CIFE
annual report
2007-08

CENTRAL INSTITUTE OF FISHERIES EDUCATION
Deemed University
Indian Council of Agricultural Research
Seven Bungalows, Versova
MUMBAI-400 061

Contents

1. Preface

The year 2007-08 has witnessed a great success in the academic front by bagging all the 15 seats in aquaculture and 2 seats in animal biotechnology by the students of CIFE. This has been possible through the combined efforts of students and faculty. Intensive coaching by innovative method followed by mock tests and interviews arranged in the Campus enhanced the confidence level of the students which has been reflected in their final selection.

A week long training exposure on board *MFV Saraswati* and hands-on-training at farms during field training has helped the students to learn and understand the subject in a better manner. Hands-on-training programmes conducted at CIFE Headquarter and its Centres besides training and result demonstration programmes conducted in North Eastern States have been to the great satisfaction of the participants, while providing major impetus for Aquacultural development in the region.

The on going research programmes have shown satisfactory results. One of the major outcome has been the synthesis document of Policy Framework for Fisheries and Aquaculture Development which will form the basis for State Fisheries Departments to formulate their State specific enabling fisheries & aquaculture policy.

CIFE's varied achievements in academic, research & development spheres during 2007-08 have been reflected in different chapters of this Annual Report. The contribution made by all the faculty members, staff and students are highly appreciated.

I express my sincere gratitude to the Director General (ICAR), Deputy Director General (Fisheries) and Deputy Director General (Education) for their kind support and guidance. I acknowledge with thanks Members of Board of Management, Chairman and Members of Research Advisory Committee, Members of Academic Council, Extension Council, Head of Divisions, Board of Examiners and other Institute – level committees for their co-operation and support. I am grateful to the Directors and Scientists of all the Fisheries Institutes, Guest Faculty and External Examiners for their time to time support. I thank all the scientists, staff and students of CIFE for their contributions. I record my appreciation to the publication team for bringing out this annual report.

(DILIP KUMAR)
Director

CIFE, Mumbai
March, 2009

2. Executive Summary

In the year 2007-08 CIFE observed overall good progress. During the year 20 institutional research projects, 23 externally funded projects, two international research projects and two contract research project were continued as planned and there has been very good progress. Survival of tiger shrimp (*Penaeus monodon*) using inland saline water in Haryana has encouraged further to carry out production experiments with techno-economic feasibility. The soil quality of salt affected ponds in Haryana showed very poor levels of nitrogen and phosphorus. Isolation of indigenous bacterial strains for using as biofertilizers to improve the fertility was carried out. The salt affected inland areas of Maharashtra showed excess sulphates which needs to be removed and necessary manipulation of ionic concentrations for optimum ratio and nutrient availability. Under the project strategies for the control of Nodavirus infection in *Macrobrachium resengergii* full length sequence information of Indian isolate of MrNV, 8 pairs of new primers have been designed. From the study on interaction of wild stock of M. resengergii and dietary protein level, it was observed that high protein fed group exhibited higher hemolymph glucose but stock type did not exhibit any variation in the glucose content in hemolymph. Higher respiratory burst activity (NBT) was recorded in the higher protein fed groups. Plantation of green manure crop Dhencha in Dimbhe reservoir, Maharashtra resulted in increase in the productivity of the reserviour.

Under the project on policy framework for Indian fisheries and aquaculture five zonal level consultative workshops on fisheries and aquaculture policy were conducted successfully at Guwahati, Hyderabad, Goa, Chandigarh and Patna. The proceedings of the workshops and a synthesized document has been prepared and sent to different stakeholders, the policy makers and development planners. In an empirical study of patents and patenting activity in the fisheries sector a total of 151 patents in fisheries sector have been documented and further classification as per specializations was carried out. Institute developed different ready to eat fish products like sandwich paste, fish curry in retortable pouch and different recipes.

In the ongoing educational programmes 16 students obtained Ph. D. Degree, 36 students their M. F. Sc. Degrees and 22 their Post-Graduate Diploma in Inland Fisheries. Total 92 students were admitted in the new academic session out of which 25 students for Ph.D. 45 students for M.F. Sc. and 22 students for P. G. Diploma in Inland Fisheries.

The extension activities progressed well during the period. Institute organized 59 short term training programmes at its Headquarter and four

The faculty participated in 60 workshops/seminars/ conferences/congresses. Faculty attended 17 training programmes/winter schools/summer schools/brainstorming sessions. Institute organized 17 meetings on different programmes, 9 workshops and 3 CAS programmes.

The meetings of RAC, Board of Management, Academic Council and Extension Council were held as per schedule.

MFV Saraswati

3. Introduction

The Central Institute of Fisheries Education (CIFE) was established on 6 June 1961 under Government of India with the assistance of FAO/UNDP to impart professional training and education to the in-service personnel of the expanding fisheries development sector at that juncture. Later, on 1 April 1979, the institute came under the umbrella of Indian Council of Agricultural Research. The Deemed University status was accorded to CIFE on 29 March 1989. Subsequently, the scope and mandate have been widened to include education as well as research. At present, CIFE offers Master programmes in nine and Doctoral programmes in eight disciplines.

The infrastructure facilities of CIFE have been upgraded over the period to achieve the international competiveness. Initially, CIFE was housed in the Institute of Science building, Bombay, and in 1964, it was shifted to a rented building at Masjid Bunder, Bombay. However, in March 1967, the Institute moved to campus at the Seven Bungalows, Versova, in the western suburb of Bombay. In 2003, CIFE developed its new campus at Yari Road. CIFE headquarter is presently housed in the Seven Bungalows campus, and the newly developed Yari Road Campus, Versova, each a kilometer apart. The 2.3 ha Seven Bungalows campus has a three-storey building that houses laboratories, classroom, computer cell, committee room, auditorium, Director's chamber, library, aquarium, museum, workshop, and administrative and accounts sections together with a backyard wet-lab and prawn hatchery. The campus also has hostel and dormitory facilities, guest house, staff quarters, gymnasium, healthcare centre and sports facilities. The recently-developed 6.7 ha Yari Road Campus has (three floors with basement) academic building that houses state of the art laboratories, classrooms, faculty and staff chambers, chambers of the Director and Joint Director, conference hall, community hall, aquarium, examination and academic cells. Additional facilities such as wet labs, ponds and hatcheries, library, staff quarters and ladies hostel, etc were also developed in the Yari Road Campus. CIFE also possesses two training-cum-research vessels, *MFV Saraswati* and *MFV Narmada*.

Budget (Rs. in Lakhs)

S.No.	Head	Sanctioned	Received	Expenditure Incurred
1	Plan + NEH	850.00	850.00	607.33
2	Non-plan	1322.00	1213.00	1307.15
3	CAS	13.96	13.96	13.96
4	SDU	126.82	126.82	93.48
5	Externally funded projects	111.44	111.44	95.36

There are eight major functional divisions at CIFE equipped with state of the art laboratories and various sections/cells to carry out specific work. Apart from the headquarters in Mumbai, the Institute has four centres located in different aqua-climatic regions (Kolkata in West Bengal, Kakinada in Andhra Pradesh, Powarkheda near Bhopal in Madhya Pradesh and Rohtak in Haryana) of the country with farms and infrastructural facilities to impart hands-on training to students, farmers and development personnel as well as to conduct need-based research projects.

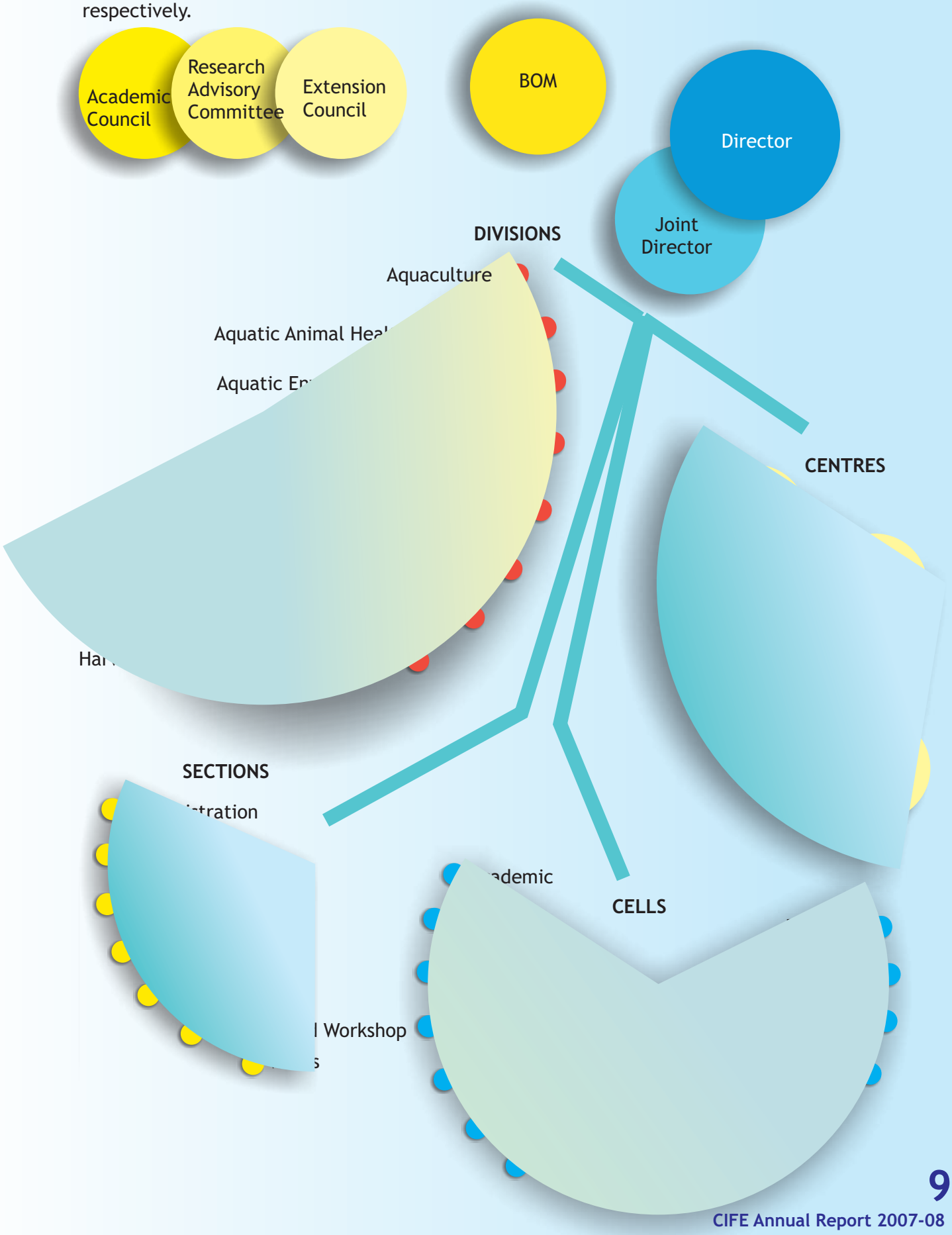
Mandate:

The mandate of CIFE was revised from time to time to keep in pace with the changing needs of the country. The present mandate of CIFE is

i. To conduct post-graduate academic programs in core and emerging disciplines of fisheries science
ii. To conduct basic and strategic research in frontier areas of fisheries
iii. To conduct demand-driven training and educational programs for different stakeholders in fisheries sector
iv. To provide technical support, inputs for policy development, and consultancy services

Organization and Management

At the helm of affairs of overall Institutional Management, CIFE has a Board of Management which also functions as the highest decision making body at the Institute level. The decisions and recommendations pertaining to academic, research and extension activities of the Institute are made by Academic Council, Research Advisory Committee and Extension Council, respectively.



4. Educational Achievements

4.1 Results

S. No.	Name of the programmes	No. of successful Students
1	Ph.D.	16
2.	Inland Aquaculture	4
3	Fisheries Resources Management	5
4	Mariculture	3
5	Post - Harvest Technology	5
6	Freshwater Aquaculture	4
7	Fish Genetics & Biotechnology	4
8	Fish Pathology & Microbiology	2
9	Fish Nutrition & Biochemistry	5
10	Fish Business Management	4
11	P.G. Diploma in Inland Fisheries	22
	Total	**74**

The following are the Ph.D theses and M.F.Sc dissertations on which degrees were awarded during the year 2007-08:

4.2 Ph.D. Theses

Name of the Student	Thesis title	Name of the Guide
Ramalinga MC-133 (2000-03 batch)	Environmental impact assessment of suspended oyster *Crassostrea madrasensis* (Preston) culture	**Dr. V. Kripa**
Jyotiranjan Nayak PHT-139 (2001-04 batch)	Effect of n-3 polyunsaturated fatty acids from fish on Daltons's lymphomaascite and liver cancer in mice	**Dr. P. G. Viswanathan Nair**
K. Rekha Devi PHT-142 (2001-04 batch)	Biotechnological studies on *Vibrio parahaemolyticus*	**Dr. P. K. Surendran**
P. Yesudhasan PHT-143 (2001-04 batch)	Effect of modified atmosphere packaging on the shelf life of commercial important fish	**Dr. T. K. Srinivasa Gopal**
Sushant Kumar Patra MC-148 (2001-04 batch)	Histomorphological characterization of immune system in Greasy Grouper, *Epinephelus tauvina* (Forsskal, 1775)	**Dr. K. C. George**
A. Chandrasekhar Rao MC-149 (2001-04 batch)	Some studies on reproductive physiology of the female Grouper, *Epinephelus diacanthus* (Valenciennes)	**Dr. L. Krishnan**
S. K. Kunda IAC-155 (2001-04 batch)	Prevention of antibiotic residues in farmed shrimps: A study of development of HACCP framework applicable at shrimp farms in India	**Dr. K. Venkateshvaran**
Haribabu Punati IAC-158 (2001-04 batch)	Aquaculture of *Macrobrachium rosenbergii* (de Man, 1879) in Andhra Pradesh: A stress related pathological study	**Dr. S. C. Mukherjee**
Prashant Telvekar FRM-163 (2002-05 batch)	A study on biology and stock assessment of *Johnieops sina* (Cuvier, 1830) from Mumbai waters	**Dr. R. S. Biradar**
Krishna Sukumaran IAC-170 (2002-05 batch)	Requirement, deficiency and hemato-biochemical response to dietary phosphrus in *Catla catla* fingerlings	**Dr. A. K. Pal**
Shahnawaz Ali FRM-181 (2003-06 batch)	Quantitative biodiversity of crustaceans and molluscs of selected interidal shores of Mumbai	**Dr. S. K. Chakraborty**
Dipesh Debnath FNB-195 (2003-06 batch)	Growth, digestive and metabolic responses of *Labeo rohita* fingerling to different dietary protein levels	**Dr. A. K. Pal**
Sabeena Farvin PHT-197 (2003-06 batch)	Biochemical studies on the protective effect of squalene on experimentally induced myocardial infarction in rats	**Dr. R. Anandan**
Dhananjay Kumar Varma IAC-210 (2004-07 batch)	Study on functional efficacy of testis and cryogenic preservation of male gametes of Mrigal, *Cirrhinus mrigala* (Ham.)	**Dr. P. Routray**
Hikkaduwa M. P. Kithsiri IAC-211 (2004-07 batch)	Growth and reproductive performance of female guppy, (*Poecilia reticulata*) in response to dietary fatty acids	**Dr. G. Venkateshwarlu**
Nitai Saha IAC-212 (2004-07 batch)	Pigmentation and breeding performance of swordtail, *Xiphophorus helleri* (Heckel 1848) by using natural colour additives and essential fatty acids in artificial feed	**Dr. (Ms) A. Sinha**

4.3 M.F.Sc. Dissertations

Name of the student	Title	Guide
Mr. Bopanna, A. G. FRM-195	Characterization of methane oxidizing bacteria in mangrove rhizosphere	**Dr. A. Vennila**
Mr. Pawan Kumar FRM-196	A study on otolith morphology and morphometry of various representation of family Sciaenidae from Mumbai waters	**Dr. S. K. Chakraborty**
Ms. Sajina, A. M. FRM-197	Stock structure analysis of Indian Mackerel along the West coast of India using morphological tools	**Dr. S. K. Chakraborty**
Ms. Soma Das FRM-198	Grazing benthic community in the intertidal area along Mumbai coast	**Dr. G. Deshmukhe**
Mr. Thimmaiah, G. N. FRM-199	Appraisal of Bhadra reservoir fisheries using GIS	**Dr. R.S . Biradar**
Ms. Kouberi Nath IAC-175	Toxicity of nitrite on Angel Fish and its possible remedy	**Dr. M. P. S. Kohli**
Mr. Santosh Kumar IAC-176	Effect of temperature on sex ratio and survival of *Poecilia reticulata* (Peters, 1860)	**Dr. Neelam Saharan**
Mr. S. S. Prasad IAC-177	Comparative study of growth and survival of swordtail (*Xiphophorus hellari*) fed with live feed *(Moina* sp.) and artificial feed	**Dr. V. K. Tiwari**
Ms. T. P. Prabita IAC-178	Evaluation of HUFA, Vitamins C & E enriched moina for post larvae of *M. rosenbergii* (de Man, 1879)	**Dr. A. K. Reddy**
Mr. G. Venkata Ravi MC-95	Development in *in vitro* primary cell culture systems from the rabbit fish *Siganus canaliculatus* (Park, 1797)	**Dr. K. S. Sobhana**
Ms. P. K. Jeeja MC-96	Nutritional profile of rotifer (*Brachionus plicatilis*) cultured using selected natural diets	**Dr. I. Joseph**
Ms. Madonna T. Thachil PHT-37	Tocopherol and PUFA in young and aged rats	**Dr. S. Mathew**
Ms. L. Manjusha PHT-38	Studies on bacteriological methods for the detection of antibacterial residues in fish and fishery products	**Dr. S. Sanjeev**
Mr. Pankaj Kishore PHT-39	Prevalence of *Yersinia* spp. in seafood and their characterization	**Dr. K. V. Lalitha**
Ms. M. A. Rajeena PHT-40	Effect of natural antioxidants on the quality and storage stability of freeze-dried coated fish balls	**Dr. A. C. Joseph**
Mr. K. Shashidhar PHT-41	Studies on ready-to-serve calcium and iron fortified shrimp soup in retortable pouches	**Dr. C. N. Ravishankar**
Mr. P. Himanshu FGB-22	Development of stable heavy metal biosensors by integration of biosensor genetic elements into *E. coli* chromosome	**Dr. A. Chaudhari**

Mr. Renuka Murthy FGB-23	Characterization of *Perna viridis* metalloothionein promoter for use in transgenic fish biosensors responsive to heavy metals	**Dr. A. Chaudhari**
Mr. Santosh Kumar FGB-24	Genetic studies on growth traits of *P. monodon* (Fabricius)	**Dr. S. Jahageerdar**
Mr. Shibashis Das FGB-25	Comparative study of growth of different stocks of *M. rosenbergii* (de Man 1879) and their molecular genetic identification	**Dr. Gopal Krishna**
Mr. Kundan Kumar FPM-22	Clinicopathological and histomorphological studies on induced inflammatory conditions in *L. rohita* (Ham)	**Dr. S. C. Mukherjee**
Mr. B. Manas Ranjan FPM-23	Comparative study on serum immunoglobulin of Indian major carps.	**Dr. M. Makesh**
Mr. Muthappa, N. A. FNB-21	Methyl donors supplementation for improved growth and stress mitigation in *L. rohita*	**Dr. S. B. Jadhao**
Mr. Rajesh Kumar FNB-22	Study on cDNA synthesis encoding Δ^6 fatty acid desaturase gene of *C. mrigala* using RT-PCR	**Dr. S. D. Singh**
Mr. Rathod Ramesh FNB-23	Fatty acid profiles of some important pelagic and demersal fishes off Mumbai coast with reference to their nutritive value	**Dr. G. Venkateshwarlu**
Mr. C. S.Tejpal FNB-24	Evaluation of dietary L-tryptophan for mitigating crowding stress in *C. mrigala* fingerlings	**Dr. A. K. Pal**
Mr. Vidya Sagar FNB-25	Nutro-physiological responses of three wild stock *M. rosenbergii* juveniles under different nutritional milieu	**Dr. K. K. Jain**
Mr. V. Vishal Ghotane FMB-16	Market research on value chain in fisheries sector in the states of Maharashtra and Gujarat	**Dr. P. S. Ananthan**
Mr. Jitendra Kr. Jena FMB-17	Market research for value added fish and fish products in selected North-Eastern states of India	**Dr. S. N. Ojha**
Mr. Rama Chandra Rout FBM-18	Market research for value-added fish and fish products in Eastern India	**Dr. R. S. Biradar**
Mr. S. Pravin FBM-19	Market research for value-added fish and fish products in Southern States of India	**Dr. S. S. Salim**
Mr. Sunil Sabat FBM-20	Market research for value added fish and fish products in selected Northern states of India	**Dr. A. Sharma**

4.4 Enrollments

S. No	Name of the Programme	Number of students Admitted
1	Ph.D. (Fisheries Resource Management)	5
2	Ph.D. (Aquaculture)	9
3	Ph.D. (Post-Harvest technology)	3
4	Ph.D. (Fish Biotechnology)	2
5	Ph.D. (Fish Genetics)	2
6	Ph.D. (Fish Pathology & Microbiology)	2
7	Ph.D. (Fish Nutrition & Biochemistry)	2
8	Ph.D. (Fish Business Management)	Nil
9	M.F.Sc. (Fisheries Resource management)	5
10	M.F.Sc. (Fish Genetics & Biotechnology)	5
11	M.F.Sc. (Fish Nutrition & Biochemistry)	5
12	M.F.Sc. (Fish Business Management)	4
13	M.F.Sc.(Fish Pathology & Microbiology)	5
14	M.F.Sc. (Post-Harvest Technology)	5
15	M.F.Sc. (Aquaculture)	9
16	M.F.Sc. (Fisheries Extension)	4
17	M.F.Sc. (Aquatic Environmental Management)	3
18	P.G. Diploma in Inland Fisheries	22
	Total	92

CIFEANS CREATE HISTORY - CAPTURE ALL SEATS IN ARS EXAMINATION - 2007

5. Research Achievements

THRUST AREA 1: UTILIZATION OF SALT - AFFECTED INLAND AREAS THROUGH AQUACULTURE

Project Title: Refinement of existing and development of new technologies for inland-saline aquaculture

Personnel : C. S. Purushothaman, P. P. Joshi, S. Raizada, U. K. Maheshwari, N. K. Chadha, G.Deshmukhe, A. K. Verma and G. Venugopal

Achievements

It has been observed in the past years that tiger shrimp (*Penaeus monodon*) post-larvae do not survive in moderate to high salinity inland ground saline water at the Rohtak Centre of CIFE. Hence, a short experiment was carried out to evaluate the role of potassium in inland ground saline water. For the experiment, 10,000 post-larvae (PL-15) of *P. monodon* were procured from Chennai on 19-20 September 2007 and stocked in nine FRP tanks (500 l) at 1000 PL/tank in two treatments of 10% salinity inland ground saline water amended with potassium levels equivalent to 50% (T-1) and 100% (T-2) of coastal seawater along with control of raw ground saline water in triplicates. Heavy mortality of around 50% was noticed in control within six hours of stocking and total mortality occurred in 48 hours in two tanks. One tank under the control set was subsequently amended after six hours with potassium level equivalent to coastal seawater which showed the revival of the leftover moribund post-larvae and the mortality was totally stopped. However, there was only 10% mortality in T-1 and T-2 after 10 days of rearing. The study, thus, showed that potassium amendment is essential for the survival of tiger shrimp PL at 10% salinity in inland ground saline water. The study reveals that intensive experiments are required to study the effect of various ions and their ratios in inland ground saline water for the survival of tiger shrimp. Seaweed (*Ulva sp.)* was attempted to be cultured in raw inland saline water of up to 10% in one experiment. No growth was observed and all the stock died within one week of the start of the culture. In the subsequent experiment, where raw water of 10-15% salinity was used, very poor growth was observed and the seaweed died between 7 and 10 days. In another experiment, the salinity of raw water was raised from 15 to 20% by dissolving common salt. Water of 20% fortified with potassium to maintain the level as in open sea water was used for the next experiment and Agrimin was used as a source of nutrients. Another experiment was conducted with raw ground saline water the salinity of which was raised to 25‰ by dissolving common salt. The stocking was also done on 15 March 2008 and the culture operation was for 45 days. Ground saline water with the salinity raised from 20 to 25‰ by adding common salt and fortified with potassium and Agrimin was used in the next experiment for the same duration. The last experiment gave the best results indicating the necessity of potassium amendment and additional nutrient supply.

water samples ranged from 0.5 to 5.5‰. The highest salinity was observed in the water sample taken from the subsurface drain at Digraj. The pH was in neutral range. Phosphorus was found to be below detectable range in all the samples. The hardness and chloride content were high except the field drainage near the canal and in the canal water of Shere village. The soil pH was in the neutral range, whereas the electrical conductivity (EC) was > 4 dS/m except for five samples. The texture was clayey with few samples falling under the category clay-loam and black soils, and hence, the low seepage. The water retention capacity was high. The salinity was high in all the water samples of the aquaculture area and subsurface drainage system of Digraj. The sulphate content was higher than the chloride content in all the samples except pond water. Similarly, the sulphate content of pond soil was also very high. The EC was very high in Digraj and Karad samples except Phaltan sample. Organic carbon content except Karad and total nitrogen except Phaltan were also very high. Therefore, in these soils, attempt should be made to address the issues of removal of excess sulphates/manipulation of ionic concentrations to maintain optimum ratio and optimization of nutrient availability.

Project Title: Strategies for the control of Nodavirus infection in *Macrobrachium rosenbergii*

Personnel: K. V. Rajendran , A. Chaudhari, M. Makesh

Achievements

Large-scale mortality of *M. rosenbergii* was reported from Kakinada, Andhra Pradesh. Moribund samples were collected and transported to the laboratory, (alcohol- preserved as well as frozen). Representative samples were subjected to RNA extraction, cDNA preparation and subsequent PCR. Apart from the primers which we have already used to detect the viruses, new sets of primers were employed in the detection of MrNV and XSV. In the case of MrNV, a primer set (MrNV-F1 and MrNV-R1) targeted to amplify a 1.14 kb region of RNA2 segment of the virus was used. However, a primer set (XSV-F1 and XSV-R1) which could amplify 772 bp regions was used in the case of XSV. Successful amplification was noticed in both MrNV and XSV.

Three PCR products (590 bp and 681 bp MrNV-specific and 500bp XSV-specific) were purified from Agarose gel, cloned in pTZ57R/T vector and transformed into *E. coli* DH5 cells and the purified plasmids were submitted for sequencing, in the last quarter. Sequence data were analysed and found that 98% homology existed between the Indian isolate of MrNV studied and the gene sequences already reported in the GeneBank, with respect to the 590 bp fragment of the RNA1 segment. Similarly, 97% similarity was observed in 681 bp fragment amplified and sequenced. With respect to XSV in the 500 bp region, 98%

However, cDNA samples made from the RNA extracted from two frozen tissue samples (presumptive) did not give any amplification. Further, amplification of 1.14 kb fragment of RNA2 segment was unsuccessful with all the samples. This needs to be tested with fresh infected samples and also with newly designed primers which could amplify smaller fragment from the same genomic region. Attempts will also be made to amplify the 1.14 kb region using long template PCR system.

To generate the full-length sequence information of Indian isolate of MrNV, 8 pairs of new primers are designed including primers targeted to amplify the capsid protein and polymerase encoding regions. These primers will be procured and different PCR conditions have to be standardized to generate the products for sequencing.

Project Title: Bacterial biofilm in aquaculture and their potential uses

Personnel: P. K. Pandey, C. S. Purushothaman, A. Vennila, S. P. Shukla

Achievements

Different substrata for the settlement of the biofilm-producing organisms including gravel, glass slides, tiles and wood were tried. Among these, wood has given better results in terms higher number of colony settlements, followed by gravel. Quantitative analysis of the isolates has been carried out. Qualitative analyses of the isolates are in progress. Apart from that, associated algae have also been characterized. Wood will be used for enhancement study of bacteria for increased fish production.

THRUST AREA 2: GENOTYPE ENVIRONMENT INTERACTION STUDIES FOR ECONOMICALLY IMPORTANT TRAITS

Project Title: Genotype-environment (GxE) interaction studies of *Macrobrachium rosenbergii* for economically important traits

Personnel: Gopal Krishna, S. Jahageerdar, G. Venugopal, M. Abbas, N. K. Chadha, Somdutt

Achievements

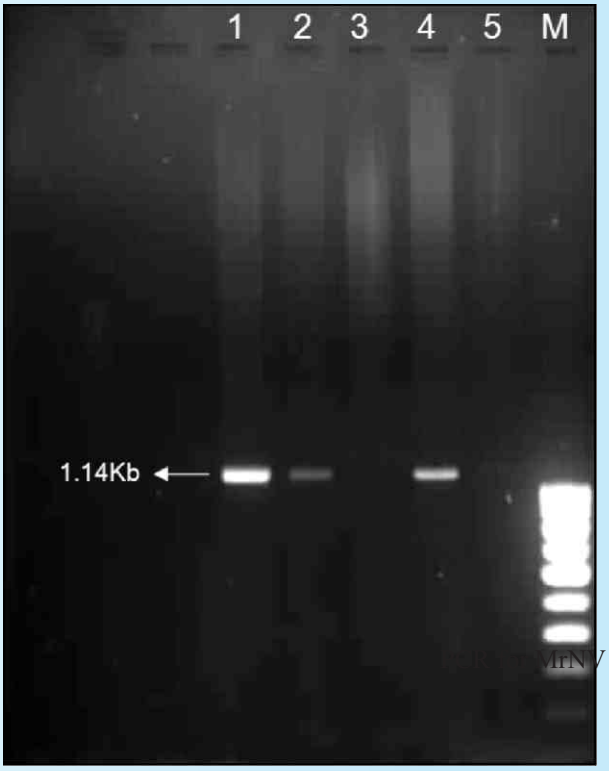
The matured male and female prawn stocks were collected from different regions including Andhra Pradesh, Orissa and Gujarat. The Gujarat stock was discarded due to insufficient mating pairs. The remaining stocks were kept for captive breeding for

about 25.5-33.5% and 5.5-11.3%, respectively. The only fatty acid, C18:3 n-3 was found only in the Andhra Pradesh and Maharashtra stock at higher dietary protein level in the range of 0.15-0.30%. No higher chain fatty acid (>C20) was identified in any stock. No variation was found in plasma calcium level with respect to stock and protein level and it ranged from 26-29.5mg/dl among all the stocks.

Project Title: Isolation, identification and characterization of common pathogens of *Macrobrachium rosenbergii* from selected stocks

Personnel: M. Makesh, S. C. Mukherjee, K. Paniprasad, R. P. Raman, G. Tripathy

Achievements



Macrobrachium rosenbergii post-larvae from Gujarat, Maharashtra and Orissa stocks maintained at Kakinada centre of CIFE reported of white-tail disease outbreak, were collected in ice and alcohol. Some of the infected PLs were also transported live to the pathology lab. The PLs had characteristic white tail and muscle suggestive of white-tail disease. The samples were processed for the confirmation of white tail disease by PCR using primers reported earlier. Total RNA was extracted form the infected tissues and cDNA was synthesized. A product of 1.14 kb was amplified on PCR which pertains to the RNA-2 of MrNV. The same cDNA sample was used for PCR for XSV using specific primers. A PCR product of 772 bp was obtained upon amplification with primers specific for XSV. Experimental infection of PLs was carried out in the laboratory. Healthy *M. rosenbergii* PLs obtained from the CIFE hatchery were infected with the infected PLs collected from Kakinada. Tissue suspension in PBS was filtered through 0.22µ syringe filter was added to the culture tank. The PLs were observed for 2 weeks. Characteristic leisons and mortality pattern were not observed in the experimental infection. A lower mortality rate and slight discolouration of the musculature was observed. However, PCR for MrNV and XSV were negative. Samples were also collected from the CIFE hatchery and subjected to PCR for MrNV and XSV. The samples were negative for both the viruses. On bacteriological and fungal

examination, *Aeromonas hydrophila* was detected. No fungus was detected in the samples. Microscopic examination did not reveal any parasites. Subsequent sampling of *M.rosenbergii* post-larvae and juveniles maintained at CIFE was done and the samples were tested for the presence of MrNV and XSV as mentioned earlier. However no virus was detected in any of the samples. The samples were also screened for fungal pathogens using GP broth, Sabourauds media and buffered yeast agar. No fungus could be isolated from any of the samples. Samples were also investigated for the presence of parasites. No parasite could be found externally or internally form tissues such as musculature, appendages and gills. The *hyrophila* isolated from *M. rosenbergii* was characterized. The isolate was Gram negative, Gelatinase positive, motile, straight rods, resistant to Ampicillin, Penicillin, Bacitracin, and sensitive to Chloromphenicol, Tetracycline and Sulphonamide, Oxidase positive, and Glucose fermenting.

THRUST AREA 3: NON-FOOD ORGANISMS IN AQUACULTURE

Project Title: Selective breeding programme for ornamental fishes.

Personnel: M. P. S. Kohli

Achievements

Goldfish, *Carassius auratus* (Linnaeus, 1758) and Fighter fish, *Betta splendens (*Regan, 1910) were procured from Kolkata and Mumbai fish markets. After conditioning to the local environment, they were reared for breeding. Having raised up to maturity stage, 500 sets each of Goldfish and Fighter fish were kept for breeding. The fecundity rate of Gold fish was in the range of 500 to 3000 numbers of eggs, while for Fighter it was 400 to 1200 numbers of eggs. The rate of survival for the young ones of Goldfish was 30%, while it was 20% for that of Fighter fish.

Overview and inside view of Ornamental fish seed hatchery

Project Title: Extraction of natural carotenoids to use as feed additives in ornamental fish feed

Personnel: A. Sinha, S. D. Singh, G. H. Pailan

Achievements

The carotenoid content of muscle and skin of some indigenous and exotic fishes has been estimated. Mean total carotenoid level in flesh and skin in different indigenous ornamental fishes are as follows: *Botia lohachata* (Y Loacu) 2.13 µg/g; *Puntius saphori* (Sophore barb) 1.60 µg/g; *Puntius conchonius* (Rosy barb) 2.40 µg/g; *Colisa fasciatus* 2.80 µg/g and *Chanda ranga* 1.70 µg/g. In exotic ornamental fishes, the average carotenoid content was (µg/g) as follows: *Cararrius auratus* (Gold fish) - 1.67; *Cyprinus carpio* (Koi carp) - 3.60; *Poecilia reticulate* (Guppy) - 3.87; *Poecilia maculates* (Molly) (silvera) - 1.60; *Poecilia maculates* (Molly) (black) - 2.40; *Xiphophorus variatus* (Platy) - 3.60; *Xiphophorus helleri* (Sword tail) (orange) - 2.80 and *Puntius tetrazona* (Tiger barb) - 2.80. Among the all fish species under study, the carotenoid content was minimum in Sophore barb and Molly (silvera) and was maximum in Guppy.

THRUST AREA 4: SUSTAINABLE FISHERIES DEVELOPMENT THROUGH CO-MANAGEMENT

Project Title: Developing strategies for fisheries enhancement of Dimbhe reservoir, Maharashtra through management interventions and community participation

Personnel: M. P. S. Kohli, N. Saharan, K. Dube, L. Shenoy, V. K. Tiwari, Chandraprakash and S.Salim

Achievements

Pre-monsoon, monsoon and post monsoon samples of the reservoir were studied for the physico- chemical parameters and biological parameters. The aquatic net productivity was in the range of 225 to 250 mg C/m^3/day.

About 500 kg of green manure crop Daincha was planted in about 3-4 hectares in exposed areas of 4 villages to enhance the produculawade pond and 3 lakh were reared in quarry.tivity of the reservoir. Soil organic carbon got increased from 0.45 to 0.70%

A view of *Dhencha* plantation

Cage construction and shifting of cages.

The plankton population of the reservoir was poor. Fish species recorded in the reservoir included *Labeo rohita, Catla catla, Cirrhinus mrigala, Cirrhinus reba, Ompok pabda, Puntius spp. Labeo calbasu, Chela spp., etc.* Under the enhancement programme, during last one year 11, 93,000 advance fry and fingerlings of Catla, Rohu and Common carp were stocked in the reservoir. Out of this, 2.6 lakh fry were reared to fingerlings in Phulawade pond and 3 lakh were in quarry.

Cage culture programme was taken up with community participation through NGO "Shaswat", working for rural development. A set of four cages (HDPE, 3m x 3m x 3m) were stocked with 3,500 (200 No./m^3) common carp fry (35-50 mm and 1.0 to 1.5 g) in each cage. After rearing for a period of nine months, a total of 4250 advance fingerlings (100 to 140 mm) were released in the reservoir. In January 2008, a set of sixteen cages of HDPE, 3m x 3m x 3m, mesh size 6 mm having 3m x 3m x 2m effective water depth was installed in the reservoir. The cages were having 1 m free board. Cage 1-4 were stocked with common carp of 25 mm, 0.256 g @ 2,700 No./cage (150 No./m^3), cage 5-12 with common carp of 20.59 mm 0.248g @ 2,250 No./cage (125 No./m^3), cage 13-15 with common carp 56.87 mm, 1.11g@900 No./cage (50 No./m^3) and cage 16 with 33.20 mm, 300 No./cage (16.67 No./m^3) gold fish. Cages are being maintained and growth is observed regularly.

A battery of cages in Dimbhe reservoir

Project Title: Development of a fisheries co-management model for selected coastal segments of Maharashtra

Personnel: S. K. Chakraborty, S. N. Ojha, K. Venkateshvaran, G. Deshmukhe, A. K. Jaiswar

Achievements

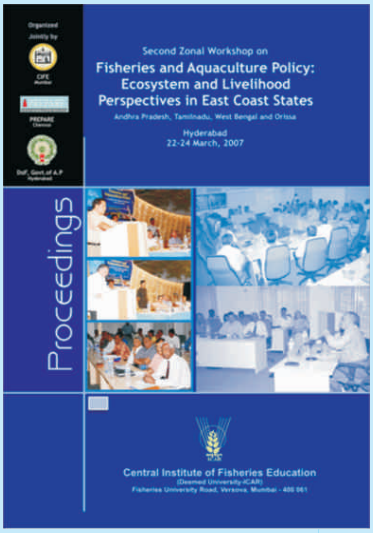
Biodiversity estimation was done from Kundalini river at Revdanda and Agrava village and also from Dharmatar creek near Nippon Dendron Ispat Company. The BOD levels were high, indicating pollution in the water bodies. The high nitrite content also was found in the water bodies. The presence of *Coscinodiscus* in the sample also proves that pollution is persisting and because of it the presence of other plankton is low. The degradation of mangrove vegetation at Kundlika river is mainly due to sand mining and effluent discharged from MIDC. The fish catch was also recorded from the landings as well those left on the platform for drying. *Thryssa* spp., *Acetes* sp., *Stolephorus* spp., *Coilia dussumeri* and penaeid prawns were recorded. PRA of Revdanda village was done. There are about 250 families of which 150 are Hindu and Jain and about 100 Muslims with fishing and related activities as main source of livelihood. All the people below 50 years of age are literate. The problem faced by the fishers is unemployment, and pollution caused by the industries. Pollution has resulted in depletion of the catch and also causes mass mortality. Sand mining is destroying the mangrove vegetation and also the bottom flora and fauna. The opportunities perceived were that the fish drying and packing with a regular platform for the same. The fishers too can be given the right to sand dredging which may result in judicious exploitation of the resources; thus saving the mangroves also. Aquatourism can be promoted in this area, as an alternative economic activity.

Project Title: Development of a participatory extension model for aquaculture

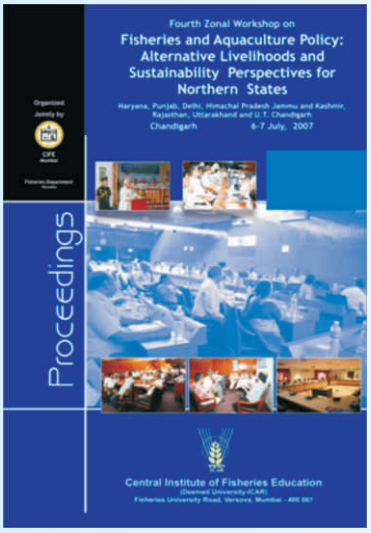
Personnel: P. S. Ananthan, S. S. H. Razvi

Achievements

Chanos chanos (Milk fish) seeds were stocked in 0.4 ha pond @10000/ha. Regular feeding, water and soil management and monthly sampling for growth was carried out. The total weight obtained from harvest was 430 kg for a total number of 2660. *Scylla tranquebarica* (Green crab) culture was also tried under participatory aquaculture model. A total number of 1200 crablets were


Second Zonal Workshop on
Fisheries and Aquaculture Policy:
Ecosystem and Livelihood
Perspectives in East Coast States
Andhra Pradesh, Tamilnadu, West Bengal and Orissa
Hyderabad
22-24 March, 2007
Proceedings
Central Institute of Fisheries Education


Third Zonal Workshop on
Fisheries and Aquaculture Policy:
Responsible Fisheries and Sustainable
Aquaculture Perspectives for
West Coast States
Goa, Gujarat, Karnataka, Kerala, Maharashtra and
Union Territories of Daman and Diu, Dadra & Nagar Haveli
and Lakshadhi
Goa, 21-23 June 2007
Proceedings
Central Institute of Fisheries Education


Fourth Zonal Workshop on
Fisheries and Aquaculture Policy:
Alternative Livelihoods and
Sustainability Perspectives for
Northern States
Haryana, Punjab, Delhi, Himachal Pradesh Jammu and Kashmir,
Rajasthan, Uttarakhand and U.T. Chandigarh
Chandigarh 6-7 July, 2007
Proceedings
Central Institute of Fisheries Education

that would assist the states, in developing their own State fisheries policy. The workshops have also brought out several cross sectoral issues confronting the fisheries sector and their interdependent nature. The workshops have yielded some specific inputs for developing the policy framework at Central and State levels. A workshop was held at the Institute during 15-20 December, 2007, for synthesizing the proceedings of five zonal workshops conducted earlier. The proceedings of five zonal workshops have been prepared and being sent to different stakeholders, the policy makers and development planners.

Policy Support: One significant outcome of the project was, the interest shown by State Department of Fisheries for development and policy support. Accordingly, policy development support was provided to the Fisheries Department of Bihar, Tamil Nadu and Assam.

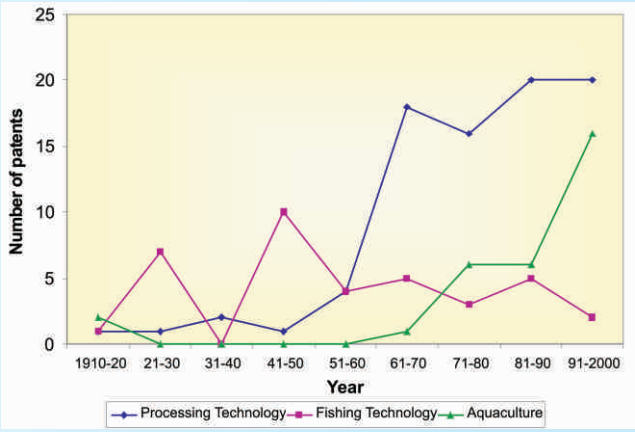
Policy Framework: Based on the consultative workshops and literature review, a detailed framework consisting of policy issues, policy status, and policy options on 8 sub sectors of fisheries and aquaculture are being prepared.

Project Title: An empirical study of patents and patenting activity in the fisheries sector

Personnel: Arpita Sharma, G. Venkateshwarlu, Gopal Krishna, B. B. Nayak, P. S. Ananthan,

Achievements

The project has the objectives to compile Indian, US and European office patents in fisheries sector (1985-2005) as per the International Patent Classification (IPC) codes related to fisheries. Under the project, methodology for patent documentation was finalized as per the IPC version 8.0. Indian patents were documented from Gazette of India, and Patent Office, Mumbai. Indian patents in fisheries sector were documented (since 1913) and cross sectional analysis of patents was undertaken. A total of 151 patents in fisheries sector were documented and further classification as per specialization was done.

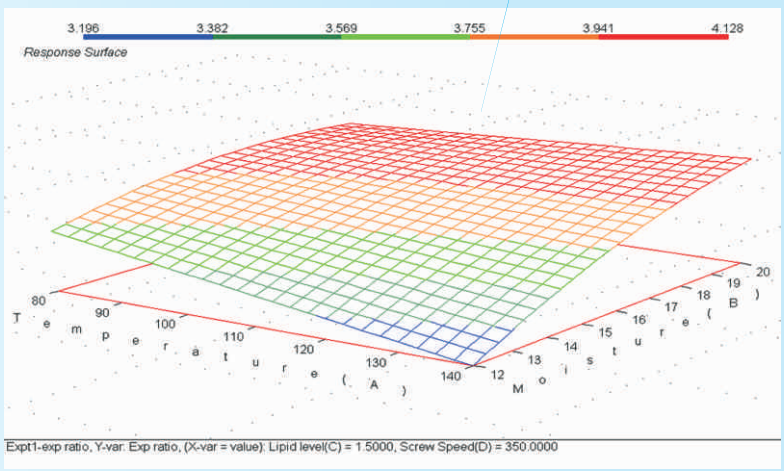


Trend in patenting activity in fisheries sector in India (1913-2000)

Case study of patented hatchery for carp eggs (Patent number: 144378) and hatchery cum spawnery (patent number: 147080) by TMBRS, Bombay has been performed. Thus, the patent rights have not been exploited to the fullest. Also the patent was renewed only for a period of 5 years after which it was discontinued. Compilation of Indian, US and European patents in fisheries sector as per the IPC codes related to fisheries (1985-2005) from the patent search software is in progress.

Achievements

Functional snack foods can be produced by twin screw extruder by incorporation of fish oil containing omega-3 PUFAs especially Eicosapentaenoic acid (EPA) and Docosahexaenoic acid (DHA). However, the major challenge of extrusion cooking is the lipid oxidation. Expansion is another important parameter of an extruded product in terms of its functional properties. Product quality can vary considerably depending on the extruder type, feed moisture, and temperature profile in the barrel session, feed rate, moisture etc. Thus, the expansion characteristics of fish oil enriched extruded products have been studied using Response Surface Methodology.



Effect of temperature and moisture on expansion ratio

Four variables namely feed moisture, temperature of the barrel, screw speed and lipid level were selected to study their effect on the expansion characters of the products and the oxidation stability of the added lipid. In order to study the effect of these variables, the response surface methodology has been followed by adopting central composite design. Based on the results of extrusion runs carried out using different lipid sources, the following ranges for different variables have been selected for designing the experiment: feed moisture (12, 14, 16, 18, 20 %), temperature of the barrel (80, 95, 110, 125, 140°C), screw speed (300, 325, 350, 375, 400 rpm) and lipid level (0.5, 1.0, 1.5, 2.0, 2.5 %)

The samples were made in twin-screw extruder as per the design by using rice-corn-Bengal gram blends. The measured expansion ratio (response variable) of extrudates along with design variables were subjected to response surface methodology by Unscrambler software. As moisture of the raw material increased, the expansion ratio was found to increase. The expansion ratio decreased gradually, with increase in temperature of the barrel. However, at high moisture levels, the expansion remained constant at all the temperatures studied in the experiment. Though screw speed of twin-screw extruder had no significant effect on expansion ratio, the expansion of the products was found to decrease with increase in the inclusion levels of lipid. The results of the experiment clearly demonstrated that temperature and moisture are powerful variables for changing the expansion properties of the extrudates.

In order to evaluate oxidative stability of extruded products, Thiobarbituric acid (TBA) value of all the samples was measured. Based on the response plots

24 Parganas and Belda GP of Narayangarh Block, Midnapore, West Bengal. Groundwater (shallow tube well water & shallow pump water), pond sediment, pond water (surface, column and bottom), plankton, benthos, aquatic weeds, fish tissues, duck meat and duck egg were collected for the estimation of total arsenic. The highest total arsenic concentration (mg/l) was observed in each element of Kolsur GP followed by Baruipur I GP, with the lowest concentration in the elements of Belda GP. The highest concentration of total arsenic was found in pond sediment followed by benthos, plankton and aquatic weeds with the lowest concentration in surface pond water of every GP. Fish samples, duck meat and eggs of Kolsur GP also showed the highest total arsenic concentration. Among different fish, bottom dwelling Common carp and Mrigal had higher level of total arsenic followed by column dwelling Rohu and surface dwelling Catla. Among different tissues studied, liver of each fish had higher concentration of total arsenic followed by kidney, and muscle. Duck organs also showed the similar trend. Among different components of egg studied, yolk contained higher concentration of total arsenic followed by albumen, and shell.

Project Title: Nutritional strategies to mitigate physio-pathological effects of endosulfan in fish

Personnel: Sanjay Jadhao, S. Gupta and S. Munilkumar

Achievements

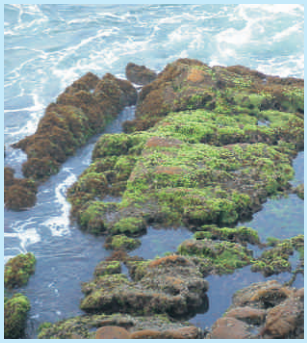
Fish (*Labeo rohita*) was exposed at LC-50 level of endosulfan with or without methyl donor supplement. The feed utilization, biochemical and enzyme profile were studied and the significant reversal of negative effect was achieved in the methyl donor supplements. LDH and MDH enzyme activities were significantly decreased in methyl donor supplement while increased in endosulfan exposed in compare to control. Similarly Acetyl choline esterase activity was increased in methyl donor supplement while decreased in endosulfan exposed. No significant change on other enzymes activities in both tissues (Liver and muscle) was found.

Project Title: Mapping of marine algae along Maharashtra coast

Personnel: G. Deshmukhe

Achievements

Out of 16 stations previously selected, 5 stations have potential seaweed



randomly stocked into triplicate tanks for each of seven treatments (PT_1, PT_2, PT_3, PT_4, PT_5, PT_6 and PT_7) for study of protein requirement and also for each of another six treatments (LT_1, LT_2, LT_3, LT_4, LT_5 and LT_6) for the study of lipid requirement in *Colisa fasciatus*. All the experimental fish were again acclimated to the respective experimental diet for one week before the actual experimental feeding. All groups of fish were fed with their respective diet to apparent satiation with two equal parts of daily ration at 09:00 and 17:00 hours for 8 weeks period. Fish were weighed every fortnight and the daily rations adjusted accordingly. Daily water temperatures were recorded at morning and evening and water samples were collected fortnightly for water quality analysis. Different performance parameters like FCR, PER, SGR, survival percentage were analyzed as per the standard method.

One-way ANOVA (Snedecor and Cochran, 1994) and Duncan`s multiple range test (Duncan, 1955) were used to analyze the significance of the difference among the means of treatments by using Compare Means (SPSS, 1997). Optimum dietary protein and lipid requirement for juvenile *Colisa fasciatus* were determined by fitting the percent weight gain of fish to second order polynomial regression analysis (Mercer *et al.*, 1989) and broken line regression procedure to determine the break point (Robbins *et al.*, 1979).

Colisa fasciatus fed with PT_3 and PT_4 feed showed significant increment ($P<0.05$) in weight gain when compared to other feeds. But no significant ($P<0.05$) weight gain was observed between fish of PT_3 and PT_4. PT_3 showed better weight gain compared to the other feed. FCR, SGR and PER showed better performances with those aforesaid feeds. By applying second order polynomial regression analysis and broken line regression procedure to determine the break point, optimum protein requirement for *Colisa fasciatus* was 30-35%. Irrespective of the lipid sources used, *Colisa fasciatus* fed with LT_4 feed showed significantly ($P<0.05$) higher FCR, growth rate and weight gain followed by the fish fed with LT_5. This study revealed that the optimum lipid requirement of *Colisa fasciatus* is in the range of 8-10% with the corresponding energy values of 400-420 kcal/100g.

5. Project Title: Mapping of microbial diversity in the marine ecosystem in and around Mumbai

Funding Agency: ICAR (Application of Microorganisms in Agriculture and Allied Sectors)
Personnel: C. S. Purushothaman, P. K. Pandey, A. Vennila

Achievements

Cultures isolated from the intertidal zones along Mumbai coast were tested for their tolerance to increasing concentrations of NaCl (2.5% to 30%). Protein profiling of Gram-positive and Gram-negative isolates tolerant to concentrations of greater than or equal to 10% salt was carried out. 1D-Proteomics of the isolate N2 in the presence and absence of external assistance of compatible solute, trehalose, under salt stress was also done.

In the salt tolerance experiment performed, only seven isolates tolerated up to 30% NaCl concentration, three tolerated up to 25% and not beyond, ten isolates tolerated up to 15% and not beyond, 42 tolerated up to 10% and not beyond, and 11 tolerated up to 5% and not beyond. Protein profiling of these isolates were carried out. Most of the diversity of the Gram-positive salt-tolerant isolates seems to be limited to the genus *Bacillus*. Although, other Gram-positive isolates were present, including many micrococcal isolates, the *Bacillus* isolates seem to withstand salt stress.

The protein profile was analyzed using non-metric multi-dimensional scaling with a 2D-plot using Correlation similarity measure distance. The clustering of points indicates the similarity between the conditions set. The three points corresponding to 1, 2 and 3% NaCl without trehalose are coinciding. At the same time, though not clustering, the points corresponding to 1, 2 and 3% NaCl stress with the assistance of trehalose are showing a similar profile, plotting close by. The marked absence of a higher molecular weight band from those N2 tubes not cultured in the presence of trehalose could indicate the repression of some systems governing endurance to salt. The absence of one band is accompanied by the intensification of a band just below it. Another band of lower molecular weight was seen in those cultures growing in the presence of trehalose, but not in the absence of it.

6. Project Title: Development of bacterial consortia for bio-processing agricultural wastes and bioremediation of aquaculture effluents

average growth observed was 200 mm/130 g in the case of mullet and 360 mm/400 g in the case of milkfish from the initial size of 10 mm/0.4 g and 30 mm/4 g, respectively.

Mullet seed procured from Kochi (Kerala) on August 25, 2007 was stocked in two lined ponds of 200 m^2 area each having 20‰ at 25,000/ha. After two months of rearing, the average size achieved was 90 mm/12 g. Mullet and milkfish seed procured from Mandapam on September 05, 2007 was stocked in two lined ponds of 0.1 ha each with 20‰ salinity at 30,000/ha after 10 days of conditioning indoors. Tiger shrimp seed from Chennai (Tamil Nadu) procured on September 19, 2007 was stocked on October 03, 2007 in six lined ponds of 200 m^2 each of 20‰ salinity after indoor rearing. Necessary amendment with potassium was done before stocking. Tiger shrimp seed procured from Kakinada (Andhra Pradesh) on September 11, 2007 was reared indoors at 5‰ salinity up to October 05, 2007. The survival rate was only 25% and these were stocked in a 200 m^2 pond of low salinity for rearing. The wet laboratory constructed under the project. This facility is being used for indoor experiments.

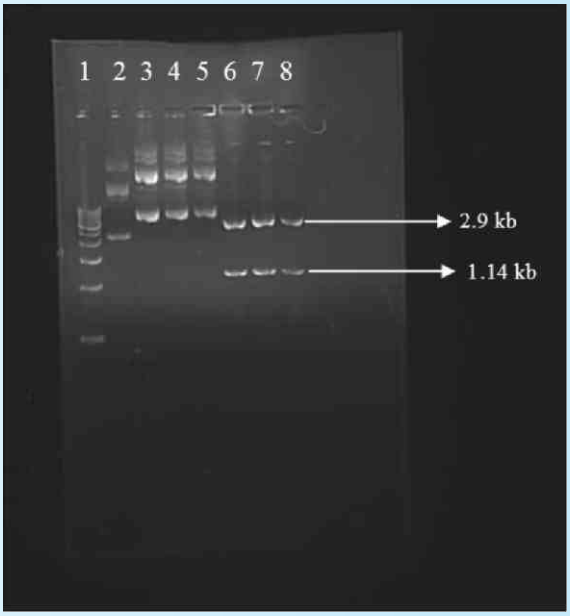
8. Project Title: Development of monoclonal antibody-based rapid diagnostic test for the detection of *Macrobrachium rosenbergii* Nodavirus (MrNV) and Extra Small Virus (XSV) of *Macrobrachium rosenbergii*

Funding Agency: DBT, New Delhi

Personnel: M. Makesh, K. V. Rajendran

Achievements

White tail disease infected post-larvae of freshwater prawn *Macrobrachium rosenbergii* were collected from a hatchery at Kakinada, Andhra Pradesh. Total RNA was extracted form the frozen samples and cDNA was synthesized using random hexamer primers. The samples were checked for the presence of MrNV and XSV using the following specific primers encoding the capsid protein gene of MrNV and XSV. Upon PCR a specific amplification product of 1.14 kb for MrNV and 772 bp for XSV were obtained.



Personnel: S. Raizada, N. K. Chadha, A. K. Reddy, A. K. Verma, M. Ali, A. Kumar, H. Javed, S. Kumar

Achievements

(i) Activity: To evaluate survival and growth of giant freshwater prawn *(Macrobrachium rosenbergii)* in raw and potassium amended inland ground saline water at 5 and 10 ppt salinities

A 45-days experiment was conducted to evaluate role of potassium amendment in inland ground saline water of 5 and 10 ppt salinities during September-October 2007. The experiment was conducted in triplicates with two treatments of 5 and 10 ppt salinities ground saline water amended with potassium equivalent to coastal seawater. FRP tanks of 500 l itre capacity were stocked with 120 PL (average size lengthl5.5 mm, weight 0.0258 gm). The raw ground saline water of the same salinity was used as control. The PL was fed ab-libitum with commercial prawn feed and 40% of the tank water was changed daily. The tanks were harvested after 45-days of rearing. A significant high survival and growth was observed in treatment than the control. Post larvae stocked in 5 ppt and 10 ppt treatment waters showed a uniform survival of 81 %, which was observed double than the control (42%) , in case of 5 ppt salinity water whereas, total mortality was observed in control water of 10 ppt salinity. The growth was also observed insignificant in both the treatment whereas it was significantly poor in control water at 5 ppt salinity. The study thus confirmed that addition of potassium could significantly enhance survival as well as growth of prawn than the raw inland ground saline water at 5 ppt salinity and addition of potassium is essential for survival and growth at and above 10 ppt salinity.

(ii) Activity: Experiment to evaluate survival and growth of giant freshwater prawn (*Macrobrachium rosenbergii)* juveniles in poly house covered ponds.

Since the prawn juveniles do not survive in open ponds during winter season in the northwestern parts of the country, 3500 number 45-days old juveniles of giant freshwater prawn *(Macrobrachium rosenbergii)* were stocked in an earthen pond of 450 m^2, covered with a poly house during November 2007. The juveniles were reared in 3ppt salinity water and fed two times with commercial prawn diet. The water of the pond was partly changed after every month. The prawns were harvested on 20 March 2008 by draining the pond. A total of 3140 prawn juveniles of size range 5-15gm, with an average weight 12.0gm were harvested. Thus the experiment has indicated that prawn juveniles could be reared with high survival during winter season in pond covered with poly house.

iii) Activity: Experiment to evaluate survival and growth of giant freshwater prawn *(Macrobrachium rosenbergii)* brood stock in poly house covered ponds.

Participating Institutions: Central Institute of Brackishwater Aquaculture (CIBA), Chennai, AKVAFORSK, Norway

Personnel: Gopal Krishna, S. Jahageerdar, G. Venugopal

Achievements

The third workshop in India and data analysis was carried out at Central Institute of Fisheries Education, Mumbai from October 30 to November 03, 2007. During the workshop, an extensive review and updation of challenge-test and performance data for the first batch of 51 families were carried out. The data on the harvested shrimp were analyzed for genetic variance. The heritability and approximate genetic correlations were estimated for harvest weight, pond survival and resistance to white spot syndrome virus (WSSV). For harvest-weight, the results demonstrated a highly significant effect of rearing pond and sex (females being heavier than males), but no effect of rearing location (CIFE or CIBA) and origin of the stocks (Tamil Nadu, Andra Pradesh and Andamans). The origin of the stocks also did not significantly affect the pond survival. For this trait, the data structure did not allow for fitting these fixed effects. The results showed significant genetic variation in body weight at harvest (h^2 = 0.28±0.07) and general pond survival (h^2 = 0.30±0.06). Approximate genetic correlations indicated a slight positive association between harvest weight and pond survival (rg = +0.16). The estimated heritability for resistance to WSSV was low (0.01). A negative genetic correlation was observed between body-weight at harvest and resistance to WSSV recorded in the controlled challenge-test (rg = -0.20). Although, the analysis did not reveal significant additive genetic variation for resistance to WSSV, a cluster of three families (two from Andra Pradesh and one from Tamil Nadu) appeared to have relatively higher resistance to WSSV.

13. Project Title: Improvement of economic traits in Rohu by diallel crossing of inbred lines

Funding Agency: ICAR (Agricutural Produce Cess Fund), New Delhi

Personnel: S. Jahageerdar

Funding Agency: ICAR (NAIP), New Delhi

Personnel: R. S. Biradar, V. K. Tiwari, A. K. Reddy, S. Salim, M. L. Ojha

Achievements

The project commenced in October, 2007. Field survey of 16 water bodies in Banswada district of Rajasthan was carried out for assessing their suitability for undertaking aquaculture activities. Market survey of fish consumption pattern in Banswada indicated that, 41% of respondents reported consumption of fish once in a week, 11% once in a fortnight and 48% once in a month. The consumer preference is more for Catla followed by Rohu and freshwater Eel. The main reason for not eating fish was found to be the high price of fish, non-availability of fresh fish and religious sentiments. Only 7% of the respondents were aware of value-added fish products and none of them had even tasted these products.

Feasibility survey of ornamental fish culture conducted in Banswada, indicated that 54% of the sample respondents were aware of ornamental fish keeping and only about 11% of them had the hobby of ornamental fish keeping. Gold fish was the most preferred aquarium fish.

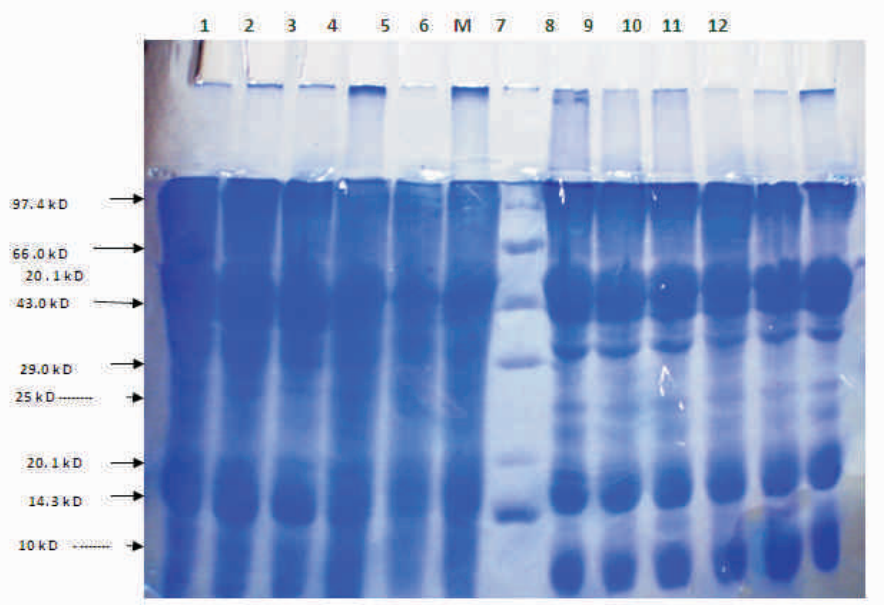
17. Project Title: Exploring market opportunities for fisheries sector in India (Jan-Dec 2008)

Funding Agency: NFDB (National Fisheries Development Board), Hyderabad

Personnel: S. Salim, P. S. Ananthan

Achievements

The country wide project is a sponsored project by NFDB, Hyderabad, and National Centre for Agricultural Economics and Policy Research (NCAP), New Delhi is the lead centre. CIFE as a partner institution would be responsible for conducting the study in Maharashtra and Gujarat with the objectives to diagnose existing marketing structures, to assess their performance in marine and inland sectors, and to undertake successful case studies on innovative marketing arrangements in fisheries sector to assess their feasibility and benefits to fisher folks. The inception workshop was held in February 2008, wherein the work plan and

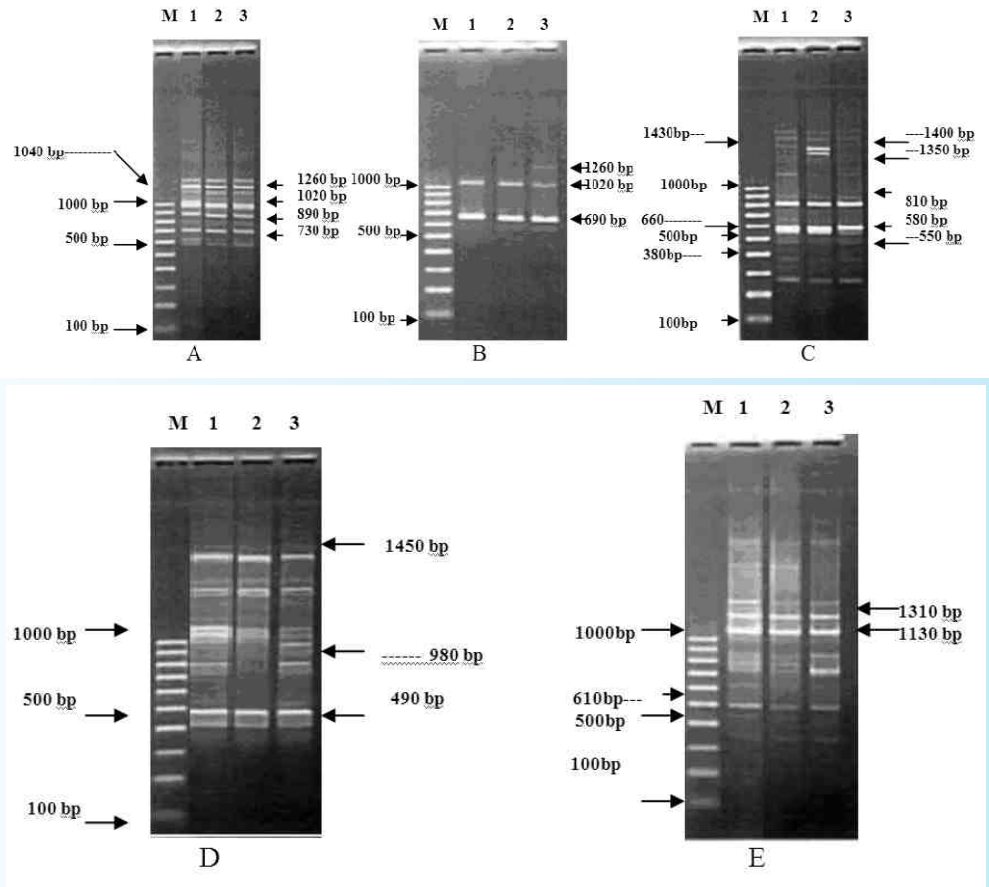


Comparative analysis of muscle Protein Polymorphism in seabass of South & West Coast as revealed by (10%) SDS PAGE.

1-6 ---> Muscle protein samples of 6 fishes of seabass from South Coast (SCLCP 2, 13, 17, 20, 26, 28).

M --->Protein Molecular Weight Marker.

7-12 ---> Muscle protein samples of 6 fishes of seabass from South Coast (WCLCP 5, 12, 21, 25, 27, 30).



Comparative RAPD profiles of *Lates calcarifer* collected from five different sites using different primers (A-OPC-02; B-OPC-07; C-OPC-08; D-OPC-09; E-OPC-11)

Lane M : 100 bp DNA molecular weight marker.
Lane 1 : RAPD profile of sea bass from East Coast.
Lane 2 : RAPD profile of sea bass from South Coast.
Lane 3 : RAPD profile of sea bass from West Coast.

Electrophoresis on Agarose gel and Ethidium Bromide staining was usually found sufficient for detection of RAPD-PCR products. The RAPD banding profiles (size in bp) were analyzed in PC using" Lab work software UVI soft and amplified bands were determined by comparing with known DNA standard molecular weight marker (100 bp of DNA ladder) in the gel. The reported molecular size of DNA bands after software analysis varied in the range of (+/-) 5 to 10 bp.

All above RAPD primers have shown DNA polymorphism in different coastal stocks of seabass. Primer OPC-08 has given very good results in terms of producing highest number of DNA bands (polymorphic as well as monomorphic) in comparison to other random primers. Maximum numbers of monomorphic DNA bands were obtained with primer OPC-02 as well as OPC-08. East Coast has shown polymorphic DNA banding profile in the range of 380 to 1430 bp, South Coast has shown polymorphic DNA banding profile in the range of 1350 to 1400 bp while West Coast has shown polymorphic DNA in the range of 550 to 1260 bp. In conclusion, the above given polymorphic DNA bands, may come out as DNA markers for a particular coastal region which may be useful for the selection of superior germplasm after further characterization.

utilization of nuclear power plant discharge in aquaculture. The concept of engineering interventions has been applied for maintaining optimum temperature round the year at hatchery complex for fish breeding and seed rearing. The results indicate that maintaining optimum temperature decreases incubation period and increases growth of fry & fingerlings of Indian Major Carps. This was a successful fish breeding programme carried out in warm water effluents from nuclear power plant in India. However, some constraints were identified and recorded through this projects especially parasitic infection in brood fishes as well as in spawn.

Combined effect of temperature and chlorine on the fry of *Labeo rohita*

A laboratory experiment is being conducted to see the effect of acclimation temperature and chlorine (0.1 ppm) at different acclimation temperatures (26, 31, 33 and 36°C) in *Labeo rohita* (Mean ± SE: 3.3 ± 0.2 g). A constant level of (0.1 ppm) chlorine was maintained throughout the experimental phase. Data on enzyme activity in different tissues of *rohita* exposed to different temperatures in combination with 0.1 ppm chlorine showed variation with increasing temperatures at 20 days and were significantly different ($p < 0.05$) amongst the experimental groups. After 28 days acclimation, values were significantly different than that of 14 days ($p < 0.05$) and varied with increasing acclimation temperatures. LDH activity increased with increasing acclimation temperatures to cope up with the increasing metabolic activity (as evident from oxygen consumption rate). However, LDH activity got inhibited due to free chlorine in rearing waters. LDH activity appears to stabilize after 28 days as compared to that of 14 days acclimation trial. MDH activity increased with

Achievements

The development of facilities for training and experiential learning was achieved. Development of a sales counter, a modular kitchen and renovation of existing facilities were achieved. A walk-in cold room and a can seaming machine were added to the existing facilities.

23. Project Title: Studies on germ plasm preservation of marine algae

Funding Agency: Department of Ocean Development, New Delhi
Personnel: G. Deshmukhe

Achievements

The survival rate of the cryopreserved thalli of three economically important algal species has been tried in the tank culture up to 70 days. Three cryoprotectants were used and glycerol was found to be best among them. *Gracilaria* showed maximum survival rate (70%) followed by *Ulva* and the least survival by *Hypnea*.

4.3. Contract Research Project

1. Project Title: Bio-safety Study of Bt Cotton with Cry 1 Ac gene on Common Carp (*Cyprinus carpio*)

Name of Sponser: Central Institute for Cotton Research, Nagpur.

Personnel: K. K. Jain, N. P. Sahu

Achievements

Procured fish seed of Common carp (*Cyprinus carpio*) for the experiment purpose from Fish Seed Farm, Khopoli, District Raigad. Prepared the different experimental diets with different doses @ 0%, 10%, 20% and 30% of Bt and non-Bt cotton. Set up the experiment at CIFE wet laboratory and stocked the seed as per experimental design. A 60 days feeding trial was conducted on Common carp fry to study the biosafety effect of Bt. cotton seed cake with Cry 1 Ac gene supplied by CICR, Nagpur. Bt Cotton seed cake was included in the diet of common carp at three levels and compared with its non-Bt. cotton counter part along with a contol group (Non cotton seed cake). Growth rate of Bt cotton seed cake was equally comparable ($P > 0.05$) with that of control group and Non-Bt counterpart as well. No mortality was found during the experimental period, suggesting no adverse effect due to feeding of Bt Cotton seed cake in *C. carpio*. The duration of this project was six months from

6. Extension Achievements

6.1 Short term Training Programmes (STP)/ Special Training Programmes

Title	Venue	Duration	No. of participants
Application of molecular biological tools and techniques in fish	Mumbai	February 15 to June 15, 2007	01
Fish & Prawn Culture (X batch of Bihar Fish Farmers)	Kakinada	April 09-18, 2007	40
Different aspects of Aquaculture	Kolkata	April 27-30, 2007	20
Value added fish products	Mumbai	May 08-10, 2007	20
Fish & Prawn Culture (XI batch of Bihar Fish Farmers)	Kakinada	May 10-19, 2007	40
Molecular cloning and expression VP19 and VP28 genes of WSSV of shrimps	Mumbai	May 10 to July 09, 2007	01
Production of Hyper-immune sera against WSSV	Mumbai	May 10 to July 09, 2007	01
Ornamental fish culture (I-Batch of Special Training Programme for women of West Champaran, Bettiah, Bihar	Kolkata	May 22 to June 05, 2007	20
Parasitic Diseases of fishes	Mumbai	May 23 to June 23, 2007	01
Advancement in fisheries and aquaculture	Mumbai	June 04-08, 2007	09
Fish & Prawn Culture (XII batch of Bihar Fish Farmers)	Kakinada	June 08-17, 2007	39
Hatchery management of Giant Freshwater Prawn for trainees from CIFE, Powarkheda.	Rohtak	July 16 --28, 2007	02
Capsule course on Fish & Fisheries for the Jammu & Kashmir trainees	Rohtak	July 01 to December 31, 2007	13
Regular course of J & K trainees.	Powarkheda	July 11 to August 10, 2007	14
Fresh water fish and prawn culture	Powarkheda	July 17-31, 2007	20
Fish & Prawn Culture (XIII batch of Bihar Fish Farmers)	Kakinada	July 22-31, 2007	34
Field Training in Freshwater and Brackish water Farming (M.F.Sc. students of CIFE, Mumbai)	Kakinada	July 24 to September 05, 2007	22
Seed production and culture of Giant Fresh water Prawn	Rohtak	July 24-30, 2007	02
Fish & Prawn Culture (XIV batch of Bihar Fish Farmers)	Kakinada	August 04-13, 2007	40

Fish and Praw Lucknow, U.P	-	-
Fish & Prawn (XV batch of		
Fresh Water F Farmers of W Bihar)		
Ornamental F Batch of Spec women of We	-	
Breeding & Cu Bihar Fish Far Rohtas, Bihar	-	-
Management M.F.Sc. Stude Aquaculture B Bhopal)		-
Fin Fish and S Industrial Fish		-
Fish& Prawn C Fish Farmers)		-
Freshwater Fi (For Bihar Fis Champaran D		
Breeding & Cu Bihar Fish Far Rohtas, Bihar	-	-
Brackish wate -batch of M.S Adikavi Nannay		-
Fish & Prawn Fish Farmers)		
Ornamental F Batch of Spec women of We	-	
Fish Culture (Livelihood Pro		-
Fish & Prawn Farmers, Patn	-	-

Fish Feed Formulation and Processing Technology (Govt officials of Mizoram)	Kolkata	December 11-15, 2007	14
Fisheries, Aquaculture and Processing of Fish of Inland Waters (students of B.Sc.(Industrial Fish and Fisheries) SNS College, Motihari, Bihar)	Kolkata	December 22, 2007 to January 1, 2008	7
Fish & Prawn Culture (XVIII batch of Bihar Fish Farmers)	Kakinada	December 29, 2007 to January 7, 2008	39
Fish Culture (Farmers of M.P. Rural Livelihood Project, Dindori, M.P.)	Powarkheda	January 07-12, 2008	22
Fish & Prawn Culture (II-Batch of FFDA Fish Farmers, Patna, Bihar)	Kakinada	January 17-26, 2008	39
Integrated Fish Farming and Composite Fish Culture (Fisheries Officers of Assam)	Kolkata	January 20-26, 2008	18
Freshwater fish and prawn culture (Farmers of MP)	Powarkheda	January 17-31, 2008	20
Fish & Prawn Culture (XIX batch of Bihar Fish Farmers)	Kakinada	January 31 to February 9, 2008	38
Integrated Fish Farming and Composite Fish Culture (Fisheries Officers of Assam)	Kolkata	February 04-10, 2008	18
Fish & Prawn Culture (III-Batch of FFDA Fish Farmers, Patna, Bihar)	Kakinada	February 12 - 21, 2008	40
Freshwater Fish & Prawn Culture.	Powarkheda.	February 14-28, 2008	20
Physio-chemical analysis of water and soil for aquaculture	Kolkata	February 18-24, 2008	01
Integrated Fish Farming and Composite Fish Culture (Fisheries Officers of Assam)	Kolkata	February 18-24, 2008	18
"Value added fish products" (St. Xaviers' College,Goa)	Goa	February 21-23, 2008	25
Value added fish products (M .M. Hall, Mudgaon, Goa)	Goa	February 24-6, 2008	25
Code of Conduct for Responsible Fisheries and Sea safety	Mumbai	February 25-29, 2008	13
A training programme in association with MPEDA, Kolkata was organized on Breeding of ornamental fish for the beneficiaries of West Bengal.	Kolkata	February 26, to March 01, 2008	25

Fish & Prawn Culture (XX batch of Bihar Fish Farmers)	Kakinada	February 28 to March 8, 2008	40
Integrated Fish Farming and Composite Fish Culture (Fisheries Officers of Assam)	Kolkata	March 03-09, 2008	**23**
Breeding of ornamental fish for the beneficiaries of West Bengal	Kolkata	March 04-08, 2008	**25**
Breeding of ornamental fish	Kolkata	March 01-15, 2008	**25**
Fish & Prawn Culture (IV-Batch of FFDA Fish Farmers, Patna, Bihar)	Kakinada	March 11-20, 2008	**39**
Fresh water fish and prawn culture (Fisheries Officers of MP, Rajasthan, UP, and Bihar)	Powarkheda	March 11-18, 2008	**12**
An exposure visit was organized for farmers/representatives from Fishermen Co-operative Societies and Officials under Agriculture Technology Management Agency, Karimnagar, Andhra Pradesh	Kolkata	March 27 to April 01, 2008	**20**

seminar on "Current Issues on Applied Zoology and Environmental Sciences with special reference to Eco-restoration & Management of Bio-resources" jointly organized by University of Lucknow and B.B. Ambedkar University, Lucknow	University of Lucknow, Lucknow	December 07-09, 2007
Agragami Handicapped Samity, W.B. Ratanpur, Purba	Ratanpur, Purba Medinipur, W.B.	December 09 - 15, 2007
National Symposium on "Ecosystem Health and Fish for Tomorrow" and "Matsya Utsav- 2007" jointly organized by CIFRI and Indian Fisheries Society of India, Barrackpore	CIFRI, Barrackpore	December 14 - 16, 2007
Kisan Mela cum exhibiton under 'Bharat Nirman Abhiyan – 2007-08'		December 18-22, 2007
95th Session of Indian Science Congress, Andhra Univ. Visakhapatnam	Andhra Univ. Visakhapatnam	January 03 -07, 2008
- organized by Vesava Koli Jamat Trust, Mumbai		January 18 -20, 2008
Koli Sea Food Festival (As part of 4th Mumbai Festival-2008) organized by Koli Festival Sanstha, Versova, Mumbai	Versova, Mumbai	January 24 -27, 2008
- "Biodiversity Conservation and Management" organized by Rajiv Gandhi Chair in Contemporary Studies, Kochi, Cochin Univ. of S&T, Kochi	Cochin Univ. of S&T, Kochi	February 03 - 06, 2008
Pusa Krishi Vigyan Mela 2007, : IARI, Pusa, New Delhi	Pusa, New Delhi	February 21-23, 2008
- by Institute of Social Studies, Kolkata		- 24, 2008
Krishi Mela and Krushak Sangosthi' under 'ATMA' project	Powarkheda (M.P.)	March 24-25, 2008
- DoF, Assam		- 2008

6.3 Radio Talk delivered

- Shri R. Ravishankar Patnaik, Technical Officer attended an interview programme at All India Radio, Visakhapatnam on the topic "Bangaaruteega Chepalalo Santanotpathi Melakuvalu" on July 03, 2007.
- Shri V. Narasimhacharyulu, Technical Officer delivered a talk on "Uppuneeti Cheruvulalo Neeti Nanyata Yajamanyam" at All India Radio, Visakhapatnam, on August 03, 2007.
- Dr. J. Krishna Prasad, Technical Officer attended a radio interview for the farmers on the topic "Inbreeding stress problems being faced by the farmers and industry" at All India Radio, Visakhapatnam, on October 03, 2007.
- Sh. K. Murali Mohan, Technical Officer delivered a talk on "*Uppuneeti chervulo misrama pempakamga palachepalatho kalipi koyyanga chepala pempakam"* at All India Radio, Visakhapatnam during November 12, 2007.

6.4 Print media

- An article on "What lies beneath" highlighting the activities of CIFE was published in West Side Plus, Times of India, Mumbai edition dated March 5, 2008.
- The exhibitions organized on the occasions were widely covered by local television and print media in the local news paper like Dainik Bhaskar, Dainik Nai Dunia, Dainik Jagaran etc.

6.5 Fish Farmers' Day

Kakinada Centre

The Fish Farmers' Day was celebrated by Kakinada Centre on July 10, 2007. Two farmers *viz.*, Shri Yalla Krishna Rao from Kajuluru, E.G. District and Shri G. Eswar Raju from Kaikaluru, W.G. District were felicitated as the Best Fish Farmers. Shri N. Sesha Reddy, M.L.C. (Govt. of Andhra Pradesh) was the Chief Guest. About 200 farmers attended the function and were motivated for sustainable aquaculture. Dr. T. Rajya Lakshmi, Former

No. of Visitors
19
02
05
22
28
25
20
40
35
70
23
25
25
13
4
14
31
15
10
25
40
16
35
31

July 5-9, 2
July 13-14
September
November
December
December
January 28
February 1
June 08, 1
August 25,
September
September
November
February 1
February 2
February 2
February 2
February 2
March 01, 2
March 10-1
March 18-1
March 23, 2

6.7 Transfer of Technology and Demonstration

The Department of Fisheries, Haryana was accorded technical know-how on prawn farming by Rohtak Centre during the reported period. A total of eight pond sites both at state farms and at private farms were selected for the purpose. Culture of prawn under both monoculture and polyculture systems were demonstrated. Demonstration of Carp culture practices were given to RDFs in their tanks in four blocks of Dist Hoshangabad by Powerkheda centre.

CIFE, Kakinada Centre coordinated the Field Experience Training (FET) for 6 ARS probationers of 82nd Foundation Course for Agricultural Research Service (FOCARS) from National Academy of Agricultural Research Management (NAARM), Hyderabad from March 18,2008 – April 05,2008.

North Eastern Region

Innovative aquaculture extension strategy and approaches were demonstrated in North-Eastern states by Dr. A. K. Reddy, Sr. Scientist and Dr. V. K. Tiwari, Sr. Scientist, under the guidance of Dr. Dilip Kumar, Director,CIFE. Result demonstration programmes were undertaken in Tripura on Semi-intensive Carp Culture (5 units); Polyculture of Carps and Giant Freshwater Prawn (5 units); Monoculture of Prawn (2 units); Manure-based Low Cost Carp Culture (3 units) and House-hold Fish-cum-Pig Integrated Farming (3 units). Result demonstration in Manipur included Polyculture of Carps (24 units); Manure-based Low Cost Carp Culture (24 units); House-hold Fish-cum-Pig Integrated Farming (4 units) and Fisheries Co-management in two units of 100 ha and 50 ha at Sendra Village and Takmu Village respectively in Bishnupur District.

Farmers' Meets/Training programmes organized in the NE states

Name of programme	Period	State
Training programme to the RDFs and FFs on Aquaculture Technologies.	July 09-12, 2007	Manipur
Farmers meet for selection of result demonstration farmers for various demonstration programmes" at Oinam village, Bishnupur District.	April 24, 2007	Manipur
A day long programme for the members of All Manipur Women Association (Reg. No. 1789) was organized to discuss various demonstration programmes to be undertaken at Mayang Imphal, Imphal West District.	April 25, 2007	Manipur
Farmers meet for selection of result demonstration farmers for various demonstration programmes at Wabgai village, Thoubal District.	April 23, 2007	Manipur
PRA for the "Assessment of fisheries development of 1st unit of 100 ha. segment of Loktak Lake" at Sendra village, Bishnupur District.	July 08, 2007	Manipur
PRA for the "Development of 2nd unit of 45 ha. of Loktak Lake segment through Fisheries Co-management" to the fishers of Khoiron Leikai and Kola villages at Kola, Bishnupur District.	July 07, 2007	Manipur
Training programme on "Trickle Down System (TDS) of Aquaculture Extension" to the Regional Officers of Department of Fisheries, Government of Assam, at Nagaon, Assam.	June 01-03, 2007	Assam
"Training programme to the Result Demonstration Farmers (RDFs) and Fellow Farmers (FFs) on Aquaculture Technologies"	June 01-03, 2007	Mizoram
Training programme to the RDFs and FFs on Aquaculture Technologies.	June 16-18, 2007	Tripura
PRA programme on "Fisheries Co-management" to the Fishers of Sendra village, Bishnupur District.	May 19, 2007	Manipur
Training programme on "Trickle Down System (TDS) of Aquaculture Extension" to the Regional Officers of Department of Fisheries, Government of Assam, at Guwahati, Assam.	May 21-23, 2007	Assam
Training programme on "Trickle Down System (TDS) of Aquaculture Extension" to the Regional Officers of Department of Fisheries, Government of Assam, at Barpeta, Assam.	May 25-27, 2007	Assam
Training programme on "Trickle Down System (TDS) of Aquaculture Extension" to the Regional Officers of Department of Fisheries, Government of Assam, at Dhulri, Assam.	May 29-31, 2007	Assam

Training programme on "Trickle Down System (TDS) of Aquaculture Extension" for the Officers of Department of Fisheries, Government of Mizoram at Aizawl.	May 29-31, 2007	Mizoram
PRA on "Fisheries co-management in Loktak Lake" for the fishers of 1st and 2nd units.	November 01, 2007	
Training programme to the RDFs and FFs on various result demonstrations programme undertaken in Manipur.	November 02-04, 2007	Manipur
Training programme to the RDFs and FFs on Aquaculture Technologies undertaken in Tripura at Ambassa, Dhalai District	November 05-11, 2007	
Training programme to the RDFs and FFs on Aquaculture Technologies undertaken in Tripura at Matabari, Udaipur block, South Tripura District.	November 06-07, 2007	Tripura
STP on fish feed formulation and processing technologies for Departmental Officers of Fisheries, Govt. of Mizoram.	December 11-15, 2007	
STP on "Integrated fish farming and composite fish culture" for Departmental officers in the rank of AFO/FD of Dept. of Fisheries, Govt. of Assam.	January 20-26, 2008	Assam
Training programme on "Freshwater Aquaculture" to the members of Rangapara Development Circle, Rangapara, Tezpur District.	January 28 to February 06, 2008	
Training programme on "Integrated fish farming and composite fish culture" for the officers of DoF, Assam	February 04-10, 2008	CIFE Kolkata Centre
Training programme on "Integrated fish farming and composite fish culture" for the officers of DoF, Assam	February 18-24, 2008	CIFE Kolkata Centre
Training programme on "Integrated fish farming and composite fish culture" for the officers of DoF, Assam	February 03-09, 2008	CIFE Kolkata Centre
Training programme on 'Trickle Down System (TDS) of aquaculture' for the officers of DoF Assam	February 02-04 2008.	Lakhimpur, Assam
Training programme on 'Trickle Down System (TDS) of aquaculture' for the officers of DoF Assam	February 05-07, 2008	Jorhat, Assam
Training programme on 'Trickle Down System (TDS) of aquaculture' for the officers of DoF Assam	February 14-16, 2008	Silchar, Assam
Training programme on ' Fisheries co-management' to the officers of Assam Fisheries Development corporation	February, 07, 2008	Jorhat, Assam
Training programme on ' Fisheries co-management' to the officers of Assam Fisheries Development corporation	Febraury 11-13, 2008	Guwahati, Assam

Training programme on ' Fisheries co-management' for the officers of Assam Fisheries Development corporation	February 11-13, 2008.	Rampur, Assam
Training programme on ' Fisheries co-management' for the officers of Assam Fisheries Development corporation	February 04-16, 2008.	Silchar, Assam
Training programme on ' Freshwater aquaculture' for the RDFs and FFS	February 24-26, 2008	Kolasib, Mizoram
Review workshop on fisheries and aquaculture development in Mezoram	February 27-28, 2008	Aizawal, Mizoram
PRA on fisheries co-management at Loktak lake	February 20, 2008	Moirang, Manipur
Training programme to the RDFS	February 21-22, 2008	Imphal, Manipur

Other programmes in NE states.

	Resource person/persons attended
Training programme to KVK officials of Zone - III, ICAR complex for NEH Region organized by CIFRI Regional Centre for NE Region, Guwahati on July 3-7 2007.	**Dr. Archana Sinha Dr. A.K. Reddy**
Training programme on "Operation of feed mill and feed formulation organized by DoF, Mizoram.	
Workshop on "Fisheries Conservation and Enhancement: Linking Researchers and Stakeholders" organized by NBFGR, Lucknow at Guwahati during December 18-19, 2007.	**Dr. Gopala Krishna Dr. A.K. Reddy**
Assam Matsya Mahotsav, 2008 to be organized by DoF, Assam at Shilpgram, Guwahati during March 29-31, 2008.	**Dr. Dilip Kumar Dr. A.K. Reddy Dr. P.K. Roy**

6.8 Extension Activities

Conducted "Dimbhe Reservoir Fisherfolk Meet" on the importance of fisheries in the livelihood development of *Katkari Tribals* during 30th January to 1st February 2008. To program included Field visits: Rearing Pond , Solar dryer, cage culture, Katkari village and fishing etc. An interaction with Dimbhe fisher folk, followed by lectures on fisheries in small ponds, sustainable fish culture and reservoir fisheries by CIFE staff and aquarium fish demonstration and awareness programme specially organized for fisherwomen.

6.9 Cruise programmes organised

20 cruises consisting of training and research were conducted during the year 2007-08 on board vessels MFV Saraswati and MFV Narmada

B.F.Sc. students, College of Fisheries, Tripura	3 days	March 06-08, 2008.
M.F.Sc. student, CIFE	5 days	March 19-23, 2008
M.F.Sc. student, CIFE	1 day	October 24, 2007
M.F.Sc student, CIFE	1 day	November 01, 2007
PhD. student, CIFE	1 day	December 11, 2007

7. Honours & Awards

CIFE (Powarkheda Centre) stall won the consolation prize in the Kisan Mela cum exhibition under 'Bharat Nirman Abhiyan - 2007-08' held on December 18-22, 2007 at Dewas (M. P.) organized by Press Information Bureau, Govt. of India, Indore.

Dr. S. C. Mukherjee received the Rajiv Gandhi Sadbhavna Award as the best Agricultural Scientist on May 21, 2007, bestowed by Rajiv Gandhi Foundation at Suchana Bhavan, Bhubaneswar.

Dr. B. K. Mahapatra was awarded the Fellowship of Zoological Society [FZS (Cal.)] in October for his outstanding contribution in Fish Biology, Aquaculture and Fish Breeding.

Dr. B. K. Mahapatra was awarded the Fellowship of Inland Fisheries Society of India (FIFSI) in December 2007 in recognition of his outstanding contributions to Inland Fisheries & Allied Science.

Dr. P. Sardar was awarded best research paper presentation award by Animal Nutrition Society of India for presentation of paper entitled "Effect of different pelleted feeds & feeding methods on performance of carps & freshwater prawn under polyculture" at International Tropical Animal Nutrition Conference organized by Animal Nutrition Society of India, NDRI, Karnal, Haryana during October, 2007.

Dr. S. D. Singh was awarded International Membership of American Fisheries Society and received C. R. Sullivan International Endowment Fund Fellowship from IFS/AFS, USA (2007-08) and received INSA and DBT International Travel Fellowship from Government of India for his visit to USA (2007-08).

Dr. K. K. Jain was awarded the Fellowship of the Academy of Science Engineering and Technology (FASET) by Academy of Science, Engineering and Technology, Bhopal for his outstanding contributions for furthering knowledge systems in service of the society to improve the quality of life of people.

8. Linkages and Collaborations

8.1 Collaborations

Institute of Aquaculture Research (AKVAFORSK), Norway: For the project "Genetic improvement of *Penaeus monodon* through selective breeding for growth and white spot disease resistance"along with the Central Institute of Brackish Water Aquaculture (CIBA), Chennai

Australian Centre for International Agricultural Research (ACIAR): For the Indo-Australian bilateral research project on "Aquaculture in degraded inland areas in India and Australia"

MoU with Adikavi Nannaya University, Rajamundry

CIFE inked a pact with Adikavi Nannaya University, Rajahmudry on 18.02.08 in the presence of Dr. S. Ayyappan, DDG (Fy.), Dr. Dilip Kumar and Dr. Nirupa Rani, Vice-Chancellors of the universities on educational and research collaborations. The important dignitaries viz. Prof. K. Devaraj, Former Vice-Chancellor, UAS, Bangalore, Dr. P. S. R. B. James, Former Director, CMFRI, Dr. K. Janaki Ram, Former Director, CIFA, Dr. N. Sarangi, Director, CIFA, and Dr. T. Rajyalakshmi, Former Director, CIBA also graced the occasion.

- Central Drug Research Institute, Lucknow
- Central Institute of Medicinal and Aromatic Plants, Lucknow
- Central Food Technological Research Institute, Mysore
- National Institute of Oceanography, Goa
- Centre for Cellular and Molecular Biology, Hyderabad
- National Botanical Research Institute, Lucknow

Universities

- Cochin University of Science and Technology, Kochi
- Annamalai University, Chidambaram
- University of Goa, Goa
- Acharya N. G. Ranga Agricultural University, Hyderabad
- Andhra University, Visakhapatnam
- Acharya Nagarjuna University, Guntur
- Mangalore University, Mangalore
- B.S.Konkan Krishi Vidyapeeth, Dapoli
- Maharana Pratap University of Agriculture and Technology, Udaipur

State Governments

- Department of Fisheries, Government of Haryana
- Department of Fisheries, Government of Uttar Pradesh
- Department of Fisheries, Government of Bihar
- Department of Fisheries, Government of Tamil Nadu
- Department of Fisheries, Government of Andhra Pradesh
- Department of Fisheries, Government of Tripura
- Department of Fisheries, Government of Arunachal Pradesh
- Department of Fisheries, Government of Meghalaya
- Department of Fisheries, Government of Nagaland
- Department of Fisheries, Government of Assam
- Department of Fisheries, Government of Manipur
- Department of Fisheries, Government of Mizoram
- State Institute of Fisheries Technology, Kakinada

Other Organisations

- Tata Power Company, Mumbai
- Action Aid International, Port Blair
- M. S. Swaminathan Research Foundation, Chennai

9. Publications

9.1 Research Publications in Refereed Journals

Abbas, M. and Sachdeva, G. K., 2008. Genetic analysis of abnormal births in a herd of sahiwal cattle. *Indian Vet. J.*, 85: 176-178.

Barse, A. V., Chakrabarti, T., Ghosh, T. K., Pal, A. K. and Jadhao, S. B., 2007. Endocrine disruption and metabolic changes following exposure of Cyprinus carpio to diethyl phthalate. Pestic. Biochem. Physiol., 88: 36-42.

Baruah, K., Sahu, N. P., Pal, A. K., Debnath, D., Yengkokpam, S. and Mukherjee, S. C., 2007. Interactions of dietary microbial phytase, citric acid and crude protein level on mineral utilization by rohu, *labeo rohita* (Hamilton), juveniles. *J. World Aquacult. Soc.* 38(2): 238-249.

Baruah, K., Sahu, N.P., Pal A. K., Jain, K. K., Debnath, D. and Mukherjee, S. C., 2007. Dietary microbial phytase and citric acid synergistically enhances nutrient digestibility and growth performance of *Labeo rohita* (Hamilton) juveniles at sub-optimal protein level. *Aquacult. Res.* 38: 109-120.

Boomireddy, S., Chakraborty, S. K., Jaiswar, A. K., Prasad, R. R. and Palaniswamy, R., 2007. Growth and mortality estimates of large scale tongue sole *Cynoglossus arel* (Bloch and Schneider) from Mumbai waters, India. *Environ. Ecol.*, 25(4): 871-875.

Chakraborty, T., Babu. P. G., Alam, A. and Chaudhari, A., 2008. GFP expressing bacterial biosensor to measure lead contamination in aquatic environment. *Curr. Sci.*, 94(5): 800.

Das, M. M., Pailan, G. H. and Kundu, S. K., 2007. Chemical composition and carbohydrate fractions of some locally available forage and concentrate feeds of Bundelkhand. *Indian J. Anim. Sci.*, 77(11): 1173-1177.

Das, P. P., Roy, B. and Sardar, P., 2008. Evaluation of paddy straw based complete feeds through *in vitro* dry matter digestibility. *Anim. Nutr. Feed Technol.*, 8: 127-132.

Das, S. K., Tiwari, V. K., Venkateshwarlu, G., Reddy, A. K., Parhi, J., Sharma, P., Chettri, J. K., 2007. Growth, survival and fatty acid composition of *Macrobrachium rosenbergii* (de Man,1879) post larvae fed HUFA-enriched *Moina micrura*. *Aquaculture*, 269: 464-475.

Garg, S. K., Kumar, A., Arasu, A. R. T., Bhatnagar, A., Jana, S. N. and Barman, U. K., 2007. Effect of periphyton and supplementary feeding on growth performance and nutritive physiology of Nile Tilapia, *Oreochromis nilolicus* and Pearlspot, *Etroplus suratensis* under polyculture. *J. Appl. Aquacult.*, 19: 19-45.

Ghosh, S., Sinha, A., and Sahu, C., 2007. Bioaugmentation in the growth and water quality of livebearing ornamental fishes. *Aquacult. Int.*, DOI 10.1007/s10499-007-9152-8.

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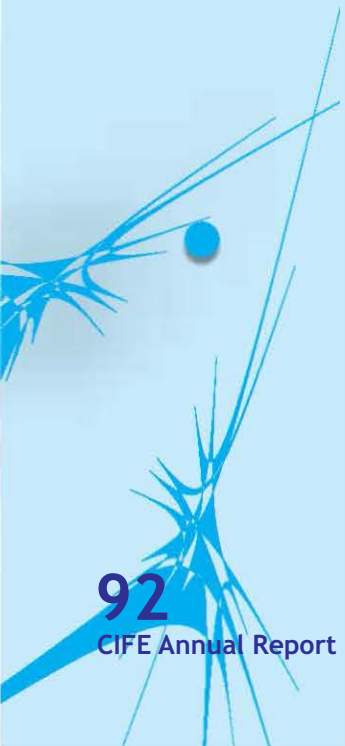

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NAIP Workshop on "Cotton Value Chain" organized by CIRCOT, Mumbai	July 20, 2007	Mumbai	N. P. Sahu
Workshop on "Partnerships in Reservoir Fisheries Development in India" organized by CIFRI, Barrackpore and NFDB, Hyderabad	July 27, 2007	Bhopal	Dilip Kumar, Somdutt, R. K. Upadhyay
National workshop on "Creating Public Awareness of Environmental Acts at the Ministry of Environment and Forests, Govt. of India as applied to Coastal Zone, Wetlands and Biosphere Reserves" organized by P. R. Government College, Kakinada	August 05, 2007	Kakinada,	R. R. Patnaik,
International workshop on "Aquatic Epidemiology Surveillance and Emergency Preparedness"	September 03-07, 2007	Chennai	R. P. Raman, M. Makesh
National symposium on "Recent Trends in Organic Farming" organized by Mahatma Phule Krishi Vidyapeeth, Rahuri	September 11-12, 2007	Pune	Dilip Kumar, C. S. Purushothaman
Workshop on "Sustainability of Indian Aquaculture Industry (Sustain-aqua 07)" organized by IIT, Kharagpur	September 28-29, 2007	Kharagpur	Dilip Kumar, P. Sardar
Krishak Mela and Sangosthi organized by JNKVV, Jabalpur and Fisheries Commissioner, Jabalpur	October 03-05, 2007	Jabalpur	R. K. Upadhyay
International Tropical Animal Nutrition Conference (TROPNUTRICON 2007)	October 04-07, 2007	Karnal	P. Sardar
The Scoping Workshop on "Aquaculture-based Ecotourism"	October 05, 2007	Neral, Maharashtra	Dilip Kumar, C. S. Purushothaman, P. K. Pandey, M. P. S. Kohli, K. D. Rawat, V. K. Tiwari
Workshop on "Fisheries and Marine Reserves in India" organized by the Greenpeace	October 08-10, 2007	New Delhi	C. S. Purushothaman
Workshop on "Computational Approaches for Predicting Molecular Interactions" organized by IMTECH,Chandigarh	October 09-12, 2007	Chandigarh	A. Chaudhari
National conference on "Development of Higher Education: Expansion, Inclusion and Excellence" organized by UGC, New Delhi	October 10, 2007	New Delhi	C. S. Purushothaman
National Workshop on "Climate Change	October 12-13,	New Delhi	A. K. Pal

	Launching Workshop of the Project "Livelihood and Nutritional Security of Tribal Dominated Areas through Integrated Farming Systems and Model Technologies"	October 20-21, 2007	Udaipur	R. S. Biradar
	5th Zonal Workshop on "Fisheries and Aquaculture Policy: Sustainable Development and Livelihood Perspectives for Central States" organized by CIFE, Mumbai, IFA, Mumbai, NFDB, Hyderabad, ICAR-RCER, Patna and DoF, Bihar	October 25-27, 2007	Patna	Dilip Kumar, A. Sinha, C. S. Purushothaman
	Data analysis workshop under the NORAD project `Genetic improvement of *P. monodon* through selective breeding for growth and white spot disease resistance', organized by CIFE, Mumbai	October 30 to November 3 , 2007	Mumbai	S. C. Mukherjee
	8th Asian Fisheries Forum	November 20-23, 2007	Asian Fisheries Society at La Meridian Hotel, Kochi	Participants*
	Innovation in Inland Saline Aquaculture in India and Australia organized by CIFE, Mumbai and ACIAR, NSW, Australia	November 28, 2007	New Delhi	Dilip Kumar, C. S. Purushothaman
	National Workshop on "Safety at Sea" organized by BOBP-IGO, Chennai	December 03-04, 2007	Chennai	L. Shenoy
	International Conference on "Emerging and Re-emerging Viral Diseases of Tropics and Sub-Tropics	December 11-13, 2007	New Delhi	S. C. Mukherjee K. V. Rajendran
	Consultative Strategic Workshop on "Strengthening and Capacity Building for Fisherwomen SHGs and Cooperatives in the Konkan Coast of India orgainized by FAO and Taraporewala Marine Biological Research Station, Mumbai.	December 13-14, 2007	Mumbai	C. S. Purushothaman, S. D. Singh, A. T. Landge, M. K. Chouksey
	Diamond Jubilee Seminar of CIFRI on "Ecosystem Health and Fish for Tomorrow"	December 14-16, 2007	Barrackpore	Dilip Kumar, A. Sinha, B. K.Mahapatra, P. Sardar
	Synthesizing Workshop on "Fisheries and Aquaculture Policy" organized by CIFE, Mumbai	15-17 December 2007	Mumbai	C. S. Purushothaman, L. Shenoy
	Regional Workshop on "Fisheries Conservation and Enhancement: Linking Research and Stakeholders"	December 18-19, 2007	Gawhati	Gopal Krishna

* Dilip Kumar, S. C. Mukherjee, R. S. Biradar, C. S. Purushothaman, S. D. Singh, S. Basu, S. K. Chakraborty, G. Krishna, K .V. Rajendran, G. Venkateshwarlu, A. Sharma, B. B. Nayak, S. S. Salim, M. Makesh, A. Vennila, U. K. Maheshwari, S. Raizada, N. K. Chadha, A. Sinha, S. Datta, P. Sardar, G. Venugopal, V. K. Tiwari, A. K. Reddy and R. P. Raman

National seminar on "Appropriate Extension Strategies for Management of Rural Resources" organized by UAS, Dharwad	December 18-20, 2007	Dharwad	S. K. Mishra
Indian Social Science Congress XXXI	December 27-31, 2007	Mumbai	A. Sharma
International seminar on "Ornamental Fish Breeding, Farming and Trade and India International (Aquashow – 2008)	January 02-03, 2008	Kochi	C. S. Purushothaman
95th Indian Science Congress	January 03-06, 2008	Visakhapatnam	Dilip Kumar, Gopal Krishna, G. Venugopal, A. Sinha, V. K. Tiwari, B. K. Mahapatra, A. K. Reddy,
International Conference on "Biodiversity, Conservation and Management (BIOCAM 2008)"	January 04, 2008	Kochi.	C. S. Purushothaman
FAO-SIDA International Workshop on "Safety of Shellfish from Harmful Algae and Biotoxins"	January 21-24, 2008	Mangalore	B. B. Nayak
Seminar on "Biodiversity Conservation and Environmental Biotechnology"	January 23-24, 2008	Tenali, Andhra Pradesh	K. P. Prasad
Biodiversity Awareness Workshop organized by CIFE, Mumbai and Biodiversity Authority of India	January 24, 2008	Mumbai	C. S. Purushothaman, G. Venugopal, G. Deshmukhe, A. K. Jaiswar, L. Shenoy
International Seminar on "Ornamentals of Kerala 2008" organized by Department of Fisheries, Kerala and FIRMA, Kochi	February 01-02, 2008	Kochi	S. S. H. Razvi
International Seminar on "Ornamental Fish Breeding, Farming and Trade"	February 02-04, 2008	Kochi	Dilip Kumar
International Conference on Biodiversity Conservation and Management (BIOCAM 2008) organized by CUSAT, ZSI, Magadh University, Bodh Gaya, Sankaracharya Univ. of Sanskrit, Kaladi	February 03-06, 2008	Kochi	S. S. H. Razvi
National Seminar on "Developing Strategies for Domestic Marketing of Fish and Fishery Products"	February 07-08, 2008	Nellore, Andhra Pradesh	K. P. Prasad, P. S. Ananthan

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. Raizada, . K. Chadha
. Vennila
ilip Kumar, . S. Purushothaman
. Venugopal, . K. Mishra
. Jahageerdar
R. S. Biradar
ilip Kumar

10.2 Training Programmes\Summer schools/Winter schools

Programme	Period	Organized by	Participants
Training Workshop for Consortia Partners to familiarize with Procurement Procedure of the Word Bank	April 16-17, 2008	BAIF Development Foundation, Pune	R. S. Biradar, Sunil Kumar, T. Padmavati
Improving Administrative Efficiency and Financial Management	June 12-19, 2007	NAARM, Hyderabad	S. S. Kocharekar, V. Pavithran
Training Programme on "Molecular Biology Techniques"	August 01-30 2007	CCMB, Hyderabad	M. Abbas, P. S. Rao
Training Programme on "E-learning"	20-25 August 2007	NAARM, Hyderabad	Rama Sharma
Training Programme on "Genomic and Protein Based Veterinary Diagnostics"	September 06-26, 2007	Madras Veterinary College, Chennai	M. Makesh
Training program on "Intelligent Reporting system (IRS) developed by ICAR"	September 10-11, 2007	IASRI, New Delhi	R. H. Khandagale
Training program on "Perspectives and Current Trends in Bioinformatics"	September 12-18, 2007	CCMB, Hyderabad	S. Jahageerdar
Intensive Fish Cultivation Training Programme	October 11-30, 2007	International Training Centre, Galillee College, Israel	U. K. Maheshwari
Winter School on "Bioprocessing Technologies in Utilization of Crop Residues for Production of Enzymes and Biofules"	October 16 to November 05, 2007	CIPHET, Ludhiana	A. Vennila
Management Development Programme on Managerial Effectiveness	November 26-31, 2007	IIM, Calcutta	Suresh Kumar
Winter School on "Recent Advances in Freshwater Aquaculture Nutrition"	November 28 to December 18, 2007	CIFA, Bhubaneswar	G. H. Pailan
Team Building Workshop cum Training	December 12-15, 2007	NAARM, Hvderabad	K. P. Prasad

Short-term Training Programme on "Integrating Spatial and Non- Spatial Natural Resources for Sustainable Watershed Management"	January 9-15, 2008	Water Technology Centre for Eastern Region, Bhubaneswar	R. Singh
Training Programme on "Finance for Non-finance Executive Schedule"	February 11-15, 2008	ASCI, Hyderabad	Suresh Kumar
Training Programme on "Capacity Building for Intellectual Property Protection and Technology Licensing in Agriculture under Indo-US Agricultural Knowledge Initiative"	February 14-16, 2008	NAARM, Hyderabad	S. Prakash, C. Prakash
CAS Training Programme on "Brood Stock Development, Management and Breeding Plans for Quality Seed Production"	February 26 - March 17, 2008	CIFE, Mumbai	Rama Sharma
Management Development Programme on "PME for Agriculture Research"	March 24-28, 2008	IIM, Lucknow	R. S. Biradar, C. S. Purushothaman, G. Venugopal
NAARM Off-campus Specialized Training for CIFE Faculty	March 31 to April 02, 2008	CIFE, Mumbai	R. S. Biradar, C. S. Purushothaman, Gopal Krishna, G. Venkateshwarlu, S. K. Mishra, A. Sharma, S. P. Shukla, A. Vennila
CAS Training Programme on "Nutritional Biotechnology for Qualitative and Quantitative Enhancement in Food Fishes"	March 31 - April 20, 2008	CIFE, Mumbai	Asha T. Landge

10.3 Brainstroming sessions/Awareness Camps/Farmers' meet

3rd Brainstorming Session on "Agriculture Educational Policy"	March 8-9 ,2008	Punjab Agricultural University, Ludhiana	Dilip Kumar

10.4 Important meetings

Network Meeting of Fish Nutrition Experts in ICAR	April 21-22, 2007	NAAS Complex, ICAR, New Delhi	S. D. Singh K. K. Jain A. K. Pal N. P. Sahu
Meeting of DBT Task Force on Aquaculture and Marine Biotechnology	May 18, 2007 and March 17-18, 2008	Department of Biotechnology, New Delhi	Dilip Kumar
Fourteenth Annual General Body Meeting of the National Academy of Agricultural Sciences, and National Symposium on "Agriculture Cannot Wait: New Horizons"	June 04-05, 2007	NAAS Complex, New Delhi	S. Jadhao
Meeting at CDRI, Lucknow to discuss the Organization of "Steering Committee Meeting of the Drug from the Sea"	July 25, 2007	Lucknow/Ministry of Earth Sciences, New Delhi	Dilip Kumar
Meeting with Bio-ved Research and Communication Centre, Lucknow	July 26, 2007	National Botanical Research Institute, Lucknow	Dilip Kumar
Meeting on "Management of Agricultural Information and Dissemination - Role of DIPA"	August 04, 2007	National Institute of Research on Jute and Allied Fibre Technology, Kolkata	P. Sardar
Central Joint Staff Council Meeting	September 15, 2007	NAARM, Hyderabad	Dilip Kumar
Meeting on "Interactive Session on Delineation"	September 25, 2007	Planning Commission, New Delhi	Dilip Kumar
The 200th meeting of the Executive Council of Dr. Balasaheb Sawant Konkan Krishi Vidyapeeth	October 19, 2007	Dapoli	Dilip Kumar
Regional Agriculture Fair	November 03-05, 2007	Motihari, Patna	Dilip Kumar
Institute Management Committee Meeting	December 07, 2007	CIFA, Bhubaneswar	A. Chaudhari
Meeting with the Secretary, Ministry of Fisheries, Director of Fisheries and Fisheries Development Advisor to the Government of Tripura	December 27, 2007	Agartala	Dilip Kumar
XX Meeting of ICAR Regional Committee No. VII	February 29 - March 01, 2008	CICR, Nagpur	Dilip Kumar
13th Meeting of the Technical Advisory Group of NAIP, Component -2	March 10-11, 2008	KAB - II, New Delhi	Dilip Kumar, A. K. Reddy, S. Munilkumar, S. P. Shukla
Microtron Advisory Committee (MAC)	March 10 -12, 2008	Mangalore University, Mangalore	N. P. Sahu

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11.	G. Venugopal	Potential Alternative Candidate Species in Brackishwater Aquaculture/Workshop on “New Directions and Dimensions Aquaculture and Fisheries in East and West Godavari”	Adikavi Nannya University, Rajamundry	February 19, 2008
12	S. D. Singh	Application of Biotechnology in Fish Nutrition and Aquaculture/ICAR-sponsored Training Programme	Fisheries College, Ratnagiri	March 08, 2008
13.	S. C.Mukherjee	“Application of biotechnology in health management in aquaculture for quarantine” in CAS Training programme on "Brood stock Development, Management and Breeding Plans for Quality Seed Production	CIFE, Mumbai	March 11, 2008
14.	S. D. Singh	National workshop on Status and Perspective of Biotechnology in Animal Feeds and Feeding	Indian Veterinary Research Institute, Izatnagar	March 11-12 2008
15.	S. D. Singh	Status and Perspective of Fisheries Education in India/National Seminar on Golden Jubilee Celebration of NDRI	NDRI, Karnal	March 12-13 , 2008

11.2 Conferences/Symposia/Workshops/Seminars/Brainstorming Sessions/Awareness Camps

S. no.	Programme	Venue	Period
1.	3rd Zonal Workshop on "Fisheries and Aquaculture Policy: Responsible Fisheries and Sustainable Aquaculture Perspectives for West Coast States"	ICAR Research Complex for Goa, Goa	June 21–23, 2007
2.	4th Zonal Workshop on "Fisheries and Aquaculture policy: Alternative Livelihood and Sustainability Perspectives for Northern States"	Chandigarh	July 06-07, 2007
3.	A Scoping Workshop on "Fisheries Based Eco-Tourism"	Saguna Baug, P.O. Neral, Dt: Raigarh, Maharashtra	October 05, 2007
4.	5th Zonal Workshop on "Fisheries and Aquaculture Policy: Sustainable Development and Livelihood Perspectives for Central States"	Patna	October 25-27, 2007
5.	Workshop for the Stakeholders on MoES Project	CIFE Kakinada Centre	November 14, 2007
6.	Workshop on "Innovations in inland saline aquaculture in India and Australia" under the Indo-Australian bilateral project on "Developing aquaculture in degraded inland areas in India and Australia".	NASC, New Delhi	November 28, 2007
7.	Synthesizing Workshop on "Fisheries and Aquaculture Policy"	CIFE, Mumbai	December 15-19, 2007
8.	Dimbhe Reservoir Fisher folk meet on the Importance of Fisheries in The Livelihood Development of Katkari Tribals	Dimbhe, Thane	January 30 - February 01, 2008
9.	Biodiversity Awareness Workshop	CIFE, Mumbai	January 24, 2008

The second day started with Lead presentations of the experts presented the policy issues in different sub-sectors of fisheries and aquaculture including the policy issues in marketing, HRD and the service delivery systems. The flagged issues were then subjected to informal but intense and focused group discussions in four separate work groups. The specific inputs for policy guidelines that emerged from each of the work group were presented in the plenary session.

Fifth Zonal Workshop on Fisheries and Aquaculture Policy: Sustainable Development and Livelihood Perspectives for Central States at Patna

The 5th Zonal Workshop on Fisheries and Aquaculture Policy: Sustainable Development and Livelihood Perspectives for Central States" was organized at the sprawling Hindi Bhawan, Patna during 25 - 27 October 2007. The workshop was inaugurated by Shri Kumar Hon'ble Chief Minister, Uttar Bihar. The Workshop was divided into technical sessions wherein existing policies and regulatory environment, and flagging of policy related issues in the participating states of Bihar, Chattisgarh, Jharkhand, Madhya Pradesh and Uttar Pradesh were presented followed by focussed group discussions and a final concluding session in which outcome of the Workshop was presented and recommendations were made.

Inauguration of giant freshwater prawn hatchery complex at CIFE Rohtak Centre by His Excellency Dr. A.R.Kidwai, Governor of Haryana

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Kakinada Centre

Visitor Name	Position/Address	Date of Visit
Dr. S. Ayyappan	Deputy Director General (Fisheries), ICAR, New Delhi	February 18, 2008
Dr. K. Janaki Ram	Former Director, CIFA, Bhubaneshwar	February 18, 2008
Dr. G. R. M. Rao,	Former Director, CIBA, Chennai	November 07, 2007
Dr. Babu Rao	Retd. Principal, College of Fisheries, Nellore, A.P.	November 07, 2007
Dr. Sivananda Murty	Director of Extension, KVAS University, Bidar, Karnataka	December 07, 2007
Sh. K. L. Durgesh	M.L.C. (Govt. of Andhra Pradesh)	April 18, 2007
Shri N. Sesha Reddy	M.L.C. (Govt. of Andhra Pradesh	July 10, 2007

Powarkheda Centre

Visitor Name	Position/Address	Date of Visit
Shri Moti Kashyap.	Hon'ble State Fisheries Minister, Vallabh Bhawan, Bhopal (M.P.)	September 26, 2007
Shri Madhukar Rao Harney	MLA, Hoshangabad	September 26, 2007
Shri Girija Shankar Sharma	MLA, Itarsi	September 26, 2007
Dr. S. N. Dwivedi	Former Director, CIFE, Mumbai	September 26, 2007 March 16, 2008
Shri H. S. Siddhu	Director of M.P. Fisheries, Bhopal	September 26, 2007 March 11, 2008

Kolkata Centre

Dr. Mangala Rai	Secretary DARE and Director General, ICAR, New Delhi	December 16, 2007
Dr. S. Ayyappan	DDG (Fisheries), ICAR, New Delhi	December16, 2007
Dr. H. S. Sen,	Director, CRIJAF, Barrackpore	December 16, 2007 December 12, 2007
Dr. N. Sarangi	Director, CIFA, Bhubaneshwar	December 16, 2007
Dr. Deepak Sarkar	Head, NBSS LUP, Salt Lake, Kolkata	December 16, 2007
Dr. K. C. Dora	Dean, Faculty of Fisheries Science, WBUA&FS, Kolkata	December 16, 2 007
Dr. S. A. H. Abidi	Former Director, CIFE, Mumbai and Former Member, ASRB, New Delhi	December 6, 2007 December 14, 2007
Dr. S. N. Dwivedi	Former Director of CIFE, Mumbai	December 17, 2007
Dr. V. V. Sugunan	ADG (Inland Fisheries)New Delhi	December 18, 2007
Dr. U. C. Goswami	Professor & Head, Deptt. Of Zoology, Guwahati University, Guwahati	January 16, 2008
Prof. N. C. Datta	Retired Professor, Department of Zoology, Calcutta University, Kolkata	January 21, 2008
Dr. C. Saha	Former Director of CIFA, Bhubaneshwar	January 26, 2008
Dr. S. C. Pathak	Former Chief General Manager (Tech.) NABARD, Mumbai	February 1, 2008
Dr. K. K. Vass	Director, CIFRI, Barrackpore	March 9, 2008.

Rohtak Centre

Dr. A. R. Kidwai	His Excellency Governor of Haryana	August 20, 2007
Dr. S. Ayyappan,	DDG (Fy.), ICAR, New Delhi	August 20, 2007
Shri P. V. Singh	Director, Dept. of Fisheries, Haryana	August 20, 2007
Dr. V. V. Sugunan	ADG (Inland Fisheries), ICAR, New Delhi	August 20, 2007
Shri Dev Dutt	lAS, Secretary Fisheries, Govt. of U.P	October 01, 2007
Dr. Barney Smith	Fisheries Program Manager, ACIAR	November 30, 2007
Dr. Stewart Fielder	Project Leader of Indo-Australian Bilateral Project	April 16-19, 2007 November 28-30, 2007
Dr. Geoff Allan	Senior Program Manager, ACIAR, Australia and Project Associate of Indo- Australian project	November 24, 2008
Dr. Kuhu Chatterjee	Regional Manager, ACIAR - South Asia, Australian High Commision, New Delhi	April 03, 2007 November 30, 2007
Ms. Simrat Labana	Program Manager, ACIAR, Australian High Commision, New Delhi	April 03, 2007
Ms. Mellisa Merino	Australian Journalist	October 11, 2007

13. Others

13.1 Quinquennial Review Team

Chairperson

Dr. M. L. Madan, Vice Chancellor, Pt. Deendayal Upadhaya University of Veterinary Science, Mathura

Members

Dr. I. Karunasagar, Professor & Head Department of Microbiology, College of Fisheries, Mangalore-575002

Dr. P. S. B. R. James, Former Director, CMFRI, House No. M-9, 3rd B Main, 2nd Cross, Prem Nivas Road, (behind Nethra Farm), P.O. St. Thomas Town, Kammanahalli, Bangalore-560084

Dr. T. P. Singh, Retd. Professor, B.H.U. Sri Ganesh Dham Colony, N8/236-R-52, Naveda Sundarpur, Varanashi-221005

Dr. M. Babu Rao, Retd Principal, College of Fisheries Science, ANGRAU, Flat No. 204, Subabhi Enclave, Road No. 14, Banjara Hills, Hyderabad-500034

Member Secretary

Dr. R. S. Biradar, Principal Scientist, Central Insttitue of Fisheries Education, Mumbai-400061

13.2. Research Advisory Committee

Chairperson

Dr. K. Gopakumar, Ex-DDG (Fisheries), ICAR, 28/863, Cheruparamsath Road, Kadavanatara, Kochi-682020

Members

Dr. Rakesh Bhatnagar, Professor, Department of Biotechnology, Jawaharlal Nehru University, New Delhi-110067

Dr. Kaushal Kumar, Professor and Head, Deparment of Zoolgy, DDU Gorakhpur University, Gorakhpur-273009

Dr. Brij Gopal, Professor, Department of Environmental Science, Jawaharlal Nehru University, New Delhi-110067

Dr. M. Devaraj, Ex-Director CMFRI, Kavya Illam, Main Road, Chenbagaramanputhoor (P.O.), Via- Nagercoil

Member Secretary

Dr. R. S. Biradar, Principal Scientist, Central institute of Fisheries Education, Mumbai-400061

13.3. Board of Management

Chairperson

Dr. Dilip Kumar, Director, Central Institute of Fisheries Education, Mumbai-400061

Financial Advisor, Indian Council of Agricultural Research, Krishi Bhavan, New Delhi-110114

Member Secretary

Shri Suresh Kumar, Sr. Administrative Officer, Central Institute of Fisheries Education, Mumbai-400061

13.4 Academic Council

Chairperson

Dr. Dilip Kumar, Director, Central Institute of Fisheries Education, Mumbai-400061

Vice Chairman

Dr. S. C. Mukherjee, Joint Director & Head, Aquatic Animal Health Management Division, CIFE, Mumbai

Members

Dr. R. S. Biradar, Principal Scientist & Head, Fishery Informatic & Technology Evalution & Transfer Division, CIFE, Mumbai

Dr. M. P. Singh Kohli, Principal Scientist & Head, Aquaculture Division, CIFE, Mumbai

Dr. Lalji Singh, Director, CCMB, Uppal Road, Hyderabad-500007

Dr. P. Keshavnath, Dean, College of Fisheries, Mangalore

Dr. Jankiram, Former Director, Central Institute of Freshwater Aquaculture, Bhubaneswar

Dr. Prabhu Pandey, Head, PG Department of Zoology, Ranchi University, Ranchi

Dr. S. K. Chakraborty, Principal Scientist& Head, Fisheries Resource Management Division, CIFE, Mumbai

Dr. C. S. Purushothaman, Principal Scientist & Head, Aquatic Environmental Management Division, CIFE, Mumbai

Dr. Gopal Krishna, Principal Scientist & Head, Fish Genetics & Biotechnology Division, CIFE, Mumbai

Dr. S. D. Singh, Principal Scientist & Head, Fish Nutrition & Biochemistry Division, CIFE, Mumbai

Dr. S. Basu, Principal Scientist & Head, Harvest & Post harvest Technology Division, CIFE, Mumbai

Dr. Neelam Saharan, Principal Scientist, representatives from the Post Graduate faculty, CIFE, Mumbai

Dr. Latha Shenoy, Sr. Scientist, representatives from the Post Graduate faculty, CIFE, Mumbai

President, PGSSU, student representative, CIFE, Mumbai
Academic Council Representative (Student), CIFE, Mumbai

Dr. S. Ehteshamuddin, Vice-Chancellor, Patna Univetrsity, Patna-800005, the representative of the U.G.C

14. Personnel

CIFE, Mumbai

Director
Dr. Dilip Kumar

Joint Director
Dr. S. C. Mukherjee

Principal Scientists
Dr. M. P. Singh Kohli
Dr. R. S. Biradar
Dr. C. S. Purushothaman
Dr. S. D. Singh
Dr. S. Basu
Dr. S. K. Chakraborty
Dr. P. K. Ghosh
Dr. K. K. Jain
Dr. A. K. Pal
Dr. (Mrs.) Neelam Saharan
Dr. (Mrs.) Kiran Dube Rawat
Dr. S. N. Ojha
Dr. K. V. Rajendran
Dr. G. Venkateshwarlu
Dr. Gopal Krishna

Senior Scientists
Dr. (Mrs.) Latha Shenoy
Dr. (Ms) Geetanjali Deshmukhe
Dr. N. K. Chadha
Dr. (Mrs.) Aparna Choudhary
Dr. P.K. Pandey
Dr. N. P. Sahu
Dr. V. K. Tiwari
Dr. S. Jahageerdar
Dr. K. Venkateshvaran
Dr. B. B. Nayak
Dr. Arpita Sharma
Dr. K. Pani Prasad
Dr. R. P. Raman
Dr. A. K. Reddy
Dr. Ashok Kumar Jaiswar
Dr. R. S. Rana
Dr. Chandra Prakash
Dr. Subodh Gupta
Dr. S. Munilkumar
Dr. Rupam Sharma
Dr. Sumanta Kumar Mishra
Dr. Gayatri Tripathi
Dr. Satya Prakash Shukla
Dr. Swadesh Prakash

Scientist (Senior Scale)
Dr. Suryakant Patil
Dr. Makesh M.
Dr. Shyam S. Salim
Dr. A. Vennila
Dr. P. S. Ananthan

Scientists
Dr. S. B. Jadhao
Dr. Ajit Kumar Verma
Mrs. Vidyashree Bharati

Technical Staff

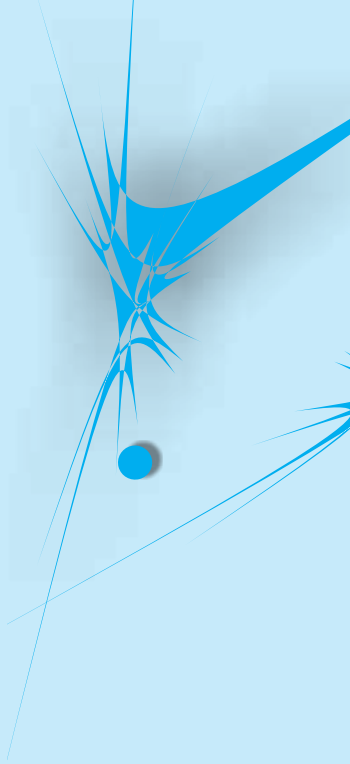
T-9
Mr. S. Natarajan
Mr. N. L. Singh

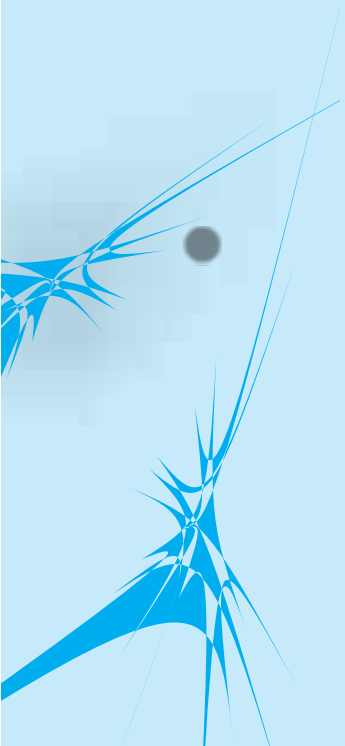
T (7-8)
Dr. Alkesh Dwivedi
Mr. R. D. Tandel
Mr. S. G. S. Zaidi
Mrs. Rama Sharma
Mr. G. K. Rao
Mr. S. K. Pandey
Ms. Asha T. Landge
Mr. A. D.Ragabhagat
Mr. S. S. Kamat

T-7
Mr. R. K. Langer

T-6
Mr. A. K. Padmanabhan
Mr. D. R. Khogare
Dr. M. K. Chouksey
Mr. Chandrakant M. H.
Mr. D. Bhoomaiah
Mr. P. K. Das
Mrs. Nalini Poojary (on study leave)
Dr. Zeba Jaffer Abidi (on deputation)

T-5
Mr. Ram Singh
Mrs. Madhavi Pikle
Mrs. Rajani H. Khandgale
Mr. J.P. Patil
Mr. R. Palaniswamy
Mrs. S.M. Bagwe
Mr. K. P. Shetty





Appointn

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9.	Dr.
10.	Dr.

Five Yearl

11.	Mr.
12.	Mrs.
13.	Mr.
14.	Mrs.

Five Yearly Assessment Meeting held on 23.4.2008

15:	Mr. Ashok Kumar	T-4	T-5	September 01, 2007
16.	Smt. Shahila Iftekhar	T-1	T-2	January 08, 2007

Five Yearly Assessment Meeting held on 19.5.2008

17.	Mr. D. Bhoomaiah	T-5	T-6	December 04, 2005

Five Yearly Assessment Meeting held on 23.5.2008

18.	Dr. P. Rami Reddy	T-6	T(7-8)	January 01, 2006
19.	Mr. S. S. Kamat	T-6	T(7-8)	January 01, 2007
20.	Late Mr. P. S. Pandey	T-6	T(7-8)	January 01, 2007
21.	Dr. R. K. Upadhyay	T-6	T(7-8)	January 01, 2007
22.	Mrs. Nalini Poojary	T-5	T-6	December 17, 2006

Five Yearly Assessment Meeting held on 26.5.2008

23.	Mr. P. K. Das	T-5	T-6	October 15, 2006
24.	Ms. Revati Dhongde	T-4	T-5	June 28, 2006
25.	Mrs. Rekha Nair	T-4	T-5	June 28, 2007

Five Yearly Assessment Meeting held on 28.5.2008

26.	Mr. N. L. Singh	T-8	T-9	January 01, 2006
27.	Mr. Josey Jacob	T-8	T-9	January 01, 2008
28.	Mr. Gurubachan Singh	T-3	T-4	July 01, 2006
29.	Mr. K. P. Shetty	T-5	3 Adv. Increments	June 27, 2007
30.	Ms. A. Mehta	T-5	3 Adv. Increments	June 27, 2007
31.	Mrs. Swati S. Parab	Assistant	AAO.	July 03, 2007
32.	Mrs. F. G. Fernandes	U.D.C.	Assistant	July 03, 2007
33.	Mrs. Sanyuja S. Parab	L.D.C.	U.D.C.	July 03, 2007
34.	Mr. Shirish P. Malvankar	SSGr. I	L.D.C.	December 11, 2007
35.	Mr. Hari Potpose	SSGr. IV	L.D.C.	July 02, 2008
36.	Mr. Gyani Ram	SSGr. I	SSGr. II	March 19, 2008
37.	Mr. Gyan Chand	SSGr. I	SSGr. II	March 19, 2008
38.	Mr. Lavesh Kumar	SSGr. I	SSGr. II	March 19, 2008

Assured Career Progression

S. no.	Name	Existing Scale of Pay	Up gradation Scale of Pay	Date
1.	Mr. S. Kamaraju, Cook	Rs. 4OOO-6000	Rs. 4500-7000	December 05, 2007
2.	Mr. Gyani Ram, SSGr.I	Rs. 2550-3200	Rs. 2610-3540	August 30, 2007
3.	Mr. Gyan Chand, SSGr.I	Rs. 2550-3200	Rs. 2610-3540	August 30, 2007
4.	Mr. Lavesh Kumar, SSGr.I	Rs. 2550-3200	Rs.2 610-3540	August 30, 2007

Transfers

S. No.	Name	Designation	From	To
1.	Dr. V. K. Sharma	Principal Scientist	CIFRI, Karnal Centre	CIFE Rohtak Centre
2.	Dr. P. K. Ghosh	Principal Scientist	CIFE Kolkata Centre	CIFE, Mumbai
3.	Dr. N. K. Chadha	Sr. Scientist	CIFE Rohtak Centre	CIFE, Mumbai
4.	Dr. G. H. Pailan	Sr. Scientist	IGFRI, Jhansi	CIFE Kolkata Centre
5.	Dr. B. K. Mahapatra	Sr. Scientist	ICAR Research Complex for NEH Region, Barapani	CIFE Kolkata Centre
6.	Mr. S. S. H. Razvi	Scientist (SG)	CIFE Powarkheda Centre	CIFE Kakinada Centre
7.	Mr. P. Satyanarayana	T-5	CIFE Lucknow Centre	CIFE Kakinada Centre
8.	Dr. Sakthivel M. (Abbas M.)	Scientist	CIFE, Mumbai	CIFE Kakinada Centre
9.	Mrs. Vidya Shree Bharati	Scientist	IISS, Bhopal	CIFE, Mumbai
10.	Mr. Chironji Lal	Chief A. O.	CIFE, Mumbai	IVRI, Izatnagar
11.	Mr. Suresh Kumar	Sr. A. O.	NBPGR, New Delhi	CIFE, Mumbai

Deputation

Name & Designation	From	Date of Relieving	Deputation to
Dr. M. Ali, T-7	CIFE Rohtak Centre	03.10.2006 (3 years)	Department of Animal Husbandry, Dairying & Fisheries, Krishi Bhavan, New Delhi
Mrs. Zeba Jaffer Abidi, T-6	CIFE, Mumbai	11.09.2006 (2 years)	Water Restructuring Project, Lucknow

Foreign Visits

Name & Designation	Deputation Period	Place of visit	Purpose
Dr. Dilip Kumar, Director	May 29, 2007	Oslo, Norway	Workshop relating to Indo-Norwegian Project.
Dr. S .D. Singh, Principal Scientist	September 01- 08, 2007	San Francisco, USA	Participation in the "137th Annual Meeting of International Fisheries Session".
Dr. U. K. Maheshwari Principal Scientist	October 11-29, 2007	Galillee College, Israel	Training Programme on "Intensive Fish Cultivation Management Programme"

Retirements

Name	Designation	Retired on	Place of posting
Mr. T. D. Kumar (Voluntary Retirement)	A. A. O.	May 29, 2007	CIFE, Mumbai
Mr. D. L. Sawant	T-5	May 31, 2007	CIFE, Mumbai
Mr. P. Satyanarayana	T-5	June 30, 2007	CIFE Kakinada Centre
Mr. N. A. Bijali (Voluntary Retirement)	S.S.Gr. IV	August 01, 2007	CIFE, Mumbai
Mr. K. Satyanarayana	S.S.Gr. III	August 31, 2007	CIFE Kakinada Centre
Mr. K. P. Khalsa	T-5	August 31, 2007	CIFE, Mumbai
Dr. P. P. Joshi	Principal Scientist	February 29, 2008	CIFE Rohtak Centre

Demise

Name	Designation	Expired on	Place of Posting
Mr. P. S. Pandey	T-7-8	March 19, 2008	CIFE Kolkata Centre
Mrs. Sidhi J. Kolambkar	S.S.Gr. I	March 27, 2008	CIFE, Mumbai


बिहार राज्य के मत्स्य पालकों के लिये
मछली एवं महाझींगा पालन का प्रशिक्षण
स्थान :
केन्द्रीय मात्स्यिकी शिक्षा संस्थान
(समतुल्य विश्वविद्यालय)
CENTRAL INSTITUTE OF FISHERIES EDUCATION


केंद्रीय मात्स्यिकी शिक्षा संस्थान
महाराष्ट्र शासन
मत्स्यव्यवसाय विभाग
आत्मा (ATMA) जि.ठाणे अंतर्गत प्रशिक्षण कार्यक्रम
कोड ऑफ कंडक्ट फॉर रिस्पॉन्सिबल फिशरीज
अंतर्गत
मी सेफ्टी

15.कार्यकारी सारांश

केन्द्रीय मात्स्यिकी शिक्षा संस्थान, मुंबई की वर्ष 2007-2008 की अवधि की प्रगति संतोषजनक रही । योजनानुसार इस वर्ष संस्थान की 20 संस्थागत अनुसंधान परियोजनाएँ, 23 बाहरी परियोजनाएँ, 2 अंतरराष्ट्रीय परियोजनाएँ एवं 2 अनुबंधित शोध परियोजनाएँ कार्यरत हैं । हरियाणा के अत:स्थलीय क्षारीय जल में टाइगर झींगा (पीनियस मोनॉडान) की जीवितता का दर टेक्नो-आर्थिकी संभावना के अनुसार प्रगति पर है । हरियाणा के क्षारीय प्रभावित तालाबों में नाइट्रोजन एवं फास्फोरस का स्तर काफी कम है । देशी बेक्टीरिया के प्रभाव को कम करने व उपजाऊपन को बढ़ाने हेतु जैविक खाद का उपयोग किया गया । महाराष्ट्र के लवणीय प्रभावित क्षेत्र में सल्फेट की अधिकता को समाप्त करने हेतु अनुपातिक रसायन एवं पो-षक तत्वों की उपलब्धता दर्शाई गई । मैक्रोबेकियम रोजनबर्गी के नोडा वायरस प्रभाव को अवरुद्ध करने हेतु 8 नए माडल जोडों का निर्माण किया गया । मै. रोजनबर्गी के अनियंत्रित भण्डार एवं प्रोटीन आहार के स्तर का अ'ययन करते हुए यह पाया गया कि उच्च हिमोलिम्फ ग्लूकोज में, उच्च प्रोटीन फेड ग्रुप था, जबकि संचित आहार में इस प्रकार का प्रभाव नहीं देखा गया । उच्च प्रोटीन फेड ग्रुप में उच्चतम श्वसन फैलाव क्रिया (एन वी टी) को रिकॉर्ड किया गया । महाराष्ट्र के डिम्बे जलाशय में हरित खाद प्लांटेशन की से जलाशय में उत्पादकता की बढोत्तरी पाई गई ।

भारतीय मात्स्यिकी एवं जलकृषि संबंधी एक सुदृढ़ नीति को कार्यरुप देने हेतु गुवाहाटी, हैदराबाद, गोवा, चंडीगढ़ एवं पटना में पांच क्षेत्रीय कार्यशालाएं आयोजित की गई । इन सभी कार्यशालाओं की कार्यवाही का विस्तृत विवरण दर्शाते हुए एक बुलेटिन प्रकाशित कर सभी संबंधित संस्थाओं व योजनाकर्ताओं को भेजी गई । पेटेन्ट्स एवं पेटेन्ट्स संबंधी अनुभवों का अ'ययन किया गया तथा पेटेन्ट्स हेतु मात्स्यिकी संबंधी 151 क्षेत्रों का चयन कर उनका प्रलेख उपलब्ध कराया गया । इस संस्थान ने भोज्य हेतु कई मत्स्य पदार्थों जैसे सैंडविच पेस्ट, पाउच में फिश करी एवं विभिन्न विधियों का निर्माण किया ।

शैक्षणिक क्षेत्र के अंतर्गत 16 छात्रों ने पी.एच.डी. की उपाधि प्राप्त की तथा 36 छात्रों ने एम.एफ.एस.सी. डिग्री तथा 22 छात्रों ने पोस्ट ग्रेजुएट डिप्लोमा प्राप्त किया । इस वर्ष कुल 92 छात्रों को प्रवेश दिया गया, जिनमें से 25 छात्रों को पी.एच.डी., 45 छात्रों को एम.एफ.एस.सी. व 22 छात्रों को अन्त:स्थलीय मात्स्यिकी में स्नातकोत्तर स्तर की उपाधि हेतु प्रवेश दिया गया ।

इस अवधि में विस्तार कार्यक्रमों में भी काफी प्रगति की गई । उपकेन्द्रों में 59 अल्पकालीन प्रशिक्षण कार्यक्रम आयोजित किए गए । इन प्रशिक्षण कार्यक्रमों में 1284 छात्रों को प्रशिक्षण दिया गया । संस्थान ने भारत के विभिन्न क्षेत्रों में आयोजित 22 प्रदर्शनियों में भाग लिया । संस्थान के कर्मचारियों ने विभिन्न विषयों पर चार रेडियो वार्ताएं प्रसारित की । संस्थान की गतिविधियों को दूरदर्शन एवं समाचार पत्रों में व्यापक रुप से प्रचारित - प्रसारित किया गया । संस्थान के वैज्ञानिकों ने मत्स्य कृषकों एवं जिज्ञासुओं को विभिन्न स्तर का मार्गदर्शन दिया । संस्थान के मुख्यालय एवं उपकेन्द्रों में मछुआरा दिवस मनाया गया । विभिन्न विद्यालयों, संस्थानों आदि के 1343 छात्रों को संस्थान के मुख्यालय एवं उपकेन्द्रों की गतिविधियों से अवगत कराया गया । प्रौद्योगिकी का हस्तांतरण एवं जलकृषि विस्तार रणनीति की नवीनता व पहुंच का प्रदर्शन त्रिपुरा, मणीपुर, मिजोरम, असम एवं नागालैंण्ड के उत्तर-पूर्वी राज्यों में किया गया । इसी के साथ इस संस्थान के वैज्ञानिकों ने इसी वर्ष में तकनीकी का सफल प्रदर्शन किया । इस संस्थान ने उत्तर-पूर्वी राज्यों मे 35 प्रशिक्षण कार्यक्रम आयोजित किए । कटकटी आदिवासियों के जीवन निर्वाह हेतु डिम्बे जलाशय फिशरटाक मीट आयोजित किया गया । इसी के साथ संस्थान के दो जलयानों एम.एफ.वी. सरस्वती एवं एम.एफ.वी नर्मदा से 20 समुद्रीय अ'ययन कार्यक्रम आयोजित किये गये ।