes, bath in 1:1,000 glacial acetic acid solution for 5 minutes and subsequent bath in 1% common salt solution for 1 hour, pond may be disinfected by applying Lindane at the rate of 8ml/1,000 litre

Argulus

Lernea

VIRAL DISEASES:

Disease : - Lymphocystis

Causative organisms : *Lymphocystis* spp. (DNA Iridovirus).

Symptoms: Lethargy, may affect balance and swimming

Control if along the lateral line.

Treatment : Frequent water changes and reduction of ammonia and nitrites in water may reduce stress to help the fish battle the infection and shrink tumors on its own.

Disease: Infectious Pancreatic Necrosis-(IPN)
Causative organisms: IPN virus
Symptoms: Darker in color, tail chasing, spiral swimming behaviour
Treatment: uncontaminated water supply, providing optimum feed

Miscellaneous Diseases

Gas bubble disease

•When nitrogen of the water is in saturation

•Gas bubble disease may result and fish fry particularly, die in large numbers.

•Fish affected by this disease often swim at an angle of 45^{o} with head pointing down.

•Other symptoms are the presence of bubbles beneath the skin, on fins, around eyes, in stomach and intestine or in blood capillaries