

IV SEMESTER
Course No.: 9 - Fish Health Management
credits :3

Course outcomes:

1. Provide students with knowledge about fish diseases and pathological aspects of diseases.
2. Learn about Fungal, Viral and Bacterial diseases of finfish.
3. Gain knowledge of Nutritional deficiency related diseases and antibiotic and chemotherapeutics.
4. Understand and learn the importance of diagnostic tools in identification of diseases and application and development of vaccines.

UNIT I: Pathology and parasitology

1-1 Introduction to fish diseases –Definition and categories of diseases – Disease and environment

1-2 Disturbance in cell structure – changes in cell metabolism, progressive and retrogressive tissue changes, types of degeneration, infiltration, necrosis, cell death and causes

1-3 Atrophy, hypertrophy, neoplasms, inflammation, healing and repair

UNIT II: Fungal and viral Diseases of fin fish.

2-1 Fungal diseases (both of shell and finfish) – Saprolegniosis, brachiomycosis, ichthyophorus

diseases – Lagenidium diseases – Fusarium disease, prevention and therapy

2-2 Viral diseases – Emerging viral diseases in fish, haemorrhagic septicemia, spring viremia of carps, infectious hematopoietic necrosis in trout, infectious pancreatic necrosis in

salmonids, swim-bladder inflammation in cyprinids, channel cat fish viral disease, prevention and therapy

UNIT III: bacterial Diseases of fin fish.

2-3 Bacterial diseases – Emerging bacterial diseases, aeromonas, pseudomonas and vibrio infections, columnaris, furunculosis, epizootic ulcerative syndrome, infectious abdominal dropsy, bacterial gill disease, enteric red mouth, bacterial kidney disease, proliferative kidney disease, prevention and therapy

UNIT IV: Protozoan Diseases of fin fish.

Protozoan diseases: Ichthyophthiriasis(White spot Disease), Costiasis, Whirling disease

UNIT V: Nutritional diseases

4-1 Nutritional pathology – lipid liver degeneration, Vitamin and mineral deficiency diseases. Aflatoxin and dinoflagellates.

4-2 Antibiotic and chemotherapeutics. Nutritional cataract. Genetically and environmentally induced diseases.

IV SEMESTER
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1. Enumeration of Bacteria by TPC Method
2. Enumeration of total Coli forms
3. Observation of gross pathology and external lesions of fish with reference to the common diseases in aquaculture
4. Examination of pathological changes in gills and gut lumen, lymphoid organ, muscles and nerves of fish
5. Collection, processing and analysis of data for epidemiological investigations of viral diseases
6. Bacterial pathogens – isolation, culture and characterization
7. Identification of parasites in fishes: Protozoan, Helminths, Crustaceans
8. Estimation of dose, calculation of concentration, methods of administration of various chemotherapeutics to fish and shell fish
9. Estimation of antibiotics used in aquaculture practices

PRESCRIBED BOOK(S):

1. Shaperclaus W. 1991 Fish Diseases- Vol.I & II. Oxonian Press Pvt.ltd
2. Roberts RJ 1989. Fish pathology. Bailliere Tindall, New York
3. Lydia Brown 1993. Aquaculture for veterinarians- fish husbandry and medicine. Pergamon Press. Oxford

REFERENCES:

1. Shankar KM & Mohan CV. 2002. Fish and Shellfish Health Management. UNESCO Publ. Sindermann CJ. 1990
2. Walker P & Subasinghe RP. (Eds.). 2005 Principal Diseases of Marine Fish and Shellfish. Vols. I, II. 2nd Ed. Academic Press
3. DNA Based Molecular Diagnostic Techniques: Research Needs for Standardization and Validation of the Detection of Aquatic Animal Pathogens and Diseases. FAO Publ. Wedmeyer
- G, Meyer FP & Smith L. 1999.
4. Bullock G et.al., 1972 Bacterial diseases of fishes. TFH publications, New Jersey
5. Post G 1987. Text book of Fish Health. TFH publications, New Jersey
6. Johnson SK 1995. Handbook of shrimp diseases. Texas A & M University, Texas