

COURSE 6A: SUSTAINABLE AQUACULTURE MANAGEMENT

Theory

Credits:3

3 hrs/week

LEARNING OUTCOMES:

Students at the successful completion of this course will be able to

- Evaluate the present status of aquaculture at the Global level and National level
- Classify different types of ponds used in aquaculture
- Demonstrate induced breeding of carps
- Acquire critical knowledge on commercial importance of shrimps
- Identify fin and shellfish diseases

SYLLABUS:

Unit:1

Present status of Aquaculture—Global and National scenario

Major cultivable species for aquaculture: freshwater, brackish water and marine.

Traditional, extensive, modified extensive, semi-intensive and intensive cultures of fish and shrimp.

Design and construction of fish and shrimp farms

Unit:2

Functional classification of ponds—headpond, hatchery, nursery ponds

Functional classification of ponds—rearing, production, stocking and quarantine ponds

Need of fertilizer and manure application in culture ponds

Physio-chemical conditions of soil and water optimum for culture (Temperature, depth, turbidity, light, water, PH, BOD, CO₂ and nutrients)

Unit:3

Induced breeding in fishes

Culture of Indian major carps: Pre-stocking management (Dewatering, drying, ploughing/desilting; Predators, weeds and algal blooms and their control, Liming and fertilization)

Culture of Indian major carps—Stocking management

Culture of Indian major carps—post-stocking management

Unit:4

Commercial importance of shrimp & prawn

Macrobrachium rosenbergii—biology, seed production.

Culture of *L. vannamei*—hatchery technology and culture practices

Mixed culture of fish and prawns

Unit:5

Viral diseases of fin fish & shell fish

Fungal diseases of fin & shell fish

Bacterial diseases of fin fish & shell fish

Prophylaxis in aquaculture

REFERENCES:

1. PillayTVR&M.A.Dill,1979.AdvancesinAquaculture. FishingNewsBooksLtd.,London
2. StickneyRR 1979. Principles of Warm WaterAquaculture. John Wiley&SonsInc.1981
3. Boyd CE 1982. Water QualityManagement for Pond Fish Culture. Elsevier ScientificPublishing Company.
4. Bose AN et.al. 1991. Costal Aquaculture Engineering. Oxford & IBH Publishing CompanyPvt. Ltd.

Webresources:

5. http://www.fao.org/fishery/docs/CDrom/FAO_Training/FAO_Training/General/x6708e/x6708e06.htm
6. http://aquaticcommons.org/1666/1/Better-Practice3_opt.pdf
7. <https://www.notesonzoology.com/india/fishery/fish-diseases-symptoms-and-control-fishery/871>

COURSE14A:SUSTAINABLEAQUACULTUREMANAGEMENT

Practical _____ Credits:1 _____ 2 hrs/week _____

LEARNINGOUTCOMES:

Onsuccessfulcompletion ofthispracticalcourse,student shall beableto:

- Identifythecharactersof Freshwatercultivablespecies
- Estimatephysicochemicalcharacteristicsofwaterusedforaquaculture
- Examinethediseasesoffinandshellfish
- Suggestmeasurestopreventdiseasesinaquaculture

SYLLABUS:

- a. Fresh water Cultivable species any (Fin & Shell Fish Specimens – Observation of morphological characters by observation and drawings)-5
- b. Brackish water cultivable species (Fin &Shell fish- Specimens- Observation of Morphological Character by observing drawing) -5
- c. Hands on training on the use of kits for determination of water quality in aquaculture (DO, Salinity, pH, Turbidity- Testing kits to be used for the estimation of various parameters/ Standard procedure can be demonstrated for the same)
- d. Demonstration of Hypophysation(Procedure of hypophysation to be demonstrated in the practicallab with anyedible fish as model)
- e. Viraldiseasesoffin &ShellFish(Observationofhistopathologicalslides/Charts/ Modelsofviral pathogens in fin/ shell fish – one edible specimen can be used for observationof same in the laboratory)
- f. Bacterial diseases of Fin & Shell Fish (Observation of his to pathological slides / Charts/ Models of Bacterial pathogens in fin/ shell fish – One edible specimen can be used for observation of same in the laboratory)
- g. Fungal diseases of Fin & Shell Fish (Observation of his to pathological slides / Charts/ Models of Bacterial pathogens in fin/ shell fish – One edible specimen can be used for observation of same in the laboratory)

REFERENCES:

- h. Boyd CE 1982. Water Quality Management for Pond Fish Culture. Elsevier Scientific Publishing Company
- i. http://www.fao.org/fishery/docs/CDrom/FAO_Training/FAO_Training/General/x6708e/x6708e06.htm
- j. http://aquaticcommons.org/1666/1/Better-Practice3_opt.pdf
- k. <https://www.notesonzoology.com/india/fishery/fish-diseases-symptoms-and-control-fishery/871>

Co-Curricular Activities

a. Mandatory:

1. For Teacher: Training of students by the teacher in laboratory/field on Breeding- Induced breeding in carps -hatchery technology of *L. Vennami*- Farming techniques- disease diagnostic techniques— concepts –Demonstration @ any aqua laboratory
2. For Student: Students shall (individually) visit a Hatchery/Farm/ Aqua diagnostic center and make careful observations of the process method and implements- protocols and report on the same in 10 pages hand written Fieldwork/Project work Report.
3. Max marks for Fieldwork/Project work Report: 05.
4. Suggested Format for Fieldwork/Project work: Title page, student details, index page, details of place visited, observations made, findings and acknowledgements.
5. (IE). Unit tests.

b. Suggested Co-Curricular Activities

1. Preparation of Model/Charts of Cultivable species of fin fish shell fish
2. Preparation of Model/Chart of Ideal fish Pond-with the standards prescribed.
3. Observation of aquaculture activities in their area (Observation of any activity related to aquaculture in the vicinity of the college/village)
4. Preparation of Model-chart of Fin/Shell fish Diseases with the eco-friendly material.
5. Assignments, Group discussion, Seminar, Quiz, Collection of Material, Video preparation etc., Invited lecture.

