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CIFE

वार्षिक प्रतिवेदन

Annual Report 2012-13



**Central Institute of Fisheries Education**

(University under Sec. 3 of UGC Act)

Panch Marg, Off Yari Road, Mumbai - 400061

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[www.cife.edu.in](http://www.cife.edu.in)





# CIFE

## Annual Report 2012-13

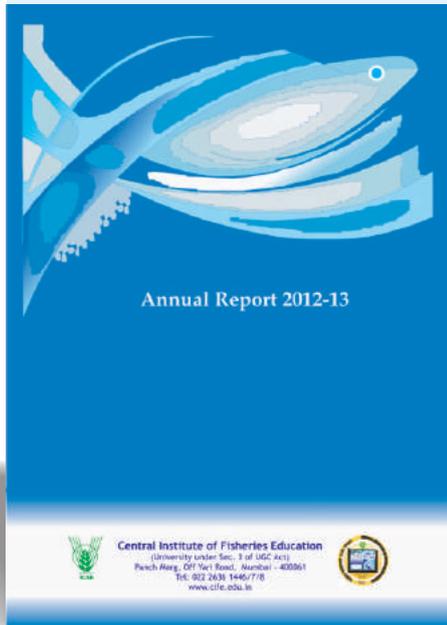


**Central Institute of Fisheries Education**

(University under section 3 of UGC act )

Panch Marg, Off Yari Road, Andheri (W), Mumbai - 400061





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# Preface

Modern infrastructure is a pre-requisite to ensure global standards, excellence and quality of education. Our new facilities added during 2012 include staff quarters, hostels and academic block (smart class rooms, conference, seminar halls and laboratories) are at par with world class organizations.

This report represents comprehensive information on the various activities and achievements of the institute during the year under the heads: Research, Education, Extension, Publication, Linkages and Collaborations, Honours and Awards, etc.

Our research output has tremendously increased in terms of highest ever publications in referred journals in the history of the institute, filling of application for patents and diversification in inland saline aquaculture. The Rohtak centre of CIFE has demonstrated highest production of *L. vanaamei* in inland saline soil, attracting considerable national attention. The research projects on nano delivery of nutraceuticals, bioactive compounds, DNA vaccine, DNA barcoding for taxonomy, GIS, ICT and ready to eat fish products have progressed with significant results.

On the academic front, 17 Ph.D. and 69 M.F.Sc. students passed out while 47 Ph.D. and 82 M.F.Sc. students were enrolled for the next batch, our focus in international arena is more concentrated on Afro-Asian countries attracting 5 foreign students from Eritrea, Sudan, Iran and Nigeria. CIFE students have continued to capture almost all the seats of ARS successively for last four years, showing the academic excellence of the institute. In order to promote International linkages, we have taken up signing the MoU with Auburn University, USA and Curtin University, Western Australia for fast-tracking our research and academic programme and to vitrine our global presence. The scientists and faculty members of the institute have received national recognition including Rafi Ahmed Kidwai Award, several society awards, fellowship of national academics, etc. Our students have participated in international events including training covering different international organisations including University of Kiel, Germany; Portsmouth Business School, CEMARE, University of Portsmouth, United Kingdom, The International Institute of Fisheries Economics and Trade (IIFET), Dar es Salaam Tanzania. Many students have availed prestigious Fullbright Nehru Doctoral and Professional Research Fellowship, inspire fellowship of DST, etc. In addition to formal academic programmes, demand-driven practical training to various stakeholders remained, the priorities of our regional centers located in different agro-climatic zone of the country.

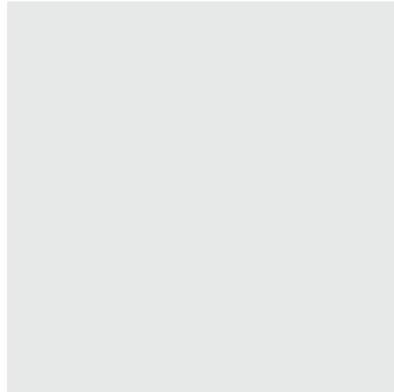
In our incessant endeavor to excel in fisheries research and to be the global leader in education, the constant support, guidance and immense encouragement provided by Dr S. Ayyappan, Secretary, DARE & DG, ICAR is gratefully acknowledged. I am thankful to Dr B. Meenakumari, DDG (Fy), Dr S.D. Singh, ADG (Inland Fisheries), Dr Madan Mohan, ADG (Marine Fisheries) and other colleagues from the Fisheries Division for their co-operation and support. My sincere thanks are due to the Members of Board of Management, Chairman and Members of Research Advisory Committee, Members of Academic Council, Institute Research Council, Extension Council, Board of Examiners and other institute level committee for their cooperation and support. My special thanks are due to the publication team for bringing out this annual report.



( W.S. Lakra)



Chapter  
2



Executive  
Summary

# Executive Summary

During the current year, the Central Institute of Fisheries Education continued to contribute significantly with focus on education, research and extension. A total of 69 masters and 17 doctoral degrees were awarded in various disciplines. As in previous year, this year too, 9 posts of Agricultural Research Service were bagged by our students. Two students were awarded the Best Young Scientist Award by Altech Inc. USA, one student bagged best research paper award and two students were awarded best poster presentation award in 2 different International Conferences. During the year, 47 Ph.D. students and 82 M.F.Sc. students were enrolled in various disciplines.

Significant research achievements, in the form of new information and upscaling of technologies and tools for sustainable aquaculture and fisheries production were made in 32 institutional and 26 externally funded projects. The institute focused its attention on diversification of species for aquaculture, reservoir development through community participation, testing the viability of *Litopenaeus vannamei* culture, molecular phylogeny, DNA barcoding, nutraceuticals, nanodelivery, bioprocessing of agricultural wastes, bioremediations of aquaculture effluents, development of DNA-vaccines, development of biosensors for monitoring of genotoxic pollutants, gene silencing and radio-ecology. Other areas where significant progress was made include molecular characterization of growth hormone gene of *Pangasianodon hypophthalmus*, assessment of impact of juvenile fishery on fish production along the west coast of India, development of salt-fermentation method for Indian Mackerel, culture of *Fenneropenaeus indicus* and *Penaeus monodon* in inland salt-affected areas, bioprospecting of genes responsible for abiotic stress-tolerance,

development of quantitative real-time PCR for shrimp viruses, effect of degradation products of both nutrients and anti-nutrients of aquafeed on immune physiology after exposure to e-beam are the other areas where significant advancements were made. Strengthening of digital library and information management was also a focus area of the institute.

The institute organized various extension education/transfer of technology related programmes and activities. A total of 62 short-term training programmes were organized at the headquarter and the four research centers in which 1509 participants were imparted skill in various aspects of aquaculture. The institute actively participated in 17 exhibitions and kisan melas at various places across the country showcasing the achievements and services being provided to the fishermen community. The institute organized 14 workshops/conferences and 24 meetings. The faculty attended 104 workshops/symposia/meetings etc. and 18 summer schools/winter schools/ training programmes. Sixteen guest lectures were given by the faculty at various universities.

A total of 112 research papers were published in refereed journals with high impact factor. Apart from this, a number of review papers, popular articles, books, book chapters and bulletins were also published during the year. The meetings of IRC, RAC, BoM, Academic Council and Extension Council were held as per schedule.

The infrastructure development of the institute is being carried out at fast pace. The infrastructure developed in this financial year include academic building (3rd and 4th floor), boys' hostel (stilt+4 floors), international guest house (stilt+4 floors), residential quarters (Type-V: 12 nos. stilt+4 floors) and Director's Residence.

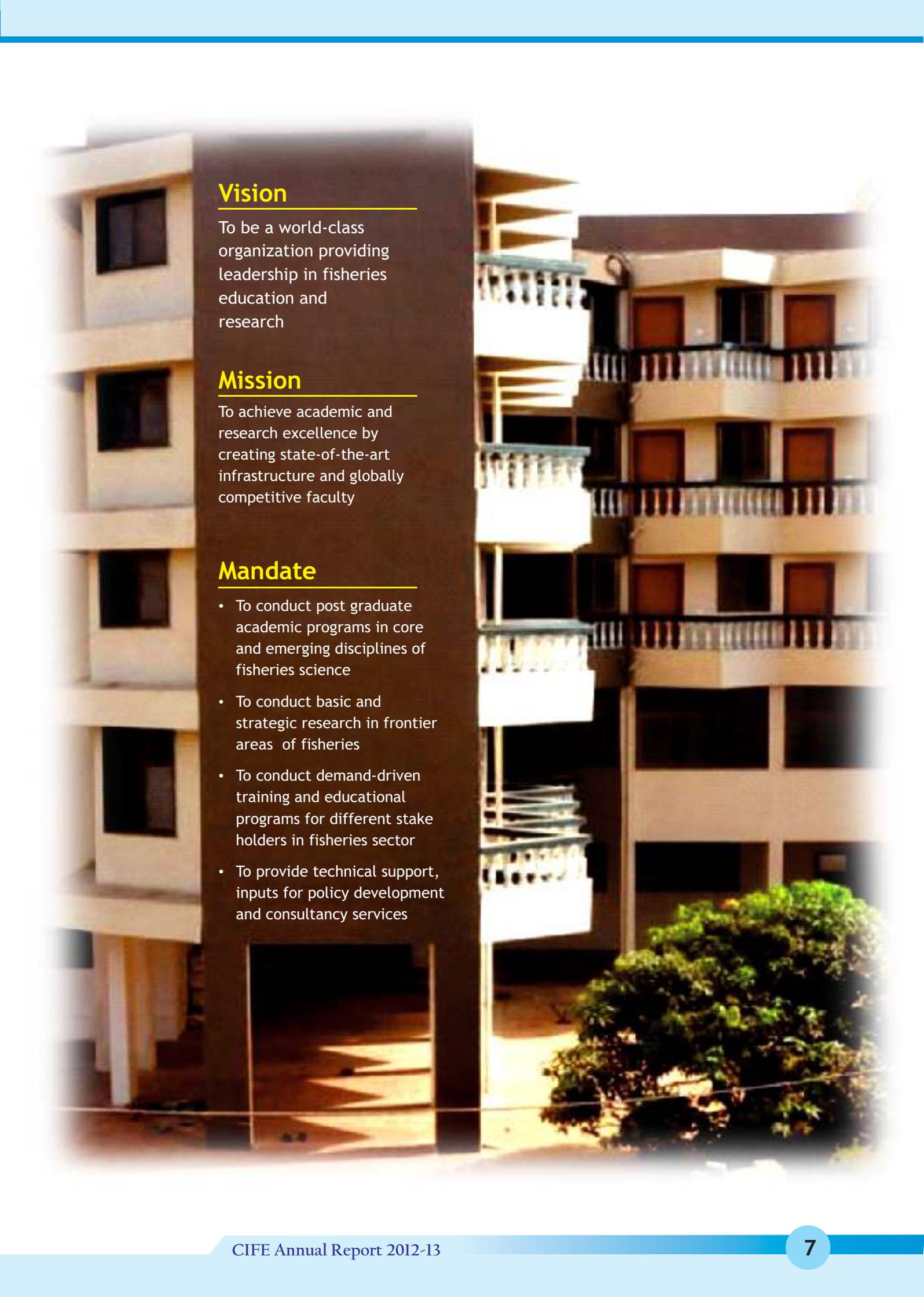
# Chapter 3



## Introduction

CIFE was established with the help of UNDP in 1961 to promote fisheries education in the country by training officials from state governments. It was in the control of Ministry of Agriculture, Govt. of India and subsequently transferred to ICAR (Indian Council of Agricultural Research) in 1979. The mandate of the institute was widened to include higher fisheries education, research as well as extension education under its functional fold. Recognizing the pivotal role played by the Institute in Human Resources Development in fisheries, the Institute was accorded the status of Deemed-to-be- University in March, 1989. The institute has become a reputed HRD centre not only with state-of-the-art facilities and laboratories but is also producing competitive manpower. The institute has also been deeply engaged in orienting, grooming and preparing the professionals from the Afro-Asian countries in fisheries and aquaculture sector.





## Vision

To be a world-class organization providing leadership in fisheries education and research

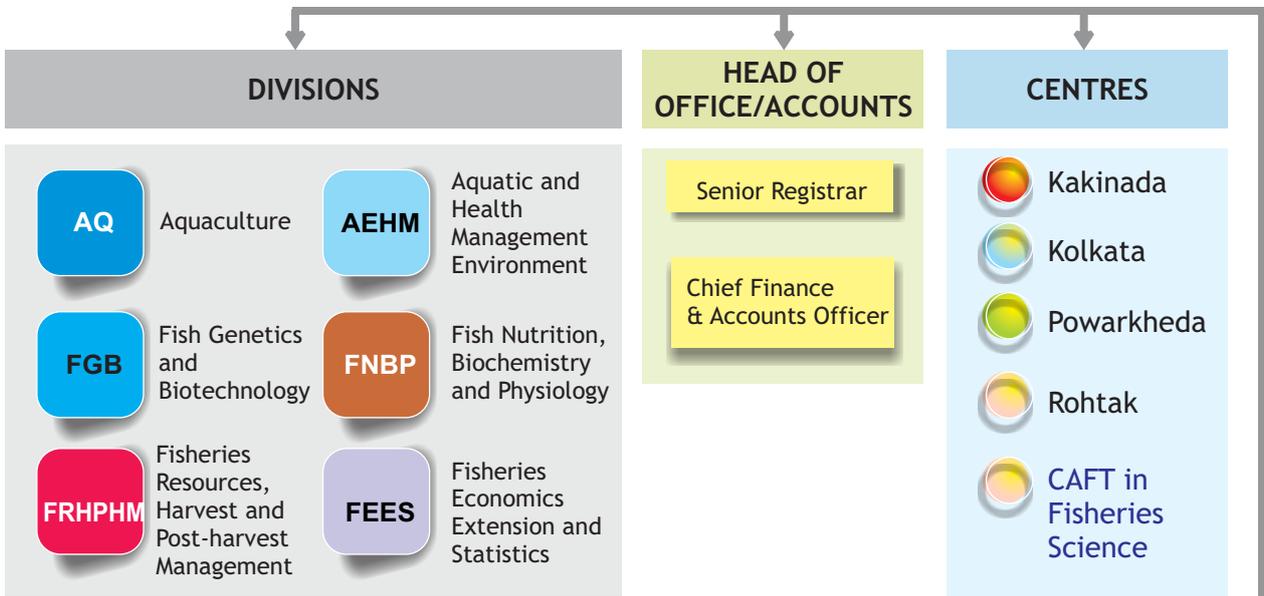
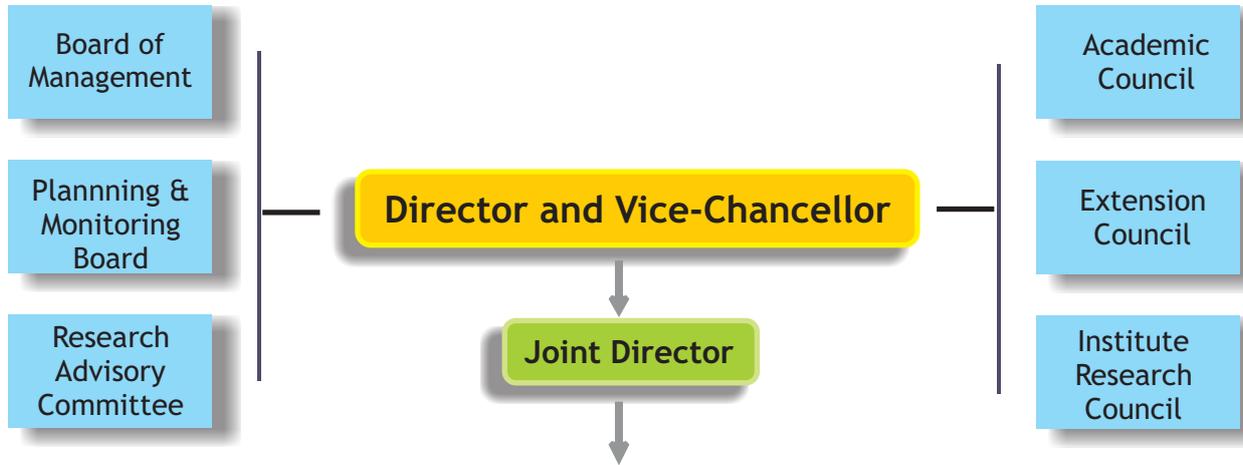
## Mission

To achieve academic and research excellence by creating state-of-the-art infrastructure and globally competitive faculty

## Mandate

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

# Organogram



### Staff Position (2012-13)

Category wise	CIFE Staff	Sanctioned	In Position
	RMP		2
Scientific		104	69
Technical		106	89
Administrative		63	49
Skilled Supporting		70	68
Non Ministerial		01	01
<b>Total</b>		<b>346</b>	<b>278</b>

### Budget (2012-13)

(Rs. in Lakh)

S. No.	Head	Sanctioned	Received	Expenditure Incurred
1.	Plan	1342.25	1342.25	1339.89
2.	Non-plan	3554.30	3453.00	3418.59

S.No.	Head	Balance C/f	Receipt in this year	Expenditure Incurred
3.	CAFT	1.88	12.41	13.26
4.	SDU	9.36	170.64	179.54
5.	Externally Funded Projects	666.98	214.37	269.96

### Revenue Generation

(Rs. in Lakh)

**Target: 150.00**

**Achieved: 199.66**

Chapter

# 4



## Educational Achievements



### 4.1 Results

During this year number of successful candidates for Ph.D. and M.F.Sc. were 17 and 69 respectively.

Discipline-wise number of passed-out students is as follows:

Name of the Programme	No. of successful candidates
<b>Ph.D</b>	
Aquaculture(AQC)	3
Aquatic Environment Management (AEM)	1
Fish Biotechnology (FBT)	1
Fish Genetics (FGB)	1
Fish Nutrition and Biochemistry (FNB)	2
Fisheries Resource Management (FRM)	3
Inland Aquaculture (IAC)	2
Mariculture (MC)	1
Post-Harvest Technology (PHT)	3
<b>Total</b>	<b>17</b>
<b>M.F.Sc. (2010-12)</b>	
Aquaculture (AQC)	12
Aquatic Animal Health Management (AAH)	08
Aquatic Environment and Management (AEM)	06
Fish Biotechnology (FBT)	04
Fish Genetics and Breeding (FGB)	02
Fish Physiology and Biochemistry (FPB)	04
Fisheries Economics (FEC)	04
Fisheries Extension (FEX)*	10
Fish Nutrition and Feed Technology (FNT)	05
Fisheries Resource Management (FRM)	08
Post-Harvest Technology (PHT)	06
<b>Total</b>	<b>69</b>

\* One student of 2009-2011 batch



## 4.2 Enrollments

### Doctoral Programmes

A total of 47 students enrolled for the Ph.D. Programmes in various disciplines for the year 2012-2015, which includes 2 (PHT-1 and FNFT-1) foreign students.

### Post-graduate Programmes

A total of 82 students enrolled for the M.F.Sc. Programmes in various disciplines for the year 2012-2014, which includes 3 (AQC-1, PHT-1 and AEM-1) foreign students.

### Details of enrolled students

S.No.	Name of the programme	No. of candidates enrolled
<b>Ph.D (Batch-2012-15)</b>		
1	Aquaculture (AQC)	11
2	Aquatic Animal Health Management (AAH)	05
3	Aquatic Environment and Management (AEM)	03
4	Fish Biotechnology (FBT)	03
5	Fish Genetics (FGB)	01
6	Fish Physiology and Biochemistry (FPB)	02
7	Fisheries Economics (FEC)	02
8	Fisheries Extension (FEX)	03
9	Fish Nutrition and Feed Technology (FNT)	03
10	Fisheries Resource Management (FRM)	07
11	Post-Harvest Technology (PHT)	07
	<b>Total</b>	<b>47</b>
<b>M.F.Sc. (Batch-2012-14)</b>		
1	Aquaculture (AQC)	14
2	Aquatic Animal Health Management (AAH)	08
3	Aquatic Environment and Management (AEM)	07
4	Fish Biotechnology (FBT)	06
5	Fish Genetics (FGB)	06
6	Fish Physiology and Biochemistry (FPB)	06
7	Fisheries Economics (FEC)	06
8	Fisheries Extension (FEX)	06
9	Fish Nutrition and Feed Technology (FNT)	06
10	Fisheries Resource Management (FRM)	09
11	Post-Harvest Technology (PHT)	08
	<b>Total</b>	<b>82</b>

### 4.3. List of dissertations submitted by M.F.Sc. (2010-2012 batch) students

Name of the student	Guide & advisory committee members	Topic
<b>Aquaculture</b>		
Mr Aditya Kumar AQ-247	S. Dam Roy	Effect of probiotics on growth, survival, immune & biochemical response of <i>Litopenaeus vannamei</i> (Boone, 1931)
Ms Christina Lalramchhani AQ-248	Neelam Saharan	Biofloc as nutrient source and its effects on water quality and growth in common carp ( <i>Cyprinus carpio</i> , Linnaeus, 1758)
Ms Babita AQ-249	Paramita B. Sawant	Studies on gonadal development in <i>Etroplus suratensis</i> (Bloch 1790) under different salinities
Ms Syed Talia Mushtaq AQ-250	Kiran Dube Rawat	Evaluation of low cost, locally available protein sources as possible replacers of fish meal in the diet of rainbow trout, <i>Oncorhynchus mykiss</i> (Walbaum, 1972)
Mr Sambid Swain AQ-251	N.K. Chadha	Effect of vitamin E and vitamin C dietary supplementation on growth and survival of grey mullet <i>Mugil cephalus</i> (Linnaeus, 1758) juveniles
Ms Gunjan Karnatak AQ-252	V.K. Tiwari	Effect of dietary prebiotic on growth survival and gut microbiota of <i>Tor khudree fry</i>
Mr Venkatesh R. Thakur AQ-253	S. Dam Roy	Bionomics, breeding and reproductive biology of clown fish from Andaman waters
Mr R. Rajesh Kumar AQ-254	C.S. Chaturvedi	Immunomodulatory effect of Bermuda grass ( <i>Cynodon dactylon</i> ) in the diet of <i>Labeo rohita</i> (Ham.) fingerlings
Mr Lokesh Paul AQ-255	Chandra Prakash	Productional potential and economic viability of wastewater aquaculture using biowastewater from dairy industry
Mr Ramesh Tripathi AQ-256	A.K. Verma	Studies on hatching performance of Indian Major Carps in jar and circular hatchery
Ms. Shilta M.T. AQ-257	N.K. Chadha	Comparative study of biofilm production in natural and artificial substrates and its effect on growth and immune response of <i>Etroplus suratensis</i> (Bloch, 1790)
Ms Yassine M. Gamededinn AQ-258	Neelam Saharan	Effect of different fertilizers on growth and survival of common carp ( <i>Cyprinus carpio</i> , Linnaeus, 1758) fingerlings

## Aquatic Animal Health Management

Ms Tanuja Abdulla AAH-01	M. Makesh	Quantitative relationship and tissue tropism of <i>Macrobrachium rosenbergii</i> nodavirus (MrNV) and extra small virus (XSV) of <i>Macrobrachium rosenbergii</i>
Mr Bhartendu Vimal AAH-02	Gayatri Tripathi	Development of cell culture from <i>Pangasionodon hypophthalmus</i>
Mr Vikash Kumar AAH-03	Kundan Kumar	Evaluation of carageenan induced inflammation in <i>Labeo rohita</i>
Mr Chandra Bhushan Kumar AAH-04	K. Pani Prasad	Development of nano-colloidal gold kit for rapid detection of <i>Edwardsiella tarda</i>
Mr S. Ayathulla R. Syed AAH-05	K. Pani Prasad	Development of <i>Edwardsiella tarda</i> vaccine using outer membrane proteins (OMP) in <i>Labeo rohita</i> (Ham.)
Mr S. Ezhil Nilavan AAH-06	R.P. Raman	Immuno-modulatory and antibacterial effect of Piperine in <i>Labeo rohita</i> (Ham.)
Mr Kusunur Ahamed Basha AAH-07	R.P. Raman	Immuno-modulatory and antibacterial effect of Andrographolide in <i>Labeo rohita</i> (Ham.)
Mr Raju Baitha AAH-08	M. Makesh	Development of enzyme-linked immunosorbent assay to quantify the immune response in mrigal carp ( <i>Cirrhinus mrigala</i> ) (Ham.1922)

## Aquatic Environment Management

Ms T.K. Teena Jayakumar AEM-14	C.S. Purushothaman	Characterization of mercury resistant bacteria in Thane creek, Maharashtra
Ms Smrutirekha S. AEM-15	S.P. Shukla	Bioprospecting of selected algal species for silver nanoparticle production
Mr Arun Kumar O.R. AEM-16	S.P. Shukla	Characterization of Sewri-Mahul IBA: An important flamingo habitat along the creek, Mumbai, India
Mr Shailendra M. Raut AEM-17	Vidya Shree Bharti	Integrated environmental quality assessment of Ulhas river estuary, Mumbai
Mr Kapil S. Sukhdhane AEM-18	P.K. Pandey	Polycyclic aromatic hydrocarbons (PAHs) contamination through oil spill in mangrove swamps of Mumbai
Ms Gnanam C. AEM-19	A. Vennila	Assessment of polycyclic aromatic hydrocarbons (PAHs) in the mangrove ecosystem at Mahul, Maharashtra

## Fish Biotechnology

Ms. Suvra Roy FBT-01	R.S. Rana	Identification and characterization of flanking regions of $\Delta 6$ fatty acyl desaturase partial gene sequence from <i>Pangasianodon hypophthalmus</i> by rapid amplification of cDNA ends (RACE)
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Mr Mohan Ramesh Badhe FBT-02	Gopal Krishna	DNA barcoding of selected marine organisms
Mr Labrechai Mog C. FBT-03	P. Gireesh Babu	Studies on routes of delivery of pCMV-VP28-LH WSSV vaccine at different life stages of <i>P. monodon</i> with emphasis on field applicability
Mr Pradeep Kumar FBT-04	Aparna Chaudhari	Microinjection of biosensor constructs in zebrafish embryos and screening of mature zebrafish for transgenic individuals

### Fish Genetics & Breeding

Ms Priyanka C.N. Pawar FGB-01	Rupam Sharma	Development of nano delivery system of DNA in <i>Macrobrachium rosenbergii</i> and assessment of its possible toxicity
Ms Nimmy Jousy FGB-02	Shrinivas Jahageerdar	Evaluation of culture systems for use in <i>Macrobrachium rosenbergii</i> (De Man, 1879) selective breeding programs

### Fish Physiology & Biochemistry

Mr Ankur Jamwal FPB-01	A.K. Pal	Expression of hypoxia inducing factor (HIF) in response to hypoxia and temperature interaction in <i>Catla catla</i> (Ham)
Mr Rajesh M. FPB-02	A.K. Pal	Regulation of HIF expression with respect to hypoxia and thermal stress interaction in <i>Cirrhinus mrigala</i> (Ham)
Mr S. Chandrasekar FPB-03	S. Dasgupta	Physiological responses of <i>Etiopplus suratensis</i> (Bloch) to hypoxia stress under different salinity conditions
Mr Dilip Kumar Singh FPB-04	Subodh Gupta	Dietary effect of Zinc on muscle development and meat quality of <i>Pangasianodon hypophthalmus</i>

### Fisheries Economics

Ms Shiwangi Gupta FEC-01	Nalini Ranjan Kumar	Impact analysis of sanitary measures for export of fish and fishery product from West Bengal
Mr Sushil S. Solanke FEC-02	M. Krishnan	Production and marketing of cultured shrimps in Thane district of Maharashtra
Mr Manish Rastogi FEC-03	Swadesh Prakash	Marketing analysis of Indian Major Carps (IMC) and catfish in Patna district of Bihar
Mr Apu Das FEC-04	Nalini Ranjan Kumar	An economic evaluation of aqua-model village scheme of Tripura

### Fisheries Extension

Mr Parag Saikia FEX-16	M. Krishnan	An assessment of fisheries extension strategies and delivery systems in Assam
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Mr N. Koteswari FEX-17	Sheela Immanuel	Impact of aqua-societies on shrimp farmers in Andhra Pradesh
Mr P. Sandeep Pedapoli FEX-18	P.S. Ananthan	An study on the ICT based extension interventions in fisheries and aquaculture development in Andhra Pradesh
Ms Bala Thongam FEX-19	S.K. Mishra	A study on the communication behaviour of fishers, fish farmers and officers of fisheries department of Manipur
Mr Kaling Padung FEX-20	S.K. Mishra	A study on the communication behaviour of fishes, fish farmer and officers of fisheries department of Arunachal Pradesh
Mr Bhaskar Chakravarty FEX-21	S.N. Ojha	Potentialities of public-private-community partnership in fisheries management for rural development in Kamrup district, Assam
Mr C. Lloyd Chrispin FEX-22	P.S. Ananthan	A study on ICT based extension interventions in fisheries and aquaculture development in Tamilnadu
Mr Leo Cyril Antony Raja FEX-23	Sheela Immanuel	Adoption of better management practices (BMPs) by shrimp farmers in Karnataka
Mr Jackson Paul M. FEX-24	Sheela Immanuel	Study on dissemination of ocean information and advisory services to fishers' in south Tamilnadu

### Fish Nutrition & Feed Technology

Ms Shamna N. FNT-01	Parimal Sardar	Impact of endosulfan and temperature on functional reproductive physiology of first generation Guppy ( <i>Poecilia reticulata</i> ) and its nutritional remediation
Mr K. Ramana Kumar FNT-02	K.K. Jain	Effect of qualitative and quantitative feed restriction on growth performance of <i>Labeo rohita</i> (Ham.)
Mr Arunkumar R. FNT-03	N.P. Sahu	Dietary evaluation of propolis for immuno-modulation in <i>Labeo rohita</i> (Ham.)
Mr Grace Angel C. FNT-04	Parimal Sardar	Utilization of defatted <i>Jatropha curcas</i> kernel meal in the diet of <i>Labeo rohita</i> (Ham, 1822) fingerlings
Mr Fawole Femi John FNT-05	N.P. Sahu	Immuno-modulatory response of dietary plant extracts in the diet of <i>Labeo rohita</i> (Ham.)

### Fisheries Resource Management

Ms Divya Viswambharan FRM-224	W.S. Lakra	DNA Barcode of fish species from the Ashtamudi lake in Kerala
Mr Renjith R.K. FRM-225	A. K. Jaiswar	Taxonomic study of selected species of family Nemipteridae along Indian Coast

Ms Jasmin F. FRM-226	Latha Shenoy	The study of the reliability of satellite data in forecasting potential fishing zone along Mumbai coast
Mr Subal Kumar Roul FRM-227	S.K. Chakraborty	Stock identification of <i>Johnieops sina</i> (Cuvier, 1830)
Mr Karankumar K. R. FRM-228	Asha T. Landge	Taxonomic study of Family Mullidae
Ms E.M. Chhanda P. FRM-229	S.K. Chakraborty	Stock identification of <i>Otolithes ruber</i> (Schneider, 1801)
Ms Wakambam A. Meetei FRM-230	Geetanjali Deshmukhe	Effect of salinity on the growth, yield and quality of agar content of <i>Gracilaria</i> spp.
Ms Bushra Shabnam FRM-231	S.K. Chakraborty	Studies on Impact of <i>Kappaphycus alvarezii</i> (Doty) Doty ex P.C. Silva, 1996, Cultivation on the survival and growth of Soft coral colonies

### Post Harvest Technology

Ms Sarika K. PHT-66	G. Venkateshwarlu	Development of functional restructured product from <i>Pangasianodon hypophthalmus</i>
Mr Devananda Uchoi PHT-68	B.B. Nayak	Microbiological and biochemical quality of salt fermented Indian mackerel, <i>Rastrelliger kanagurta</i> (Cuvier, 1816)
Ms Sreelakshmi K.R. PHT-70	G. Venkateshwarlu	Development of ready to eat sandwich paste from Indian Mudcrab
Ms Priya E.R. PHT-71	G. Venkateshwarlu	Development of squid gelatin based edible bioactive film for fish preservation
Mr G. Janarthanan PHT-72	G. Venkateshwarlu	Extraction and characterization of protein hydrolysates and lipids from shellfish waste

#### 4.4. List of Ph.D. awardees during 2012-2013

Name of the student Regn No. & Batch	Guide	Date of Viva-voce	Thesis Title
Ms Vani T. IAC-235 2005-08	Neelam Saharan	26.04.2012	Effect of Vitamin C and Selenium against cypermethrin toxicity in <i>Catla catla</i> (Ham.) fingerlings
Mr E. Suresh FG-275 2006-09	A.K. Reddy	22.08.2012	Genetic diversity of populations of <i>Macrobrachium rosenbergii</i> using microsatellites
Mr Md Shahbaz Akhtar FNB-331 2008-11	A.K. Pal	03.09.2012	Physio-metabolic responses of tropical and temperate fish to different stressors and their mitigation measures
Mr Soibam Khogen Singh AQ-318 2008-11	V.K. Tiwari	17.09.2012	Synergistic effect of dietary pre and pro-biotics in <i>Labeo rohita</i> (Ham.) fingerlings under different stressors
Mr Lakshmisha I.P. PHT-244 2005-08	T.V. Sankar	27.09.2012	Lipid protein interaction in fish meat during accelerated conditions and the effect of natural antioxidants
Ms Asha Augustine MC-241 2005-08	Imelda Joseph	20.10.2012	Utilization of starch and cellulose by microbial symbionts in selected marine fishes
Mr Tarkeshwar Kumar FRM-310 2008-11	S.K. Chakraborty	20.11.2012	Biology and stock assessment of <i>Johnieops sina</i> (Cuvier, 1830) from Ratnagiri waters
Mr Anil Nilesh Pawar AQ-312 2008-11	M.P. Singh Kohli	24.01.2013	Evaluation of dietary pre- and pro-biotics for improving growth and immuno-competence of <i>Labeo fimbriatus</i> (Bloch, 1795) fingerlings

Mr Pankaj Kishore PHT-296 2007-10	B. B. Nayak	28.01.2013	Ecology of <i>Yersinia enterocolitica</i> in aquatic foods
Ms A. Jeyakumari PHT-324 2008-11	G. Venkateshwarlu	28.01.2013	Studies on delivery of Omega-3 fatty acids through emulsification and encapsulation
Ms Deepa Sudheesan FRM-256 2006-09	A. K. Jaiswar	02.02.2013	Species differentiation of grey mullets (Family : Mugilidae) from Indian waters
Ms Biji Xavier FNB-278 2006-09	K. K. Jain	11.02.2013	Effects of mixed feeding schedule on growth performance and metabolic responses of <i>Labeo rohita</i> (Ham.) fingerlings
Ms Paramita B. Sawant AQ-356 2009-12	Chandra Prakash	13.02.2013	Habitat status and biodiversity of Powai lake and its renewable restoration through scientific, technological and aquaculture interventions
Mr Tasaduq Hussain FRM-342 2009-12	S. K. Chakraborty	28.02.2013	Biology and stock assessment of oil sardine <i>Sardinella longiceps</i> (Valenciennes 1847) from Ratnagiri waters
Mr Annam Pavan Kumar FB-272 2006-09	W. S. Lakra	02.03.2013	Molecular phylogeny and DNA barcoding of Elasmobranchs from Indian coast
Ms Shyne Anand P.S. IAC-260 2006-09	M.P.S. Kohli	21.03.2013	Effect of dietary supplementation of Periphyton biomass and Biofloc on growth and Immuno-physiological aspects of juvenile <i>Penaeus monodon</i> (Fabricius, 1798)
Mr Hewawasam B. Jayasiri AEM-379 2009-12	C. S. Purushothaman	25.03.2013	Assessment of persistent organic pollutants in plastic debris and sediment in Mumbai beaches



#### 4.5. Professional Development Programme

Three PPD (Professional Development Programme) Modules were completed during the tenure in which 17 state fisheries officers and self-sponsored candidates participated.

Name of the Course	Duration	No. of students passed
Module III: Fish Processing, Quality Assurance and Marketing	4 months Feb-May 2012	4 self-sponsored trainees from Bihar(3) and West Bengal (1)
Module II: Aquaculture	4 months Jun-Sep 2012	11 out of which 8 officers from state fisheries department of Meghalaya (5) M.P. (1), J& K (1), Nagaland (1) and 3 self-sponsored trainees from Bihar
Module-IV Development Planning and Management in Fisheries)	4 months Feb-May 2012	2 officers from state fisheries department of M.P. (1) and J& K (1)
PDP Module I: Capture and Enhanced Fisheries	4 months Oct-Jan 2013	4 [M.P. 2, Nagaland 2], out these 1 self-sponsored trainees from M.P.
Module-IV (Development Planning and Management in Fisheries	4 months Feb-May 2013	3 officers from state fisheries department of M.P.(1) and Nagaland (2)
<b>Total</b>		<b>24</b>

#### 4.6. Guest faculty and special lectures

Several guest lectures by outside faculty were arranged for the students during the year which are listed as follows

Name of the faculty	Designation and place	Title of the lecture	Date
Dr Manju Sharma Padma Bhushan	Former Secretary, Department of Biotechnology, Govt of India	Dr. S. N. Dwivedi memorial lecture on Biotechnology, the excitement and relevance	25 Aug 2012
		C. V. Kulkarni memorial lecture	11 Aug 2012
Dr M.V. Gupta	World Food Prize Laureate	Impact of climate change on fisheries, food and livelihood securities	30 Nov 2012
Dr Ravi Fotedar	Professor and International Program Director in Aquatic Science, Curtin University, Australia	Sustainable aquaculture: challenges and approaches	1 Mar 2013
Dr V.V. Sugunan	Former Assistant Director General, ICAR	Reservoir fisheries of India	13-14 Mar 2013
Mr Rama Devassy	Devassy and Devassy Chartered Accountants, Trivandrum	Financial and project management	16 Mar 2013
Dr L. Krishnan	Director, Fish for All, MSSRF, Chennai	Outreach activities in fisheries	19 Mar 2013
Dr G.K. Kulkarni	Professor Emeritus, Dr Baba Saheb Ambedkar Marathwada University, Aurangabad	Research methods & methodologies	23 Mar 2013
Mr M.M. Maragal	Associate Professor College of Fisheries, Mangalore	Thermal processing of fishery products	23-28 Mar 2013
Dr K.R. Sundara Varadarajan	Prof and Head, Division of Agri Economics, Annamalai University	Marketing management	28 Mar 2013
Dr O.S. Verma	Adjunct Professor	Fisheries extension	2012-13



#### 4.7. Educational cruise

After undergoing massive repairs M.F.V. Saraswati went on a trial cruise on 11 May 2012. Following which M.F.V. Saraswati completed 7 research and training cruises spending 28 days at sea. During the programme, M.F.Sc. and Ph.D. students were given onboard training including Seamanship & Navigating practice. M.F.V. Narmada sailed for onboard training and research on 26 occasions spending 29 days at sea. The vessel was given on hire to other Institutes/Organizations to generate revenue for the Institute.

#### 4.8. Students achievements

##### Dr. N.R. Menon gold medal

Mr Saurav Kumar was awarded Dr. N.R. Menon gold medal for the best M.F.Sc. thesis for the year 2012 on 3 December, 2012 during the AFSIB Silver Jubilee Global Symposium at Mangalore. The title of his dissertation was Immuno-modulatory and antiparasitic effects of Azadirachtin against some selected ectoparasites in goldfish (*Carassius auratus*)

##### Altech young scientist award

Mr Mujahidkhan Pathan won the prestigious Altech young scientist award by Altech Inc., USA for his outstanding research work on DNA vaccine against WSSV in *P. monodon*.

Ms Priyanka C. Nandanpawar has been awarded

the Altech young scientist award for her outstanding M.F.Sc thesis work on Nanotechnology.

##### Best poster award

Ms Supriya Sabnis won best poster award for 'Identification and characterization of 5' flanking region of *Penaeus monodon* sodium potassium ATPase beta subunit gene' presented at the Second National Conference on Fisheries Biotechnology held at CIFE, Mumbai during 2-3 Nov 2012.

##### Best paper award

J. Raymond Jani Angel, R. Charan, P. P. Suresh Babu, Deepti R. Nair, V. K. Tiwari, Kiran Dube Rawat, Bobby Ignatius, R. B. Pramod Kiran, P. Srinivasa Rao, K.B. Sreeramamurthy, 2013. Captive breeding of a near threatened species, *Pengba*, *Osteobrama belangeri* (Valenciennes, 1844) using three different inducing agents. Presented during National Seminar on Emerging trends in Indian Aquaculture. 21-23 March 2013. Kerala University, Trivandrum.

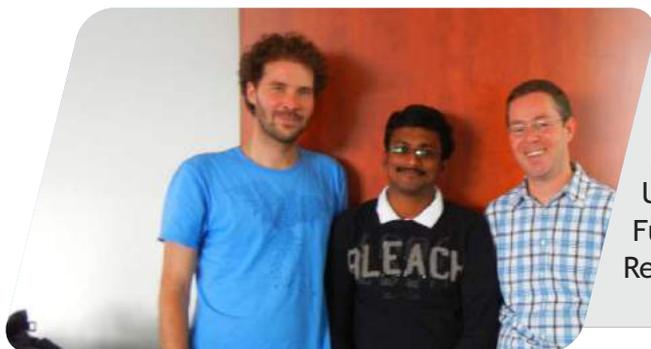
##### TATA endowment award

Mr Md. Akladur underwent Overseas Training on "Protein- protein interaction" In CENTEX Shrimp Lab, Bangkok, Thailand under TATA endowment award.

##### ICAR International fellowship

Ankur Jamwal bagged ICAR International fellowship for Ph.D in Canada

## 4.9. Other honours



Mr Sivaraman, Ph.D student was selected for the summer school on 'Equity and Efficiency in Fisheries' from 2-5 July 2012 in University of Kiel, Germany and for the Fullbright Nehru Doctoral and Professional Research Fellowship for the year 2012-13.

Ms Piyashi Deb Roy, II Ph.D (FBM) participated in the meeting on Mangrove ecology, functioning and management held in Galle, Sri Lanka from 2-6 July 2012



Mr Tesfom Melake Araya and Ms Piyashi Deb Roy attended the International Institute of Fisheries Economics and Trade (IIFET) Conference held in Dares Salaam Tanzania from 16-20 July 2012. The Theme of the conference was Visible Possibilities: The Economics of Sustainable Fisheries, Aquaculture and Seafood Trade. They presented posters on 'Performance, potential and prospects of fisheries sector in Eritrea' and 'Economic valuation of mangroves for assessing the livelihood of fisherfolk - A case study in India'.

Ms Prathvi Rani, Ph.D student was awarded FAO Bursary of \$ 2,744 USD for attending the Ph.D Intensive course on "The Economics of Fisheries Management" from 6-17 Aug 2012, in Portsmouth Business School, CEMARE, University of Portsmouth, United Kingdom.



Mr Pankaj Kumar H. Mugaonkar, Ph.D (Fish Business Management) scholar has been selected for the International advance course on, 'Research Applications in Seafood Marketing' Zaragoza, Spain which is being jointly organized by the International Centre for Advanced Mediterranean Agronomic Studies (CIHEAM), through the Mediterranean Agronomic Institute of Zaragoza (IAMZ) and the Food and

Agriculture Organization of the United Nations (FAO), through the Fisheries and Aquaculture Department.

# Chapter 5



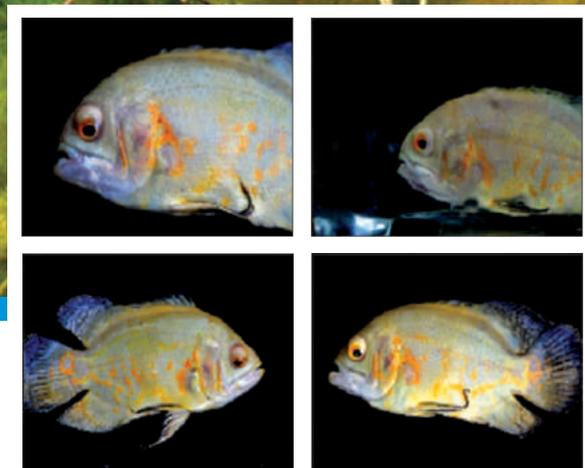
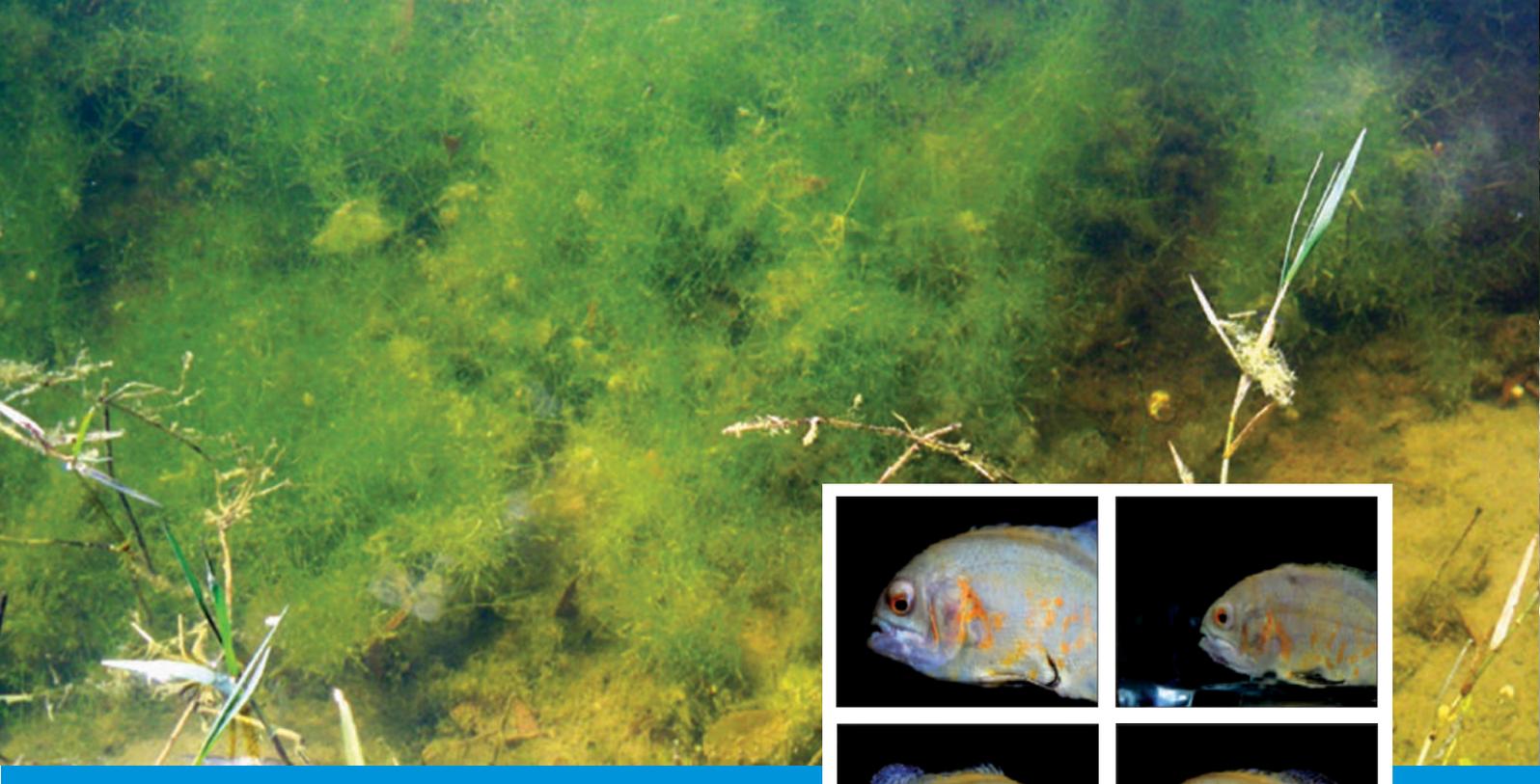
## Research Achievements



## Aquaculture Division

### Externally Funded Research Projects:

<b>Project</b>	: A value chain on fish production in fragile agricultural lands and un-utilized aquatic resources in Maharashtra
<b>Personnel</b>	: A. K. Reddy, V. K. Tiwari and M. H. Chandrakant
<b>Duration</b>	: 2008 - 2013
<b>Funding Agency</b>	: NAIP, ICAR
<b>Budget</b>	: 385.104 Lakh
<b>Project</b>	: Studies on present status of marine radioecology and biodiversity at Tarapur coastal sites
<b>Personnel</b>	: Chandra Prakash and Paramita Banerjee Sawant
<b>Duration</b>	: 2011-2013
<b>Agency</b>	: BRNS, DAE (Govt of India)
<b>Budget</b>	: 168.50 Lakh
<b>Project</b>	: Community based reservoir fisheries management
<b>Project Personnel</b>	: Kiran Dube, Neelam Saharan, V.K. Tiwari and Chandra Prakash
<b>Project Duration</b>	: 2011-2013
<b>Funding Agency</b>	: NFDB, Hyderabad
<b>Budget</b>	: 30.73 Lakh
<b>Project</b>	: Livelihood and nutritional security of tribal dominated areas through integrated farming system and technology models
<b>Personnel</b>	: Kiran Dube Rawat, V.K. Tiwari, P.S. Ananthan and M.L. Ojha
<b>Duration</b>	: 2011-2013
<b>Funding Agency</b>	: NAIP, ICAR
<b>Budget</b>	: 93.10 Lakh
<b>Project</b>	: Field demonstration of tiger shrimp culture using inland saline sub surface water in Haryana
<b>Personnel</b>	: A.K. Reddy and V. Harikrishna
<b>Duration</b>	: 2012-2015
<b>Funding Agency</b>	: NABARD
<b>Budget</b>	: 7.10 Lakhs
<b>Project</b>	: Stock characterization, captive breeding, seed production and culture of hilsa ( <i>Tenulosa ilisha</i> )
<b>Personnel</b>	: B. K. Mahapatra and S. Das Gupta
<b>Duration</b>	: 2012-2015
<b>Funding Agency</b>	: NFBSFRA, ICAR
<b>Budget</b>	: 139.84 Lakhs

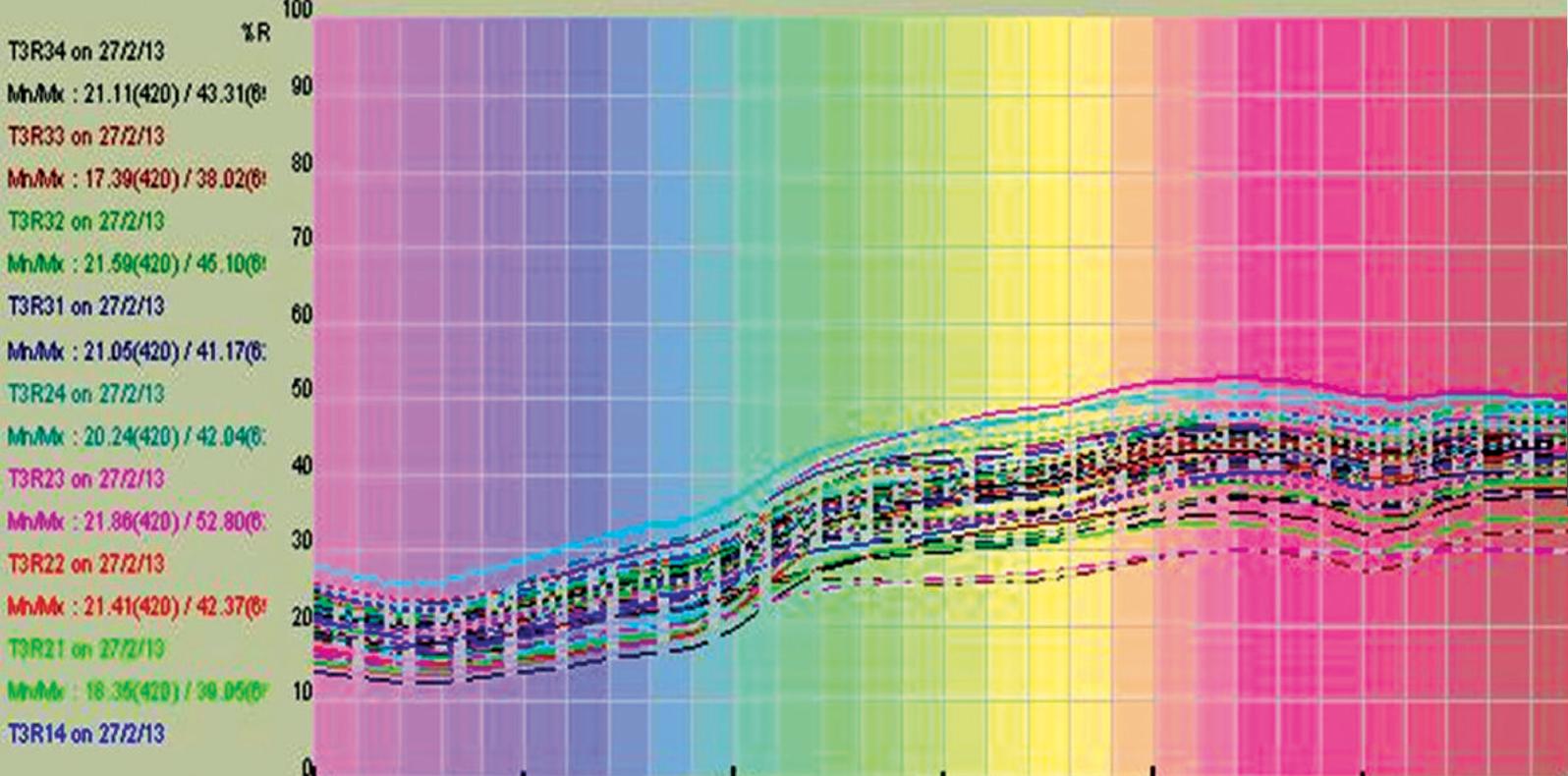


### Institutional Projects:

<b>Project</b>	: <b>Assessment and bioremediation of Pendimethalin toxicity in common carp (<i>Cyprinus carpio</i>)</b>
<b>Personnel</b>	: Neelam Saharan, P.P. Srivastava and Gayatri Tripathi
<b>Duration</b>	: 2012-2015
<b>Project</b>	: <b>Grow out culture of table size <i>Clarias batrachus</i> and <i>Macrobrachium rosenbergii</i> in floating net cages</b>
<b>Personnel</b>	: Kiran Dube Rawat, Neelam Saharan, A.K. Reddy, C.S. Chaturvedi and Chandra Prakash
<b>Duration</b>	: 2012-2015
<b>Project</b>	: <b>Rearing of indigenous medium carp, <i>Labeo calbasu</i> (Ham. 1822) in weed infested ponds</b>
<b>Personnel</b>	: N.K. Chadha, Somdutt, Chandra Prakash, and Paramita Banerjee Sawant
<b>Duration</b>	: 2012-2015
<b>Project</b>	: <b>Up-scaling, demonstration and diversification of technologies for finfish and shellfish in inland saline soils</b>
<b>Personnel</b>	: A.K. Reddy, N.K. Chadha, S.S.H. Razvi, P.S. Ananthan and V. Harikrishna
<b>Duration</b>	: 2012-2015



- Project** : Technology development on breeding, larval rearing and colour enhancement of selected high value tropical ornamental fishes
- Personnel** : Paramita Banerjee Sawant, N.K. Chadha, Chandra Prakash, P.P. Srivastava and S. Dasgupta
- Duration** : 2012-2015
- Project** : Water budgeting studies on the hatchery, nursery rearing and grow-out practices for carp
- Personnel** : A.K. Verma, V.K. Tiwari, Chandra Prakash and C.S. Chaturvedi
- Duration** : 2011-2014
- Project** : Comparative evaluation of growth and reproductive performances of normal and stunted yearlings of rohu (*Labeo rohita*)
- Personnel** : Suresh Babu and S.S.H. Razvi
- Duration** : 2012-2015
- Project** : Biology, captive maturation and breeding of ornamental snakehead, *Channa barca* (Ham.)
- Personnel** : B.K. Mahapatra, S. Munil Kumar and Subhendu Datta
- Duration** : 2011-2013



## Significant achievements

- The studies on a value chain on fish production in fragile agricultural lands and un-utilized aquatic resources in Maharashtra were carried out. Sub-surface drainage system with aquaculture ponds was established in 4.0 ha area at Tambave village, Volva taluka, Sangli district. The ponds were stocked with carp fingerlings after collection of sufficient drain water. Sugarcane was harvested from the sub-surface drainage system installed in two units each of 4.0 ha and achieved an average production of 162.50 tons of sugarcane/ha and 850 kg of fish /0.20 ha.
- Observations made on phytoplankton, zooplankton (in water) and macrobenthos (in sediments) around the discharge points of Tarapur Atomic Power Station (TAPS) 1 & 2 and 3 & 4 revealed the dominance of *Fragillaria* was followed by *Pleurosigma*, *Coscinodiscus* and *Navicula*. Zooplankton was dominated by copepods and was followed by polychaetes and gastropods. The sediment showed high sand particles ranging from 81.68-93.6%. The organic carbon in the sediment ranged from 0.07-1.03. The water pH ranged from 7.6-8.3 while salinity varied from 33-37 ppt. The concentration of ammonia and nitrite nitrogen ranged from 0.5-1.3 and 0.05-0.80 mg/l respectively. The presence of the dolphins at the site is the indication for healthy environmental condition.
- Under community based reservoir management program, two specialized training programs were conducted at Powerkheda center of CIFE and also at Mahad on hatchery unit & operation, rearing and feed management of spawn, fry, fingerlings and brooders, identification, prevention and treatment of diseases, process of seed stocking in reservoir (conditioning, packing, transporting & stocking), discussion on dam management with field visit, practical training of breeding process of Indian major and common carp, fish catching and deep water fish harvesting and net webbing in Khaire dam. Additionally, a 3 day training program on Aquaculture and Fisheries management was conducted at *Shramajivi Janata Sahayyak Mandal*, Mahad during 21-23 January 2013.
- Studies on pesticide toxicity in common carp encompassed studies on the pesticide, Pendimethalin. LC<sub>50</sub> values for common carp weight (15-20 g) was determined to be 26.905 ppm by Probit Analysis at 96 hours whereas, safe concentration was ascertained to be 3.50 ppm.
- An analysis of weeds in weed infested ponds is the first step towards formulation of methods of its control. The most prevalent weed in weed infested ponds was *Vallisneria*, whose total weight ranged from 3357.25 gm/m<sup>2</sup> to 9733



- gm/m<sup>2</sup>. The nature of sediment in such ponds was alkaline throughout the period, having pH variation from 7.3-7.6. Even though nitrogen and phosphorus concentrations were slightly on the higher side, the causative factor for the acceleration of weed infestation was higher concentrations of bicarbonate ions coupled with higher values of water hardness.
- The colour enhancement studies of the high value tropical ornamental fish Oscar, (*Astronotus ocellatus*) is important for maximizing the profit. Studies on colour enhancement using natural and artificial ingredients in feed, were based on measurement of colour in terms of a popular colour scale - CIE L\*, a\*, b\* (wherein, L\* is lightness axis - 0 is black, 100 is white, a\* is red-green axis - positive values are red; negative values are green and 0 is neutral, and b\* is blue-yellow axis, - positive values are yellow; negative values are blue and 0 is neutral. Colour of fish was found to be enhanced maximally by marigold, which enhanced the yellow spectrum (b\* = 29.03) much more than carrot (b\* = 19.82) and papaya (b\* = 17.35). Synergistic effects of water pH and ascorbic acid showed that maximum colour enhancement at pH 6 and Vit-C level of 50 mg .
  - Water budgeting studies on the hatchery, nursery rearing and grow-out practices for carp encompassed design of FRP jar hatchery and a comparative study on hatching of eggs in a circular chinese hatchery and FRP jar hatchery (a set of 6 jars) at Arrey state fish farm, Goregoan and CIFE, Balbhadrapuram, Kakinada. Survival percentage in jar hatchery was satisfactory.
  - Upscaling and demonstration of proven technologies in farmers' ponds is important for diversification of technologies for finfish and shellfish in inland saline soils. Trials on new candidate species *Litopenaeus vannamei* in inland saline soils and ground saline water yielded a production of 13.1 tons per hectare at the Baniyani Unit of CIFE, Rohtak Centre following a growout period of 120 days, which helped to raise a net profit of Rs. 14,31,000/- per ha. Demonstration on culture of tiger shrimp *Penaeus monodon* in low saline water at Lahli Unit of CIFE, Rohtak Centre yielded a production of 2,693 kg/ha in 40 days culture duration raising a net profit of Rs. 4,80,650/- per ha.

## Aquatic Environment and Health Management Division

### Externally Funded Research Projects:

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<b>Project</b>	: <b>Development of bacterial consortia for bio-processing agricultural waste and bioremediation of aquaculture effluents</b>
<b>Personnel</b>	: C.S. Purushothaman, P.K. Pandey and A. Vennila
<b>Project Duration</b>	: 2006 onwards
<b>Funding Agency</b>	: AMAAS, ICAR
<b>Budget</b>	: 49.80 Lakh

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<b>Project</b>	: <b>Gene Silencing: A strategy for the management of white spot syndrome virus (WSSV)</b>
<b>Personnel</b>	: K.V. Rajendran and M. Makesh
<b>Duration</b>	: 2008- 2013
<b>Funding Agency</b>	: NAIP, ICAR
<b>Budget</b>	: 91.0236 Lakh (CIFE Component)

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<b>Project</b>	: <b>Studies on the likely impact of the proposed Kalpasar project on ecology, fishery and socio-economic aspects of the coastal community of the Gulf of Khambhat</b>
<b>Personnel</b>	: C.S. Purushothaman, S.K. Chakraborty, Geetanjali Deshmukhe, A.K. Jaiswar and Arpita Sharma
<b>Duration</b>	: 2009-2012
<b>Funding Agency</b>	: MOES, Govt. of India
<b>Budget</b>	: 38.02 Lakh

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<b>Project</b>	: <b>Development of quantitative real-time PCR for four DNA viruses infecting Indian penaeid shrimp</b>
<b>Personnel</b>	: K.V. Rajendran, M. Makesh and Aparna Chaudhari
<b>Duration</b>	: 2009-2012
<b>Funding Agency</b>	: DBT, Govt. of India
<b>Budget</b>	: 43.62 Lakh

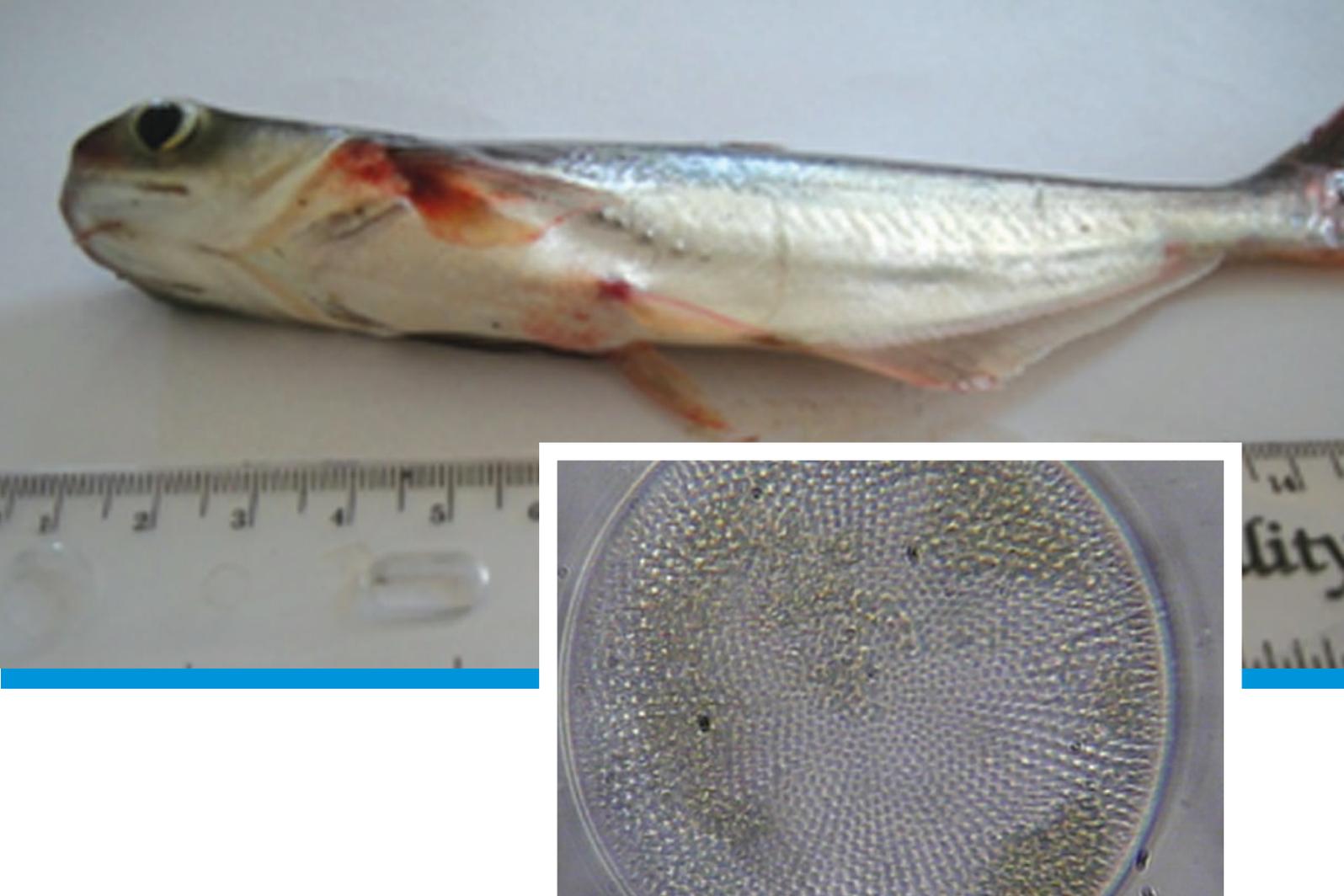
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<b>Project</b>	: <b>Molecular characterization of Type - 1 interferon of Indian major carps and its application as an adjuvant for fish vaccination</b>
<b>Personnel</b>	: M. Makesh and K.V. Rajendran
<b>Duration</b>	: 2011-2014
<b>Funding Agency</b>	: DBT, Govt. of India
<b>Budget</b>	: 60.49 Lakh

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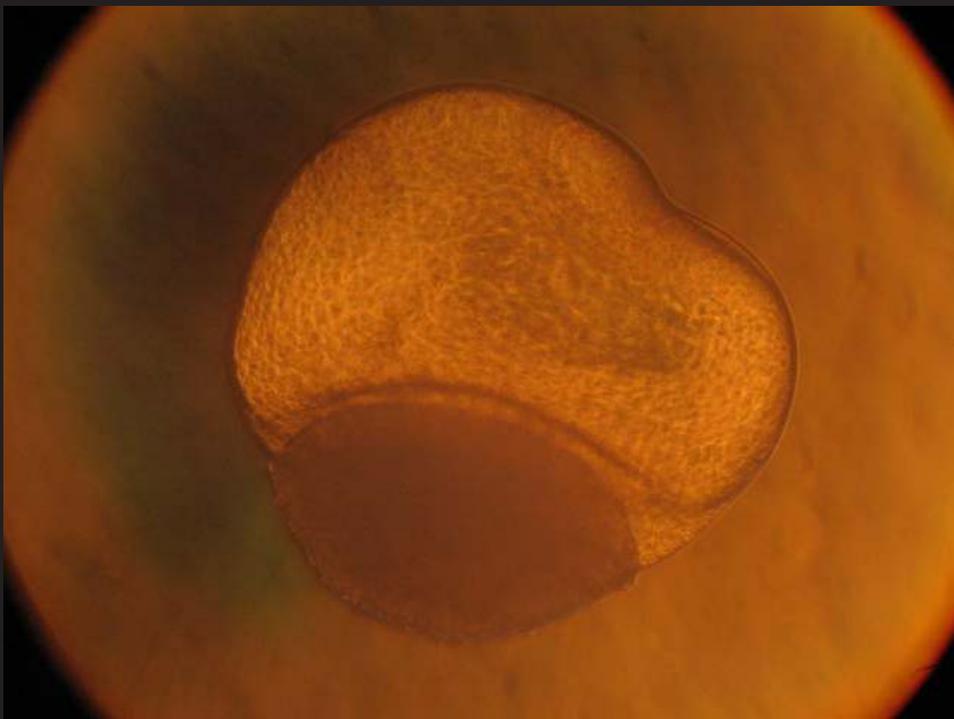
<b>Project</b>	: <b>Defense genes of tiger shrimp (<i>Penaeus monodon</i>) with respect to bacteria (<i>Vibrio harveyi</i>) and white spot virus (WSSV) infection</b>
<b>Personnel</b>	: K.V. Rajendran and M. Makesh
<b>Duration</b>	: 2012-2016
<b>Funding Agency</b>	: NFBSFRA, ICAR
<b>Budget</b>	: 71.45 Lakh

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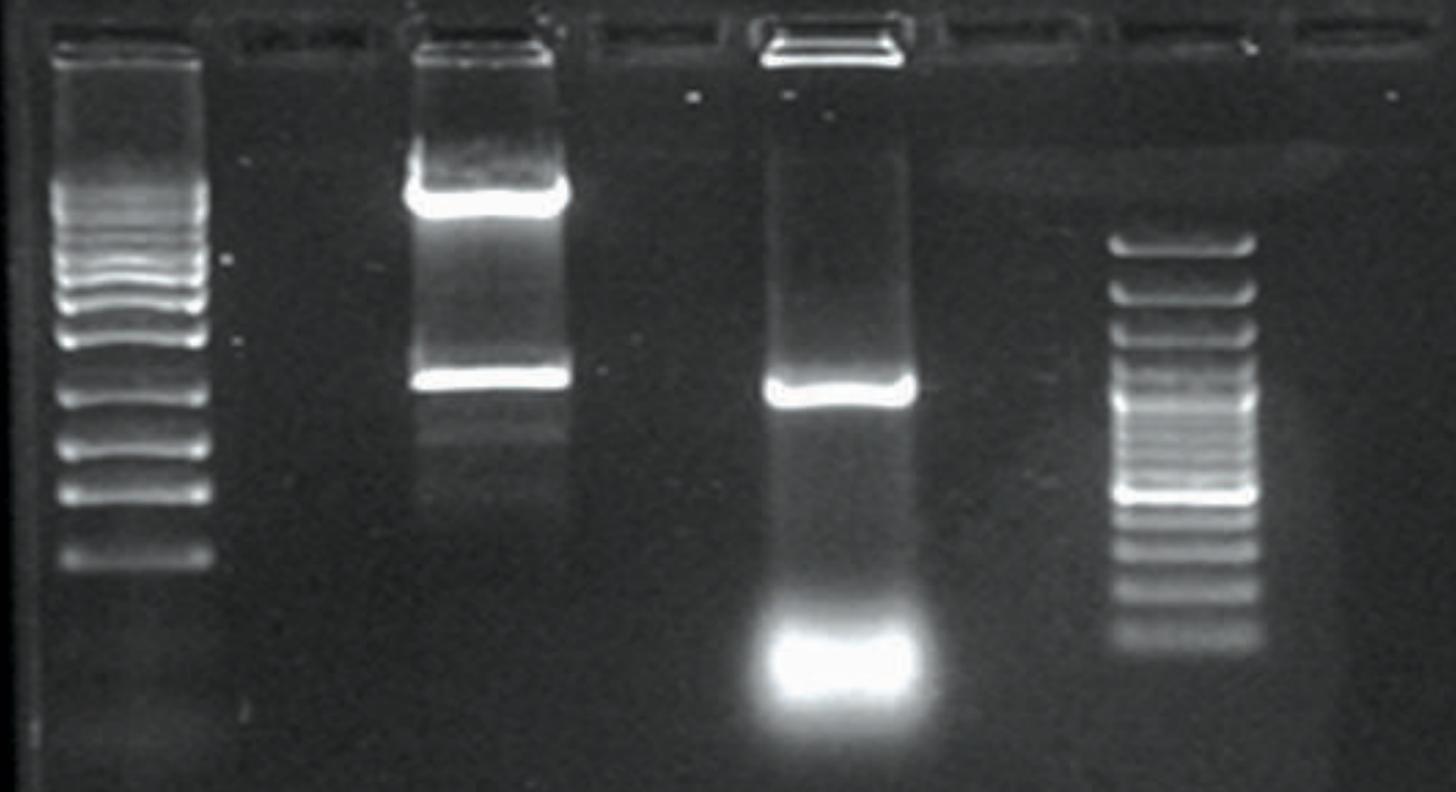


## Institutional Projects

<b>Project</b>	: Trophic state index through <i>in-situ</i> measurement and satellite remote sensing in inland and coastal waters
<b>Personnel</b>	: C.S. Purushothaman, V.S. Bharti and V.K. Yadav
<b>Duration</b>	: 2011-2014
<b>Project</b>	: Monitoring of pollution in a coastal ecosystem and assessment of trophic transfer of persistent pollutants
<b>Personnel</b>	: A. Vennila, C.S. Purushothaman, S.P. Shukla, P.K. Pandey and V.S. Bharti
<b>Duration</b>	: 2012-2015
<b>Project</b>	: Designing and testing of column based water filtration units for removal of inorganic and organic wastes from hatchery wastewater
<b>Personnel</b>	: S.P. Shukla, A. Vennila, P.K. Pandey and V.S. Bharti
<b>Duration</b>	: 2012-2015
<b>Project</b>	: Production enhancement of Indian major carps through biofilms
<b>Personnel</b>	: P. K. Pandey, C.S. Purushothaman, S.P. Shukla, A. Vennila and Somdutt
<b>Duration</b>	: 2011-2014

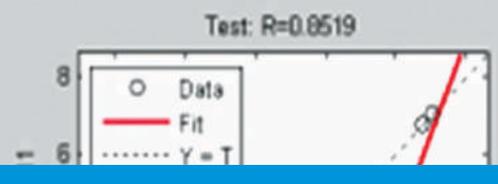
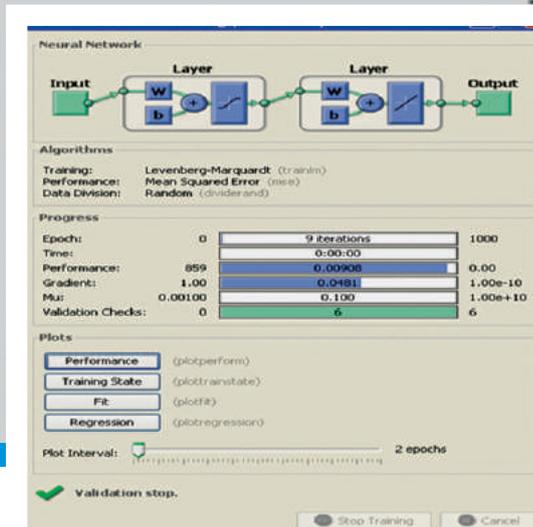
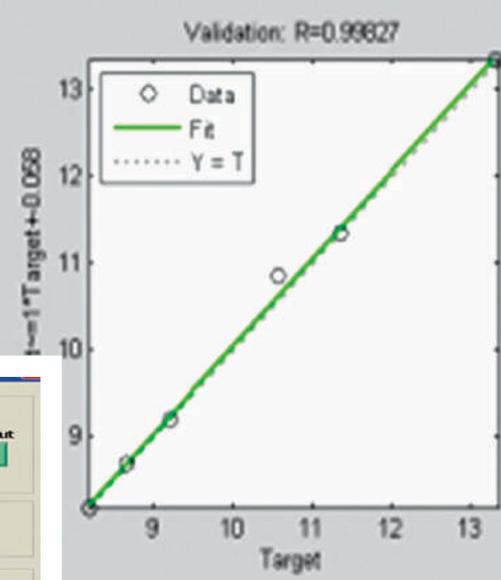
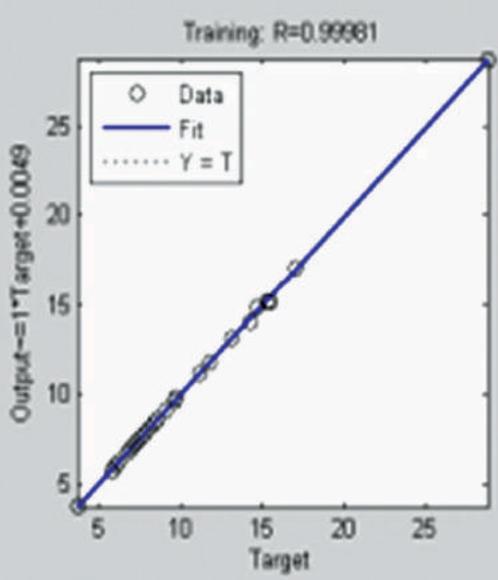


- Project** : Development of monoclonal antibody-based immunodiagnostic technique to quantify immune response in *Cirrhinus mrigala* and *Pangasianodon hypophthalmus*
- Personnel** : M. Makesh, K.V. Rajendran, Gaurav Rathore and Suresh Babu
- Duration** : 2010-2013
- Project** : Development and characterization of embryonic stem-like cells from *Carassius* species
- Personnel** : G. Tripathi, W.S. Lakra and M.K. Bedekar
- Duration** : 2012-2015
- Project** : Development of novel bicistronic vaccine construct against *Edwardsiella tarda*
- Personnel** : M.K. Bedekar, K.V. Rajendran, G. Tripathi and M. Makesh
- Project Duration** : 2012-2013
- Project** : Isolation, identification and characterization of common pathogens of pangasius stocks
- Personnel** : K. Pani Prasad, G. Tripathi, R.P. Raman and Kundan Kumar
- Project Duration** : 2010-2013
- Project** : Phytochemical studies of *Polygonum* spp. and biological assay of various extracts of the weed against fish pathogens
- Personnel** : Subhendu Datta, B.K. Mahapatra, K. Pani Prasad and Parimal Sardar
- Project Duration** : 2010-2013



### Significant achievements

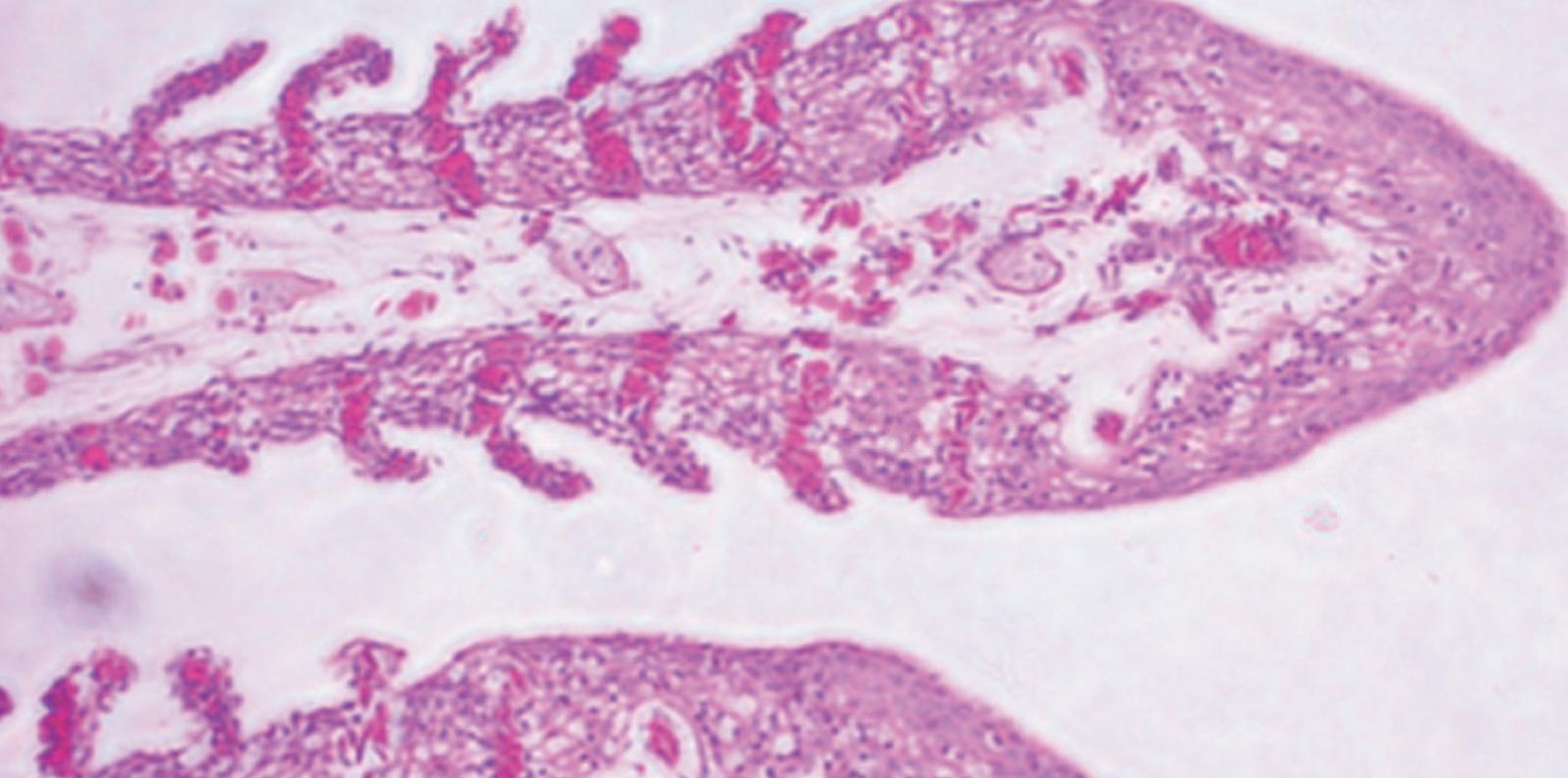
- Based on the isolate compatibility studies, four crude consortia were designed for lignocellulose degradation using old as well as new isolates out of which, two were found to be efficient. Ten bacterial isolates from detritus and fish culture ponds were identified using 16S rDNA sequences and the isolates have been submitted to the culture collection of the National Bureau of Agriculturally Important Microorganisms, Mau. The sequences have been deposited with the GenBank database under accession number JX228178 - JX228187.
- It was found that the total suspended solid content in water bodies has less impact on productivity as compared to the coloured dissolved organic matter content. So, for the prediction of eutrophication status of the water body, coloured dissolved organic matter content should be taken into consideration.
- A column-based unit was designed for the treatment of ammonia in water. Algal adsorbents, viz., alginic acid, calcium alginate and dried spirulina powder were used as adsorbents. The adsorption capacity of conventional adsorbents such as zeolite and activated charcoal was enhanced by the treatment with small quantities of algal adsorbents. About 30-40% increase in adsorption capacity was recorded after the above treatment. At 5-ppm ammonia concentration, 60% ammonia was adsorbed by the above unit in 15 minutes. An application of graded magnitude of electric field in the column showed a considerable increase in the adsorption capacity of tested adsorbents.
- TaqMan quantitative polymerase chain reaction (PCR) assays for white spot syndrome virus (WSSV) were developed. The assays showed wide dynamic range of detection ( $10^9$  to 10 copies) with the ability to detect even a single copy of the virus. Primers and probe concentrations were optimized, and reproducibility and reliability were determined both within and between separate assays. These assays were successfully applied to quantify WSSV replication in experimentally-infected shrimp and in cultured haemocytes, and also to test the silencing effect of some of the antisense constructs on WSSV *in vitro*. A TaqMan assay for hepatopancreatic parvovirus (HPV) was also developed and standardized, and the assay showed a wide dynamic range ( $10^9$  to 10 copies) with the detection capability of a single copy. The assay also showed high reproducibility. The assay was further applied to quantify the HPV in clinical samples and compared with conventional PCR. Similarly, the SYBR-Green assay developed for monodon baculovirus (MBV) was successfully used to quantify the viral load in field samples. A SYBR-



Green based PCR specific for the infectious strain of infectious hypodermal and haematopoietic necrosis virus (IHHNV) was also developed, standardized and further applied to quantify the viral load in field samples.

- Primary-cell culture systems were developed from different tissues and haemocytes of *Scylla serrata* as models to conduct WSSV infection trials and to check the efficacy of different antisense constructs against WSSV infection. Attempts were made to develop cell cultures from hepatopancreas, heart, testis, muscle, eye stalk, nervous tissue, epidermis, ovarian tissue, haematopoietic tissue and haemocytes using L-15 (1X, 2X and 3X strength) as the basal medium with different combinations of growth supplements including serum (5-10%), crab saline, non-essential amino acid mixture, lipid concentrate, vitamin mixture and growth factors. Primary cultures from testis and haemocytes showed better proliferative capacity as compared to the other tissues tried. Cultured testis cells were viable as suspension cultures up to 21 days. Haemocytes could be maintained *in vitro* up to 15 days and the cells showed better susceptibility to WSSV as compared to the other tissues tested. These could be effectively used for infection and transfection trials.

- The full-length interferon Type-II gene of *Labeo rohita* (rohu) was amplified. The primers were designed using the sequences available with Genbank. Rohu fingerlings were injected intraperitoneally with inactivated *Aeromonas hydrophila* and the kidney was isolated aseptically. Total RNA was purified, cDNA synthesized and PCR performed with specific primers. A 600-bp product was obtained which was cloned and submitted for sequencing.
- Monoclonal antibodies were used to develop enzyme-linked immunosorbent assay (ELISA) to quantify the immune response in *Cirrhinus mrigala* (mrigal) and *Pangasianodon hypophthalmus* (pangasius). Fish were immunized with inactivated *A. hydrophila*, and serum was collected from the control and immunized fish at different time points. The serum antibody was quantified by indirect ELISA. The antibody titre was significantly higher in immunized fish. The monoclonal antibodies (MAbs) also reacted with Immunoglobulin M (IgM) bearing cells (B Lymphocytes) in immunofluorescence and immunoperoxidase tests.
- The isolation of embryonic stem cells from the commercially important aquarium goldfish *Carassius auratus* was done under feeder and feeder-free conditions. Feeder-cell cultures



were prepared from the gill, kidney and spleen tissue explants supplemented with L-15 medium and 15% faetal calf serum.

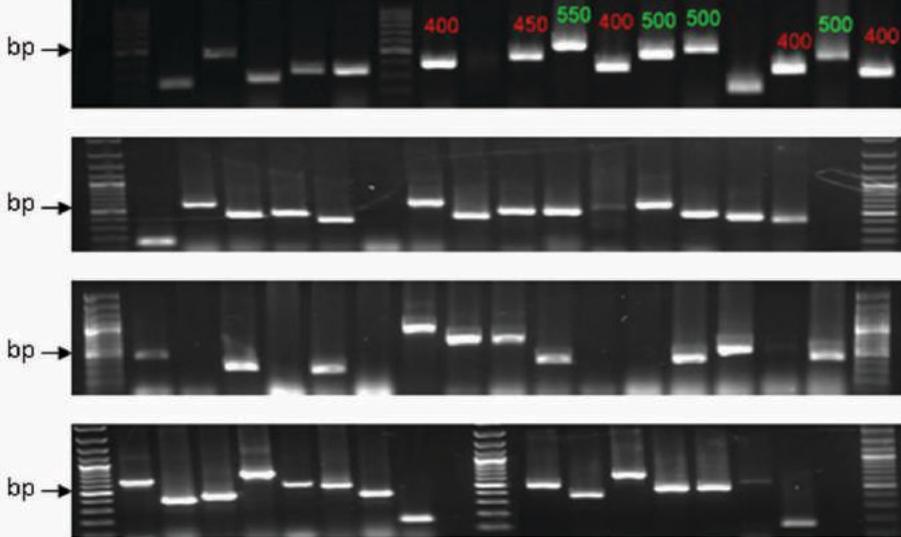
- Bacterial genomic DNA of *Edwardsiella tarda* was extracted using the CTBA/NaCl method. PCR primers for amplification and further cloning of Glyceraldehyde 3-phosphate dehydrogenase (GAPDH) gene of *E. tarda* in *pIRSE* and *pRSET* vectors were designed. On PCR amplification, a 996-bp GAPDH gene was amplified. The gene was first cloned in *pRSET* prokaryotic expression vector. Recombinant GAPDH protein was expressed and purified using Ni-NTA purification technology. The same GAPDH gene was also cloned in *pIRES* vector. The cloning was confirmed by colony PCR and restriction enzyme digestion.
- Organic extracts from aerial parts of *Polygonum hydropiper* and *Polygonum glabrum* were found effective against gram-negative (*A. hydrophila*, *A. caviae*, *E. tarda*) and gram-positive bacteria (*Streptococcus beta haemolyticus*). Methanolic extract was found to be effective for treating the diseased ornamental fishes like goldfish, swordtail and *Channa barca*.



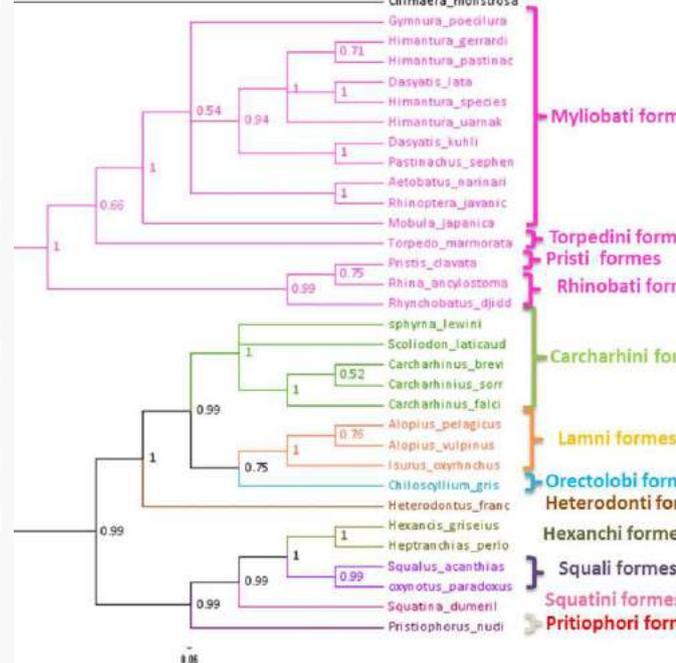
## Fish Genetics and Biotechnology Division

### Externally Funded Research Projects:

<b>Project</b>	: <b>Functional validation of four novel proteins associated with salt homeostasis in <i>P. monodon</i></b>
<b>Personnel</b>	: Aparna Chaudhari, Gireesh Babu P. and Gayatri Tripathi
<b>Duration</b>	: 2009-2013
<b>Funding Agency</b>	: NAIP (Govt of India)
<b>Budget</b>	: 45 Lakh
<b>Project</b>	: <b>Strengthening statistical computing for NARS</b>
<b>Personnel</b>	: Shrinivas Jahageerdar
<b>Duration</b>	: 2009-2014
<b>Funding Agency</b>	: NAIP (Govt of India)
<b>Budget</b>	: 44.37 Lakh
<b>Project</b>	: <b>Genetic conservation and live gene banking of Mahseer fish in Indrayani river</b>
<b>Project personnel</b>	: Gopal Krishna, N.K. Chadha, V.K. Tiwari, Rupam Sharma, S.N. Ogale and M. Mahajan
<b>Duration</b>	: 2010-2015
<b>Funding Agency</b>	: NFDB, Hyderabad
<b>Budget</b>	: 139 Lakh
<b>Project</b>	: <b>Development of nano-delivery system of DNA based RNAi vaccine against WSSV in tiger shrimp <i>Penaeus monodon</i></b>
<b>Personnel</b>	: Rupam Sharma, Aparna Chaudhari and Gireesh Babu P.
<b>Duration</b>	: 2012-2015
<b>Funding Agency</b>	: DBT (Govt of India)
<b>Budget</b>	: 64.41 Lakh



**Colony PCR to identify recombinant clones carrying the microsatellite repeats enriched genomic DNA fragments of 400 – 1000 bp size**



**Fig. 1 Phylogenetic reconstruction of elasmobranchs derived from Mitochondrial and Nuclear genes**

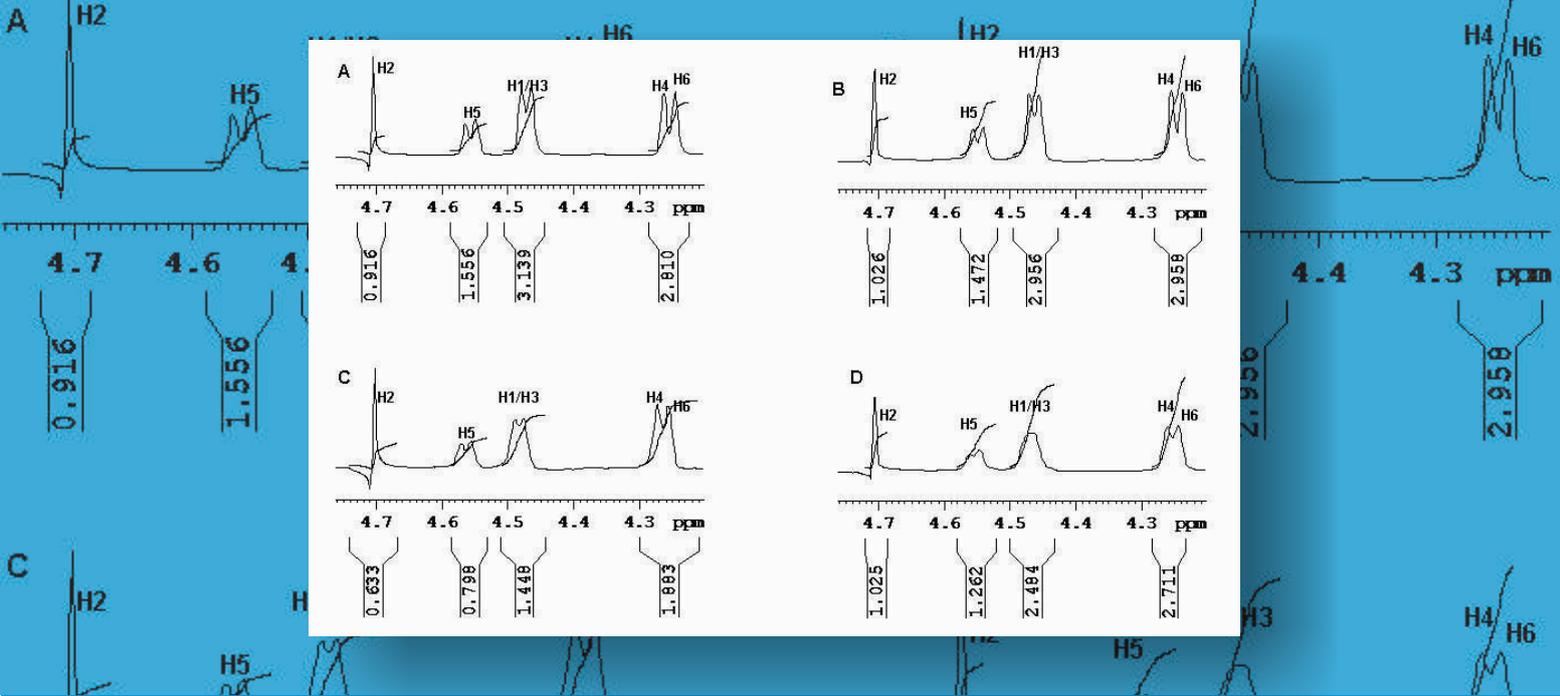
## Institutional Projects:

<b>Project</b>	: <b>Molecular phylogeny and DNA barcoding of elasmobranchs and selected teleost from Indian coast</b>
<b>Personnel</b>	: W.S. Lakra, A. Pavan Kumar, Gopal Krishna, S.K. Chakraborty, Aparna Chaudhari and A.K. Jaiswar
<b>Project Duration</b>	: 2011-2013
<b>Project</b>	: <b>Stock comparison of <i>Clarias batrachus</i> (Linnaeus, 1758) for selective breeding</b>
<b>Personnel</b>	: Shrinivas Jahageerda, Gopal Krishna, Rupam Sharma, C.S. Chaturvedi, Somdutt, S.S.H. Razvi and P.P. Suresh Babu
<b>Project Duration</b>	: 2012-2017
<b>Project</b>	: <b>Identification and validation of tri and tetra-nucleotide microsatellite loci in <i>Clarias batrachus</i></b>
<b>Personnel</b>	: Gireesh Babu P., Aparna Chaudhari, Rupam Sharma and Pavan Kumar A.
<b>Project Duration</b>	: 2012-2015
<b>Project</b>	: <b>Development of technology for breeding hatchery installation and rearing of riverine catfish seed viz <i>Ompok pabda</i>, <i>Pangasius hypophthalmus</i> and <i>Clarias batrachus</i></b>
<b>Personnel</b>	: C.S. Chaturvedi, Gopal Krishna, Neelam Saharan, V.K. Tiwari, Somdutt, Arpita Sharma and Asha Landge
<b>Project Duration</b>	: 2012-2015



## Significant achievements

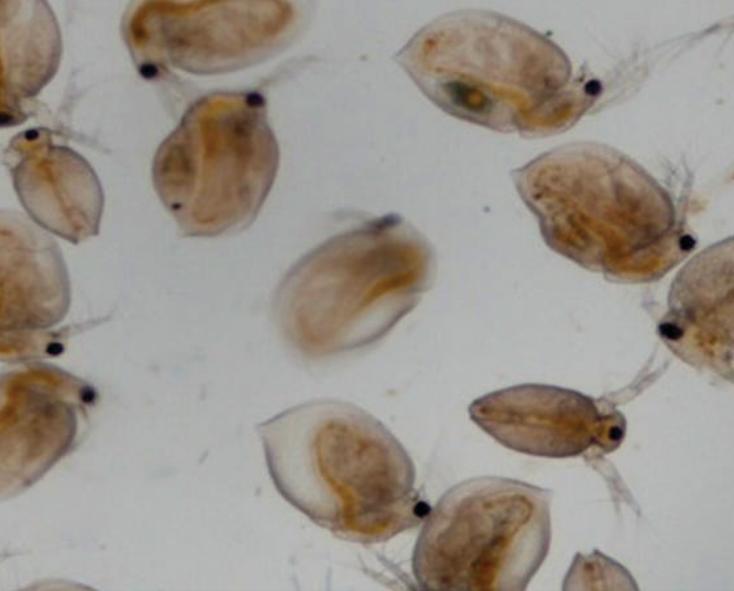
- Genomic DNA fragments of 400 to 1000 bp were hybridized to immobilize probes containing selected tri and tetra nucleotide repeats. Some microsatellite loci have been identified and more clones are being sequenced.
- Under stock rehabilitation and conservation efforts, Mahseer seed was reared in cages in Indryani river. Cages have been installed in the river Indrayani at Dehu village in Maharashtra. The yearlings are being reared at farm and in the brood-stock ponds to develop the brood stock. Awareness Program was organized involving the stake holders and local farmers, villagers and Panchayat Simiti members.
- DNA barcoding of twenty species of elasmobranchs and fourteen species of Gobiidae and tetradontidae fishes clearly discriminated all the species. Molecular phylogeny among species was studied for 30 species with partial cytochrome C oxidase subunit I gene (COI), 12s ribosomal gene (12s rDNA) and for 20 species with recombination activating gene 1 (RAG-1) and 15 species for internal transcribed spacer sequence (ITS-2). Among all datasets, the dataset1 (COI and 12s rDNA) gave consistent tree topology with all three methods i.e., maximum parsimony, maximum likelihood and Bayesian inference.
- Nanodelivery of the DNA vaccine pVP28-LH against WSSV developed and tried to improve its protection efficacy in *P. monodon*. Preparation of chitosan particles was carried out using the method of Calvo *et al.* (1997) based on the principle of ionic gelation using TPP anion (Triphosphosphate). Nanoparticles using other materials are also being tested.
- Na-K-ATPase is recognized as the major enzyme involved in salt homeostasis. The recombinant  $\alpha$  and  $\beta$  subunits of *P. monodon* under the control of constitutive promoter CMV could enhance the duration of survival of zebrafish larvae hatched from embryos co-microinjected with these constructs. In order to localize the recombinant protein *in vivo* in these zebrafish larvae, the genes were cloned so as to have an N-terminal His-tag. The expression of these subunits was confirmed *in vitro* using a cell line, and the recombinant proteins could be stained using anti-His primary antibody on western blots. The  $\beta$ -subunit promoter has been determined and uploaded on the NCBI GenBank.
- For HRD under NAIP project, workshop-cum-installation training program was organised that was attended by 24 trainees from 19 institutes. Two awareness cum training programs on 'SAS: For Research Data Analysis' were organized at CIFE and Directorate on Onion and Garlic Research, Pune in which 53 trainees participated. A national training on 'SAS for Data Reduction and Multivariate Analysis' was organized Mumbai and was attended by 31 trainees from 17 institutes.



## Fish Nutrition, Biochemistry and Physiology Division

### Externally Funded Research Projects:

<b>Project</b>	: Potential drugs from selected marine invertebrates and plants from Indian waters
<b>Personnel</b>	: Subodh Gupta and Geetanjali Deshmukhe
<b>Project Duration</b>	: 2007-2012
<b>Funding Agency</b>	: MOES, Govt. of India
<b>Budget</b>	: 136.00 Lakh
<b>Project</b>	: Strengthening of digital library and information management under NAIP (e-Granth), NAIP, ICAR
<b>Personnel</b>	: N. P. Sahu and Subash Chand
<b>Project Duration</b>	: 2009-2014
<b>Funding Agency</b>	: NAIP, ICAR
<b>Budget</b>	: 38.81 Lakh
<b>Project</b>	: Studies on the degradation products of both nutrients and anti-nutrients of aqua-feed exposed to E-beam and their effects on Immuno-physiology of fish, <i>Labeo rohita</i> .
<b>Personnel</b>	: N. P. Sahu, A. K. Pal, S. Ganesh and Girijesh Govil
<b>Project Duration</b>	: 2010-2014
<b>Funding Agency</b>	: BRNS, DAE (Govt. of India)
<b>Budget</b>	: 11.49 Lakh
<b>Project</b>	: Studies on present status of marine radioecology and biodiversity at Kalpakkam coastal sites
<b>Personnel</b>	: A. K. Pal, Munil Kumar, S. Raja Ram and Santhana Krishnan
<b>Project Duration</b>	: 2011-2014
<b>Funding Agency</b>	: BRNS, DAE (Govt. of India)
<b>Budget</b>	: 208.35 Lakhs



- Project** : Baseline riverine radioecology and biodiversity studies around proposed NPP site (Jabalpur, M.P.)
- Personnel** : S. Dasgupta, S. P. Shukla, Ravi P. M. and P. K. Srivastava
- Project Duration** : 2011-2014
- Funding Agency** : BRNS, DAE (Govt. of India)
- Budget** : 202.35 Lakhs
- Project** : Optimum utilization of locally available plant-based ingredients for aquafeed through electron beam irradiation, BRNS, DAE, Gol
- Personnel** : Parimal Sardar, Ganesh S. and G.H. Pailan
- Project Duration** : 2012-2015
- Funding Agency** : BRNS, DAE (Govt. of India)
- Budget** : 18.035 Lakhs

### Institutional Projects

- Project** : Nutritional requirement and nutrigenomics studies for growth and flesh quality in *Pangasianodon hypophthalmus* (Sauvage, 1878)
- Personnel** : Muralidhar. P. Ande, K. K. Jain, Subodh Gupta, P. P. Srivastava and Sujata Sahoo
- Project Duration** : 2012-2015
- Project** : Tracking germ cell migration during early gonadal development and germ cell transplantation in carp
- Personnel** : S. Dasgupta, A.K. Pal and Srabani Mukherjee
- Project Duration** : 2012-2015
- Project** : Utilisation of sewage to culture fish food organisms for ornamental fish
- Personnel** : Munilkumar S. , B.K. Mahapatra, G.H. Pailan and S. Datta
- Project Duration** : 2012-2015
- Project** : Feeding of high glucosinolates mustard oil-meal based diet of nutritional and patho-physiological responses of Indian Major Carps
- Personnel** : G.H. Pailan, Parimal Sardar and N.P. Sahu
- Project Duration** : 2012-2015



## Significant achievements

- A growth trial was conducted to determine the dietary lipid and protein requirement of juvenile *Pangasianodon hypophthalmus*. The lipid and protein requirement were found to be 10.1% and 37.1%, respectively. Zinc requirement was also determined and found to be 32 mg/kg. The muscle calpain activity was lowered with increased supplement level of zinc.
- Attempt was made to clone and characterize the vasa gene, an accepted gene marker for PGCs. Using PCR with different sets of primers and 3' RACE, the final composed cDNA obtained was 1520nt (ORF-1374nt and 3'UTR-46nt). BLAST search against database revealed a high similarity of mvasa to vasa homologues of other vertebrates. The predicted mvasa protein sequence consists of 458 amino acid residues and contains eight consensus sequences characteristic of the DEAD box protein family. The partial sequence has been submitted to NCBI (accession no. KC110756). By using, RT-PCR, mrigal vasa gene was found only in testis, ovary and not detected in brain, spleen, liver, heart, kidney, gill and muscle.
- As a new initiative on electron beam radiation study was initiated in collaboration with two leading research organization of the country, BRNS, BARC, Mumbai and TIFR, Mumbai.
- Identification of breakdown products of both nutrients and antinutrients of aquafeed ingredients exposed to E-beam at 10kGy using 2D NMR were studied. The NMR results have shown the structural rearrangement of phytic and tannic acid on exposure to e-beam. On exposure to E-beam, sodium phytate and tannin, anti-nutrient of aqua-feed, undergo structural rearrangement. The structural changes lead to a decrease in their anti-nutrient and an increase in their antioxidant activity. This indicate the scope of using e-beam irradiated ingredients in aqua feed.
- In order to find bioactive compounds from the marine organisms, thirty two samples of marine organisms (sponges- 26, sea grass and weeds- 06) were collected and identified by CAS-Marine Biology, Annamalai University. Out of 32 samples, six were reported as new and subjected to preliminary study for biotoxicity in mice model. Pharmacological potential of these extracted samples were studied in collaboration with CDRI, Lucknow. Six voucher samples were sent to NIO for herbarium and four samples were sent to ACTREC, Kharghar, Navi Mumbai to check their anti-cancer activity. None of the samples was reported to have any pharmacological activity.



- The total glucosinolates content of mustard oil cake procured from different places were estimated. The average glucosinolates contents was 148.06  $\mu\text{mol/g}$  in expeller pressed musurd oil cake and 153.49  $\mu\text{mol/g}$  in solvent extracted deoiled oil cake. It was found that oil extraction methods have no significant effect on total glucosinolates content of oil cake.
- Sewage samples were treated in sequential manner with lime (20 g/50 L), bleaching (5 g/50 L) and EDTA (10 mg/L). pH was found to be significantly higher (8.20-8.26) and buffering of pH in the range of 6.8-7.1 was found to support algal and zooplankton growth. *Chlorella vulgaris* was isolated using modified media for Daphnia was used as test animal to culture in sewage.
- To study present status of marine radioecology and biodiversity at Kalpakkam coastal site, the samples of water, sediment, phytoplankton, zooplankton and benthos etc. were studied. Salinity, pH, DO, ammonia, nitrite, nitrate and phosphate ranged from 34-36 ppt, 7.9-8.1, 6.2-7.4 mg/l, 0.09-0.19 mg/l, 0.127-0.147 mg/l, 0.52-1.01 mg/l, 0.09-0.23 mg/l, respectively. Soil samples were analyzed and values were pH, 7.0-7.5, organic carbon, 0.083-0.139% and total nitrogen from 83-139 mg/100g. Twenty nine species of phytoplanktons and eleven species of zooplankton were identified. Shannon Weiver Index of phytoplankton was estimated to be 1.67-1.82. It was found that crustacean species like Portunidae, Majidae, Calappidae and Penaeidae contributes 50%, 13%, 12% and 25% respectively. However, *Mesogastropoda* contributes 38%, Neogastropoda 31% and rest of the species contributes  $\leq 7\%$  among the molluscs. Among the fishes the perciformes contributes almost 50%. Samples (fish, water, soil) were processed at Environmental Survey Lab, Kalpakkam for analysis of the radionuclides.
- To study baseline riverine radioecology and biodiversity around proposed NPP site (Jabalpur, M.P.), radioecological, physiochemical as well as biotic integrity based on aquatic plants, phytoplankton, zooplankton, benthic fauna were assessed. Phytoplankton population has shown peak in June, where Bacillariophyceae was found to be most dominant. Zooplankton population showed peak in January and November and copepoda was found to be the most dominant. Thirty eight species of macrophyte were reported. Insect larvae of order Diptera and Trichoptera were most dominant component of benthic fauna. *Catla catla* and *Labeo* sp. were the most dominant fish reported. Water quality parameters were within permissible limit with accordance to IS standard for class A.



## Fisheries Resources, Harvest and Post-harvest Management Division

### Externally Funded Research Projects:

<b>Project</b>	: Validation of OCM II geo-physical products over western coastal region
<b>Personnel</b>	: Latha Shenoy
<b>Project duration</b>	: 2008-2012
<b>Funding Agency</b>	: SAC, Ahmedabad
<b>Budget</b>	: Rs. 31.20 Lakh
<b>Project</b>	: Validation of potential fishing zone advisories along the Mumbai coast, Maharashtra
<b>Personnel</b>	: Latha Shenoy
<b>Project duration</b>	: 2009-2012
<b>Funding Agency</b>	: INCOIS, Hyderabad
<b>Budget</b>	: Rs.10.04 Lakh
<b>Project</b>	: Studies on of marine radioecology and biodiversity around nuclear plant site in Jaitapur, Maharashtra, BARC
<b>Personnel</b>	: S.K. Chakraborty and A.K. Jaiswar
<b>Project Duration</b>	: 2011-2014
<b>Funding Agency</b>	: BRNS, DAE (Govt. of India)
<b>Budget</b>	: Rs. 68.25 Lakh
<b>Project</b>	: Capture and removal of ammonia from fish processing waste water using Archaea.
<b>Personnel</b>	: B.B. Nayak and Manjusha L.
<b>Project duration</b>	: 2011-2016
<b>Funding Agency</b>	: NFBSFARA, ICAR
<b>Budget</b>	: Rs. 227.72 Lakh
<b>Project</b>	: Accelerated salt fermentation of Indian mackerel " Rastrelliger kanagartha" using fermentation microflora
<b>Personnel</b>	: B.B. Nayak and Manjusha L.
<b>Project duration</b>	: 2013-2016
<b>Funding Agency</b>	: RGSTC, Maharashtra
<b>Budget</b>	: Rs. 31.00 Lakh



### Institutional Projects:

<b>Project</b>	: <b>Assessment of molluscs, crustaceans and algal biodiversity along inter-tidal region of Maharashtra coast.</b>
<b>Personnel</b>	: S.K. Chakraborty, Geetanjali Deshmukhe, Latha Shenoy, A.K. Jaiswar, Asha Landge and S. Patil
<b>Project duration</b>	: 2012-15
<b>Project</b>	: <b>Occurrence and dissemination of antimicrobial resistance and virulence factors among Enterobacteriaceae in seafood.</b>
<b>Personnel</b>	: H. Sanath Kumar, B.B. Nayak and Manjusha L.
<b>Project duration</b>	: 2012-15
<b>Project</b>	: <b>Development of a method for salt fermentation of Indian Mackerel, <i>Rastrelliger kangurta</i></b>
<b>Personnel</b>	: B.B. Nayak and Manjusha L.
<b>Project duration</b>	: 2012-15
<b>Project</b>	: <b>Studies on improvement of rheological and functional properties of fish gelatin</b>
<b>Personnel</b>	: Venkateshwarlu G, B.B. Nayak and Nagalakshmi K.
<b>Project duration</b>	: 2010-13



## Significant achievements

- Experimental fishing and analysis of water samples collected along the Mumbai coast for the validation of PFZ advisories issued by the Indian National Centre for Ocean Information Services, Hyderabad indicated that the predicted areas are productive enough to yield a significant catch. Two awareness campaigns were conducted for the fishers of Mumbai coast to make them understand the benefits of usage of PFZ advisories in fishing operations.
- A comparison of *in-situ* and OCM II measurement based on the analysis of more than 250 water samples for two parameters viz. chlorophyll-a and total suspended matter (TSM) was accomplished for eight stations along the Mumbai coast. A comparison of the values showed that *in-situ* and OCM-II Chlorophyll-a values were in the range 0.53-6.94 and 1.44-57.13 mg/l, respectively. TSM values for *in-situ* measurements were in the range of 25.4-36.7mg/l. The overall observations on *in-situ* and OCM values for Chlorophyll-a indicated that concentration of Chlorophyll-a was on higher side during the winter months from November-February. The overall pattern of the OCM-II and *in-situ* data for chlorophyll-a and TSM suggested that a higher degree of match was evident in the months of January and February when the sky is mostly cloud free over the Mumbai coast.
- Samples were collected during March-May, June-August, September-November, December-February, 2012-13 for the inshore areas. Offshore collection was made on March-May, September-November and December-February. From all the stations, water samples, both phyto and zooplankton, benthos and fish samples were collected and analysed. The physio-chemical parameters studies were pH, temperature, depth, DO, Free CO<sub>2</sub>, alkalinity, salinity, hardness, ammonia and chloride. The site selected north of the NNP was Ganeshghule, Ambolgad and Vetye and on the south of the NNP were Vizaydurg, Pural, Padavne and Deogad. In west of the stations among phytoplankton *Skeletonema* spp. *Chaetoceros* spp. and *Nitzschia* spp. were dominant. Diversity indices like Shannon-Weiner, Simpson and Margalef etc was applied for both phyto and zooplankton. Among zooplankton Copepods, Nauplius and Tintinnids were dominant. Among the benthos polychetes formed the bulk of the collection followed by gastropods. Biomass of the gastropods was however, higher than polychetes. The benthos were also subjected to Pielou's evenness index, Simpson, Shannon-Weiner diversity index etc. A total of 37 species of fish has been recorded which includes 4 species of crabs and 2 species of prawns and



cephalopods each Mackerel and *Lactarias lactarias* were the dominant species. Radiochemical analysis of samples from Vizaydurg and devgad was done. After processing the counting was done in gamma spectrophotometry. The Sc-137 ranged between 1.9-7.83Bq/kg.

- Mesophilic Archaea have been detected in large number in all the stages of fish processing waste water treatment system. Several isolates selectively enriched from wastewater system have been found to be ammonia oxidizers. Though most of the efficient oxidizers turned out to be bacteria, some of the isolates neither responded to bacterial universal primers set, nor to archaeal universal primers set. However, they responded to archaeal fluorescent insitu hybridization probes at low stringency condition and do not respond at high stringency condition. Sequence analysis have been non-conclusive till now.
- Six sites with sandy and rocky shoreline of 800 km Maharashtra coastline selected were: Dahanu (Wadvan), Khardanda, Bandstand, Alibag, Shrivardhan and Ratnagiri. Total 7 crustaceans, 32 molluscan and 51 algal species recorded from four sites; out of which about 10-15 species are regularly harvested by the local communities. Some of the molluscan species were preserved for barcoding.
- Antibiotic resistant enterobacteria isolated from fish and shellfish included *Escherichia coli*, *Klebsiella* spp., *Enterobacter* spp. and *Salmonella enterica*. A very high level of resistance was observed for amoxicillin/Clavulanic acid followed by the third generation cephalosporins ceftazidime and cefotaxime and the monobactam drug aztreonam. Least resistance was observed against the fluoroquinolone drug ciprofloxacin and imipenem. Currently, the molecular determinants of antibiotic resistance are being investigated using PCR.
- Mackerels were fermented by a combination of dry and wet-salting method. Aduration of 4 months fermentation resulted in a stable product with 14.1% salt. The pH of the muscle had reduced to 5.3 and moisture to 51% leading to the stability along with salt. The fermented fish could be stored for 3 months without being rancid. Being free from pathogenic bacteria, bacterial toxins, the product is safe for consumption. The product has pleasant flavour and very attractive meat colour. When cooked with vegetables to neutralize the salt, the product was accepted by fermented fish non eaters with an acceptability score of 4.5 in a 5 point scale. The TVBN, TMA and FFA of the final product were 37mg %, 17mg %, 0.49 % (of oleic acid) and 0.77mg malonaldehyde/Kg respectively.



- The physico-chemical and functional properties of gelatins extracted from skins of Tiger-toothed croaker (*Otolithes ruber*) and Pink perch (*Nemipterus japonicus*) were studied. The study clearly demonstrated that the protein content of fish gelatin was found significantly correlated with the gelation capacity, whereas hydroxyl proline was found highly correlated with the emulsifying capacity and viscosity. Interestingly, the gel strength showed close correlation with several functional properties such as melting point, viscosity, foaming capacity, foaming stability and water holding

capacity demonstrating the significance of its value in determining the quality of gelatin. Further, it was observed that the maximum gel strength and melting point were obtained at pH 4.0 and 6.0, respectively and was found quite stable to variations in pH (2 to 10) compared to inconsistent mammalian gelatin. The stability over a fairly wide pH range is very useful for food applications of gelatin. Similarly it was observed that the maximum gel strength and melting point were obtained at 2% NaCl concentration.



## Fisheries Economics Extension and Statistics Division

### Institutional Projects:

<b>Project</b>	<b>: Responsible fisheries management along Mumbai coast: empowering through information and institutional strategies</b>
<b>Personnel</b>	: S.N. Ojha, Arpita Sharma, Sheela Immanuel, P.S. Ananthan, M. Krishnan, S.K. Chakraborty, Ram Singh, S.S. Kamath and G.K. Rao
<b>Project duration</b>	: 2011-2014
<b>Project</b>	<b>: A study on some aspects of forecast modeling technique in fisheries</b>
<b>Personnel</b>	: Rama Sharma and M. Krishnan
<b>Project duration</b>	: 2011-2014
<b>Project</b>	<b>: Documentation of endogenous grass root level innovations in fisheries sector and facilitating patenting of innovations by CIFE scientists</b>
<b>Personnel</b>	: Arpita Sharma, Rupam Sharma, S.P. Shukla, Asha Landge, P.S. Ananthan and Rama Sharma
<b>Project duration</b>	: 2012-2015
<b>Project</b>	<b>: Ecology, livelihoods and governance in Indian reservoir fisheries: An ecosystem based approach</b>
<b>Personnel</b>	: P. S. Ananthan, M. Krishnan, Arpita Sharma, Asha Landge, A. Vennila, Rama Sharma and Pavithra (till Dec 2012)
<b>Project duration</b>	: 2012-2015

## Significant Achievements

- It has been found that Mumbai has fishing regions which are diametrically opposite with reference to production trends and accordingly, focus on two fisheries management strategies in Mumbai are required. Based on the level of education and exposure to information technology (IT), the two strategies that could be used for disseminating information on responsible fisheries would be oral and print media including audio advisories, hand-outs, posters and electronic media including videos, sms and internet. Fishers' needs of Gorai and Colaba of Mumbai were further collected to conduct Need Hierarchy Analysis. It was observed that mostly fishers needed to restrict overfishing (23.4%) and pollution (23.4%). It is suggested to form a Mumbai Fishery Management Council that may be set up on the lines of Regional Fishery Management Councils of US to address fishers needs. Modes of information dissemination in Gorai and Colaba were also studied. Topics for communication were selected as per the needs of the fishers. Fishers need to know about overfishing and its causes, so that they can take better decisions, pollution and measures to control it, marketing of fish and other technologies and schemes, community organizations that can look after the issues of regulations and management of the fisheries sector and fishers living conditions.
- Artificial Neural network method (ANN) provided much better forecast as compared to fuzzy time series and ARIMA methods. Comparisons were made among these models both in terms of goodness of fit and models accuracy. To check the model accuracy, mean square errors (MSE) and average errors in percentage were calculated for forecasted marine productions
- An Ecosystem Based Approach being conducted in Maharashtra covering 6 selected large/medium reservoirs located in four of the five geographic/agro-climatic and five of the six administrative regions in Maharashtra namely Dimbhe (WSA-1224 ha) and Ujjani (WSA-29000 ha) reservoirs in Western Maharashtra or Pune Division, Girna (WSA-5586 ha) reservoir in Khandesh region (Nasik Division), Isapur (WSA-9271 ha) in Marathwada region (Aurangabad Division), Itiadh in Gondia (WSA- 5875 ha) reservoir in Vidharba region (Nagpur Division), and Nala Damayanti / Upper Wardha reservoir (WSA-9315 ha) in Amravati District. Preliminary information with respect to hydrological profile, fisheries resources, production details, fishers demographic details, types of management regimes and institutional arrangements in existence have been collected for five reservoirs in Maharashtra under study through field visits and secondary sources. Comparison of Private Contractual system (Revenue based) and Cooperative System (Welfare based) of reservoir management revealed the former is more effective in measuring fish production and productivity, while the latter is more effective in equitable benefit sharing among fishers. Review of policy and regulatory system in Maharashtra has revealed absence of a single policy and regulatory document for managing reservoir fisheries and even contradictions in the existing practice across the state. Relevant policies, government orders, resolutions and letters (38 documents in english and marathi dated back to 1966 collected from multiple sources) dealing with definition of specific water bodies, their ownership and management rights, leasing authority for specific type/size of water bodies, fixation of lease term and tenure, leasing rights and responsibilities and DoF/MFDC, priorities of lease, estimation of field, yield potential and stocking recommendations, etc. were collected and critically reviewed. This has shown absence of a single policy and regulatory document for managing reservoir fisheries as well as many gaps, variations and even contradictions in the existing practice across the State and reservoirs.

### Ongoing Projects at CIFE - at a glance

Total Institutional Projects	: 33
Total External Projects	: 27
Total Funds attracted	: Rs. 2454.803 lakh
Funding Agencies	: NAIP, BRNS, NFDB, NABARD, NFBSFRA, AMAAAS, MOES, DBT, SAC, RGSTC and INCOIS

# Chapter 6



## Extension Achievements



## 6.1. Short term Training Programmes (STP)/ Special Training Programmes for NE states/Other states etc. organized during the year

### CIFE, Mumbai

S.No.	Title	Duration	No. of participants
1	Value added fish product preparation	16-18 Jul 2012	11
2	Fish, water and sediment collection in off - shore water	24 Nov 2012	6
3	Aquaculture technology for tribal development ( <i>Adivasi viikas ke liye matsya paalan</i> )	21-22 Dec 2012	12
4	Promoting Hindi in official work	18-21 Jan 2013	12
5	Integrated fish farming	30 Jan 2013	20
6	<i>Adivasi viikas ke liye matsya paalan</i>	5-7 Mar 2013	24
7	Application of nanotechnology in fisheries and aquaculture	11-16 Mar 2013	6
<b>Total</b>			<b>91</b>



## CIFE, Kolkata centre

S.No.	Title	Duration	No. of participants
1	Inland fisheries and aquaculture	13-18 Apr 2012	13
2	Orientation training on ornamental fish breeding and culture	3 May 2012	11
3	Freshwater fish farming	29 Apr-8 May 2012	21
4	Orientation training on modern pisciculture and advanced technologies in aquaculture	14-15 May 2012	25
5	Recent advances in aquaculture technologies	24-30 Jul 2012	5
6	Entrepreneurship development in ornamental fish breeding and culture	22-28 Aug 2012	18
7	Training cum exposure visit on ornamental fish breeding and culture	30-31 Aug 2012	15
8	Freshwater aquaculture	30 Aug-8 Sep 2012	23
9	Training cum exposure visit on ornamental fish breeding and culture	1 Oct 2012	12
10	Basic training programme on ornamental fish breeding and culture	8-12 Oct 2012	20
11	Freshwater aquaculture	11-20 Oct 2012	25
12	Fish processing and value added fish products	20-26 Nov 2012	33
13	In-Plant training programme	1 Oct-30 Nov 2012	16
14	Ornamental fish breeding and culture	26 Nov-3 Dec 2012	29
15	Freshwater aquaculture	13-22 Dec 2012	31
16	Freshwater aquaculture	9-18 Jan 2013	25
17	Freshwater aquaculture	17-21 Jan 2013	22
18	Fish nutrition and feeding strategies	18-24 Jan 2013	14
19	Freshwater aquaculture	6-15 Feb 2013	25
20	Tribal training programme on <i>Mitha jale Machh Chash</i>	18-23 Feb 2013	21
21	Freshwater aquaculture	27 Feb-8 Mar 2013	25

22	Tribal training programme on <i>Mithajale Machh Chash</i>	11-16 Mar 2013	21
23	Field demonstration programme on freshwater aquaculture	17-19 Mar 2013	13
24	Hands-on-training on ornamental fish breeding and culture	21 Mar 2013	11
25	Tribal training programme on <i>Mithajale Machh Chash</i>	18-23 Mar 2013	28
26	Training cum field visit on advances on freshwater aquaculture	20-26 Mar 2013	6
<b>Total</b>			<b>508</b>

### CIFE, Kakinada Centre

S.No.	Title	Duration	No. of participants
1	Freshwater aquaculture	3-10 Jun 2012	20
2	Seed production and culture of Magur	23-29 Aug 2012	1
3	<i>Machili evum Maha Jhinga Palan</i>	19-28 Sep 2012	30
4	<i>Machili evum Maha Jhinga Palan</i>	4-13 Oct 2012	30
5	Brackishwater aquaculture	9-15 Oct 2012	17
6	Disease diagnosis, prevention and control measures in aquaculture	15-21 Oct 2012	5
7	<i>Machili evum Maha Jhinga Palan</i>	5-14 Dec 2012	30
8	<i>Machili evum Maha Jhinga Palan</i>	18-27 Dec 2012	30
9	<i>Machili evum Maha Jhinga Palan</i>	3-7 Jan 2013	20
10	<i>Machili evum Maha Jhinga Palan</i>	19-28 Jan 2013	30
11	<i>Machili evum Maha Jhinga Palan</i>	30 Jan-8 Feb 2013	30
12	Freshwater aquaculture	4-12 Feb 2013	29
13	<i>Machili evum Maha Jhinga Palan</i>	13-22 Feb 2013	30
14	<i>Machili evum Maha Jhinga Palan</i>	26 Feb-7 Mar 2013	30
<b>Total</b>			<b>332</b>



## CIFE Centre, Rohtak

S.No.	Title	Duration	No. of participants
1	Prawn culture and general aquaculture management	2 days (21 batches)	200
2	Hatchery management and seed production of Magur	4-13 Jul 2012	8
3	Carp breeding and hatchery management	18-27 Jul 2012	21
4	Freshwater prawn culture	22-28 Aug 2012	14
5	Fish and prawn culture	29 Aug-7 Sep 2012	20
6	Carp culture practices and recent advances	11-20 Sep 2012	21
7	Fish and prawn culture	24 Sep-3 Oct 2012	19
8	Fish and prawn culture	4-13 Oct 2012	19
9.	Fish and prawn culture	27 Nov-6 Dec 2012	20
10	Fish and prawn culture	11-20 Dec 2012	18
11	Fish and prawn culture	26 Dec 2012-4 Jan 2013	20
12	Fish and prawn culture	19-28 Jan 2013	15
13	Fish and prawn culture	29 Jan-7 Feb 2013	20
14	Fish and prawn culture	7-16 Feb 2013	19
15	Fish and prawn culture	26 Feb-9 Mar 2013	20
<b>Total</b>			<b>454</b>



### CIFE Centre, Powerkheda

S.No.	Title	Duration	No. of participants
1.	Hatchery management and seed production of Magur	4-13 Jul 2012	8
2.	Freshwater prawn farming	22-28 Aug 2012	14
3.	Freshwater prawn culture	22-28 Aug 2012	14
4.	Fish and prawn culture	29 Aug-7 Sep 2012	20
5.	Carp culture practices & recent advances	11-20 Sep 2012	21
6.	Fish and prawn culture	24 Sep-3 Oct 2012	19
7.	Fish and prawn culture	4-13 Oct 2012	19
8.	Fish and prawn culture	27 Nov-6 Dec 2012	20
9.	Fish and prawn culture	11-20 Dec 2012	18
10.	Fish and prawn culture	26 Dec 2012-4 Jan 2013	20
11.	Fish and prawn culture	19-28 Jan 2013	15
12.	Fish and prawn culture	29 Jan-7 Feb 2013	20
13.	Fish and prawn culture	7-16 Feb 2013	19
14.	Fish and prawn culture	26 Feb-9 Mar 2013	20
<b>Total</b>			<b>247</b>



## 6.2 Exhibitions organized

S.No.	Event	Venue	Duration
1.	Exhibition cum Kisan Mela	CIFE Centre, Kakinada	14 Mar 2012
2.	Exhibition - Global Konkan	M M R D A Ground, Bandra - Kurla Complex, Mumbai	12-16 Apr 2012
3.	Kishan Mela- Kharif 2012 organized by Office of Collector, Hoshangabad	Krishi Upaj Mandi, Hoshangabad	18-20 Jun 2012
4.	Exhibition during the visit of Hon'ble Union Minister for Agriculture and Food Processing industries	CIFE, Mumbai	6 Jul 2012
5.	16th National Exhibition on India Marching towards an Advance Nation - Organised by Central Calcutta Science and Culture Organization for Youth	Nazrul Maidan, Narayantala Kolkata	7-11 Sep 2012
6.	2nd India Crop Summit-2012 organized by Indian Chambers of Commerce, Kolkata in collaboration with Govt of West Bengal and ICAR, New Delhi	Netaji Indoor Stadium, Kolkata, West Bengal	17-18 Sep 2012
7.	Exhibition during Workshop cum Farmers Meet on Inland saline aquaculture	CIFE Rohtak Centre	22 Sep 2012
8.	<i>Jharkhand Matsya Mahostav</i> - organized by Directorate of Fisheries, Govt of Jharkhand, Ranchi	Vidhan Sabha Ground, Dhurwa, HEC, Ranchi	28-29 Sep 2012
9.	Indian Agriculture Industries (IAI) Aquaculture Expo	IARI Ground, PUSA, New Delhi	13-15 Dec 2012
10.	Kisan Divas	NDRI, Karnal	22 Dec 2012
11.	Integrated Agriculture Mahotsav - organized by Regional Centre of CIFA, Kalyani	CIFA, Kalyani Centre	3-4 Jan 2013
12.	Global Konkan festival	MMRDA Ground, Mumbai	4-7 Jan 2013



13.	Exhibition during Workshop on Feed based Aquaculture: Status, Constraints and Potential	College of Fisheries, Agartala	11-12 Jan 2013
14.	Versova Koli Sea Food festival	Versova, Mumbai	18-20 Jan 2013
15.	The Congress on Public Private Partnership in Aquaculture and Culture Based Fisheries - Organised by CIFRI, Barrackpore	CIFRI, Barrackpore	9-11 Feb 2013
16.	Kisan Mela in collaboration with ATMA East Godavari district.	CIFE Kakinada Centre	14 Mar 2013
17.	<i>Bharat Nirman Abhiyan</i> organized by Press Information Bureau, Indore.	Mela ground, Chanderi, Ashoknagar (M.P.)	17-19 Mar 2013



### 6.3 Farmers' Meets/Awareness programmes etc.

S.No.	Name of programme	Place	Period
1.	Awareness programme on Development of fisheries and aquaculture for livelihood security of the tribal community	Dimbhe, Maharashtra	8 Sep 2012
2.	<i>Matsya kisan mela</i> with Haryana state fisheries dept	CIFE Centre Rohtak	20-22 Sep 2012
3.	Aquaculture new possibilities and concerns	CIFE Centre Kakinada	9 Oct 2012
4.	Assessment of training needs and possible academic partnerships	CIFE Centre Kakinada	26 Oct 2012
5.	Farmers' meet assessment of training needs and possible academic partnerships	Nellore, Andhra Pradesh	16 Nov 2012
6.	Interactive workshop-cum-farmers' meet on fisheries and aquaculture development in Mizoram-HRD and research needs	Aizawl, Mizoram	22 Nov 2012
7.	Interactive workshop-cum-farmers' meet on fisheries and aquaculture development in Manipur-HRD and research needs	Imphal, Manipur	24 Nov 2012
8.	Awareness workshop	Udaipur, Rajasthan	17-19 Dec 2012
9.	Interactive workshop-cum-farmers' meet		
10.	Awareness workshop	Talegaon, Maharashtra	28-29 Dec 2012
11.	Fish and pawn culture	Lions Community hall Tallarevu, Kakinada	26 Feb 2013
12.	<i>Adivasi matsya krishak ek divasiya chetna sangosthi</i>	CIFE Centre, Powarkheda	7 Mar 2013
13.	Workshop cum Farmers Meet on Inland saline aquaculture	CIFE, Mumbai	10 Mar 2013
14.	Kisan Mela	CIFE Centre, Kakinada	14 Mar 2013
15.	Awareness programme on Fisheries enhancement in reservoirs, mini-dams, minor irrigation tanks and village ponds in Chikhaldara, Maharashtra	Chikhaldara, Maharashtra	21-22 Mar 2013

## 6.4 Other extension activities

### CIFE HQ, Mumbai

#### *TV/Radio Talk delivered*

Dr. C. S. Chaturvedi delivered two radio talks, one on Ornamental fish culture a source of income and other on Paddy cum fish culture were broadcast on 16 June 2012 and 22 June 2012 respectively on All India Radio Akashwani, Port Blair, Andaman and Nicobar Island

Dr Rajeshwar Uniyal gave a radio talk on Folk song in Rain on 13 July, 2012 and another on Indian Culture in Folk song on 19 October, 2012

#### *Print media*

News on the visit of CIFE officials to Dimbhe reservoir was covered by Pune Newspaper TODAY on 24 September 2012

### CIFE Centre, Kakinada

#### *Transfer of Technology and Demonstration*

Technical guidance was provided to fish farmers and students on fish farming, freshwater fish disease diagnosis and treatment. CIFE Kakinada centre in collaboration with ATMA, East Godavari District has given technological inputs to farmers to start paddy cum fish culture in East Godavari District.

#### *Field training Programmes/exposure visits*

The centre carried out field training programme at BWFF, Kakinada and FWFF, Balabhadrapuram during

June 2012 for M.F.Sc. and PDP students. About 16 B.F.Sc students from Assam Agricultural University underwent training at this centre both at FWFF and BWFF farms. During their training apart from theory and practicals they also underwent hands on training on carp and catfish breeding, *L. vannamei* culture and scampi breeding. They also had exposure to various fisheries organizations.

Field exposure was given to a total of 81 visitors from Assam, Port Blair and Manipur who visited the centre from time to time

#### *TV/Radio Talk delivered*

Dr J Krishna Prasad delivered a radio talk on Marpuchappalu utpathimariu Chapalapempakam which was broadcast on 20 December, 2012 on All India Radio, Visakhapatnam.

Mr R. Ravishankar Patnaik delivered a radio talk on Chapala pempakam adhunikapaddatulu-ardhikavishayalu which was broadcast on 25 December, 2012 on All India radio Visakhapatnam.

#### *Print media/Electronic media*

News item on the training programmes conducted along with photos were published in the leading local newspapers and 22 such articles from Kakinada centre were showcased

#### *Visit Coordination*

The centre attended to more than 700 visitors which comprised of fish farmers, students and entrepreneurs.

#### *TV Coverage*

The activities of the Kakinada centre were widely covered by various TV channels the details of which are as follows:

S. No.	Event	TV channel	Date
1.	Bihar Training programmes Tele talk by R. Ravishankar Patnaik	UCC News, local news channel	20 Jan 2013
2.	Kisan Mela-TV Coverage	UCC Channel	14 Mar 2013
3.	Kisan Mela-TV Coverage	Gemini News	15 Mar 2013
4.	Kisan Mela-TV Coverage Message Delivered by S. S. H Razvi/ATMA	Gemini News	15 Mar 2013
5.	Centres Training programmes- Tele Talk by S.S.H Razvi	UCC News, local news channel	20 Mar 2013

### Fish Seed production

#### Fish / prawn Fry / PL produced (In Lakh)

Koi carp	6.50
Catla	66.75
Rohu	82.00
Pengba	0.75
Magur	0.24
Scampi	0.46

**Total 149.50**

#### Revenue generation

Training	Rs. 6,44,336
Sales and farm produce	Rs. 6,78,324
Miscellaneous	Rs.1,09,170

**Total Rs. 14,31,830**

### CIFE Centre, Rohtak

#### Transfer of technology and demonstration

Name of the Technology: Commercial shrimp cultivation using inland saline water and polyculture of freshwater prawn with carps

Place of demonstration: Brahmanvas Village Haryana

Live harvesting demonstrations of

1. *Litopenaeus vannamei* culture in inland saline waters
2. Tiger shrimp culture in low saline inland saline waters

#### Revenue generation

Receipts from sale of fish, prawn seed, books, rent from guest house & hostel, auctioning of unwanted trees during 2012-13 is as follows

Sale of Farm produce	Rs 22,96,989/-
Miscellaneous	Rs 89,365/-
<b>Total</b>	<b>Rs 23,86,354/-</b>

### CIFE Centre, Powarkheda

#### TV/Radio Talk delivered

A team of Bhopal Doordarshan visited this centre on 30 June, 2012 to cover the centre's activities and pre seasonal preparation of fish culture tanks. Dr Somdutt, PS & OIC delivered a talk on Powarkheda Centre's activities and Dr R. K. Upadhyay, Tech. Officer delivered a talk on pre-seasonal preparation of fish culture tanks. The same were telecast in the month of July, 2012 by 'Bhopal Doordarshan'.

#### Print media

A wide coverage of exhibitions and technical information rendered by the centre during above exhibitions was made in leading local News papers.

#### Visit co-ordination

173 visitors comprising fish farmers and students from educational institutions visited the centre and were apprised about the research, job placements and scope of aquaculture in India and fish and prawn farming at this centre.

#### Seed production

Freshwater prawn (*M. rosenbergii*) seed production & sale

- Total 93,500 PL were produced during 2012 season.
- Total 39,200 juveniles were raised from the above PL.
- Out of which 19650 juveniles were stocked in centre's ponds for further rearing.
- 19550 juveniles were sold to State Fisheries Dept. and fish farmers.
- 31.5 kg prawn (surplus stock) was sold @ Rs. 250/kg for Rs. 7,875/-

#### Revenue generation

Source of Revenue	Amount (Rs)
Prawn seed and prawns sale	46,975
Hostel rent	42,240
STP fees	67,000
Book sale	4,085
Seed sale	1,240
Tender sale	9,000
Wood sale (Auction of trees)	16,01,007
<b>Total</b>	<b>17,71,547</b>



## CIFE Centre, Kolkata

### *Transfer of Technology and Demonstration*

The following technologies were demonstrated to fish farmers and entrepreneurs in various meetings, exhibitions, TV programme and on the occasion of fish farmers day celebration at the Centre :

- Technology for ornamental fish breeding & culture
- Fish processing technology and value added products
- Fish feed formulation and feeding strategies
- Culture of small indigenous fish species
- Integrated fish farming
- Live feed culture techniques, breeding and larval rearing of magur
- Aquarium construction and decoration
- Soil and water analysis techniques

### *Field Exposure Programme for students and fish farmers:*

Five exposure training programme for fish farmers and students from West Bengal, Bihar, Tripura, Uttarakhand, A.P., Tamilnadu, Maharastra were organized by the Centre during April to Sept, 2012 in which 79 participants were trained.

### *TV/Radio Talk delivered*

#### *ETV Bangla 'Annadata' Programme*

- 13.05.2012 Preparation of glass aquarium
- 14.05.2012 Aquarium decoration
- 15.05.2012 Aquarium plants
- 16.05.2012 Food for aquarium fish

- 17.05.2012 Aquarium maintenance
- 5.6.2012 Breeding of angel fish and scope of need based training programme in the CIFE, Kolkata Centre for fish farmers, students and entrepreneurs
- 20.06.2012 Feed formulation for ornamental fish
- 21.7.2012 Fish Farmers' Day
- 21.7.2012 Breeding of Singhi
- 21.7.2012 Breeding of Koi Carp
- 7.9.2012 Making of aquarium
- 11.9.2012 Larval rearing of Magur
- 12.12.2012 Feeding of ornamental fish

#### *Live telecast in Tara news*

- 03.05.2012 Increasing of cost of fish in local market

#### *Amar Bangla*

- 7.07.12 Effect on Hilsa Fishery due to haphazard rain.

#### *ETV News*

- 11.07.12 Fish Farmers Day celebration

#### *Kolkata Doordarshan 'Krishi Darshan'*

- 25.12.2012 Social Economic Development on Pisculture

## 6.5. Workshop on Prioritization of Research and Education for Fisheries Development in North-Eastern Region

The Central Institute of Fisheries Education is working with North Eastern states in various capacities. The officers of different levels have been trained at CIFE and several officers are the alumni of CIFE in various North Eastern states. CIFE is also involved in technology dissemination in many states since 2000. The states of Tripura, Manipur, Nagaland,



Mizoram and Assam are the states where the contribution of CIFE is intensive. It was aimed to identify the priority areas of research and human resource planning for fisheries development in partnership mode involving State Agricultural University, Central Agricultural University, ICAR Institutes and the Department of Fisheries. In this back ground, a two day workshop was organized by Central Institute of Fisheries Education (CIFE), Mumbai in collaboration with Assam Agricultural University (AAU) at Jorhat campus of AAU on “Prioritization of Research and Education for Fisheries Development in North East India” during 26-27 November, 2012.

The workshop was inaugurated by Shri Basanta Das, Minister of Fisheries, Govt of Assam. Among the dignitaries present were Dr K.M. Bujarbaruah, Vice Chancellor, Assam Agricultural University, Jorhat, Dr W.S. Lakra, Vice-chancellor, CIFE, Mumbai, Dr A.K. Roy, IAS, Secretary Fisheries, Govt of Assam and Directors of State fisheries Departments, Deans of fisheries colleges, scientists, farmers and stake holders. Delivering the inaugural address, Dr W.S. Lakra, Vice-chancellor, CIFE, Mumbai, in his address made a point that the workshop would be a new paradigm for the development of fisheries in the region and will help in chalking out priorities for research and education issues. He briefly highlighted the activities and achievements of the institute and future plan of the institute to develop the aqua-sector in the north east region. He also mentioned about the human resource required for the fisheries development in the country and role of CIFE in HRD of the country. He emphasized the recognition of the institute through placement of

the students in fisheries departments, research institutions and in different laboratory in the country and abroad. The role of CIFE in entrepreneurship development in fisheries was also narrated by him. In the plenary session, Dr K.M. Bujarbaruah, Vice-chancellor, AAU pointed out the need of a fish disease diagnostic centre to help the farmers for entire North East to boost the productivity. Dr W.S. Lakra, Vice-chancellor, CIFE, Mumbai has assured the house to provide the necessary support in this regard.

Following key recommendations were made during the plenary session of the two-day workshop:

1. Establishment of a Fish Disease Diagnostic Centre at Guwahati to serve the North East Region
2. Development of low cost feed with locally available feed ingredients
3. Development of Human Resource especially the youth force in specific areas
4. Refresher courses for state fisheries officials
5. Solving the problems of the farmers of NE in participatory mode with scientific intervention by the institutes of NE and CIFE, Mumbai in a collaborative mode

## 6.6. Workshop in North East Region

Central Institute of Fisheries Education, Mumbai in collaboration with College of Fisheries, CAU, Lembucherra, Tripura successfully conducted two days workshop on “Feed Based Aquaculture in North East Region: Status, Constraints and Potential”



during 11-12, January, 2013. The workshop was held at College of Fisheries, CAU, Lembucherra, Tripura to address the major constrains towards aquaculture development in North-East (NE) India i.e. the identification and availability of locally produced and locally available cheaper feed ingredients for aqua feed formulation. Participants including the scientists, experts from different Institutes of the NE region and other parts of the country and also progressive fish farmers of the region actively participated in the discussion pertaining to different aspects of feed and feeding of fishes. The workshop was inaugurated by Dr S.K. Panda, Chief Secretary by lighting the lamp in the presence of other dignitaries like Dr A.K. Pal, Joint Director, CIFE, Dr J. R. Dhanze, Dean Tripura College of fisheries, Lembucherra, S. Bhowmik, Secretary, Department of fisheries and Dr

N.P. Sahu, Principal Scientist and organizing secretary, CIFE, Mumbai. There were five sessions, where there was close interaction among the scientists, farmers and industries. One exhibition was also organized during the workshop where different educational and ICAR Institutes, feed manufacturers, State Govt. organizations viz. Central Institute of Fisheries Education, Mumbai; College of Fisheries, CAU, Lembucherra, Tripura; ICAR Complex for NE Hill Region, Tripura Centre; Lembucherra, Tripura; Dept. of Fisheries, Govt. of Tripura; Godrej Feed, Anmol Feed participated. In the plenary session Dr S.N. Puri, Vice-chancellor, CAU, Manipur expressed his satisfaction for workshop as it was highly required for the farmers of NE region. Local mass media gave a wide coverage in details about this programme.

Total training programmes	:	76
Total number of trainees	:	1632
Exhibitions organized	:	17
Farmers' meet/awareness programmes	:	15
Total TV/Radio talk delivered	:	28
Revenue generation	:	Rs. 199.52 Lakh



Chapter

7



# Honours and Awards

## Dr W.S. Lakra

### Awards

**Dr. P. Bhattacharya Memorial Award** of the National Academy of Agricultural Sciences for the Biennium 2011-2012.

**ET NOW National Education Leadership Award** for outstanding contribution to Education for the Year 2013.

### Fellowship

- National Institute of Ecology, Jaipur
- National Academy of Sciences, Allahabad

### Member

Panel for Fish and Fisheries Products, Food Safety and Standards Authority of India, Ministry of Health & Family Welfare, Govt. of India, New Delhi.

Executive Council for finalizing the rating of scientific journals at National Academy of Agricultural Sciences, New Delhi.

Selection-cum-Standing Committee for Emeritus Scientist Scheme of ICAR, New Delhi.



### Rafi Ahmed Kidwai Award

**Dr A K Pal**, Head, Fish Nutrition, Biochemistry and Physiology Division of CIFE was honoured with the prestigious Rafi Ahmed Kidwai Award of Indian Council of Agricultural Research (ICAR) considered to be one of the highest award for his pioneering research work on stress physiology and nutraceuticals. The award consists of a cash prize Rs 5 lakhs and a citation. The award was given by honorable Union Minister of Agriculture and Food Processing Industries, Shri Sharad Pawarji, in presence of Union Minister of State for Agriculture & Parliamentary Affairs Shri Harish Rawatji, during the 84th foundation day celebration of ICAR on 16 July 2012 in New Delhi.



### Gold Medal

**Dr Gopal Krishna** was awarded Gold Medal for his contribution to Fish Genetics by the organizing Committee of International Conference on Biodiversity and Indian Academy of Environmental Science, Haridwar.



### SAB Award

**Dr K. P. Pani Prasad**, Principal Scientist won the SAB Award of Excellence in Sustainable Aquaculture for the year 2012 from the Society for Applied Biotechnology, Tamil Nadu.



### ZSI Medal

**Dr. B.K. Mahapatra** received Prof. B.N. Pandey Memorial ZSI medal for the year 2012-2013 on 3 October, 2012 for outstanding research & academic contribution in the field of fisheries

## CIFE's recognition by UNDP - Equator prize 2012

SHASHWAT has been chosen as winner of the biennial Equator Prize 2012 of the United Nations Development Program (UNDP), New York state. Since the year 2006, team from Central Institute of Fisheries Education is involved in livelihood security and nutrition of tribal fishers of Dimbhe reservoir through community participation. CIFE has been crucial in providing technical guidance for the development of the reservoir fisheries. Under CIFE guidance, the community uses a state-of-the-art cage and pen techniques in which fish fingerlings are grown to 100-175 mm in length before being released into the open water. Through the self-help groups, women have received technical guidance and training in the upkeep of ornamental fish, which are reared in cages provided by CIFE. Dimbhe was a low productive reservoir. By stocking the lake and planting Dhencha, green manure crops on reservoir-banks that become submerged when the water level rises, resulted in improved productivity of the ecosystem.



## Bioved award



Dr S.G. Zaidi was awarded Bioved Fellowship Award 2013 for "Ornamental Fish and Aquarium Technology" on 23 Feb 2013 during the 15<sup>th</sup> Indian Agricultural Scientists and Farmers' Congress on Agriculture and Global Climate Change organised by Bioved Research Institute of Agriculture & Technology, Allahabad.

## Bioved medal 2013



Mr Dasari Bhoomaiah was awarded "Dr. R. N. Dwivedi Medal 2013" in the field of Computer Design and Development on 23 Feb 2013 during "15<sup>th</sup> Indian Agricultural Scientists and Farmers' Congress on Agriculture and Global Climate Change" organised by Bioved Research Institute of Agriculture & Technology, Allahabad.

## Fellowships

Dr K. P. Pani Prasad, Principal Scientist was awarded the Fellowship of Society for Applied Biotechnology by the Society for Applied Biotechnology, Tamil Nadu in 2012.

Dr S. K. Chakraborty has been awarded Fellowship of the Zoological Society of India, Kolkata for his outstanding contribution in the field of Zoology (Fisheries) for the year 2013.

## Other Honours

Dr S.N. Ojha bagged the First Prize in Hindi Elocution and Third Prize in Hindi Poem Recital by NARAKAS Rajbhasha Karyanayan Samiti, Mumbai on 05 March, 2013.

## NAARM Logo

Mr Dasari Bhoomaiah was awarded appreciation certificate in recognition of his contribution in designing new logo of NAARM on the occasion of 37th Foundation Day held on 1st September, 2012 at NAARM, Hyderabad.



## Institutional awards 2011-12

Best Scientist	:	Dr K. Pani Prasad
Best Young Scientist	:	Dr Rupam Sharma
Best Young Scientist	:	Dr P.P. Suresh Babu
Best Division/Centre	:	CIFE Kolkata Centre
Best Technical Staff	:	Mr Ravishankar P. R.
Best Administrative Staff	:	Mr Pradeep G. Angne
Award for Institutional Building	:	Dr Neelam Saharan
Best Publication of the Year	:	Genetic parameters for growth and survival in <i>Penaeus monodon</i> cultured in India Gopal Krishna, Gopalapillay Gopikrishna, Chavali Gopal, Shrinivas Jahageerdar, Pitchaiyappan Ravichandran, Sudalyandi Kannappan, Subramaniapillai M. Pillai, Sivagnanam Paulpandi, Remanibhaskaran P. Kiran, Ramamoorthy Saraswati, Gundaboena Venugopal, Dilip Kumar, Thomas Gitterle, Carlos Lozano, Morten Rye, Ben Hayes. <i>Aquaculture</i> 318: 74-78.
Best Technology Generation	:	Dr S. Basu, Dr B.B. Nayak, Mr Avinash Sable Dr M.K. Chouskey, Mr B.T. Phande Ms P. Viji and Ms Madonna T Thachil
Best Technology Commercialization	:	Dr W.S. Lakra, Dr Arpita Sharma Dr V.K. Tiwari and Dr P.S. Ananthan
Best M.F.Sc. Student (2011-12)	:	Mr Saurav Kumar
Best Ph.D Student (2011-12)	:	Mr Jayappa Mallappa Koli
Best School Child	:	Ms Deepali S. Bandkar D/o Mr Sanjeev R, Bandkar
Best School Child	:	Ms Mishi Upadhyay D/o Mr R. K. Upadhyay
Highest Scorer in Class XII	:	Ku. Pothu Sai Sowmya D/o Mr P. Srinivas Rao

### ICAR West Zone Sports Meet

CIFE's 43 members of sports team participated in ICAR West Zone Sports Meet at NRC Camel, Bikaner during 27 February to 2 March 2013. The following prizes were won.

#### Men:

- |                           |   |
|---------------------------|---|
| 1. Race 100 meter (III)   | Deepak Bhokase  |
| 2. Race 200 meter (III)   | Kishore Bose  |
| 3. Race 400 meter (II)    | Ninad V. Kandalgaonkar  |
| 4. Race 800 meter (I)     | Ram Shinde  |
| Race 800 meter (III)      | Ninad V. Kandalgaonkar  |
| 5. High Jump (III)        | Kishore Bose  |
| 6. Relay Race 100 x 4 (I) | Deepak Bhokase<br>Sambhaji Shelke<br>Ninad V. Kandalgaonkar<br>Kishore Bose |
| 7. Kabaddi                | Champion  |

#### Women:

- |                              |                               |
|------------------------------|-------------------------------|
| 1. Badminton (Single) (II)   | Rita Singh                    |
| 2. Badminton (Double) (II)   | Pragati & Rita Singh          |
| 3. Table Tennis (Single)(II) | C. S. Kundel                  |
| 4. Table Tennis (Double)(II) | C. S. Kundel &<br>F. Fernades |
| 5. Race 100 meter (II)       | V.S. Bharti                   |
| 6. Race 200 meter (II)       | V.S. Bharti                   |



### ICAR West Zone Sports Meet

CIFE's 25 members of Sports team participated in ICAR Inter Zonal Sports Meet at IARI, New Delhi during 18 - 21 January 2013.

Ms Bagwe won the second prize in Carrom (single).



Chapter

8

**Linkages**  
and Collaboration

## 8.1. Linkages

The Institute maintains linkages and collaborations with various national and international institutions and agencies for educational, research and development.

### Government of India Organizations

Integrated Fisheries Project, Kochi  
Central Institute for Coastal Engineering for Fishery, Bangalore  
Central Institute of Fisheries Nautical and Engineering Training, Kochi  
Fishery Survey of India, Mumbai  
Marine Products Export Development Authority, Kochi  
National Institute of Nutrition, Hyderabad  
Zoological Survey of India, Kolkata  
Indian Institute of Technology, Kharagpur  
Department of Earth Sciences, Government of India  
Department of Science and Technology, Government of India  
Department of Biotechnology, Government of India  
Indian National Center for Ocean Information Services (INCOIS), Hyderabad  
Satellite Application Centre, Ahmedabad in the utilization of OCEANSAT II  
Bhaba Atomic Research Centre, Mumbai  
Tata Cancer Research Center, Mumbai  
Indian Institute of Foreign Trade, Kolkata

### ICAR Institutes

Central Marine Fisheries Research Institute, Kochi  
Central Institute of Brackishwater Aquaculture, Chennai  
Central Institute of Freshwater Aquaculture, Bhubaneswar  
Central Inland Fisheries Research Institute, Barrackpore  
Central Institute of Fisheries Technology, Kochi  
National Bureau of Fish Genetic Resources, Lucknow  
Directorate of Coldwater Fisheries Research, Bhimtal  
ICAR Research Complex for Goa, Goa

ICAR Research Complex for Eastern Region, Patna

IARI, New Delhi

### CSIR Institutes

Industrial Toxicology Research Centre, Lucknow  
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  
Institute of Genomics and Integrative Biology, Delhi  
Indian Institute of Integrative Medicine, Jammu

### Universities

Cochin University of Science and Technology, Kochi  
Annamalai University, Chidambaram  
Adikavi Nannaya University, Rajahmundry  
University of Goa, Goa  
Acharya N.G. Ranga University, Guntur  
B.S. Konkan Krishi Vidyapeeth, Dapoli  
Maharana Pratap University of Agriculture and Technology, Udaipur  
Jawaharlal Nehru University, New Delhi  
Microtron Centre, Mangalore University, Mangalore  
Bhartiyar University, Coimbatore  
West Bengal University of Animal & Fishery Sciences, Kolkata  
Mumbai University, Mumbai  
Bidhan Chandra Krishi Viswa Vidyalyaya, Nadia, West Bengal  
Kalyani University, Kalyani West Bengal

## State Governments

Department of Fisheries of the following states:

Haryana  
Uttar Pradesh  
Bihar  
Tamil Nadu  
Andhra Pradesh  
Tripura  
Arunachal Pradesh  
Meghalaya  
Nagaland  
Assam  
Manipur  
Mizoram  
Sikkim

The Seafood Exporters Association of India, Kolkata

Nezami Rekha Sea Foods Pvt. Ltd., Kolkata

IFB Agro Industries Ltd., Aquatic & Marine Products Div., Kolkata

Shimpo Exports, Kolkata

Coreline Exports, Kolkata

Digha Sea Food Exports, Kolkata

NSZA Sea Food Pvt. Ltd, Kolkata

Central Calcutta Science and Culture Organization for Youth

APC Nutrient, Mumbai

Godrej Agrovvet Pvt. Ltd., Vijayawada.

IICB, Kolkata

## Other Organizations

State Institute of Fisheries Technology, Kakinada

Tata Power Company, Lonavala & Mumbai

Action Aid International, Port Blair

M. S. Swaminathan Research Foundation, Chennai

## NGOs:

Interactive Research School in Health Affairs, Pune

SHASHWAT, Manchar, District Pune

Yusuf Meherally Centre, Kutch, Gujarat

United Artists' Association, Ganjam, Orissa

FONA, Talegaon , Maharashtra

## International

- International- IMB- Halifax (Canada)
- Beri Guarin University, Isreal
- Institute of Aquaculture Research (AKVAFORSK), Norway
- Australian Centre for International Agricultural Research (ACIAR)
- World Fish Center, Penang, Malaysia
- Food and Agriculture Organization of the United Nations, Rome, Italy

## 8.2. Collaborations

Collaborative project with Department of Microbiology, College of Fisheries( Mangalore), Karnataka Veterinarian Animal Science and Fisheries University, Bidar.

Memorandum of Understanding with Arnala Fishermen cooperative society for development of a fish drying demonstration facility. National Centre of Nanomaterials and Nanotechnology, University of Mumbai.

Board of Research on Nuclear Sciences, (BRNS), Department of Atomic Energy, Mumbai.



## Publications

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- Development of Brood and Gene Banks for Aquaculture Production and Genetic Conservation, CIFE, Mumbai, 2012, 243 pp.
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## 9.8. Magazines

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Chapter

# 10

## Participation

Workshops/Conferences/Symposia/  
Meetings/Farmers Meet etc.

## 10.1. Workshop/Conferences/Symposia/ Meetings /Farmers' Meet/Trainings etc. Attended

Date	Programme	Venue	Participants
<b>April 2012</b>			
11/4	One day Workshop on Database & Social Security of Fishers organized by FISHCOPFED, New Delhi	CIFE Kolkata Centre	B. K. Mahapatra G.H. Pailan S. Datta S. Munilkumar A. Biswas
17-18/4	National Consultation on Development of Surveillance Programme for Aquatic Animal Diseases	NBFGR, Lucknow	Gaurav Rathore
21/4	One day Interface meeting with scientists from ICAR Institutes and State fisheries officials and University staff	CRIDA, Hyderabad	S.S.H Razvi P. Rami Reddy R. Ravisankar Patnaik
17-21/4	Sensitization/Awareness/Motivation (SAM) workshop on Capacity Building of Women Managers in Higher Education	SNDT University, Mumbai	Rama Sharma
22-24	Interface meeting of fisheries colleges, departments of the universities offering graduate and post graduate courses in zoology/marine biology	Visakhapatnam	K. Pani Prasad
23	Regional Workshop on Expert Consultation on Academic Partnership for Excellence and Networks in Fisheries Education and Research	Science City, Kolkata	C.S. Purushothaman B. K. Mahapatra G.H. Pailan S. Datta S. Munilkumar A. Biswas A. Biswas Pavan Kumar
29	Expert Consultation on Academic Partnership for Excellence & Networks in Fisheries Education	Visakhapatnam	C.S. Purushothaman Gopalkrishna M. Krishnan N.P. Sahu N.K.Chadha K. Pani Prasad Kundan Kumar A. Muralidhar
30	Meeting to discuss XIIth plan	ICAR, New Delhi	A.K. Pal
<b>May 2012</b>			
5-6	Workshop on Strategic Action Plan for Exploration and Characterization of Fish Germplasm Resources and Indigenous Knowledge in North-Eastern Region of India	College of Fisheries CAU, Agartala	Gaurav Rathore
14	National Workshop on Higher Education in Fisheries - Way Forward	NAS Complex New Delhi	C. S. Purushothaman
15-16	Aqua Tech Expo 2012	Amalapuram	P. SrinivasaRao J. Krishna Prasad V. Narasimhacharyulu
16	Scientific Advisory Meeting	KVK, JNKVV Powarkheda	Somdutt

22	One day workshop on Holistic Development of Fisherman Depending on Narmada River Basin of M.P. and Its Tributaries in M.P.	M. P. State Fisheries Dept Bhopal	Somduitt
30	Scientific advisory meeting	KVK, CIAE, Bhopal	R.K. Upadhyay
<b>June 2012</b>			
5	NAIP Review Meeting with World Bank Representative at CIRCOT, Mumbai	CIRCOT, Mumbai	Swadesh Prakash
12	Meeting organized by DDG (Fy.) on Proficiency testing programme of NACA for Aquatic Animal Diseases in Asia-Pacific	KAB-II, New Delhi	Gaurav Rathore
11-13	32nd Research Council Meeting of Birsa Agricultural University, Ranchi	BAU, Ranchi	Swadesh Prakash
16	Seminar on Wetland Day of Department of Fisheries, Govt. of West Bengal	Rabindra Niketan Kolkata	B.K. Mahapatra G.H. Pailan S. Datta S. Munilkumar A. Biswas
20	Workshop cum Focus Group Discussion on Linkages with Nimpith	RAKVK Nimpith South 24-Parganas	B.K. Mahapatra
26	Consultative Meeting of the ICAR Committee for Developing the Policy for Higher Agricultural Education in India	ICAR, New Delhi	C.S. Purushothaman M. Krishnan
27	Indo-Norway Committee meeting	DBT, New Delhi	C.S. Purushothaman
27-28	Research Project Consultation on Fisheries and Aquaculture of Hilsa ( <i>Tenulosa ilisha</i> )	CIFRI, Barrackpore	B.K. Mahapatra
29	One day seminar on Conservation and Management of Aquatic Biodiversity	WBUAFS, Kolkata	B.K. Mahapatra
<b>July 2012</b>			
11	Meeting on Wetland Development Along with the MIC, Govt. of W. B	<i>Kola Matsya Samabay Samiti</i>	B.K. Mahapatra
16-18	International Workshop on Innovative Teaching for Improved Training	ITC, Sheraton New Delhi	Geetanjali Deshmukh Ashok Jaiswar Rupam Sharma
19-20	21st Meeting of the Regional Committee of Zone II	NAARM, Hyderabad	B.K. Mahapatra
23	73rd Meeting of the Institute Management Committee	CMFRI-RC, Mumbai	C.S. Purushothaman
<b>August 2012</b>			
2	Brainstorming Session on Climate Resilient Aquaculture Strategies for Indian Sundarban	WBUAFS, Kolkata	B.K. Mahapatra
3	Meeting organised by NFDB on Setting Priorities for 12th Plan	NASC, New Delhi	Gaurav Rathore
6-10	Working group meeting (WGM) for Development of Video Film on Popularization of Vocational Education	PSSVIVE, Bhopal	R.K. Upadhyay
7	Meeting on Platform on Diagnostics and Vaccine	CIBA, Chennai	K. Pani Prasad Gaurav Rathore

8	Meeting on Network on Aquatic Animal Health	CIBA, Chennai	K. Pani Prasad Gaurav Rathore
18	Consultation on National Network Project on Aquaculture Development and Diversification in Degraded Inland Areas	CIFE, Mumbai	Neelam Saharan N.K. Chadha
28	National Conference on Agribusiness Development in Tamil Nadu	MIDS, Chennai	M. Krishnan
30	National Seminar on Emerging Trends in Aquaculture: Challenges and Opportunities-2012	SV University, Tirupati	K. Pani Prasad
<b>September 2012</b>			
7	Meeting with NGO- Saraswath and tribal community around Dimbhe reservoir on fisheries awareness programme	Dimbhe Maharashtra	A.K. Pal
8	Workshop on Tribal Beneficiaries of CIFE, Mumbai CIFE technology	M. Krishnan	
10-11	Hindi Workshop	NIRJAFT, Kolkata	G.H. Pailan C. N. Sahani
11-14	Training on Coastal and Marine Ecology Resources and Communities	Hotel RoyalPark Kakinada	S.S.H. Razvi P. Rami Reddy
18	Meeting of Scientific Advisory Committee	KVK, Nimpith, 24 Parganas	B.K. Mahapatra
20	Selection Committee Meeting for the promotion of Senior Scientist to Principal Scientist	ASRB, New Delhi	C.S. Purushothaman
25-26	National Institute of Research on Jute and Allied Fibre Technology - Seminar	NIRJAFT, Kolkata	B.K. Mahapatra
29	Meeting to finalize the project proposal along with budget on "Nano Agriculture Mission" under Platform Nanotechnology	CPRI, Shimla	G. Venkateshwarlu
<b>October 2012</b>			
3-12	Use of Simulation Modelling in Climate Change Research: Special Reference to Natural Resource Management	IISS, Bhopal	
10-12	Expert Consultation on Managing Trans-Boundary Diseases of Agricultural Importance in Asia-Pacific	NASC, New Delhi	K.V. Rajendran Gaurav Rathore
11-13	Attended Selection Committee as an expert member for the Selection of Assistant Professor & Associate Professor for the Department of Fishery Science	NDVU, Jabalpur	A.K. Pal
12-13	National Conference on Aquaculture : Prospect & Problems	Dept. of Zoology, Institute of Science, Mumbai	R.K. Upadhyay
15-19	MDP Workshop on Supply Chain Management in Agriculture	NAARM, Hyderabad	Nalini Ranjan Kumar
16-17	International Expert Consultation on Education for Biodiversity Conservation	NAC, Hyderabad	Latha Shenoy
18	QRT Meeting on Impact of NAARM Training Programs	NAARM, Hyderabad	M. Krishnan
24-28	Farmers meet on Assessment of Training Needs and Possible Academic Partnerships	CIFE, Kakinada	K. Pani Prasad A.K. Reddy

30-31	National Seminar on Science for Shaping the Future of India.	M.P.C.S.T, Bhopal	R.K. Upadhyay
31 to 2 Nov	NKN Annual Workshop on The e-infrastructure of India	IIT, Bombay	Shrinivas Jahageerdar
<b>November 2012</b>			
16	Workshop on Assessment of Training Needs and Possible Academic Partnerships	Nellore	K. Pani Prasad A.K. Reddy
19-20	Second National Symposium on Innovative Approaches and Modern Technologies for Crop Productivity, Food Safety and Environmental Sustainability	Thrissur, Kerala	K. Pani Prasad
22-24	Workshop on Developing Winning Research Proposal	NAARM, Hyderabad	Nalini Ranjan Kumar
26-27	Prioritization of Research and Education For Fisheries Development in North Eastern Region	AAU, Jorhat	A.K.Pal M. Krishnan GopalKrishna B.K. Mahapatra Rupam Sharma K. Pani Prasad Pavan Kumar
28-30	8th Biennial Animal Nutrition Association Conference	Bikaner	G.H. Pailan
29	Interface meeting	CIAE, Bhopal	Somdudd
<b>December 2012</b>			
3	Workshop on Women Fish Vendors in Mumbai	ICSF, Chennai TISS, Mumbai	Arpita Sharma
3-9	MDP in Agricultural Research	NAARM, Hyderabad	Neelam Saharan
4-6	Global Symposium on Aquatic Resources for Eradicating Hunger and Malnutrition- Opportunities and Challenges	Mangalore	P.P. Suresh Babu Munil Kumar Sukham
4-5	RFD meeting	KASB-II, New Delhi	Rupam Sharma
11-12	National Hindi seminar on Traditional Aqua farming System: Prospects and Challenges	CIBA, Kakdwip	Munil Kumar Sukham
14	41th meeting of the Institute Management Committee of CIBA	CIBA, Chennai	A.K. Pal
14 -15	XXII Meeting of ICAR Regional Committee	IARI, New Delhi	V. Hari Krishna
15	Quinquennial Review Team Meeting of the AMAAS Projects	CIBA, Chennai	C.S. Purushothaman
15	3rd Biennial Convention of WBPFGA	WBUA&FS, Chalkgaria	B.K. Mahapatra
17-21	Executive Development Programme on Leadership Development	NAARM, Hyderabad	A.K.Pal
18-19	Awareness program on Ornamental Fish Culture	Udaipur	Pavan Kumar
18-20	International Conference on Statistics and Informatics in Agricultural Research	IASRI, New Delhi	Shrinivas Jahageerdar
23	<i>Haryana Kisan Ayogen</i>	Haryana State Government	S.N. Ojha
<b>January 2013</b>			
3-5	National Seminar of Jute and Allied Fibers in Changing Times: Issues and Strategies	NIRJAFTT	B. K. Mahapatra

3-7	100th Indian Science Congress	Kolkata	B. K. Mahapatra G.H. Pailan S. Datta P. Sardar S. Munilkumar A. Biswas
4-7	Global Konkan Meet Konkan Bhumi Pratishthan	Mumbai	M. Krishnan S.N. Ojha Arpita Sharma Ananthan P. S.
5-6	National Hindi seminar on Blue Revolution through Technology in India's East & North East States	CIFE Kolkata Centre	W.S. Lakra C.S. Purushothaman Nalini Ranjan Kumar Sheela Emanuel S.P. Shukla C.S. Chaturvedi A Vennila Pavan Kumar Rajeshwar Uniyal Dasari Bhoomaiah P.K. Das
7-9	XI Agricultural Science Congress on 'Agricultural Education : Shaping India's Future'	OUAT, Bhubhaneswar	W.S. Lakra Aparna Chaudhari G.H. Pailan
11-12	Workshop on Feed based Aquaculture: Status, Constraints and Potential	College of Fisheries, Agartala	A. K. Pal, N.P. Sahu, A.K. Reddy, G.H. Pailan P.P. Srivastava, S.
Munilkumar			
18-20	Versova Koli Sea Food Festival	Mumbai	M. Krishnan, S.N. Ojha
24	Zonal Workshop for Finance Officers of West Zone	NBSS & LUP, Kolkata	B.K. Mahapatra
<b>February 2013</b>			
3	KVK Annual Meeting	KVK, Rohtak	V. Hari Krishna
7-8	XI Agriculture Science Congress on Agricultural Education : Shaping India's Future	OUAT, Bhubnaeswar	W.S. Lakra G.H. Pailan S.N. Ojha Aparna Chaudhari
8-10	Aqua Aquaria 2013	Vijayawada	J.K. Prasad
8	RFD Meeting	ICAR, New Delhi	A.K. Pal
12-13	Organized workshop and chair a session on Feed Based Aquaculture in North-East Region : Status, Constraints and Potential	CoF, Agartala	A.K. Pal
9-11	The Congress on Public Private Partnership in Aquaculture and Culture-based Fisheries	CIFRI, Barrackpore	B. K. Mahapatra G.H. Pailan P. Sardar S. Munilkumar
10	RFD Meeting	KAB II, New Delhi	Neelam Saharan
14	Meeting of NFBSFARA on Hilsha project	Krishi Bhavan, New Delhi	B.K. Mahapatra
23	One day Concluding Workshop on Sea Bass Farming in Pond Culture Systems	CIBA, Chennai	P. P. Suresh Babu

22-24	15th Indian Agricultural Scientists and Farmers' Congress on Agriculture and Global Climate Change	Allahabad	W.S. Lakra Dasari Bhoomaiah S.G.S. Zaidi
27	National Seminar on Aquaculture for Food Security	BJMG College, Chavara	C.S. Purushothaman
28	One day Workshop on Social Security of Fishers organized by FISHCOPFED, New Delhi	CIFE, Kolkata	B.K. Mahapatra G.H. Pailan S. Datta P. Sardar S. Munilkumar A. Biswas
<b>March 2013</b>			
1-2	National Workshop on Foresight and Future Pathways of Agricultural Research Through Involvement of Youth in India	NASC Complex, New Delhi	W.S. Lakra Aparna Chaudhari Sanath Kumar Muralidhar Ande
1-3	International Seminar on Problems and Prospects of Coastal Aquaculture and Application of Biotechnological Tools for Rural Development	Vidyasagar University, Midnapore	B.K. Mahapatra
4	BOS meeting in Applied Zoology Department	Mangalore University, Mangalore	A.K. Pal
7-8	Workshop of CIPS on Innovative practices in Rural Development	NIRD, Guwahati	B.K. Mahapatra
9	Workshop on Creation and Maintenance of Aquarium	Dept. of Applied Aquaculture, B.U., Bhopal	R.K. Upadhyay
11	14th Consultative meeting of FSI	FSI, Mumbai	Latha Shenoy
12	Workshop of CIPS on Innovative practices in fisheries	Shillong	B. K. Mahapatra
15	Meeting of the Heads of Divisions and Directors of Institutes with the Director General, ICAR	NASC Complex, New Delhi	All HoDs
19-21	Director's Conference at NASC Complex	ICAR, New Delhi	A.K. Pal
21	Meeting on Development of Digital Knowledge Management Platform for Fisheries at NAIP, KAB-II, Pusa Campus	ICRISAT, Hyderabad	Rama Sharma
21-23	National Seminar on Emerging Trends in Indian Aquaculture (Etia 2013)	University of Kerala, Thiruvananthapuram	K.V. Rajendran
22	Meeting of Scientific Advisory Committee	KVK, Nimpith	B. K. Mahapatra
23	Incubation Workshop on Setting up of Knowledge park on Marine and Agricultural Biotechnology	JNTU, Kakinada	S.S. H. Razvi P.P. Suresh Babu P. Rami Reddy J.K. Prasad V.N. Acharyulu R. Ravisankar Patnaik
25	Consultative Meeting on Setting up of One Dedicated Center for Hilsha Conservation	DoF, Govt. of West Bengal	B. K. Mahapatra
28-30	Zodiac 2013 Exhibition at RGIT, Versova, Mumbai	Mumbai	S.N. Ojha Arpita Sharma Ananthan P.S.

## 10.2. Invited Lectures /Papers etc.

S.No.	Title	Period	Place	Programme	Participant
1	Lead Theme Paper on Development of Surveillance Programme for Aquatic Animal Diseases	17-18 April 2012	NBFGR Lucknow	National Consultation on Development of Surveillance Programme for Aquatic Animal Diseases	Gaurav Rathore
2	Present Problems and solutions in <i>L. vennamei</i> culture	9 Sept 2012	Matlapalem	Reliance foundation Farmers meet	K. Murali Mohan
3	<i>L.vennamei</i> culture	9 Sept 2012	Matlapalem	Reliance foundation Farmers meet	P. Rami Reddy
4	Freshwater Fish harvest and Processing	8-12 Oct 2012	Panvel Mumbai	Kharland Research Station	G. Venkateshwarlu
5	Consolidated Report on Priorities for Policies, Research and Regional Management of Fish Trans-Boundary Diseases	10-12 Oct 2012	APAARI in collaboration with ICAR at NASC Complex N. Delhi	Plenary session of Expert Consultation on Managing Trans-Boundary Diseases of Agricultural Importance in Asia-Pacific	Gaurav Rathore
6	New Insights in Innate Immune Mechanisms and Pathogen Recognition Receptors	2 Nov 2012	CIFE, Mumbai	Second National Conference on Fisheries Biotechnology	K.V. Rajendran
7	Perspectives of Nutraceuticals in Aquaculture	2 Nov 2012	CIFE, Mumbai	Second National Conference on Fisheries Biotechnology	N.P. Sahu
8	Transgenic zebrafish as biosensors	2-3 Nov 2013	CIFE, Mumbai	Second National Conference on Fisheries Biotechnology	Aparna Chaudhari
9	<i>Kheti ko Labhdayak Dhanda banana keliye Betulkrashak prashikshan</i>	30 Nov 2012	Powarkheda	Agricultural Extension and Training centre	R. K. Upadhyay
10	Status of Stock Improvement in Aquatic Species	3-4 Dec 2012	MJPRU Bairelly	International Conference on Recent Trends in Climate Change Research vis-a-vis Biodeiversity	Gopal Krishna
11	Evaluation of Aquaculture Species: Challenges and Opportunities	18-20 Dec 2012	IASRI New Delhi	International Conference on Statistics and Informatics in Agricultural Research	Shrinivas Jahageerdar
12	Problems facing by <i>L.vennamei</i> shrimp culture farmers	24 Dec 2012	Talla Revu E.G. Dist A.P.	Reliance Foundation Farmers meet	K. Murali Mohan
13	<i>L.vennamei</i> culture	24 Dec 2012	Talla Revu E.G. Dist A.P.	Reliance Foundation Farmers meet	P. Rami Reddy
14	Fish Biodiversity	24 Dec 2012	Mumbai	Lal Bahadur Shastri Academy of Nautical Sciences	S.K. Chakraborty
15	Fish Biodiversity and its Conservation in Maharashtra	4 Jan 2013	Mumbai	Global Konkan Festival	S.K. Chakraborty

16	Guest Lecture		Karvatha, Chattisgarh	Indira Gandhi Krishi Viswavidhyala	C.S. Chaturvedi
17	Unravelling the Functional Genome of Zebrafish using Transgenesis	22-23 Jan 2013	CIFA , Bhubaneswar	International Symposium on Genomics in Aquaculture	Aparna Chaudhari
18	<i>L. vennamei</i> feeding and probiotics applications	26 Jan 2013	Talla Revu, E.G.Dist A.P.	Farmers meet	K. Murali Mohan
19	SAS for Research Data Analysis	1 Feb 2013	Rajguru, Nagar, Pune	Directorate on Onion and Garlic Research	Shrinivas Jahageerdar
20	Value Added Fish Products	6-9 Feb 2013	Bandra (E), Mumbai	Taraporevala Marine Biological Research Institute	G. Venkateshwarlu
21	Culture practices and techniques in <i>L.vennamei</i> culture	26 Feb 2013	Talla Revu, E.G.Dist A.P.	Farmers meet	P. Rami Reddy
22	Carp and Pangasius culture practices	26 Feb 2013	Talla Revu, E.G.Dist A.P.	Farmers meet	J. Krishna Prasad
23	Fish marketing problems and economic aspects	26 Feb 2013	Talla Revu, E.G.Dist A.P.	FRS of SVVU Kakinada ATMA	R. Ravisankar Patnaik
24	Good Management Practices on <i>L.vennamei</i> culture	6 Mar 2013	Talla Revu, E.G.Dist A.P.	FRS of SVVU Kakinada	
25	Productivity Management for Sustainable Aquaculture	27 Feb 2013	BJMG College, Chavara	National Seminar on Aquaculture for Food Security	C. S. Purushothaman
26	Status and Management of Transboundary Aquatic Animal Diseases	21 Mar 2013	University of Kerala, Thiruvannatha Puram	National Seminar on Emerging Trends in Indian Aquaculture (Etia 2013)	K. V. Rajendran

### 10.3. Training Programmes\Summer Schools/Winter Schools Attended

Programme	Period	Organized by	Name
Effective Communication Strategies: Men and Women at Work	23-28 Apr 2012	IIM, Ahmedabad	S.N. Ojha
Competency Enhancement Programme for Technical Officers of ICAR	7-16 May 2012	NAARM, Hyderabad	R. K. Upadhyay
International Training on Stock Assessment of Hilsa sponsored by BOBP	30 Apr-1 May 2012	CIFRI, Barrackpore	S. Munilkumar G.H. Pailan
Spot Study of Recent Aquaculture Practices/ Developments Around Kakinada Centre	16-26 Jun 2012	CIFE Centre, Kakinada	L. P. Bamalia
Up-date Knowledge on Magur Breeding and Field Exposer in Fisheries	27 Jun-3 Jul 2012	CIFE Centre, Kakinada	Hasan Javed
Management Development Programme of Financial Management for Non Finance Executives	2 - 6 Jul 2012	NIFM, Faridabad	K.K. Jain
Sensory and Instrumental Methods in Texture Analysis of Processed Foods	1-3 Aug 2012	CFTRI, Mysore	G. Venkateshwarlu
Metagenomics: Role of Next Generation Sequencing & Bioinformatics	15-24 Oct 2012	AAU, Anand	Aparna Chaudhari
One day Training on Unicode systems in Hindi	30 Nov 2012	CIFE, Mumbai	Sujata Sahoo R. Ravisankar Patnaik
Winter School on Advances in Molecular Techniques in Gene Regulation and Functional Genomics	3- 23 Dec 2012	NDRI, Karnal	Sujata Sahoo
Technology Forecasting, Assessment and Management	16-22 Dec 2012	NIAS, Bengaluru	G. Venkateshwarlu
Statistical Approaches for Genomic Data Analysis	07-19 Jan 2013	IASRI, New Delhi	Gireesh Babu P.
Statistical Techniques for Quantitative Project Management	10-11 Jan 2013	ISI, Mumbai	Rama Sharma
Survey Design and Data Analysis using SAS in Social Science	28 Jan-6 Feb 2013	NAARM, Hyderabad	Muralidhar P. Ande
Techniques in Electron Microscopy	4-16 Feb 2013	AIIMS, New Delhi	Nalini Poojary
Awareness Training on Quality Management System, ISO 9001	18 Feb 2013	CIFE, Mumbai	Selected faculty of CIFE Mumbai
Internal Auditor Training for Internal Audit for ISO 9001	25 Feb 2013	CIFE, Mumbai	Selected faculty of CIFE Mumbai
Nanotechnology and Its Application in Fisheries and Aquaculture	11-16 Mar 2013	CIFE, Mumbai	Megha Bedekar

## 10.4. Visits Abroad

S.No.	Title	Duration	Place	Participant
1.	As a visiting Professor under Erasmus Mundus program organized by Erasmus Mundus, Katholieke Hogeschool Sint Lieven Gent, Belgium	14-24 Jan 2013	Dublin Institute of Technology, Dublin	G. Venkateshwarlu
2.	Training programme on Advanced cutting edge technology VIZ. Germ Cell Transplantation Technique	3 Dec 2012 to 28 Feb 2013	Tokyo University of Marine Science & Technology, Tokyo	S. Dasgupta



# Chapter 11



Meeting/Workshops/Seminars/  
Summer/Winter Schools etc.

## Organized



### 11.1. Conferences/Symposia/Workshops/Seminars/Brainstorming Sessionsetc. organized

S. No.	Programme	Venue	Period
1.	Expert Consultation on Academic Partnership for Excellence and networks in Fisheries Education	CIFE, Mumbai	17-18 Apr 2012
2.	Expert Consultation on Academic Partnership for Excellence and Networks in Fisheries Education and Research	Science City Auditorium, Kolkata	23 Apr 2012
3.	Expert Consultation on Academic Partnership for Excellence and Network	Hotel Daspalla, Vishakapatnam	29 Apr 2012
4.	National Consultation on Academic and Training needs of State Fisheries Departments		13 Jun 2012
5.	<i>Rajbhasha Puskar Samaroh</i> for TOLIC, North Mumbai (off)	CIFE, Mumbai	22 Jun 2012
6.	Workshop for TOLIC North Mumbai	CIFE, Mumbai	23-24 Aug 2012
7.	Hindi Fortnight	CIFE, Mumbai and its Centres	14-28 Sep 2012
8.	Brainstorming Session on DNA Barcoding	CIFE, Mumbai	27 Oct 2012
9.	Second National Conference on Fisheries Biotechnology	CIFE, Mumbai	2-3 Nov 2012
10.	Prioritization of Research and Education for Fisheries Development in North-Eastern States	Jorhat, Assam CIFE in Collaboration with Assam Agriculture University	26-27 Nov 2012



11.	Unicode Workshop	CIFE, Mumbai	30 Nov 2012
12.	National Seminar on North East States	CIFE Centre, Kolkata	5-6 Jan 2013
13.	First Annual Convention on Sustainable Agriculture and Food Security, Challenges and Opportunities in Agriculture, Animal Husbandry & Fisheries:	CIFE, Mumbai	18-19 Jan 2013
14.	Awareness Training on Quality Management System [ISO 9001: 2008 Standard Requirements] by KVA Engineers and Consultants Private Limited	CIFE, Mumbai	18 Feb 2013





## 11.2. Meetings Organized

S. No.	Programme	Period
1	Board of Examination	4 Apr 2012
2	Core Committee Meeting (Academic)	4 May 2012
3	69th Official Language	19 May 2012
4	Planning and Monitoring Board Meeting	22 May 2012
5	World Environment Day	5 Jun 2012
6	Core Committee Meeting (Academic)	20 Jul 2012
7	Board of Examination	30 Jul 2012
8	Board of Examination	1 Aug 2012
9	Consultation on National Network Project on Aquaculture Development and Diversification in Degraded Inland Areas	18 Aug 2012
10	Agriculture Education Day	5 Sep 2012
11	Board of Examination	6 Sep 2012
12	Academic Council Meeting	11 Sep 2012
13	Indian Fisheries Association Meeting	22 Oct 2012
14	Core Committee Meeting (Academic)	31 Oct 2012
15	IRC Meeting	8 Nov 2012
16	Syllabus Review Committee Meeting for FGB	21-22 Nov 2012
17	Board of Examination	7 Dec 2012
18	Board of Management	2 Jan 2013
19	Board of Examination	14 Jan 2013
20	Core Committee Meeting (Academic)	15 Jan 2013
21	Core Committee Meeting (Academic)	27 Feb 2013
22	Core Committee Meeting (Academic)	21 Mar 2013
23	Meeting of the Delegates from Universidad Juarez Autonoma de Tabasco (UJAT), Mexico to CIFE	29 Mar 2013
24.	Board of Examination	2 Apr 2013



### 11.3. CAFT Training programmes

S. No.	Programme	Conducted by	Period	Number of participants
1.	Research Strategies for Mitigation and impact of Climate Change on Fisheries	Fish Nutrition Biochemistry and Physiology Division	15 Nov-5 Dec 2012	21
2.	Responsible Harvest and Quality Standards for Seafood Export	Post-harvest Division	9-29 Jan 2013	19



Chapter  
**12**



Distinguished  
**Visitors**



## 12. Distinguished Visitors at CIFE, Mumbai & its Centers

S No	Date of Visit	Visitor	Particulars
1	11 April 2012	Dr Mangla Rai	Former Director General, ICAR
2	23 April 2012	Prof. C. S. Chakrabarty	Vice-Chancellor, WBUAFS
3	23 April 2012	Prof. Amalesh Choudhury	Former Head, Dept of Marine science, University of Calcutta
4	6 June 2012	Dr K. Venkatesham, IPS	CEO, Rajiv Gandhi Jeevandayee Arogya Yojana, Mumbai
5	6 June 2012	Dr Rajan Welukar	Vice-Chancellor, Mumbai University
6	6 June 2012	Dr Gurbachan Singh	Chairman, ASRB, New Delhi
7	6 June 2012	Shri Gurdas Kamat	Member of Parliament
8	6 July 2012	Shri Sharad Pawar	Hon.ble Minister of Agriculture and Food Processing, Govt of India
9	6 July 2012	Shri Baldev Khosa	M.L.A., Versova, Mumbai North-West
10	6 July 2012	Dr S. Ayyappan	DG, ICAR & Secretary DARE, New Delhi
11	6 July 2012	Dr (Mrs.) B. Meena Kumari	DDG (Fy.), ICAR, New Delhi
12	10 July 2012	Shri D. Venkateswarlu	Ex-MLA, District Congress Committee President
13	10 July 2012	Dr Subrata Saha	Hon'ble Minister of State Dept of Fisheries, West Bengal
14	10 July 2012	Dr B. C. Saha	IAS, Director, Dept of Fisheries, West Bengal
15	10 July 2012	Prof. N. C. Datta	Former Professor and Head, Calcutta University
16	7 Aug 2012	Norwegian delegates	Norway
17	25 Aug 2012	Dr Manju Sharma	Ex-Secretary DBT
18	5 Sep 2012	Dr S. Ayyappan	DG, ICAR & Secretary DARE, New Delhi
19	5 Sep 2012	Dr (Mrs.) B. Meena Kumari	DDG (Fy.), ICAR, New Delhi
20	5 Sep 2012	Dr Madan Mohan	ADG (Fy.), ICAR, New Delhi
21	5 Sep 2012	Dr S.N. Sharma	Regional Manager, Haryana Grameen Bank
22	21 Sep 2012	Dr U. K. Subuddhi	IAS, MD, M.P. Fish Federation, Bhopal
23	22 Sep 2012	Shri Bupendar S. Hooda	Hon' ble Chief Minister of Haryana
24	22 Sep 2012	Dr R.S. Paroda	Chairman, Haryana Kisan Ayog
25	22 Sep 2012	Dr Tarun Sridhar, IAS	Joint Secretary (Fy), Ministry of Agriculture, Govt of India



26	22 Sep 2012	Dr P.V. Singh	Director of Fisheries, Haryana
27	22 Sep 2012	Shri Sadilal Batra	M.P., Rajya Sabha, Rohtak
28	22 Sep 2012	Shri Bharat Bhusan Batra	M.L.A., Rohtak
29	22 Sep 2012	Smt. Shakuntala Katak	M.L.A., Kalounore
30	22 Sep 2012	Shri Anand Dangi	M.L.A, Mokra
31	22 Sep 2012	Dr A.K. Srivastava	Director, NDRI, Karnal
32	22 Sep 2012	Dr D.K. Sharma	Director, CSSRI, Karnal
33	22 Sep 2012	Dr Yadav	Ex-Director, IVRI
34	22 Sep 2012	Dr (Mrs) Asha Dhawan	Dean, College of Fisheries, Guru Angad University of Veterinary and Animal Sciences University, Ludhiana
35	23 Sept 2012	Prof. N. R. Chatterjee	Former Head, Dept of Aquaculture, Faculty of Fishery Science, WBUA&FS
36	18 Oct 2012	Dr Mruthyunjaya	Former National Director, NAIP
37	26 Oct 2012	Shri L. Satyanarayana	Rotorian and President All India Shrimp Hatcheries Association
38	29-1 Nov 2012	Dr M. M. Saxena	Prof. & Head, Dept. of Environmental Science, MGSU, Bikaner
39	3 Nov 2012	Dr C. Devakumar	Assistant Director General (Education, Planning & Development), ICAR, New Delhi
40	22-24 Nov 2012	Dr R. S. Chauhan	Prof.& Head, Department of Aquaculture, G. B. Pant University of Agriculture and Technology, Pantnagar (Uttarakhand)
41	25-27 Nov 2012	Dr H. S. Dhaker	Prof. & Head ,Aquaculture Division, College of Fisheries, Ratnagiri
42	31 Dec 2012	Shri Tariq Anwar	Hon. Union Minister of State for Agriculture and Food Processing Industries, Govt of India
43	31 Dec 2012	Shri Munaf Hakim	Chairman, Minorities Commission, Govt. of Maharashtra
44	5 Jan 2013	Dr A. P. Sharma	Director, CIFRI, Barrackpore
45	5 Jan 2013	Dr S. Ayyappan	Director General, ICAR, New Delhi
46	5 Jan 2013	Dr A. K. Shrivastava	Director, NDRI, Karnal

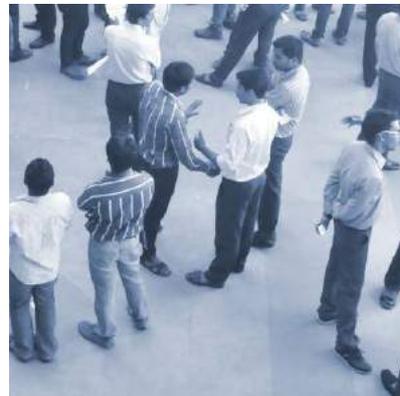


47	5 Jan 2013	Dr P. Jayashankar	Director, CIFE, Bhubaneswar
48	5 Jan 2013	Dr J. K. Jena	Director, NBFGR, Lucknow
49	5 Jan 2013	Dr P. Das	Former Director, NBFGR, Lucknow
50	5 Jan 2013	Dr Rajiv Kumar	Director, Dept of Fisheries, Govt of Jharkhand
51	6 Jan 2013	Dr Dilip Kumar	Former Director, CIFE, Mumbai
52	6 -9 Jan 2013	Dr A. D. Diwan	Retd ADG, ICAR, New Delhi
53	24 Jan 2013	Dr Sunil Chacko & team	Professor adjunct from Global India Foundation, University of Albert, Japan
54	21 Feb 2013	Mrs Shashi Gulati	Financial Commissioner and Principal Scretary, Dept. of Fisheries, Haryana
55	4-7 Mar 2013	Dr H.K.Vardia	Dean, Kwardha, Chhattisgarh
56	13 -15 Mar 2013	Dr V. V. Sugunan	Former ADG (Inland Fisheries) ICAR, New Delhi
57	23 Mar 2013	Dr Karim Maridia	Professor and Program Director, World Technology Access (WorldTAP) Program of the Institute of International Agriculture, Michigan State University MSU, USA,
58	29 Mar 2013	Dr Jose Manuel Pina Gutierrez, Rector, UJAT, Dr M.C. Rosa Martha Padron Lopez, Director, DACBIOL, Dr Martha Pererra and DrJeane Rimber Indy, Professor	Mexican Delegation from Universidad Juarez Autonoma de Tabasco (UJAT University), Mexico

# Chapter 13



## Others





### 13.1. Celebration of Fish Farmers' Day

#### Rohtak

Fish Farmers Festival was organized by CIFE in association with NFDB, Hyderabad; Haryana Kisan Ayog, Haryana; Department of Fisheries, Haryana at its Regional Centre, Lahli, Rohtak, Haryana on 22 September, 2012. The Chief Guest Shri Bupendar Singh Hooda, Hon'ble Chief Minister of Haryana and other dignitaries were taken around the farms and shown the activities of the farm. The Chief Guest and other dignitaries witnessed harvest of tiger shrimp *Penaeus monodon* and Pacific white shrimp *Litopenaeus vannamei* and viewed overall farm facilities of Lahli and Baniyani Units and the ongoing research activities at the centre. After the farm visit Hon'ble Chief Minister inaugurated exhibition arranged for the benefit of farmers.

Dr W.S. Lakra, Director/Vice-Chancellor, CIFE welcomed Hon'ble Chief Minister of Haryana Shri. Bupender Singh Hooda, Chief Guest of the function, Padmabhusan Dr R. S. Paroda, Chairman, Haryana Kisan Ayog, other dignitaries, Scientists, Officials and farmers from Haryana and Punjab. Dr W.S. Lakra emphasized the role of CIFE, Rohtak Centre in

development of salt affected land for aquaculture in the North Western states *i.e.*, Haryana, Punjab, Rajasthan and Uttar Pradesh. He also requested to extend the lease period of Rohtak Centre for 99 years from the existing 25 years for further development as a Centre of Excellence. Dr. R. S. Paroda appreciated the work being carried at CIFE, Rohtak Centre and said that state government should provide necessary help to CIFE as and when required.

Hon'ble Chief Minister Shri Bupinder Singh Hooda in his inaugural address appreciated the work done by CIFE, Rohtak Center and appealed to the farmers that doing fish and shrimp culture by using underground saline water is a torch light for the farmers of Haryana. He agreed in principle to increase the lease period of Rohtak Centre for 99 years and to provide all the assistance from the state side.

#### Kolkata

The institute celebrated the Fish Farmers' Day with lot of enthusiasm in the Headquarters as well as in the sub centres. Farmers were felicitated and farmers meet and discussions were held.



On this occasion, a fish farmers' meet was organized at the Kolkata centre. Sri Subrata Saha, Hon'ble Minister of State, Department of Fisheries, Aquaculture, Aquatic Resources and Fishing Harbours, Govt. of West Bengal was the Chief Guest. Other distinguished guests included Prof. Dr. N.C. Datta, Former Professor and Head, Univ. of Calcutta and Shri B.C. Saha, IAS, Director, Department of Fisheries, Govt. of West Bengal. On this occasion, five publications of CIFE, Kolkata Centre in the form of leaflets were released by Sri Subrata Saha, Hon'ble Minister of State. Fish farmers presented their success stories to motivate other fellow farmers. Farmers and professionals participated in lively discussion after each presentation. Two fish farmers, two societies and one TV channel of the state were felicitated on this occasion for their commendable contribution in the field of fisheries/aquaculture. Sri Kashinath Barman was conferred with the best fish farmer award in recognition of his contribution in the field of fisheries and aquaculture as a successful commercial fish farmer and the fisheries development in the region of Purba, Medinipur district of W.B. Sri Suprabhat Dutta was conferred upon best fish farmer award in recognition of his contribution to fish culture especially promotion of breeding and culture of indigenous ornamental fish in the district of South 24-Pargans of W.B. Best Fisheries Cooperative Society Award 2012 was given to "Sindarni Fishermen's Cooperative Society

Limited" for its outstanding contribution in the promotion of Beel fisheries and livelihood support to fishers in general and the fisheries development in particular of North 24-Pargans district of W.B. Best Women Fisheries Cooperative Society Award 2012 was conferred to "Ratnadwip Rangin Matsya Chash Mahila Samabay Samity Ltd." for their outstanding contribution in the promotion of ornamental fish breeding and culture among the rural women for their livelihood support in general and the fisheries development in Howrah District of W.B. "Special Team Award 2012" was given to "Annadata, E-TV Bangla" for their outstanding contribution for mass awareness and dissemination of aquaculture and fisheries technologies through Annadata Bangla programme of E-TV.

### 13.2. Celebration of Hindi Week

Hindi Week (14-20 September 2012) was celebrated by all the staff, student and trainees of of the institute and its centres with great enthusiasm. They participated in several hindi programmes e.g. debate, essay writing, extempore speeches, songs, etc. organized during this week. The prizes were distributed to the winners of these competitions on the last day of the programme.

### 13.3. 150th Birth Anniversary of Shri Swami Vivekananda

To commemorate the 150<sup>th</sup> Birth Anniversary of Shri



Swami Vivekananda, a lecture was organized on “Life and Teachings of Shri Swami Vivekananda” by Prof E. Vasanth Kumar who is an authority on the works of Shri Swami Vivekananda and penned several books on the life and teachings of Shri Swami Vivekananda. The lecture was attended by staff and students with great enthusiasm and paid their respect to one of the greatest spiritual leaders of the modern world and a great lover of humanity.

### 13.4. Environment Day

CIFE celebrated World Environment Day on 5 June 2012 by planting indigenous trees along the roads of the Yari Road campus. Saplings were planted by Director and senior staff of the institute.

### 13.5. Agriculture Education Day

CIFE celebrated Agriculture Education Day on 5 September 2012. On this occasion a student competition was held in which participants were provided with a short scientific popular article, based on that they prepared a powerpoint presentation and presented it before CIFE faculty and students. Students participated in the event with great enthusiasm. First, second and third prizes in the Masters' student group were awarded to Mr Satya Prakash, Mr Sujit Kumar and Mr Rameez Roshan, respectively. In the Ph.D group the first, second and third prizes were awarded to Ms

Shamna N., Mr Murali S. and Ms Piyashi Debroy, respectively.

### 13.6. CIFE-Industry Day

As part of ICAR-Industry day, CIFE, Mumbai organized CIFE-Industry meet on 28<sup>th</sup> February 2013 jointly with the Compounded Livestock Feed Manufacture Association (CLFMA) of India, a nation-wide association of more than 200 livestock/aqua-feed & health care products manufacturing firms. Dr W.S. Lakra, Director, Vice-Chancellor of Central Institute of Fisheries Education (CIFE) chaired the program and welcomed the dignitaries representing the different industries across the country like Biostadt India Ltd., Waterbase Ltd., Godrej Agrovet Ltd., Aqua International Ltd., Betul Oil Ltd, Hindustan Feed, CP Aquaculture, Nav Indus Food Machines Pvt Ltd, Kemin Industries, Novus International, Herbal Industries, Bovian Healthcare, Quality Poultry Products Pvt. Ltd., Abhay Cotex Private Limited, Muyang Group, MSD Animal Health, Neospark, Drugs & Chemicals Pvt. Ltd, IB Groups, APC Nutrients, Praj Industries etc. who participated in this interactive interface. Dr. Lakra attracted the attention of industries for the technology developed by CIFE and emphasized break-through technology of CIFE in standardizing the techniques for culture of *P. monodon*, *L. vannamei* culture in ground saline affected areas.



The meeting was attended by Dr Dinesh Bhosale, Chairman of CLFMA, Dr Phalke, Honorary Secretary, CLFMA, Dr A.K. Pal, Joint Director, CIFE, Dr. N.P. Sahu, Head, Fish Nutrition Biochemistry and Physiology Division, CIFE and all other scientists of CIFE.

### 13.7. Library

The Central Institute of Fisheries Education, Library Mumbai provides access to information and communication technology resources for study, reference and research purposes. Information and communication technology resources are available via 28 computers in the Digital Library.

At present more than 50,000 highly specialized reading materials, in the form of books, reference works, journals, published data, bulletins, reviews, advances, reports, pamphlets, having 100 reading seating capacity. This CIFE, library is opted open access system for the users. Dewey Decimal classification scheme is adopted for library documents. During the year 2012-13 the Library subscribed to 30 foreign and 61 Indian journals. , 972 latest books, 48 Swamy's Handbooks, 77 Swamy's References and Swamy's News. The Library subscribed ProQuest Aquatic Science Collection (ASFA) and has a fully automated KOHA Automation Software. The Ph.D. theses and 10318 rare books are available in digitized form.

## 13.8. Infrastructure development

### Electron Microscopy Facility

An Electron Microscopy Facility has been created in the Institute to facilitate the rapid morphologic identification and differential diagnosis of infectious agents, ultrastructural alteration studies of cells under stress and structure-property-function relationships of biological tissues. The Transmission Electron Microscopy lab houses a 120 kv Hitachi TEM and an Ultramicrotome along with other accessories. The lab is now completely functional for the scientists and students of CIFE and researchers from other Institutes and Universities as well.

### Other constructions and repairs at the headquarters and the centres

A 20 tub model catfish hatchery was installed as an additional infrastructure at Dept of Fisheries Raipur, Chattisgarh for the breeding of *O. pabda* and *Heteropneustes fossilis* in July, 2012. Construction of a new Hostel for farmers 'training purpose is in full swing in CIFE Centre, Kakinada. Portable hatchery system and strengthening of bunds was also undertaken at the centre. Renovation & repair of hatchery including changing of water supply line, drainage lines, electrical installations, flooring, roof, circular concrete ponds and Repairs of trainee's hostel, service connection cable to hostel building was



carried out at CIFE centre, Powarkheda. A fish museum has been set up at the Kolkata centre.

The major infrastructure developments in Rohtak centre were the laying of Interlocking paver blocks between library & office building, catfish hatchery & office, Prawn hatchery & catfish hatchery and the repairs of outdoor cemented tanks and type II quarters

At the headquarters the construction of aquarium display unit at new campus has been completed and construction of sports complex is in progress. Renovation of office buildings, residential complex, hostel and guest house was undertaken in addition to the regular upkeep of the laboratories and furnishing of the III and IV floor of academic building.

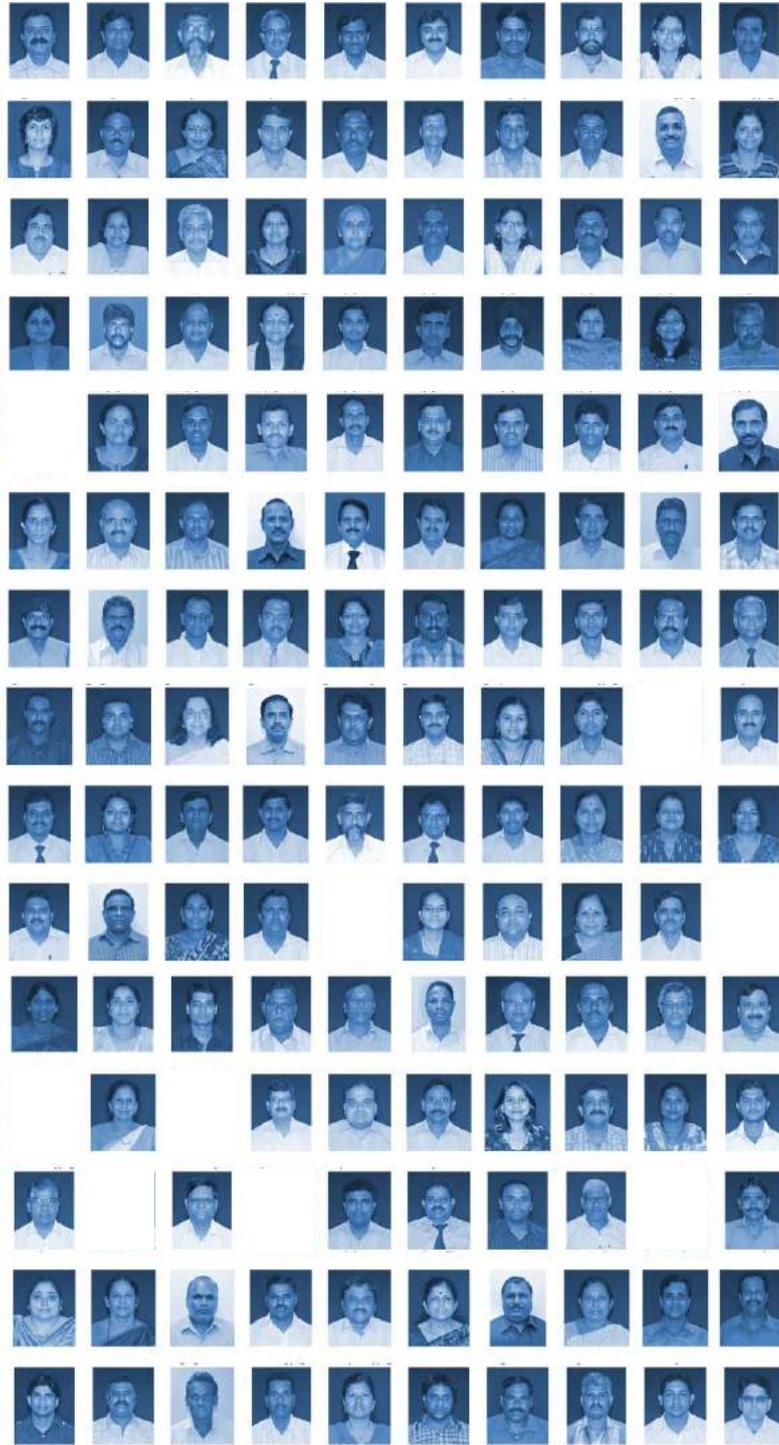
### 13.8. Lectures delivered under science club activity

12 lectures on various topics were organized during the year. The sessions were very lively and interactive.

S.No.	Name	Title	Date
1.	Dr S.N. Ojha	Convergent Extension Education Governance Model for India	1 April 2012
2.	Mr Rishi Aggarwal	Mangroves of Mumbai- Importance and Strategies for Protection	28 April 2012
3.	Dr R.S. Biradar	Sampling Methods and Data Analysis in Fisheries	30 May 2012
4.	Mr Surjit Bisht Western India	ProQuest and Retrieval of Scientific Literature	23 June 2012
5.	Dr N. P. Sahu	Nutraceuticals for Health and Growth	28 July 2012
6.	Dr Geetanjali Deshmukhe Dr. P. K. Pandey Dr. Rupam Sharma and Dr. Paromita Sawant	Improvised Teaching Methods	23 Aug 2012
7.	Dr S. P. Shukla	Dhruviya Jeevevam Jaiv-praudyogik Prayogki Sambhavna' (Polar Organisms and Possible Biotechnological Applications)	15 Sept 2012
8.	Dr J. R. Bandekar Head, RB & HSD, Bhabha Atomic Research Centre	Radiation Processing of Food	6 Oct 2012
9.	Dr Aparna Chaudhari	High Throughput DNA Sequencing Using Next Generation Platforms and its Impact on Biological Research	17 Dec 2012
10.	Dr O. S. Verma Adjunct Professor, FEES Division, CIFE	Transaction Analysis in Interpersonal Communication	23 Jan 2013
11.	Dr Sher Ali J.C. Bose National Fellow, Head, Molecular Genetics Division, NII, New Delhi	Can Brain Tumor Be Avoided? Some Answers From Genomic Studies	1 Feb 2013
12.	Dr S. Dasgupta	Germ Cell Transplantation : Experiences from TUMSAT, Japan	30 March 2013

Chapter

14



Personalia

## Details of Present Staff Members

### CIFE Head Quarters, Mumbai

#### RMP

##### Director

Dr W.S. Lakra

##### Joint Director

Dr R.S. Biradar (Till 31.5.2012)

Dr A.K. Pal (From 3.9.2012)

#### Scientific Staff

##### Head of Division

Dr C.S. Purushothaman

Dr A.K. Pal (Till 2.9.2012)

Dr Gopal Krishna

Dr S.K. Chakraborty

Dr M. Krishnan

Dr Dam Roy (Till 17 August 2012)

##### Head of Division (Acting)

Dr (Mrs) Neelam Saharan

Dr N.P. Sahu

##### Principal Scientist

Dr K.K. Jain

Dr (Mrs) Kiran Dube Rawat

Dr S.N. Ojha

Dr K.V. Rajendran

Dr G.Venkateshwarlu

Dr N.K.Chadha

Dr (Mrs) Sheela Immanuel

Dr Nalini Ranjan Kumar

Dr Geetanjali Deshmukhe

Dr P.K. Pandey

Dr (Mrs.) Aparna Choudhary

Dr B.B. Nayak

Dr S. Jahageerdar

Dr V.K. Tiwari

Dr Arpita Sharma

Dr K. Pani Prasad

Dr A.K. Reddy

Dr P.P. Srivastava

Dr Gaurav Rathore

##### Senior Scientist

Dr (Mrs) Latha Shenoy

Dr R.P. Raman

Dr C.S. Chaturvedi

Dr Ashok Kumar Jaiswar

Dr Subodh Gupta

Dr Chandra Prakash

Dr Rupam Sharma

Dr Gayatri Tripathi

Dr Satya Prakash Shukla

Dr Swadesh Prakash

Dr Makesh M

Dr Asha T. Landge

Dr Zeba Jaffer Abidi

Dr S. Das Gupta

Dr A. Vennila

Dr Sanath Kumar H.

Dr Megha Bedekar Kadam

Dr Rama Sharma

Dr A.K. Balange

##### Scientist (Sr. Scale)

Dr Suryakant Patil

Dr P.S. Ananthan

Dr Ajit Kumar Verma

##### Scientist

Dr (Mrs) Paromita Banerjee Sawant

Mrs Vidyashree Bharati

Mrs Babita Rani A.M.

Mr A. Pavan Kumar

Dr Gireesh Babu Pathakota

Mr Kundan Kumar

Dr Murlidhar Ande

Mr Vinod Kumar Yadav

Ms Nagalaxmi K.

Mrs Manjusha L.

Ms Pavitra S. Murthy

Dr Sujata Sahoo

#### Technical Staff

##### Technical Officer (T-9)

Mr Josey Jacob

##### Technical Officer (T-7/8)

Mr Alkesh Dwivedi

Dr S.G.S. Zaidi

Mr R.D. Tandel

Mr G.K. Rao

Dr S.K. Pandey

Mr S.S. Kamat

Dr M.K. Chouksey

Mr Chandrakant M.H.

Mr S.L. Kotian

##### Technical Officer (T-6)

Mr S.K. Sharma

Mr A.K. Padmanabhan

Mr D.R. Khogare

Mr Dasari Bhoomaiah

Mr Ram Singh

Mr P.K. Das

Dr (Mrs) Nalini Poojary

Mr Subhash Chand

##### Technical Officer (T-5)

Mr S.K. Chodankar

Mrs Madhavi Pikle

Mrs S.M. Bagwe

Mr S.M. Shinde

Mr R.G. Kudale

Mr Bhagat Singh Rawat  
Mr C.B. Kareer  
Mr B.G. Mandhare  
Mrs S.S. Gajbhiye  
Mr J.M. Koli  
Mrs S.P. Nalawade  
Mrs Rajani H. Khandgale  
Ms Revati B. Dhongde  
Mrs Rekha Nair  
Mr S. Maity

**Technical Assistant (T-4)**

Shri Sanjeevan Kumar  
Mr S.R. Bandkar  
Mrs Bharati Ghagare  
Mr N.K. Aglave  
Mr B.J. Rathod  
Mr Avinash Sable  
Mr Baburam Jaiswar  
Mr Suryakant L. Koli  
Mr B.T. Phande

**Technical Assistant (T-3)**

Mr Anil Kumar Kulsange

Mr Sagar Suresh Sawant  
Mr Rajarshee Moitra  
Mr Yogesh Jadhao  
Mr Vijay Kumar Gupta  
Mr Pawan Kumar  
Mr K. Dhana Raju  
Mr Sikandar S. Hussain  
Mr A.L. Kokane  
Mr V.G. Dhindore  
Mr K.V. Rajendran  
Mr A.P. Dhawde

**Technical Assistant (T-2)**

Mr Arun Puri Gosavi  
Mr R.D. Deshmukh  
Mr Dhanpat Singh Rawat  
Mr V.K. Bhawe  
Mrs V.D. Misale  
Mr A.N. Mahadik  
Mr Mohd. Baqar

**Technical Assistant (T-1)**

Mr Dhiraj Prakash  
Mr Mohd Sadiq M. Mulla

## Administrative Staff

**Sr. Registrar**

Mr G.R. Desh Bandhu

**Chief Finance & Accounts Officer**

Mr Suresh Chandra

**Sr. Administrative Officer**

Mr Mahesh B. Khubdikar

**Dy. Director (Official Language)**

Dr R.P. Uniyal

**Administrative officer**

Mrs Valsa Pavithran

**Asstt. Admn .Officer**

Mr B.L. Kokkula  
Mrs N.Y. Raorane  
Mrs Sushma Singh  
Mrs Deepika N. Behl  
Mrs S.R. Wadhavkar

**Private Secretary**

Mr G.S. Fernandes

**Personal Assistant**

Mrs S.R. Arutla  
Mr P.R. Ninawe

**Stenographers (Grade - III)**

Mrs Pragati R. Gadre

**Assistant**

Mrs D.S. Naik  
Mrs F.G. Fernandes  
Ms C.S. Khundol  
Mr D.S. Ingale  
Mr R.R. Kadam  
Mrs Swati S. Koli  
Mr V.S. Kuveskar  
Ms Richa Singh  
Mr Suraj Gupta

**Upper Division Clerk**

Mr D.V. Raorane  
Mrs S.V. Pawar  
Mrs A.U. Joshi  
Mr A.G. Kolambkar  
Mrs Sanyuja S. Parab  
Mr B.P. Chauhan  
Mr N.L. Ghane  
Mr P.G. Angne  
Mr M.B. Waghela

**Lower Division Clerk**

Mrs C.C. Raut  
Mrs Anu Grover  
Mr S.H. Bhosale  
Mr Shirish P. Malvankar  
Mr R.N. Kamble  
Mr Kantaram A. Shinde  
Mr Prasenjit P. Sonawane  
Mr Kishore Bose

**Skilled Support Staff**

Mr B.N. Sukur  
Mr Madhu Wasnik  
Mr G.G. Zendeekar  
Mr Surajbali R. Jaiswar  
Mr V.M. Patil  
Mr B.S. Tamankar  
Mr Ashok R. More  
Mr D.B. Gaikwad  
Mr Sitaram B. Padyal  
Mrs V.J. Tambe  
Mrs K.R. Ahire  
Mr T.G. Gaikwad  
Mr J.K. Makhwana  
Mrs Kamala Jai Kishore  
Mr Bandu R. Chavan  
Mr Ankush R. Dore  
Mr M.P. Kotian  
Mr G.B. Kamble  
Mr Ashok R. Shingade  
Mr Jagdish N. Dhanu  
Mr Vasant N. Ondkar  
Mr Arvind M. Lavande  
Mr Vinod Kumar Yadav  
Mrs R.H. Chavan  
Mr Ganesh N. Zendeekar  
Mr Ankush N. Joyashi  
Mr Anil D. Sonawane  
Mrs Reshma Naik  
Mr Sambhaji Shelke  
Mr Ninad V. Kandalgaonkar  
Mr Deepak M. Bhokase  
Mr Fakirmayan U. Mullaji  
Mrs Revati Venkateshvaran

## CIFE Kakinada Centre

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### Officer Incharge/Scientist (S.G.)

Mr S.S.H. Razvi

### Scientist

Dr Suresh Babu

### Technical Officer (T-7/8)

Mr P. Rami Reddy

Mr V.N. Acharyulu

Mr K. Murli Mohan

### Technical Officer (T-6)

Mr K.B.S. Murthy

Mr P. Srinivas Rao

Mr J.K. Prasad

Mr R.R.S. Patnaik

### T-I-3

Mr M. Satyanarayana

### T-1

Mr A. Gurraiah

### Cook

Mr Kamaraju

### Assistant

Mr B. Laxman Rao

### Lower Division Clerk

Mrs M. Rama Mani

### Skilled Support Staff

Mr M. Krishna

Mr K. Satyanarayana

Mr K. Niranjana

Mr N. Venkata Ramana

Mr K. Prasad

Mr V. Shivaji

Mr O. Veera Raju

Mr T. Satyanarayana

Mr P.V.K. Reddy

Mr P.D. Reddy

Mr S. Valisha

Mr A.L. Reddy

Mr S.S. Reddy

Mr Y. Buchilingam

Mr M. Govindu

Mr M.A. Rao

Mr G.V.V. Satyanarayana

Mr S.N. Saheb

## CIFE Kolkata Centre

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### Officer Incharge/Principal Scientist

Dr B.K. Mahapatra

### Principal Scientist

Dr G.H. Pailan

### Senior Scientist

Dr Parimal Sardar

Dr Shubendu Dutta

Dr S. Munil Kumar

### Technical Officer (T-7/8)

Dr Ashok Biswas

### Technical Officer (T-5)

Mr R.K. Mondal

### T-4

Mr P.K. Patra

### T-3

Mr S.K. Das

Mr Prakash Kumar Behera

Mrs G. Aruna Devi

### T-2

Mr T.K. Ghosh

### Personal Secretary

Ms Kaberi Biswas

### Assistant

Mr C.N. Sahani

### Upper Division Clerk

Mr P.K. De

### Lower Division Clerk

Mr Ram Milan Singh

### Skilled Support Staff

Mr B.D. Mondol

Mr T.C. Balmiki

Mr R.N. Das

Mr R.N. Prasad

Mr Ramesh Chowdhary

Mrs Suman Pandey

## CIFE Powerkheda Centre

**Officer Incharge/Principal Scientist**  
Dr Somdutt

**Technical Officer (T-7/8)**  
Dr R.K.Upadhyay

**Technical Officer (T-5)**  
Mr L.P. Bamalia  
Mr Hasan Javed

**T-4**  
Mr Gurubachan Singh

**T-2**  
Mr Anup Singh

**T-1**  
Mr Raghuvir Prasad

**Assistant**  
Ms Asha Dhurve

**Lower Division Clerk**  
Mr Hari M. Potpose

**Skilled Support Staff**  
Mr Hari Singh  
Mr Lallu Prasad  
Mr Vishnu Lal  
Mr Mangli Prasad  
Mr Surendra Kumar  
Mr Ram Keval Prasad  
Mr Shambhu Dayal  
Mr Manoharlal  
Mr Ram Swaroop  
Mr S. Prajapati  
Mr Gyan Chand

## CIFE Rohtak Centre

**Officer Incharge/Scientist**  
Mr Hari Krishna

**Scientist**  
Mrs Thankam Teresa Paul

**Technical Officer (T-5)**  
Mr Ashok Kumar

**T-3**  
Mr Satyendra Kumar Singh  
Mr Lokesh Kumar

**T-2**  
Mr Krishan Kumar

**Assistant**  
Mr V.K. Sinha

**Skilled Support Staff**  
Mr Gyani Ram  
Mr Gyani Chand  
Mr Lavesch Kumar

### Retirement list from 1st April, 2012 to 31st March, 2013

Sl. No.	Name	Designation	Date of retirement
1	Mrs Manju Pal	Skilled Support Staff	30.4.2012
2	Dr R.S. Biradar	Joint Director	31.5.2012
3	Dr M.P. Singh Kohli	Principal Scientist	30.6.2012
4	Mr K.R.K. Reddy	Technical Officer (T-5)	30.6.2012
5	Mr M.C. Appa Rao	Skilled Support Staff	30.6.2012
6	Mrs A.A. Shukla	Assistant	31.7.2012
7	Mrs Shahila Iftekhar	T-2	31.7.2012
8	Mrs Swati. S. Parab	Asstt. Admn. Officer	28.2.2013

## Transfer

Name	From	To	Date
1. Mr Suresh Kumar, C.A.O.	CIFE, Mumbai	CPCRI, Kasargod	6.6.2012
2. Mrs Thankam Teresa Paul, Scientist	CIFE Centre, Rohtak	CIFRI, Bangalore	30.11.2012
3. Ms Pavitra S. Murthy, Scientist	CIFE, Mumbai	NACP, New Delhi	02.1.2013
4. Dr S.K. Mishra, Sr. Scientist	CIFE, Mumbai	CRRRI, Cuttack	21.11.2012
5. Mr Sanjeevan Kumar, T-4	CIFE Centre, Rohtak	CIFE, Mumbai	
6. Mr Dhiraj Prakash, T-1	CIFE Centre, Kolkata	CIFE, Mumbai	3.4.2013
7. Dr R.S. Rana, Sr. Scientist	CIFE, Mumbai	SWRI, Avikanagar	19.5.2012

## Appointments

1. Ms Richa Singh	Assistant	23.06.2012
2. Mrs Revati Venkateshvaran	Skilled Support Staff	14.02.2013
3. Mr Suraj Gupta	Assistant	04.03.2013
4. Mrs Suman Pandey	Skilled Support Staff	01.03.2013
5. Mr Mohd Sadiq Mulla	T-1	11.03.2013

## Promotion

S.No.	Staff	From	To	Date
1.	Dr N.P. Sahu	Senior Scientist	Principal Scientist	01.01.2009
2.	Dr Geentajali Deshmukhe	Senior Scientist	Principal Scientist	01.01.2009
3.	Dr Aparna Choudhary	Senior Scientist	Principal Scientist	01.01.2009
4.	Dr P.K. Pandey	Senior Scientist	Principal Scientist	01.01.2009
5.	Dr S. Jahageeradar	Senior Scientist	Principal Scientist	25.07.2009
6.	Dr V.K. Tiwari	Senior Scientist	Principal Scientist	01.01.2010
7.	Dr G.H. Pailan	Senior Scientist	Principal Scientist	30.12.2010
8.	Dr Arpita Sharma	Senior Scientist	Principal Scientist	22.03.2011
9.	Dr Pani Prasad	Senior Scientist	Principal Scientist	01.06.2011
10.	Mrs Valsa Pavithran	A.A.O.	A.O.	27.12.2012

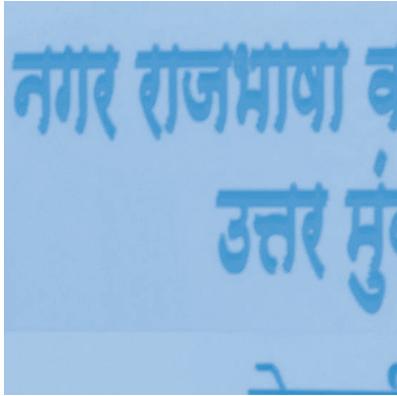
## Obituary

CIFE Parivar mourns the sudden demise of **Ms. Nalini Sawant**, Lower Division Clerk on 1 September 2012. May her soul rest in peace.



Chapter

# 15



हिन्दी  
प्रगति प्रतिवेदन

इस वर्ष संस्थान ने हिन्दी के क्षेत्र में कई महत्वपूर्ण उपलब्धियां प्राप्त की हैं। विशेषरूप से संस्थान के अधिकारियों एवं कर्मचारियों को कम्प्यूटर पर हिन्दी में सरलता से कार्य करने हेतु यूनिकोड कार्यशाला आदि का आयोजन किया गया। वर्षभर की विशिष्ट उपलब्धियां इस प्रकार हैं :

### 1. हिन्दी कार्यशाला का आयोजन

संस्थान के समस्त अधिकारियों/कर्मचारियों को कम्प्यूटर पर यूनिकोड में प्रशिक्षित करने हेतु कुल 12 कार्यशालाएं संचालित की जा रही हैं। इसके अंतर्गत प्रथम कार्यशाला संस्थान के हिन्दी अनुभाग, पुस्तकालय तथा सूचना प्रौद्योगिकी विभाग के अधिकारियों/कर्मचारियों हेतु दिनांक 30 नवम्बर 2012 को आयोजित की गई। एम.टी.एन.एल. के **श्री कलीम उल्लाह खान**, सहायक निदेशक, राजभाषा ने सभी उपस्थित प्रतिभागियों को व्यक्तिगत रूप से उक्त विषय में प्रशिक्षित किया। इस कार्यशाला में काकिनाड़ा केन्द्र से **श्री रविशंकर पटनायक** ने भी भाग लिया।

### 2. जलचरी, अंक-20 का विमोचन

संस्थान में प्रकाशित होने वाली लोकप्रिय पत्रिका जलचरी अंक-20 को **रंगबिरंगी मछली विशेषांक** के रूप में प्रकाशित किया गया। इस अंक का विमोचन माननीय केन्द्रीय कृषि एवं सहकारिता मंत्री **श्री तारिक अनवर जी** के कर-कमलों से किया गया।

### 3. हिन्दी प्रकाशन

वर्ष 2012-13 के अंतर्गत हिन्दी-अंग्रेजी स्टाफ **टेलीफोन डायरेक्टरी एवं वार्षिक प्रतिवेदन-2012** का हिन्दी अंक भी प्रकाशित किया गया।

### 4. हिन्दी पखवाड़ा - 2012 का आयोजन

संस्थान में दिनांक 14 से 28 सितम्बर 2012 तक **हिन्दी पखवाड़ा** का आयोजन किया गया। यह समारोह संस्थान के नवीन परिसर के सभागृह में आयोजित किया गया। कार्यक्रम का प्रारंभ सरस्वती वंदना एवं दीप प्रज्वलित कर किया गया। समारोह के मुख्य अतिथि राजभाषा विभाग, पश्चिमी क्षेत्र कार्यान्वयन कार्यालय के प्रभारी **श्री विनोद कुमार शर्मा** थे। संस्थान के विभागाध्यक्ष **डा. गोपाल कृष्ण** ने स्वागत भाषण प्रस्तुत किया। उन्होंने सभा में उपस्थित सभी से अनुरोध किया कि वे हिन्दी के प्रसार एवं प्रयोग को बढ़ाने में अपना योगदान दें एवं संकल्प लें कि वे अपना समस्त प्रशासनिक कार्य हिन्दी में ही करेंगे। उप निदेशक (राजभाषा) **डा. राजेश्वर उनियाल** ने हिन्दी प्रगति की उपलब्धियां एवं हिन्दी पखवाड़ा की रूपरेखा प्रस्तुत की। संस्थान के वरिष्ठ कुलसचिव **श्री जी. आर. देश बन्धु** ने संस्थान में हिन्दी के प्रयोग एवं उपलब्धियों पर प्रसन्नता व्यक्त करते हुए कहा कि हिन्दी का जितना कार्य हमारे संस्थान में हो रहा है, वह सराहनीय तो है, परंतु हमें अभी राजभाषा विभाग द्वारा जारी लक्ष्यों को प्राप्त करना होगा। हमारे साहित्य एवं प्रसार पुस्तिकाओं का लाभ मत्स्य

किसानों को मिले, इसके लिए हमारे वैज्ञानिक हिन्दी साहित्य उपलब्ध कराएं।

संस्थान के वरिष्ठ प्रशासनिक अधिकारी **श्री महेश खुबड़ीकर** ने धन्यवाद प्रस्ताव प्रस्तुत किया तथा **श्री प्रताप कुमार दास**, तकनीकी अधिकारी ने मंच संचालन किया। उद्घाटन सत्र में ही भाषण, गीत एवं कविता प्रतियोगिताओं का आयोजन भी किया गया जिसमें कर्मचारियों एवं छात्र-छात्राओं ने भाग लिया। इस प्रतियोगिताओं का संचालन **डा. अर्पिता शर्मा**, प्रधान वैज्ञानिक ने किया।

### व्याख्यान

दिनांक 15 सितम्बर 2012 को, सायंस क्लब की ओर से वरिष्ठ वैज्ञानिक **डा. एस. पी. शुक्ला** ने अपनी एंटार्टिका यात्रा पर आधारित **“एंटार्टिका एवं जीव-जन्तुओं के जीवन”** पर हिन्दी में एक रोचक व्याख्यान प्रस्तुत किया। इस कार्यक्रम की संचालिका **डा. अपर्णा चौधरी**, प्रधान वैज्ञानिक थीं। इसी के साथ, हिन्दी पखवाड़ा में पुस्तकालय दिवस, लेखन व चित्रकला प्रतियोगिता तथा महिला दिवस भी आयोजित किया गया।

दिनांक 26 सितम्बर 2012 को नगर राजभाषा कार्यान्वयन समिति, उत्तर मुंबई (कार्यालय) हेतु नराकास प्रतियोगिता का आयोजन किया गया। जिसके अंतर्गत निबंध लेखन, भाषण एवं गीत/कविता का आयोजन किया गया। इसमें कई कार्यालयों के **प्रतिभागियों** ने भाग लिया। इस प्रतियोगिता एवं समारोह के मुख्य अतिथि **श्री आर.जी. मीणा** अतिरिक्त आयुक्त (श्रम) थे।

दिनांक 28 सितम्बर 2012 को पखवाड़े का समापन समारोह आयोजित किया गया। यह समारोह संस्थान के निदेशक एवं कुलपति **डा. वाजीर एस. लाकड़ा** की अध्यक्षता में सम्पन्न हुआ। समारोह सरस्वती वंदना से प्रारंभ हुआ। पखवाड़े के दौरान आयोजित प्रतियोगिताओं में विजयी प्रतिभागियों को निदेशक महोदय के कर-कमलों से प्रमाण पत्र, पुरस्कार एवं नकद पुरस्कार प्रदान किए गए। इस अवसर पर **डॉ वजीर एस. लाकड़ा**, निदेशक ने परिषद के महानिदेशक, **डा. एस. अय्यप्पन** द्वारा भेजे गए हिन्दी दिवस संदेश को पढ़कर सुनाया तथा संस्थान में सम्पन्न हुए हिन्दी पखवाड़ा पर प्रसन्नता व्यक्त करते हुए कहा कि निश्चय ही इस संस्थान ने हिन्दी में बहुत ही उत्कृष्ट कार्य किया है। इस हेतु सभी को बधाई देते हुए अपील की कि इसे और आगे बढ़ाते हुए हमें राष्ट्रीय पुरस्कारों को प्राप्त करना है। उन्होंने सभी को हिन्दी में काम करने हेतु शब्दावली नए रूप में उपलब्ध कराने हेतु कहा। उन्होंने वैज्ञानिकों से आवाहन किया कि वे परिषद द्वारा प्रकाशित नवीन हिन्दी जर्नल 'कृषिका' में अपना लेख प्रकाशित करें, जिसे नास रेटिंग भी मिली हुई है। उन्होंने संस्थान में कम्प्यूटर पर हिन्दी कार्य करने को बढ़ावा देते हुए कहा कि समस्त कम्प्यूटरों में यूनिकोड लोड कर दिया जाए, जिससे हिन्दी में काम करना सरल हो सके।

## उपकेन्द्रों में हिन्दी प्रगति

### काकिनाड़ा केन्द्र

संस्थान के काकिनाड़ा केन्द्र में दिनांक 14 से 28 सितम्बर 2012 तक हिन्दी पखवाड़ा का आयोजन किया गया। समारोह का उद्घाटन केन्द्र प्रभारी **डा. एस. एस. एच. रिजवी** के कर-कमलों से सम्पन्न हुआ। हिन्दी पखवाड़ा के अन्तर्गत हिन्दी श्रुत लेख, कथा, कविता, कहानी, हिन्दी में भाषण इत्यादि प्रतियोगिताओं का आयोजन किया गया, जिसमें कर्मचारियों ने उत्साहपूर्वक भाग लिया। विजयी प्रतिभागियों को समापन समारोह में पुरस्कार एवं प्रमाण पत्र प्रदान कर सम्मानित किया गया।

### कोलकाता केन्द्र

संस्थान के कोलकाता केन्द्र में दिनांक 14 से 20 सितम्बर 2012 तक हिन्दी सप्ताह का आयोजन किया गया। इसके अन्तर्गत लेखन, भाषण, चुटुकुले, कविता, गायन, अंताक्षरी इत्यादि प्रतियोगिता का आयोजन किया गया, जिसमें मेघालय, मणिपुर, बिहार, जम्मू कश्मीर, मध्य प्रदेश के प्रशिक्षार्थियों एवं कर्मचारियों ने भाग लिया।

### पवारखेड़ा केन्द्र

पवारखेड़ा केन्द्र में भी हिन्दी सप्ताह का आयोजन 14 से 20 सितम्बर तक किया गया। उद्घाटन सत्र के मुख्य अतिथि **श्रीमती वासू जोशी**, स्नातकोत्तर हिन्दी प्राध्यापिका थी। हिन्दी सप्ताह के दौरान भाषण, अंताक्षरी, पत्र लेखन, भान-गीत आदि प्रतियोगिताओं का आयोजन किया गया। समापन समारोह में विजयी प्रतिभागियों को प्रमाण पत्र एवं पुरस्कार प्रदान किया गया।

## 5. हिन्दी जलवाणी

संस्थान में एम. एफ. एस. सी. के समस्त छात्रों हेतु हिन्दी जलवाणी पाठ्यक्रम संचालित किया जाता है। इस पाठ्यक्रम में हिन्दी जानने वाले एवं हिन्दी का ज्ञान नहीं रखने वाले छात्रों तथा विदेशी छात्रों लिए अलग-अलग वर्ग बनाए जाते हैं। इस वर्ष दो विदेशी छात्रों को भी हिन्दी सिखाई गई।

## 6. राष्ट्रीय संगोष्ठी का आयोजन

संस्थान के कोलकाता केन्द्र में दिनांक 5-6 जनवरी 2013 को "भारत के पूर्वी एवं पूर्वोत्तर राज्यों में प्रौद्योगिकी के माध्यम से नीली क्रान्ति" विषय पर राष्ट्रीय संगोष्ठी का आयोजन किया गया। संगोष्ठी का उद्घाटन परिषद के महानिदेशक **डॉ. एस. अव्यप्पन** के कर कमलों से किया गया। इस संगोष्ठी में संस्थान के लगभग 200 वैज्ञानिकों एवं अधिकारियों ने भाग लिया।

## 7. राजभाषा कार्यान्वयन समिति की बैठकों का आयोजन

संस्थान के निदेशक एवं समिति के अध्यक्ष **डा. वाजेर एस. लाकड़ा** की अध्यक्षता में संस्थान की राजभाषा कार्यान्वयन समिति की नियमित बैठकें संपन्न हुईं तथा इस पर अनुवर्ती कार्रवाई की गई।

## 8. नगर राजभाषा कार्यान्वयन समिति, ऊ.मुं.(का.) की बैठक का आयोजन

यह संस्थान नगर राजभाषा कार्यान्वयन समिति, ऊत्तर मुंबई (का.) का अध्यक्षीय कार्यालय भी है। इसके अंतर्गत केन्द्रीय सरकार के 95 कार्यालय हैं जिसकी नियमित छमाही बैठकें आयोजित की जाती हैं तथा समय-समय पर नराकास, ऊत्तर मुंबई. (का.) हेतु प्रतियोगिता एवं पुरस्कार समारोह का आयोजन किया गया।

- 12 वीं. छमाही बैठक - 22 जून 2012
- 13 वीं. छमाही बैठक - 05 अगस्त 2012
- नराकास हिन्दी कार्यशाला - 23-24 अगस्त 2012
- नराकास प्रतियोगिता - 26 सितम्बर 2012

## 9. अनुवाद एवं अन्य कार्य

प्रमुख अनुवाद कार्यों में संस्थान के वार्षिक प्रतिवेदन का हिन्दी भाग प्रस्तुत किया गया। इसी के साथ, परिषद से प्राप्त वित्त संबंधी दस्तावेजों का हिन्दी अनुवाद और छात्र शोध सारांश तथा वैज्ञानिकों के लेखों व प्रशासनिक प्रपत्रों का अनुवाद किया गया।

## 10. प्रतिनिधित्व

**श्री प्रताप कुमार दास**, तकनीकी अधिकारी ने महात्मा गांधी अंतरराष्ट्रीय हिन्दी विश्वविद्यालय, वर्धा में दिनांक 1-2 मार्च 2013 को 21 वीं सदी की राजभाषा हिन्दी विषय पर आयोजित राष्ट्रीय संगोष्ठी में भाग लिया।

## 11. रेडियो वार्ता

इस वर्ष **डॉ. राजेश्वर उनियाल**, उप निदेशक (राजभाषा) ने निम्नलिखित रेडियो वार्ता प्रस्तुत की -

लोकगीतों में रूपरेखा - प्रसारण 13.07.2012

लोकगीतों में भारतीय संस्कृति - प्रसारण 19-10-2012

चर्चा - प्रसारण 19-02-2013

## ABBREVIATIONS

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AAU	Anand Agricultural University
ACTREC	Advanced Centre for Treatment, Research and Education in Cancer
AIIMS	All India Institute of Medical Sciences
AMAAS	Alberta Media Arts Alliance Society
APAARI	Asia Pacific Association of Agricultural Research Institutions
ASRB	Agricultural Scientists Recruitment Board
BARC	Bhabha Atomic Research Centre
BAU	BIRSA AGRICULTURAL UNIVERSITY, RANCHI
BLAST	Basic Local Alignment Search Tool
BRNS	Board of Research in Nuclear Sciences
CAU	Central Agricultural University
CDRI	Central Drug Research Institute
CIAE	Central Institute of Agricultural Engineering
CIBA	Central Institute of Brackishwater Aquaculture
CIFRI	Central Inland Fisheries Research Institute
CIRCOT	Central Institute for Research on Cotton Technology
CMFRI	Central Marine Fisheries Research Institute
CPRI	Central Power Research Institute
CRIDA	Central Research Institute for Dryland Agriculture
CTBA	California Thoroughbred Breeders Association
DBT	Department of Biotechnology
ELISA	Enzyme-Linked Immunosorbent Assay
EG	East Godavari
FISHCOPFED	National Federation of Fishermen's Cooperatives LTD
FRS	Fisheries Research Station
GAPDH	Glyceraldehyde 3-Phosphate Dehydrogenase
HRD	Human Resource Development
IASRI	Indian Agricultural Statistics Research Institute
ICRISAT	International Crops Research Institute for the Semi-Arid Tropics
ICSF	International Collective in Support of Fishworkers
ICT	Information and communications technology
IISS	Indian Institute of Soil Science
IIT	Indian Institute of Technology
INCOIS	Indian National Centre for Ocean Information Services
JNTU	Jawaharlal Nehru Technological University
KVK	Krishi Vigyan Kendras
MOES	Ministry of Earth Sciences
MPCST	M. P. Council of Science & Technology
NAARM	National Academy of Agricultural Research Management
NABARD	National Bank for Agriculture and Rural Development
NAIP	National Agricultural Innovation Project
NASC	National Agricultural Science Centre Complex
NBFGR	National Bureau of Fish Genetic Resources
NBFGR	National Bureau of Fish Genetic Resources
NBSS&LUP	National Bureau of Soil Survey and Land Use Planning
NCBI	National Center for Biotechnology Information
NFDB	National Fisheries Development Board
NIO	National Institute Of Oceanography
NIRD	National Institute of Rural Development
NIRJAFT	National Institute of Research on Jute & Allied Fibre Technology
NMR	Nuclear Magnetic Resonance
OUAT	Orissa University of Agriculture & Technology
PCR	Polymerase Chain Reaction
PFZ	Potential Fishery Zone
PSSVIVE	PSS Central Institute of Vocational Education (PSSCIVE) Bhopal
RFD	Result Framework Document
SNDTWU	Shreemati Nathibai Damodar Thackersey Women's University
SAC	Space Applications Centre
TIFR	Tata Institute of Fundamental Research
TISS	Tata Institute of Social Sciences
UNDP	United Nations Development Programme
WBUAFS	West Bengal University of Animal and Fishery Sciences
WSSV	White Spot Syndrome Virus
ZSI	Zoological Survey of India

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