

TRAINING CALENDAR

2018-19



ICAR- Central Institute of Brackishwater Aquaculture
(Indian Council of Agricultural Research)

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Brackishwater aquaculture comprising of shell-fish and finfish culture is a multibillion dollar enterprise in India. Doubling of farmers' income can be achieved by adopting scientific shrimp farming. During 2015-16, shrimp production in the country was 434558 Metric Tons, registering an increase of 31% as compared to 2014-15. Production of *Penaeus vannamei* increased by 41% to 353413 tons whereas that of *Penaeus monodon* remained unchanged between 70000 to 75000 tons. The total farmed shrimp production Export earnings from farmed shrimp was about Rs. 24000 crores in 2014-15, where total seafood export was about Rs. 30000 crores. Other strengths of brackishwater aquaculture include that this sector acts the major livelihood source for coastal rural poor by providing an employment of 1820 lakh man-days/year.

Water resources suitable for aquaculture do not compete with agriculture and drinking purposes. In fact the coastal water resources have very limited alternate uses and if aquaculture is responsibly developed in the country it will boost the income of coastal rural poor and add to add the national income. Brackishwater resources of 1.2 million ha and inland saline areas of about 8 million ha are huge untapped potential to be utilized in India. Tropical climate, availability of species diversity and huge rural youth work force further increases the prospects of brackishwater aquaculture sector in future years. Utilizing these strengths strategic planning and implementation of research and development agencies along with the support of State Governments could help to achieve sustainable growth and take up brackishwater aquaculture sector in India to newer heights in near future.

The Central Institute of Brackishwater Aquaculture (CIBA) under the Indian Council of Agricultural Research (ICAR) was established in 1987 with the following mandate:

- Basic, strategic and applied research for techno-economically viable and sustainable culture systems for finfish and shellfish in brackishwater.
- Species and systems diversification in brackishwater aquaculture.
- Act as repository of information on brackishwater fishery resources with a systematic database.
- Human Resource Development, capacity building and skill development through training, education and extension

The Headquarters of the Institute is located at Chennai and the experimental facilities, finfish and broodstock holding facilities, experimental hatcheries, pilot scale feed mill, etc., are at Muttukadu, about 35 km south of Chennai. The Institute has a Research Centre located

at Kakdwip in South 24 Parganas District of West Bengal.

The research and development programmes in brackishwater aquaculture are carried out under the framework of the following five divisions:

- Crustacean Culture Division (CCD)
- Fish Culture Division (FCD)
- Nutrition, Genetics & Biotechnology Division (NGBD)
- Aquatic Animal Health & Environment Division (AAHED)
- Social Sciences Division (SSD)

The Institute has linkages and collaboration with other ICAR Fisheries Research Institutes and other Institutes under ICAR, State Agricultural Universities (SAUs), Fisheries, Agriculture, Horticulture and Animal Husbandry Departments of the State Governments/Union Territories, Brackishwater Fish Farmers Development Agencies (BFDAs) in various states, Department of Animal Husbandry, Dairying and Fisheries, the Coastal Aquaculture Authority, Ministry of Agriculture, Govt. of India, the National Fisheries Development Board, Ministry of Agriculture, Govt. of India, the Marine Products Export Development Authority (MPEDA), Department of Biotechnology - NOFIMA, Norway, Govt. of India, M.S.Swaminathan Research Foundation, Chennai, Aquaculture Foundation of India, Chennai, FAO-Bay of Bengal Programme, Network of Aquaculture Centres in Asia-Pacific (NACA) and World Bank.

Training courses in brackishwater aquaculture are conducted throughout the year by the Institute as part of the extension services and offered to the State / Central government officials, faculty members and students of Fisheries Colleges and Agricultural Universities, farmers, entrepreneurs and other stakeholders engaged in brackishwater shellfish and finfish aquaculture activities. Brainstorming sessions, Interaction meetings, Farmers' meets, Demonstrations, Hands-on trainings, Workshops and Exhibitions are also conducted from time to time.

NOMINATION AND COURSE FEE

The application for the training (Annexure-I) in respect of each course must be accompanied by course fee in the form of a Demand Draft drawn in favour of "ICAR Unit, CIBA", payable at State Bank of India, Santhome Branch, Chennai-600028. The course fee can be also paid as cheque or cash/Credit/Debit Card at the time of reporting for the course. There is no course fee for ICAR employees. Applications should reach 15 days in advance

for consideration. The employed candidates should apply through proper channel. The soft copy of the application can also be submitted through e-mail. The selected candidates will be intimated by post/e-mail and they should report on the first day of the commencement of the training course. Application along with the course fee is to be sent to (i) Director, ICAR-Central Institute of Brackishwater Aquaculture, 75, Santhome High Road, Raja Annamalai Puram, Chennai – 600 028 for the Courses conducted at Chennai and (ii) Officer-in-Charge, Kakdwip Research Centre of CIBA, 24 Paraganas (South), Kakdwip - 743 347, West Bengal, for the courses conducted at the KRC, Kakdwip.

TRAVEL

The expenditure on travel, TA, DA, etc., has to be borne by the sponsoring authority / Organization or by the candidates themselves

BOARDING AND LODGING

Since the Institute is having limited hostel facilities, guidance would be provided to find suitable accommodation in hotels nearby the Institute. The transport facility will be provided from Chennai to Muttukadu Experimental Station whenever the training course is conducted at Mutukkadu Experimental Station of the Institute.

COORDINATION

The training courses will be coordinated by the concerned Head of the Division / Subject Matter Specialist. If any participant is unable to understand the matter in English, arrangements would be made to translate in Hindi, Bangla, Oriya, Telugu, Kannada, Malayalam and Tamil. On successful completion of the Training Courses, a Certificate on the same will be provided to each participant. If there is a demand for particular Training Course(s), it can be repeated as per the requirement.

Sl. No	Title of the Course	Place & Date	Durati on in Days	Minimum Number of Participants	Course Fee (per candidate in Rs. and tax as applicable)
1.	Recent advances in Soil and Water Management in Brackishwater Aquaculture	18-22 June, 2018, Chennai	5	10	2000/-
2.	Advance training on feed formulation and feed management in brackishwater	18-22 June, 2018 at KRC, Kakdwip, West	6	10	2000 /-
3.	Recent advances in Soil and Water Management in Brackishwater Aquaculture	25-30 June, 2018, Chennai	6	10	4720/-

4.	Hands-on training on Shrimp and Crab Breeding and Culture.	16-21 July 2018, Chennai	6	10	4000/-
5.	Advances in Brackishwater Aquaculture Practices	16-21 July, 2018 at KRC, Kakdwip, West Bengal	6	10	2000 /-
6.	Environmental and Climate Change Issues in Brackishwater	6-10 August – 2018, Chennai	5	10	3000/-
7.	Hands on training on brackishwater aquaculture practices for small scale farmers and the people belonging to Scheduled Tribes	27 August– 1 September 2018, Navsari, Chennai, Kakinada	6	10	2000/-
8.	Scientific management practices for sustainable shrimp and crab culture	20-25 August 2018 at KRC, Kakdwip.	6	10	2000 /-
9.	Seed Production and Culture of Brackishwater Finfishes.	30 July - 08 August 2018, Chennai	10	10	8000/-
10.	Recent advances in Pacific white shrimp (<i>Penaeus vannamei</i>) Farming.	20-24 August 2018, Chennai	5	10	5000/-
11.	Tools for Aquatic Animal Disease Diagnosis and Management.	24-29 September 2018	6	10	9000/-
12.	Better Management Practices in Shrimp <i>P.vannamei</i> Farming.	08-12 October 2018, Chennai	5	10	3000/-
13.	Diagnosis and control of brackishwater finfish and shellfish diseases with special reference to emerging diseases	12-17 November, 2018 at KRC, Kakdwip,	6	10	2000 /-
14.	Environmental and Climate Change Issues in Brackishwater Aquaculture Sustainability	12-17 November, 2018, Chennai	6	10	5900/-
15.	Genetics & Biotechnology: Tools and their application in aquaculture.	26-30 November 2018 Chennai	5	10	8000/-
16.	Issues in brackishwater farming and solutions for improvement of culture, management practices in Gujarat	12-16 February 2019, Navasari, Agricultural University, Gujarat	5	10	2000/-
17.	Advanced Training in Aquaculture Nutrition and Feed Technology	19-28 February 2019, Chennai	10	10	8500/-
18.	Livelihood and entrepreneurship Development in Brackishwater Aquaculture	11-15 March 2019, Chennai	5	10	2000/-

**Module 2: NEED BASED
TRAINING***

The need based training courses will be arranged based on the requirement of the client. Those who are interested to join the following customized training course for a minimum period of 2 days (and maximum period as per the requirement) can contact and confirm the training dates.

(course fee will be decided based on the details and requirements of the training seekers for individual programme and the fee for the same will be intimated in advance)*

Sl. No.	Title of the Course	Course Components (The Course can be conducted for the combination of any of these components)	Minimum duration In days
1.	Seed production and culture of Asian seabass (<i>Lates calcarifer</i>)	<ul style="list-style-type: none"> a. Broodstock procurement, transportation techniques, acclimatization, quarantine b. Captive fish maintenance, maturation assessment, oocytes examination, selection of brood fishes for hormonal induction, c. Hormone preparation and administration techniques, d. Observation of spawning, egg collection, estimation of fertilization rate, incubation, hatching, larval 	3
2.	Nursery and grow out system for shrimp culture using Biofloc technology	<ul style="list-style-type: none"> a. Development of biofloc in static and RAS systems b. Nursery culture of post- larvae to juveniles with biofloc in tank based systems 	5
3.	<i>Artemia</i> biomass culture using RAS	<ul style="list-style-type: none"> a. Development of axenic and mass algal culture b. Production of <i>Artemia</i> biomass 	5
4.	Live feed culture techniques	<ul style="list-style-type: none"> a. Importance of live feed for fish larval production b. Production of live feeds c. Enrichment of live feeds d. Application of live feeds for fish larviculture 	5

5.	Hands on training on Aqua feed analysis	<ul style="list-style-type: none"> a. Sampling of ingredients and feed for analysis b. Sample processing c. Preparation of standard solutions and reagents for proximate analysis d. Hands on training on estimation of proximate principles for moisture, crude protein, crude lipid, crude 	3
6.	Aqua feed production	<ul style="list-style-type: none"> a. Physical evaluation of feed ingredients b. Hands on training on grinding, sieving and mixing c. Feed production of wet pelletizer and Ring die pelletizer for production of sinking pelleted feeds d. Water stability of feeds e. Feed drying and packing f. Hands on training for production of extruded feeds g. Techniques for preparation of slow 	5
7.	Extrusion Feed Technology	<ul style="list-style-type: none"> a. Physical evaluation of feed ingredients b. Hands on training on grinding, sieving and mixing c. Hands on training for production of extruded feeds d. Techniques for preparation of 	3
8.	Ring die pellet feed preparation	<ul style="list-style-type: none"> a. Physical evaluation of feed ingredients b. Hands on training on grinding, sieving and mixing c. Feed production of wet pelletizer and Ring die pelletizer for production of sinking pelleted feeds 	3
9.	Advanced Analytical Techniques	<ul style="list-style-type: none"> a. Hands on training on analysis of fatty acid by GC b. Hands on training for amino acid analysis using HPLC c. Estimation of major and minor minerals in feed and 	5
10.	Feed Management	<ul style="list-style-type: none"> a. Feed requirement calculation b. Feeding chart for fish and shrimp c. Check tray monitoring d. Feeding methods and frequency e. Automatic feeders f. FCR 	3

11.	Pond water and soil analysis and interpretation of results	<ul style="list-style-type: none"> a. Collection water and soil samples from aquaculture ponds b. Protocols for analysis of water and soil samples c. Interpretation of results d. Yard stick indicators for healthy pond bottom 	3
12.	Pond soil and water BMPs for successful shrimp growth	<ul style="list-style-type: none"> a. Suitability of soil and water for shrimp aquaculture b. Optimum water and soil parameters for shrimp growth c. Management practices (BMPs) for the maintenance of water and soil parameters within the optimum levels 	3
13.	Advanced analytical/instrumentation techniques for pond soil and water parameters	<ul style="list-style-type: none"> a. Important pond soil and water parameters and their optimum levels for brackishwater aquaculture b. Analytical techniques for the estimation of soil and water parameters c. Advanced instrumentation 	5
14.	Tools for Aquatic Animal Disease Diagnosis and Management	<ul style="list-style-type: none"> a. Overview of diseases in shrimp aquaculture b. Hepatopancreatic microsporidiosis, acute hepatopancreatic necrosis disease (AHPND), shrimp viral diseases c. Better management practices (BMPs) d. Biosecurity and Quarantine Measures e. Diseases surveillance in brackishwater aquaculture f. Probiotics and immunostimulants g. Requirements for Aquatic Animal Disease Diagnostic Laboratory h. Investigating disease in brackishwater aquaculture i. Bacteriological methods j. Molecular diagnostics k. Principles and practice of polymerase chain reaction l. PCR diagnosis of some important OIE listed viruses and bacterial pathogens of shrimp 	6
15.	Aquatic Bacteriology	<ul style="list-style-type: none"> a. Overview of Aquatic Bacteriology b. Aquatic bacteriological methods c. Requirements for Bacteriology Laboratory d. Sampling, isolation and identification of bacteria 	3

16.	Finfish and shellfish Parasitology	a. Overview of Parasitology b. Finfish and shellfish parasites in aquaculture c. Identification methods	3
17.	Aquaculture Pathology	a. Shrimp anatomy, dissection, tissue preservation; sampling, preservation / fixation and transport of samples for disease investigation b. Histological techniques: fixing, embedding, sectioning and staining c. Describing pathology	3
18.	Molecular Diagnostics of shellfish and finfish Diseases	a. Principles and practice of polymerase chain reaction (PCR) and reverse transcriptase PCR (rt-PCR)	3
19.	Polymerase chain reaction (PCR) for diagnosis of shrimp diseases	a. Principles and practice of polymerase chain reaction (PCR)	3
20.	Molecular Diagnostics of finfish diseases	a. Principles and practice of reverse transcriptase PCR (rt-PCR) b. Diagnosis of two finfish viruses by RT-PCR	3
21.	Preparation of Bankable projects for obtaining bank loans/subsidies	a. Project report and its components b. Preparation of draft project report c. Vetting/Appraisal by present/retired officials from commercial	5
22.	Approaches and methodologies for brackishwater aquaculture extension	a. System specific extension approaches with frameworks b. Socio-economic evaluation of aquaculture systems - templates	5
23.	Climate change and aquaculture	a. Important weather parameters and their direct and indirect impacts (positive and negative) on brackishwater aquaculture b. Impact of extreme climatic events on aquaculture c. Mitigation and adaptation measures for combating the impacts of climate change d. Contribution of aquaculture to global warming potential (Greenhouse gases) e. Life cycle analysis for environmental sustainability and carbon friendly aquaculture.	5

24.	Integrated programme on biological and Analytical techniques (suitable for student community)	<ul style="list-style-type: none"> a. Biological techniques, breeding, larviculture, nursery and grow out culture of shrimps, fishes and crabs. b. Feed processing technology for different fish and shrimp species. c. Disease diagnostics including pathology, microbiology, virology and parasitology. d. Genetics, bioinformatics and biotechnology techniques for aquaculture. e. Soil and water quality analyses and recommendations. f. Socio-economic assessment of technologies and programmes. 	30 days* (Fees based on the nature of training and requirements of the trainees)
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Training at Kakdwip Research Centre of CIBA, Kakdwip, West Bengal

25.	Breeding and seed production of brackishwater catfish <i>Mystus gulio</i>	<ul style="list-style-type: none"> a. Broodstock development. b. Maturation assessment and induced breeding. c. Spawning and larval rearing. d. Nursery rearing. 	5
26.	Mud crab farming	<ul style="list-style-type: none"> a. Grow-out and fattening of mud crab, Pre-stocking management, Pond preparation, crab fencing, liming and fertilization, stocking density, grading, feeding management, soil and water quality 	3
27.	Farm made aqua feed preparation	<ul style="list-style-type: none"> a. Physical evaluation and selection of feed ingredients b. Hands-on training on grinding, sieving and mixing c. Feed formulation techniques d. Hands-on training for feed production through pelletizer e. Water stability of feeds 	3
28.	Nutrient enrichment of feed ingredients through solid state fermentation (SSF)	<ul style="list-style-type: none"> a. Importance of solid state fermentation b. Introduction about the organisms used for solid state fermentation c. Techniques of solid state fermentation d. Hands on training for nutrient enrichment of ingredients through SSF e. Proximate analysis of ingredients before and after enrichment 	5

29.	Disease Management in Brackishwater Aquaculture with special reference to <i>Penaeus vannamei</i> farming.	<ul style="list-style-type: none"> a. Management of exotic and emerging diseases in shrimp farming in the wake of introduction of <i>Penaeus vannamei</i> farming in India. b. Currently prevailing diseases of <i>P. vannamei</i> in India with their control measures. c. Acute hepatopancreatic necrosis disease (AHPND): Current scenario and future perspectives. d. Biosecurity and quarantine measures with special reference to <i>P. vannamei</i> farming in India. e. Sampling tools of shrimp for bacteriological and histopathological examination. f. Rapid diagnosis of shrimp diseases through molecular tools. g. Role of probiotics and immunostimulants in prevention of diseases in vannamei 	5
30.	Scope of brackishwater fish and shrimp farming (In vernacular language, Bengali)	<ul style="list-style-type: none"> a. Brackishwater farm design and construction b. Important cultivable species and their culture c. <i>Penaeus vannamei</i> and <i>Penaeus indicus</i> culture d. Polyculture of tiger shrimp and fish, IMTA, culture of crab. e. Livelihood opportunity with ornamental fish, pearlspot and scat f. Marketing of farm produce 	5

Module-3: NEED BASED TRAINING PROGRAMME – Long Term

(* course fee will be decided based on the aspects covered and the duration of the programme and will be intimated in advance)

Need based Training programmes of 3 – 8 weeks can also be conducted. This type of training programme would be comprehensive on the brackishwater aquaculture and the course content would cover shrimp and mud crab farming and seed production; finfish farming and seed production; aquaculture nutrition; aquatic environment and animal health management; genetics and biotechnology; aquaculture extension, economics and entrepreneurship development.

Services offered by ICAR-CIBA

TRANSFER OF TECHNOLOGY & CONSULTANCY SERVICES

- Soil and water quality management in shrimp farming/brackishwater aquaculture
- Environmental impact assessment of aquaculture projects and carrying capacity estimation of water bodies
- Shrimp hatchery technology and management (Species: Pacific White Shrimp (*P.vannamei*), Tiger shrimp (*P.monodon*), Indian white shrimp (*P.indicus*), Kuruma shrimp (*P. japonicus*) and Banana shrimp (*P.merguensis*).
- Shrimp farming technology
- Mud crab breeding larval development and culture
- Finfish breeding and culture (species: Asian seabass (*Lates calcarifer*), Grey Mullet (*Mugil cephalus*), Milkfish (*Chanos chanos*), Pearlsplit (*Etroplus suratensis*) and brackishwater catfish (*Mystus gulio*).
- Shrimp/crab / fish nutrition & feed technology, biofloc technology
- Shrimp / crab/ fish disease diagnosis and health management including pathology, microbiology, virology and parasitology.
- Aquatic animal quarantine and biosecurity
- Shrimp/ crab/ fish genetics, genomics, biotechnology and bioinformatics
- Knowledge partnership and partnership farming with stakeholders for the technologies developed, validated and ready for technology transfer through the Institute Technology Management Unit.
- HACCP

ANALYTICAL SERVICES

- Analyses of water and soil quality parameters
- Analyses of shrimp / fish feed and their ingredients
- Microbiological and pathological analyses of shrimp / fish tissue samples.
- Genetics, Genomics & bioinformatics

For further details, please write to:

**The Director
ICAR-Central Institute of Brackishwater Aquaculture
75, Santhome High Road, Raja Annamalaipuram,
Chennai-600 028 Tamil Nadu**

Published by : **Dr. K.K.Vijayan**
Director

APPLICATION FOR TRAINING COURSE

1. Title of the Training Course :
2. Name of the Candidate :
(in capital letters)
3. Educational Qualification :
4. Occupation/Designation :
5. Postal address, E-mail I.D.
and Mobile no. :

6. Date of Birth/ Nationality/Sex :
7. Whether SC/ ST :
(if 'yes', attach proof certificate)
8. Nature of Training required in
Brackishwater Aquaculture :
9. Particulars of course fee/
DD enclosed :
10. Are you being sponsored?
If 'yes', give name and
address of the Organisation :

- (Recommendation of sponsoring
authority with signature and office
seal)

Date:
Place:

Signature of the applicant

