



भाकृ अनुप  
ICAR

# मत्स्य प्रौद्योगिकी समाचार Fish Technology Newsletter

खंड/Vol. XXII सं /No. 4 अक्टूबर October / दिसंबर December, 2011



## Contents

News from the Research Front	1
Publications	9
Training Programmes	9
Outreach Programmes	10
Exhibitions	10
Workshops/Seminars	11
Deputation Abroad	15
Consultancies	16
VIP Visits	19
Celebrations	20
Awards and Honours	21
Invited Talks	22
Personnel News	23
Personalia	28

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## News from the Research Front

### Fish Burger from Low Value Fish

The Fish Processing Division of CIFT, Cochin has developed a formulation for making burgers from low value fishes like Lizard fish and Thread fin bream. Fish burger can be considered as a balanced meal contributing to the requirement of all major nutrients. It provides important nutrients such as protein, carbohydrate, fat, minerals, vitamins, fibre content etc. The major components of fish burger are fish patties - 30%, leafy vegetables - 30%, and burger bun - 40%. The burger developed from the above

fishes showed excellent product attributes and consumer acceptance.

Lizard fish (*Saurida tumbil*) and Thread fin bream (*Nemipterus japonicus*) form a sizable catch in trawl net landings. These fishes are not the desired candidates for table fish in our society and forms poor man's choice. Hence they are marketed as low-value fish.

Both the species have white meat with low fat and high protein content. Thread fin



Fish burger

केन्द्रीय मात्स्यकी प्रौद्योगिकी संस्थान

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Lizard fish (*Saurida tumbil*)

bream has become a targeted fish for surimi production because of its meat quality. Hence this fish is caught by deep sea trawlers for surimi production.

Biochemical composition of Lizard fish and Thread fin bream is shown in Table 1. The meat in both the fishes is white in colour with low fat content. Hence it forms an excellent meat base for the fish burger.

Biochemical Factors	Lizard fish (%)	Thread fin bream (%)
Moisture	77.23	76.36
Protein	19.04	18.62
Fat	0.92	0.86
Ash	2.18	2.71

Table 1. Biochemical composition of Lizard fish and Thread fin bream

### Preparation of the patties

Various ingredients for the fish patties were taken based on the formulation in Table 2. Fresh vegetables such as tomato, cucumber, lettuce, cabbage, capsicum (all sliced) were used for sandwiching with burger bun.

Sl. No.	Ingredients	Quantity
1	Cooked fish mince	1000 gm
2	Cooked potato	1000 gm
3	Onion, finely chopped	75 gm
4	Green chillies	20 nos
5	Coriander leaves	25 gm
6	Chilly powder	25 gm
7	Corn flour	25 gm
8	Oil	To fry
9	Salt	To taste
10	Cheese	25 gm
11	Pepper powder	5 gm
12	Mayonnaise	75 gm

Table 2. Ingredients for fish patties



Thread fin bream (*Nemipterus japonicus*)

The recipe given in Table 2 was accepted after two trials and incorporating the suggestions of the panel members. The ingredients; onion and green chilly were fried in oil for 5 min. Coriander leaves were added followed by heating chilli powder under low flame for one minute. Cooked fish meat, mashed potato, corn flour and salt were added and mixed well. From this 60 g portions were taken and made in to patties of 5 cm diameter, coated with a cereal based batter and bread crumbs. The patties were then fried in oil till both sides turn in to light brown colour.

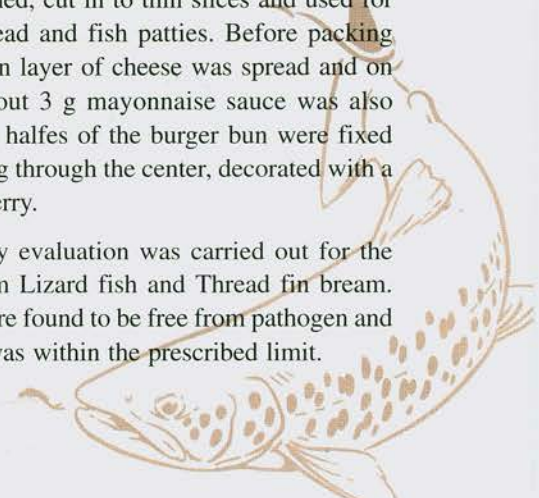
**Batter:** The ingredients for the batter were taken as per Table 3 and mixed properly to disperse the ingredients uniformly. One measure of this batter mixture was mixed with two parts of water and used for coating patties.

Sl. No.	Batter Ingredients	Quantity
1	Maida	1 kg
2	Corn flour	100 g
3	Bengal gram	100 g
4	Salt	15 g
5	Guar gum	3 g
6	Turmeric powder	3 g
7	Sodium tri-polyphosphate	5 g

Table 3. Composition of batter

Burger buns were procured from a commercial bakery. Vegetables were washed, cut in to thin slices and used for sandwiching with bread and fish patties. Before packing with vegetables, a thin layer of cheese was spread and on top of vegetables about 3 g mayonnaise sauce was also applied. Finally, both halves of the burger bun were fixed by a tooth pick passing through the center, decorated with a slice of onion and cherry.

Microbial quality evaluation was carried out for the burgers prepared from Lizard fish and Thread fin bream. Burgers from both were found to be free from pathogen and total microbial load was within the prescribed limit.





### Consumer acceptance

Consumer acceptance was studied by assessing the product attributes with the help of a panel of judges drawn from different category of staff consisting of scientists, technical officers, and research fellows. Results of the consumer acceptance studies on a 10 point hedonic scale is given in Table 4.

Product Attributes	Lizard fish burger	Thread fin bream burger
Appearance	9.2	9.0
Flavour	8.7	8.5
Taste	8.5	8.5
Texture	8.7	8.5
Overall acceptability	9.0	8.5

Table 4. Consumer acceptance score

### Nutritional evaluation

Major nutritional factors such as protein, fat, carbohydrate, fibre content and the various minerals in the fish burger are shown in Tables 5 and 6.

Item	Moisture (%)	TN (%)	Ash (%)	Fat (%)	Carbohydrate (%)	Calorific value per 100 g burger
Lizard fish burger	57.50	7.80	2.27	12.60	38.91	300.24 Calories
Thread fin bream burger	57.596	7.07	2.44	12.99	32.67	275.87 Calories

Table 6. Calorific value of fish burger

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 - Dr. Femeena Hassan, Quality Assurance and Management Division, CIFT, Cochin

## Comparison of Nutritional Composition of Farmed *Litopenaeus vannamei* (Whiteleg shrimp) and *Penaeus monodon* (Black tiger shrimp)

Farming of the exotic shrimp, *Litopenaeus vannamei* (commonly known as White leg shrimp, Pacific white shrimp, and Vannamei shrimp) has been gaining momentum in India especially in the state of Andhra Pradesh. The production of Vannamei shrimp in Andhra Pradesh was 1655MT from a culture area of 264 ha in 2009-10 (MPEDA, 2010).

Chill killed *L. vannamei* (Fig. 1a) and *P. monodon* (Fig. 1b) shrimp were separated in to two groups viz. male and female and analyzed for various nutritional and quality parameters (Table 2).



Fig. 1 (a). *Litopenaeus vannamei*



Fig. 1 (b). *Penaeus monodon*

The protein content of *L. vannamei* was lower than *P. monodon*. The protein content of male *L. vannamei* (19.31%) was lower than female shrimp (20.19%) whereas in *P. monodon*, the protein content was relatively higher in male shrimp (21.56%) compared to the female shrimp (20.92%). Lipid content was similar in *L. vannamei* (0.94%) and *P. monodon* female (0.95%) but the lipid content was relatively lower in male *P. monodon* (0.6%). Calcium content was distinctly higher in *L. vannamei* (830.9 to



1142.3 mg%) than *P. monodon* (141.28 to 173.13 mg%). Phosphorus and iron content were comparatively higher in *L. vannamei*. The freshness indicator parameters, Total Volatile Base Nitrogen, Peroxide Value and Free Fatty Acid were good in all the shrimp. Sulphite content, total plate counts, *Escherichia coli* counts etc. were within the acceptable limits in all the samples. The processing yields were higher in *L. vannamei* compared to *P. monodon* (Table 1) for all product types viz., headless (HL), peeled undeveined (PUD) and peeled deveined tail on (PDTO). However, there was no difference in soaking yields of both the shrimps.

Field Characteristics	<i>Litopenaeus vannamei</i>	<i>Penaeus monodon</i>
HON to HL	69-70%	64 - 65%
HL to PUD	84-85%	82 - 83%
HL to PDTO	89-90%	88-89%
Soaking yield - HL	4 %	4%
Soaking yield - PDTO	10-11 %	10-11%
Soaking yield - PD	12-13%	12-13%

Table 1. Comparison of yield characteristics of *Litopenaeus vannamei* and *Penaeus monodon*

Nutritional Quality	<i>Litopenaeus vannamei</i>		<i>Penaeus monodon</i>	
	Male	Female	Male	Female
Protein, %	19.31	20.19	21.56	20.92
Fat, %	0.94	0.94	0.6	0.95
Na, mg%	472	644	436.2	420.71
K, mg%	1112.5	1192.5	1255.78	1165.04
Ca, mg%	830.90	1142.3	141.28	173.13
P, mg%	1403.2	1467.5	1016.4	983.4
Fe, ppm	92.42	76.64	48.4	49.4
Sulphite, ppm	<10	<10	<10	<10
TPC, cfu/g	6.25x10 <sup>4</sup>	4.35x10 <sup>4</sup>	5.5x10 <sup>4</sup>	1.1x10 <sup>5</sup>
<i>E. coli</i> , MPN/g	<3	<3	<3	<3

Table 2. Comparison of nutritional and quality characteristics of *Litopenaeus vannamei* vis-à-vis *Penaeus monodon*

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## Bioactivities of Oyster (*Crassostrea madrasensis*) Peptide Extract

### Peptide extraction from oyster

Cultured oysters were harvested in live condition and depurated for a few hours. Meat was separated from the shells and kept on ice. It was subjected to extraction by homogenization in ethanol: 0.7M HCl (3:1 v/v; 400 ml) at 0°C using a Waring blender. The homogenate was stirred for 2 h at 0°C and centrifuged (4000 xg for 30 min at 0°C). Ethanol was removed from the supernatant under reduced pressure using Vacuum therm and the volume was reduced to 100 ml. Following volume reduction, the sample was subjected to a second centrifugation (4000 xg for 30 min at 0°C). The supernatant containing the peptides was collected for further purification.

### Partial purification of the peptides

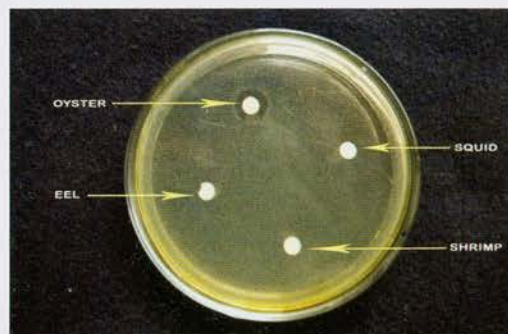
The extract obtained in the above step was pumped onto four Sep-Pak C-18 cartridges (Waters Associates) connected in series at a flow rate of 2 ml/min. Bound material was eluted with acetonitrile: water: trifluoroacetic acid (70:29.9:0.1, v/v/v) and freeze-dried. The freeze dried samples were dissolved in 0.1% TFA and made up to 5 ml. The peptides were quantified by biuret method. The concentration of the extract was 16.82 mg/ml.

### Bioactivity in peptide extract

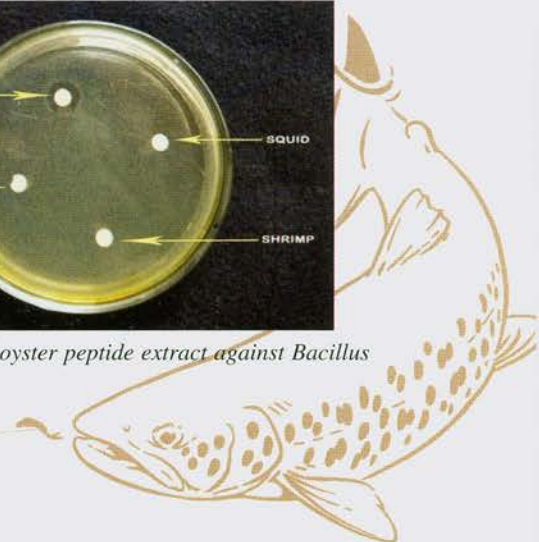
The extract obtained was hypothesized to contain possible anti-oxidant, anti-inflammatory and antibacterial activities.

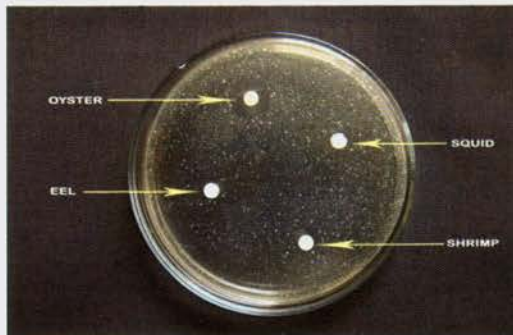
### Antibacterial activity

Preliminary studies show that the extract has antibacterial effect against *Bacillus subtilis*. The extract showed an inhibition zone of 8-10 mm diameter on media at pH 7.2 and 8.8.



Antibacterial activity of oyster peptide extract against *Bacillus subtilis* at pH 7.2





Antibacterial activity of oyster peptide extract against *Bacillus subtilis* at pH 8.8

### Anti-oxidant activity

Dipicryl phenyl hydrazine (DPPH) scavenging assay was carried out in the oyster extract to establish anti-oxidant activity. IC<sub>50</sub> (amount of the extract at which 50% inhibition of DPPH free radical scavenging takes place) value for the oyster extract was calculated to be 0.4 mg.

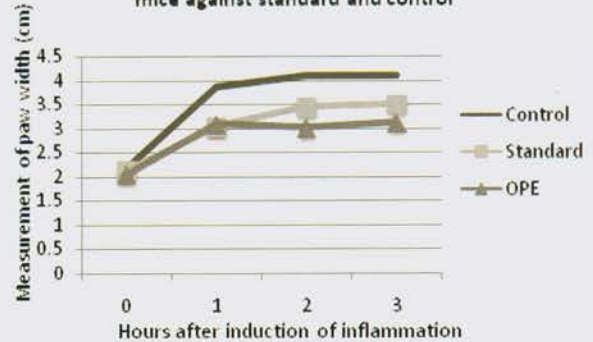
Sample	DPPH IC <sub>50</sub> (µg) values
Oyster peptide extract	400
Gallic acid	2.78

Anti-oxidant activity of oyster peptide extract

### Anti-inflammatory activity

Three groups of rats; control, standard and test were taken for the study. Initial thickness of paw was noted in all groups of rats. Test group mice were administered 0.5 ml of oyster peptide extract (OPE) (intraperitoneal). Standard group of mice were injected with Ibuprofen (100mg/kg body weight). Inflammation was induced in all mice by injection of 3.5% formalin, 30 minutes after drug and extract administration. Paw thickness was measured at one-hour intervals for 3 hours. Control group mice showed an increase in the paw thickness. OPE group showed better paw size reduction than the standard group.

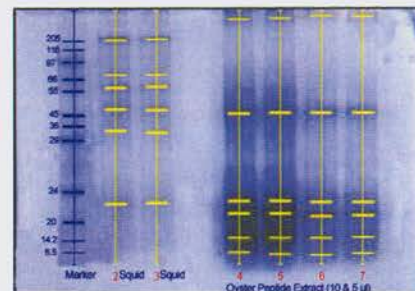
Effect of oyster peptide extract on inflammation induced in mice against standard and control



Six peptide fragments were detected in the oyster peptide extract and their relative molecular weight was determined by gel docking using Biorad Software Quantity One as 255, 47, 23, 21, 16 and 8 MW-K Da respectively.



Electrophorogram of oyster peptide extract



Gel docking and molecular weight determination

- Dr. K.K. Asha, Dr. Suseela Mathew, Dr. R. Anandan and Dr. P.T. Lakshmanan

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## Harvesting, Processing and Marketing of Black Clam in Perumbalam Island, Cherthala, Alappuzha

Kerala is a state with one of the richest clam resources in India and the resources are most abundant in the Vembanad Lake of the state, with annual estimated landings of 66,000 mt in 2008-09. The dominant species was Black clam (*Villorita cyprinoides*) which accounted for 70% of the clam fishery (Laxmilatha and Appukuttan, 2002) with an annual production of 50,275 mt (Suja and Mohamed, 2010). Clam fishing has been a traditional family-oriented activity along the backwaters. The levels of investment are low both for harvesting and processing. Two economically important products are the meat and the shell. A diagnostic study was undertaken, for the Haritha Farmers Club

(sponsored by NABARD), at Perumbalam village, Chertala to understand the supply chain of clam in the village, as a first step towards development of a clam cluster under the NABARD Cluster Development Programme. Perumbalam village is an island located at 9°51'N, 76°22' E and has an area of 16.32 km<sup>2</sup>. It is around 7 km in length and 2 km in width with a population of around 11,000. The island is connected to the mainland only through water transport (ferry service and *Jhangaar*). About 250 families are engaged in clam picking activity. The fishermen are engaged in harvesting and the women in processing and marketing of the clam meat.





### Clam harvesting

Clam harvesting is usually unselective using a hand held dredge (locally called *Kolli*). The craft is a small canoe made of traditional timber like *Anjili* (*Artocarpus hirsuta*) wood or *Punna* (*Calophyllum inophyllum*) wood, fitted with a 2hp engine. Fishing is carried out in two times i.e., morning or evening. In the morning, picking starts from 5.30 am onwards, though some fishers start around 9.00 am. The total time spent on harvesting depends on the individual fisher. Depending on the time they start, the fishing activity ends between 8.00 am and 3.30 pm. The harvesting can last up to 10 hours depending on the quantity of harvest. 54% of the respondents spent 6 to 7 hours in picking clam (Fig. 1). The peak season for harvest is April-May and the lean season June-July. The number of fishing days is 15 to 20 in a month on an average and fishing is carried out for nearly 10 months in a year. On an average around 200 trips are undertaken annually.

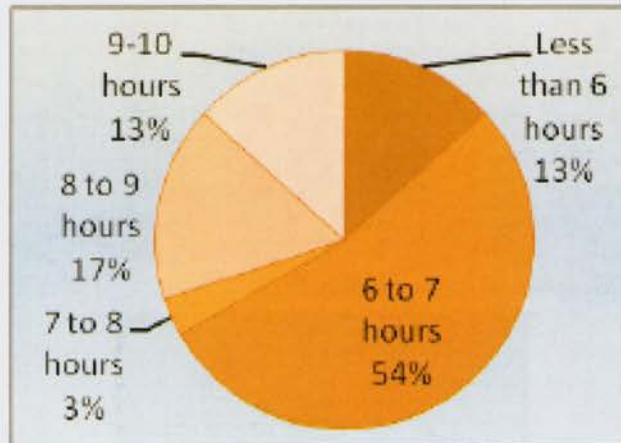


Fig. 1. Time spent in clam picking



Harvesting of clam from canoe using hand dredge

While the recommended harvestable size is 15 mm, there is no selective harvesting and very small sizes (locally called 'Mallikakka') are also harvested due to increased competition. However, there are many fishers who release the small sized clams or seed clams in the backwaters near their residences and rear them to a bigger size. This process of transplanting the under-sized seed clam in the nearby

water bodies is called as relaying or semi-culture. This is a good conservation option practised by most fishermen in the area. The period of culture varies from six months to one year depending on the size at the time of initial harvest.

### Processing – Boiling and shucking

The harvested clam is generally cooked by the fisherwomen at household level and the clam meat is shucked out of the shell. The meat is then taken for marketing in nearby markets. This has for decades been a small scale, household activity and has remained unchanged. The whole clam is boiled in aluminium vessels of 3' diameter and depth of 1.5'. Around 50 to 60 kg raw clam can be boiled in this vessel at a time. The activity is generally carried out in the open with very little attention paid to the hygiene aspects.



Steps in Clam processing





The whole clam is boiled for about half an hour, and the meat and shell are separated using different iron sieves having mesh size 1 cm, 1.5 cm and 2 cm according to the size of the clam. The shucked meat is washed a couple of times to remove any dirt attached to the surface while sieving or shucking. The meat is stored in aluminium containers until it is taken to the market. The shell remains in the yard to be collected later.

### Marketing of the products of the cluster

The marketing of clam meat is exclusively done by the fisherwomen. Both clam meat and clam shell have got a distinct market. While the clam meat goes for human consumption, the shell goes into the lime making industry. The major marketing channels for the clam meat are as follows:



The processed clam meat is marketed in different wholesale markets like Chambakkara, Paravur, South Paravur, Vaikom and Ernakulam market. About 77% of the clam pickers at Perumbalam island sells the meat to wholesalers located in these markets. 60% of the respondents depend on Chambakkara market alone, which is the most easily accessible one. The market commission agent charges are 10% of the sales value. The clam meat is either transported to the market in aluminum vessel, covered by a cloth or in plastic covers. They travel to the mainland by boat or *Jhangaar* and further by bus. On an average 6 to 10 kg meat is sold per day per family. The clam shell is also a much sought byproduct with lot of demand in the lime industry. The shell is usually collected from the households by traders who market it further.

### Time analysis of fisher persons involved in the clam picking and processing activity

An analysis of the time spent by the fishermen and women in the clam harvesting and homestead processing was carried out. The daily routine chart of the fishermen and women are as given in Table 1.

The duration of harvest ranged from 6-9 hours. On an average around 7 hours are spent in harvesting of clam. The processing activity takes around 3 hours after which the product is taken to the market by the fisherwomen. Depending upon the market frequented, the time for marketing ranges from 2-4 hours.

The average consumer price ranged between ₹ 43 to 72 per kg over the marketing channel. On an average the selling price ranges from ₹ 40 to 50 per kg of meat. Meat from bigger sized clams fetches higher prices. The marketing margins tended to be low when more number of intermediaries were present in the marketing channel. In cases where direct selling has taken place, the margins accruing to the fisherwomen have been high.

Though a domestic market exists for clam and clam meat is liked by consumers, the consumer is not very satisfied with the product as he is aware of the poor hygienic conditions of processing and will go in for cleaning of the clam once again after purchase. If clam is processed and packed properly it can gain consumer confidence and create a good market.

### Economics of the clam cluster

The economics of operation of clam fishing at the household level has been presented in Table 2. The total cost of clam fishing was ₹ 24,500 and the gross and net returns were ₹ 88,800 and ₹ 64,300 respectively. Since it is a low investment fishing activity, the profit realization is

Particulars	Amount (₹)
Fixed cost	4,460.00
Operational cost	20,040.00
Gross returns	88,800.00
Net returns	64,300.00

Tab 2. Economics of operation of clam fishing

Market	Timing/ Gender	4.00 to 6.00 am	6.00 to 8.00 am	8.00 to 10.00 am	10.00 am to 12.00 pm	12.00 to 2.00 pm	2.00 to 4.00 pm	4.00 to 6.00 pm	6.00 to 8.00 pm	
Morning	Men	Clam Picking								
Market	Women	Clam Processing	Clam Marketing						Clam Processing	
Evening	Men	Clam Picking								
Market	Women			Clam Processing			Clam Marketing			

Table 1. Daily routine chart of clam processing





relatively high and there exists a potential for increasing the profit through scientific culture, responsible harvesting, proper processing and suitable value addition.

Scientific harvesting and utilization of clam meat will enhance the livelihood opportunities of the fishers dependent on this fishery, instead of merely concentrating on the shell trade, as there is a potential to develop quality food products and as also a distinct consumer base for the meat.

## References

1. Laxmilatha, P. and Appukuttan, K.K. (2002) - A review of the black clam (*Villorita cyprinoides*) fishery of the Vembanad Lake, *Indian J. Fisheries*, **49(1)**: 85-91.
2. Suja, N. and Mohamed, K.S. (2010) - The Black clam, *Villorita cyprinoides*, fishery in the state of Kerala, India, *Marine Fisheries Review*, **72(3)**: 48-61.

- Dr. Nikita Gopal, Smt. P. Jeyanthi and Shri V. Chandrasekar

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## Osmotic Stress in *Oceanobacillus iheyensis*: Whole Transcriptomic Approach

Genome-wide studies of bacterial gene expression are shifting from microarray technology to second generation sequencing platforms. RNA-Seq is a recently developed approach to transcriptome profiling that uses deep-sequencing technologies. RNA-Seq helps to discover and profile the entire transcriptome in any organism. With no probes or primers to design, RNA-Seq delivers unbiased and unparalleled information about the transcriptome. *Oceanobacillus iheyensis* isolate from aquatic environment shows extremely halotolerant and facultative alkaliphilic properties. A study was undertaken to elucidate the possible mechanism of halotolerance in *O. iheyensis* using RNA-Seq approach. An unanticipated growth curve was observed in *O. iheyensis* grown in 1.3M NaCl where the cells remained in lag phase till the end of the 14<sup>th</sup> hour followed by an abrupt growth-rate acceleration from 0.6 OD to 2.1 OD in 2 hrs. Elucidation of the molecular mechanisms involved in halotolerance can be achieved by comparing the whole transcriptome of the cells during lag phase and log phase.

Total RNA was isolated from *O. iheyensis* cells

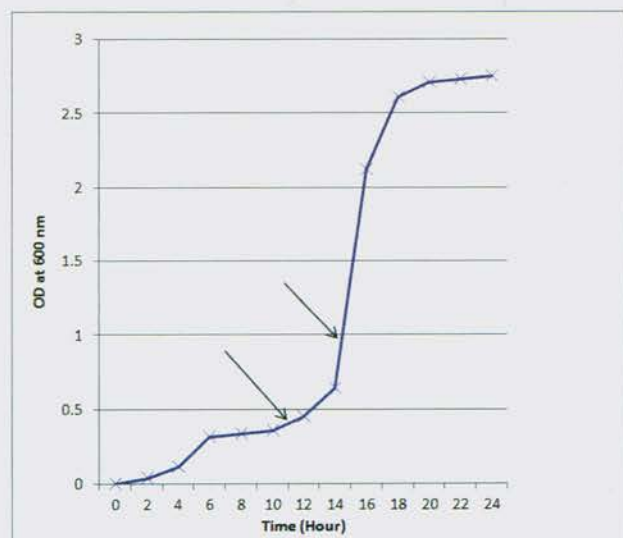


Fig. 1. Growth curve of *O. iheyensis* at 1.3M NaCl with approximate RNA collection points shown by arrows

harvested at lag phase (0.4 OD) and log phase (1 OD) in the growth curve. The RNA was concentrated for mRNA by depleting the 16S and 23S ribosomal RNAs from the samples. RNA was then converted to cDNA and subjected to shotgun sequencing by Applied Biosystems SOLiD sequencing platforms. A total of 57,520,368 Million high-quality reads for *O. iheyensis* 0.4OD sample and 53,502,737 Million reads for *O. iheyensis* 1.0 OD sample were obtained. The overall genomic expression profile indicated that the expression of a considerable subset of genes was affected during the growth in the presence of 1.3M NaCl. The FPKM values for each gene have been calculated for *O. iheyensis* 1.0 OD and 0.4 OD samples. These FPKM values (FPKM 0.4 and FPKM 1.0) were further utilized to calculate the fold change as  $\ln(\text{FPKM } 1.0/\text{FPKM } 0.4)$  where  $\ln$  is natural log. Moreover, uncorrected p-value of the test static for each gene have been computed as well. Total 3500 genes have been divided on the basis of their significance (significance can be either “yes” or “no”, depending on whether p is greater than the FDR after Benjamini-Hochberg correction for multiple-testing). There were 848 genes in total that have significant difference in their FPKM values for *O. iheyensis* at 1.0 OD and 0.4 OD. These 848 genes have been further divided into two categories, i.e. upregulated genes and downregulated genes from *O. iheyensis* 1.0 OD to 0.4

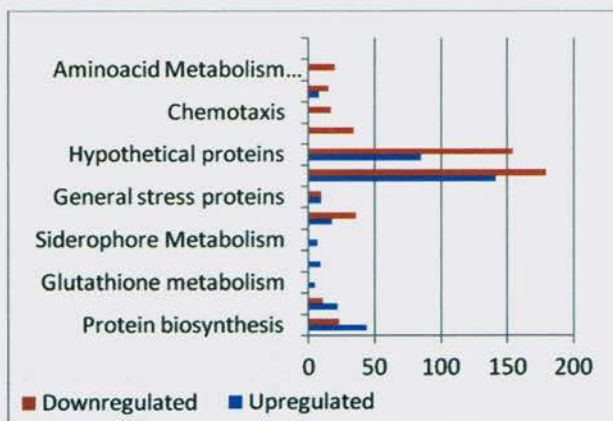
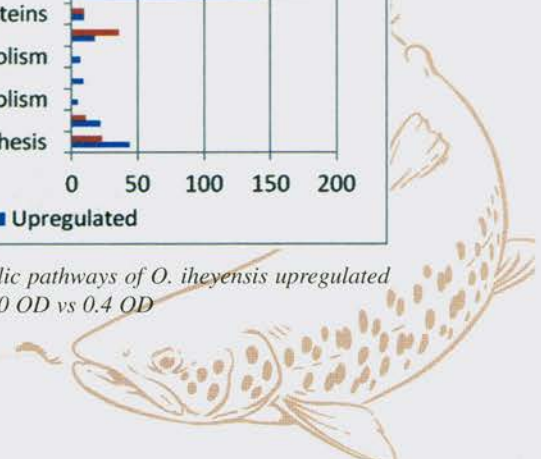


Fig. 2. Genes in metabolic pathways of *O. iheyensis* upregulated and downregulated at 1.0 OD vs 0.4 OD







OD. A total of 349 genes were significantly upregulated and 499 genes were significantly downregulated in the whole transcriptome analysis of *O. iheyensis*. There were 16 highly downregulated genes (fold change  $\leq -1.0$ ) from *O. iheyensis* 1.0 OD to 0.4 OD. In addition to that, 13 highly upregulated genes (fold change  $\geq 1.0$ ) from *O. iheyensis* 1.0 OD to 0.4 OD were also detected. The majority of the upregulated genes fell in to the following functional categories; phospholipid metabolism, protein synthesis, energy metabolism, glutathione metabolism. A large fraction of the highly downregulated genes were identified as flagellar and

chemotaxis related proteins and some amino acid metabolism and transport related genes. Eighty five of the 349 *O. iheyensis* genes induced at high salinity database searches revealed no significant homology with protein of known function, indicating that a significant part of the cellular and physiological adaptation reactions of *O. iheyensis* to high salinity growth conditions is still unexplored. The study provided important clues to better understanding of the mechanism of adaptation to extreme environment and stress response using high-throughput sequencing-based approach.

- Dr. Toms C. Joseph, Shri Aravind Madhavan and Dr. K.V. Lalitha  
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## Publications

### Research Papers

1. Balasubramaniam, A., Meenakumari, B., Erzine, K., Boopendranath, M.R. and Pravin, P. (2011) – Estimation of drift gill nets selectivity for *Carrangoids papuensis* in Kanyakumari coast of South India, *Asian Fish. Sci.*, **24**: 62-77.
2. George Ninan, Lalitha, K.V., Zynudheen, A.A. and Jose Joseph (2011) – Effect of chilling on microbiological, biochemical and sensory attributes of whole aquacultured Rainbow trout (*Oncorhynchus mykiss* Walbaum, 1792), *J. Aqua. Res. Development* S5:001 doi 10.4172/2155-9546.
3. Pravin, P. and Meenakumari, B. (2011) – Towards the development of eco friendly purse seines, *INFOFISH*, **6**: 40-44.

4. Vipin, P.M., Pradeep, K., Renju Ravi, Jose Fernandez, T, Remesan, M.P., Madhu, V.R. and Boopendranath, M.R (2011) – First estimates of length-weight relationship of *Diaphus watasei* (Jordan and Starks, 1904) caught off South West Coast of India, *Asian Fish. Sci.*, **24**: 453-455.
5. Vipin, P.M., Renju Ravi, Jose Fernandez, T, Pradeep, K., Boopendranath, M.R. and Remesan, M.P. (2011) – Distribution of myctophid resources in Indian Ocean, *Rev. Fish Biol. Fisheries*, DOI 10.1007/51160-011-9244, pp 1-14.

### Special Publication

1. Fishing Methods of Chilka Lagoon – M.P. Remesan, P. Pravin, B.K. Pradhan and B. Meenakumari (2011), CIFT Special Publication, 24 p.

## Training Programmes

### Cochin

1. Laboratory techniques in microbiological examination of seafoods (12-24 September)
2. Identification of *Vibrio parahaemolyticus* by PCR (20 September – 20 October)
3. PCR techniques for detection of white spot syndrome virus (11-14 October)
4. Isolation and identification of *Vibrio parahaemolyticus* from fish in retail outlets and their confirmation using PCR (16 August – 15 October)
5. Value added products from fish and shellfish (17-19 October)
6. Isolation and identification of bacteria of public health significance from food (24-29 October)
7. Effect of short term marination on the quality and shelf life of chill stored *Pangasius* fillets (16 August – 18

November)

8. Effect of modified atmospheric packaging on the shelf life of *Pangasianodon hypophthalmus* (16 August – 18 November)
9. HACCP concepts (14-18 November)
10. Food packaging techniques and testing of packaging materials (24 November – 15 December)
11. Studies on incidence of *Vibrio parahaemolyticus* in seafood (1-31 December)
12. Seafood quality assurance and management (5-17 December)
13. Value addition in fish (13-16 December)

### Visakhapatnam

1. Laboratory techniques in microbiological examination of seafoods (10-14 October)





2. Preparation of value added products (8-9 November)
3. Fishery microbiology and biotechnology (21 November)
4. Preparation of value added products, hygienic handling

of fish and latest developments in fish processing (8-9 December)

### Veraval

1. HACCP concepts (11-15 October)



Trainees and Faculty of HACCP training



Hands on training at fish processing factory at Veraval

## Outreach Programmes

During the quarter the following outreach programmes were conducted by the Institute:

1. Training programme on 'Value added products' at State

Institute of Fisheries Technology, Kakinada on 3 November, 2011.

2. Workshop on 'Fuel efficient fishing' at Calicut on 25 November, 2011.

## Participation in Exhibitions

During the quarter the Institute participated in the following exhibitions:

1. Exhibition organized by the Press Information Bureau, Govt. of India at Pookkottur, Malappuram during 13-15 October, 2011.
2. 'Kollam Fest – 2011' organized by the Kollam Corporation at Kollam during 14-20 November, 2011.
3. Exhibition organized by the Press Information Bureau,

Govt. of India at Anchal Panchayath in Kollam district during 24-26 November, 2011.

4. Exhibition held in connection with 6<sup>th</sup> National Conference of KVKs, JNKVV, Jabalpur during 3-5 December, 2011.
5. '23<sup>rd</sup> Krishi Shilpa 'O' Banijya Mela', Purba Medinipur, West Bengal during 9-15 December, 2011.
6. 'Swasrayabharat-2012' organized by Swadeshi Science



Pookkottur



Anchal





Dr. B. Meenakumari, DDG (Fy.) at Jabalpur



Purba Medinipur



Cochin



Chennai

Movement at Cochin during 15-20 December, 2011.

- Exhibition held in connection with 9<sup>th</sup> Indian Fisheries Forum, Chennai during 19-23 December, 2011.

- 'Karshika Mela 2012' organized by Gandhiji Study Centre, Thiruvananthapuram at Thodupuzha during 26 December, 2011 to 1 January, 2012.

## Innovations 4 Industry Meet

A Business Meet titled "Innovations 4 Industry Meet in Crop Science" was organized by the Zonal Technology Management - Business Planning and Development (ZTM-BPD) Unit, South Zone, Cochin along with the National

Academy of Agricultural Research Management (NAARM), Hyderabad on 19 November 2011 at Rajendranagar, Hyderabad for showcasing the innovations from seven prestigious Crop Science Research Institutions under ICAR.



Releasing of technology brochure



A section of the audience



The Meet was organized as part of the business incubation drive designed for the agricultural sector to promote entrepreneurs with the help of latest R&D facilities and vast knowledge available with ICAR. The event brought together Innovators and Entrepreneurs from the field of agriculture on the same platform.

Dr. Swapan Kumar Dutta, Deputy Director General, Crop Science Division of ICAR, New Delhi was the Chief Guest for the programme and Dr. Bangali Baboo, National Director, National Agricultural Innovation Project (NAIP) was the Guest of Honour. During the inaugural meeting, Dr. T.K. Srinivasa Gopal, Director, CIFT, Cochin gave the introductory remarks about the event. Dr. S. Mauria, ADG (IP&TM), ICAR offered felicitations.

A technology brochure titled "Innovations - A Technology Showcase in Crop Science" prepared by ZTM-BPD Unit, CIFT, Cochin was officially released by Dr. Swapan Kumar and a Video Film on "Crop Science Innovations" was released by Dr. Bangali Baboo.

Dr. Swapan Kumar Dutta while delivering his inaugural address touched on the technologies in crop science that can be rediscovered and can be continued further. The production of beer from rice, the production and use of rice bran oil, health drinks from a variety of grains, whisky from sorghum are some of the potential technologies that need to be developed in crop science sector. He also added that in future we should compete with other world countries not only in improving the yield but also to store after cleaning process is over and to improve all ways of market strategies.

The event consisted of an exclusive technical conference that featured technical presentations on the

innovations developed by the Crop Science Research Institutions under ICAR, and panel sessions that helped the industry professionals to enhance their technical knowledge, share ideas with scientific community and formulate new business plans. Dr. Leela Edwin, Member Secretary, ZITMC and Dr. C.N. Ravishankar, Principal Investigator, NAIP-BPD Unit gave presentations on the activities of the ZTM-BPD Unit, South Zone in areas of intellectual property protection, technology management, and agri-business incubation.

The meet also consisted of an exhibition which provided an opportunity for the private sector to witness the wide range of knowledge based and entrepreneur-ready technologies. The ICAR institutes which participated in the event are, Central Research Institute for Dryland Agriculture, Hyderabad, Central Tobacco Research Institute, Rajahmundry, Directorate of Oilseeds Research, Hyderabad, Directorate of Sorghum Research, Hyderabad, Directorate of Rice Research, Hyderabad, National Bureau of Agriculturally Important Insects, Bangalore, and Sugarcane Breeding Institute, Coimbatore.

The technologies presented in the exhibition included improved crop varieties and hybrids suited to the diverse agro-ecologies and situations, technologies for eco-friendly and sustainable crop production and protection, crop improvement and health management, bio-resource utilization and bio-safety, value added products, bioinformatics, genomics, biotechnology, farm machinery, land use diversification and energy management. The Meet was attended by representatives from agricultural industry, entrepreneurs, exporters, importers, R&D institutions/academia, business and technology consultants.

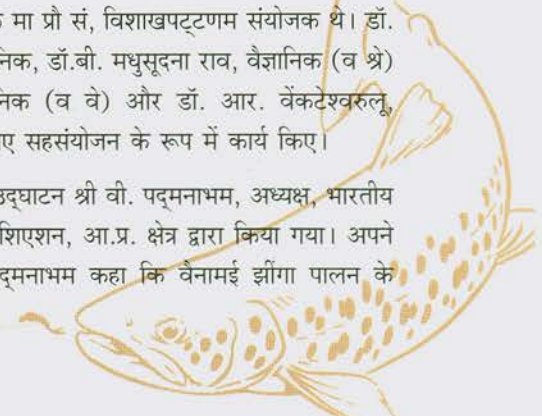
## Entrepreneur Meet on Fishery Waste Utilization / मत्स्यन रद्दी प्रयुक्ति पर उद्यमी बैठक

An Entrepreneur Meet on 'Developments in Fishery Waste Utilization' was jointly organized by Zonal Technology Management – Business Planning & Development Unit, South Zone, Cochin and Visakhapatnam Research Centre of CIFT at Visakhapatnam on 21 October 2011. The entrepreneur meet is a leading step towards the utilization of seafood waste. Dr. C.N. Ravishankar, PI, BPD Unit, South Zone was the organizer and Dr. M.M. Prasad, Scientist-in-Charge, CIFT, Visakhapatnam was the Convener. Dr. A.A. Zynudheen, Senior Scientist, Dr. B. Madhusudana Rao, Scientist (SG), Dr. L.N. Murthy, Scientist (SS) and Dr. R. Venkateswarlu, Scientist functioned as Co-convener for the meet.

The entrepreneur meet was inaugurated by Shri V. Padmanabham, President, The Seafood Exporters Association of India, A.P. Region. In his inaugural address Shri Padmanabham said that shrimp waste generation from

के मा प्रौ सं का विशाखपट्टणम अनुसंधान केन्द्र, क्षेत्रीय प्रौद्योगिकि प्रबंधन एवं व्यापार नियोजन यूनिट (क्षे प्रौ प्र एवं व्या नि यू) दक्षिण क्षेत्र के सहयोग से 'मत्स्यन रद्दी प्रयुक्ति में विकास' पर उद्यमी बैठक 21 अक्टूबर, 2011 को आयोजित किया। यह उद्यमी बैठक समुद्री खाद्य रद्दी की प्रयुक्ति की ओर एक मार्गदर्शी कदम है। डॉ. सी.एन. रविशंकर, प्र.अ., था नि वि यूनिट, दक्षिण क्षेत्र आयोजक था और डॉ. एम.एम. प्रसाद, प्रभारी वैज्ञानिक, के मा प्रौ सं, विशाखपट्टणम संयोजक थे। डॉ. ए.ए. सैनुदीन, वरिष्ठ वैज्ञानिक, डॉ.बी. मधुसूदना राव, वैज्ञानिक (व श्रे) डॉ. एल.एन. मूर्ति, वैज्ञानिक (व वे) और डॉ. आर. वेंकटेश्वरलू, वैज्ञानिक इस बैठक के लिए सहसंयोजन के रूप में कार्य किए।

इस उद्यमी बैठक का उद्घाटन श्री वी. पद्मनाभम, अध्यक्ष, भारतीय समुद्री खाद्य निर्यातक एसोशिएशन, आ.प्र. क्षेत्र द्वारा किया गया। अपने उद्घाटन भाषण में श्री पद्मनाभम कहा कि वैनामई ड्रीगा पालन के





Dr. M.M. Prasad delivering the presidential address

the shrimp processing plants is bound to increase with the increased shrimp production because of the introduction of Vannamei shrimp culture. He encouraged the prospective entrepreneurs to venture into by-product production on a commercial scale. He congratulated CIFT and BPDU for organizing the meet which is the need of the hour. Dr. M.M. Prasad in his presidential address said that there is tremendous potential for the production and marketing of chitin, chitosan and glucosamine in the international market. He said that the estimated world business potential for chitin and its derivatives including chitosan by 2015 would be more than ₹ 3 lakh crores. Shri G. Maheswarudu, Scientist-in-Charge, CMFRI, Visakhapatnam Regional Centre and Shri A.K. Choudhury, Deputy Director, CIFNET, Visakhapatnam Unit offered felicitations. Dr. A.A. Zynudheen welcomed the gathering and Dr. B. Madhusudana Rao proposed vote of thanks.

Dr. A.A. Zynudheen, Dr. L.N. Murthy and Dr. R. Venkateswarulu, Scientists from CIFT demonstrated the production of chitin and chitosan preparation to the prospective entrepreneurs. Shri Nitin Singh, Business Manager, ZTM-BPDU, South Zone explained in detail the business proposals for establishing chitin and chitosan plants. An interaction session was organized in which the queries raised by the entrepreneurs were addressed by the scientists.

The following technical talks were delivered during the entrepreneur meet:

- i. An overview of fisheries scenario in Andhra Pradesh - Dr. M.M. Prasad
- ii. Chitin and chitosan – Production technology – Dr. A.A. Zynudheen
- iii. Industrial applications of chitin and chitosan – Dr. B. Madhusudana Rao
- iv. Fish and fish waste utilization – Dr. L.N. Murthy
- v. Business overview on chitin and chitosan – Shri Nithin Singh



A section of the audience

परिचय के कारण झींगा उत्पादन की वृद्धि से झींगा संसाधन संयंत्रों से झींगा रद्दी का उत्पादन छलॉग लगा सकता है। वे भावी उद्यमी वाणिज्यिक स्तर पर उपोत्पाद का उत्पादन में साहस करने को प्रोत्साहित किया। वे के मा प्रौ सं और व्या नि वि यू को इस बैठके आयोजन के लिए बधाई दिए और कहे कि यह बैठक समय की मांग है। डॉ. एम.एम. प्रसाद अपने अध्यक्षीय भाषण में कह कि अंतर्राष्ट्रीय बाजार में काइटिन, काइटोसैन एवं ग्लोकोस्मीन के उत्पादन एवं विपणन के लिए, विशाल संभावनाएं हैं। वे कहे कि काइटिन एवं उसके उत्पन्न काइटोसैन के साथ वर्ष 2015 तक ₹ 3 लाख करोड़ से ज्यादा की व्यापार संभावनाएं रखते हैं। श्री जी. महेश्वरूडु, प्रभारी वैज्ञानिक, के स मा अनु सं, विशाखपट्टणम क्षेत्रीय केन्द्र और श्री ए.के. चौधरी, उप निदेशक, सिफनेट, विशाखपट्टणम यूनिट आशीर्वचन प्रदान किए। डॉ. ए.ए. सैनुद्दीन उपस्थित का स्वागत किया और डॉ. बी. मधुसूदना राव धन्यवाद प्रस्तावित किया।

डॉ. ए.ए. सैनुद्दीन, डॉ. एल.एन. मूर्ति और डॉ. आर. वेंकटेश्वरूलू, वैज्ञानिकों, के मा प्रौ सं भावी उद्यमियों को काइटिन एवं काइटोसैन की तैयारी के उत्पादन को प्रदर्शित किए। श्री नितीन सिंह व्यापार प्रबंधक, क्षेत्र प्रौ प्र - व्या नि वि यू, दक्षिण क्षेत्र काइटिन एवं काइटोसैन संयंत्र की स्थापना के लिए व्यापार प्रस्ताव की विस्तृत जानकारी दिया। एक अन्वोन्यक्रिया सत्र आयोजित किया गया जिस में उद्यमियों द्वारा उठाए गए प्रश्नों का समाधान वैज्ञानिकों द्वारा किया गया।

इस उद्यम बैठक के दौरान निम्नलिखित तकनीकी भाषण प्रदान किए गए:

- i. आंध्रा प्रदेश में मात्स्यिकी परिदृश्य का एक सिंहावलोकन - डॉ. एम.एम. प्रसाद
- ii. काइटिन एवं काइटोसैन उत्पादन प्रौद्योगिकी - डॉ. ए.ए. सैनुद्दीन
- iii. काइटिन एवं काइटोसैन का औद्योगिक अनुप्रयोग - डॉ. बी. मधुसूदना राव
- iv. मत्स्य एवं मत्स्यन रद्दी की प्रयुक्ति - डॉ. एल.एन. मूर्ति
- v. काइटिन एवं काइटोसैन पर व्यापार सिंहावलोकन - श्री नितीन सिंह





## Workshop on Entrepreneurship Development / उद्यमवृत्ती विकास पर कार्यशाला

A one day workshop on 'Entrepreneurship development for fish based business' was conducted on 3 November, at CIFT, Cochin. The workshop was conducted under the NAIP value chain sub-project 'Responsible harvesting of selected small pelagics and freshwater fishes' which aims to encourage value chain based business enterprises.

The workshop was inaugurated by Dr. P.T. Lakshmanan, Director-in-charge, CIFT, Cochin. A presentation on entrepreneurship development was done by Shri M. Nasser, Principal Investigator of the Project. Dr. S. Balasubramaniam, Head, EIS Division, Dr. S. Sanjeev, Principal Scientist, Dr. S. Ashaletha, Dr. V. Geethalakshmi and Dr. R. Anandan, Senior Scientists were the other speakers for the day. Around 40 budding entrepreneurs participated in the event.

Bulk landing fishes such as mackerel and sardine which are highly nutritious are under-utilized as they do not receive enough value in the market. Hence the fishermen as well as the consumers are not benefitted by these fishes. They are not used to make products due to strong smell and presence of bones. The project aims to promote value addition of such fishes and convert them into innovative marketable products which provide the customers a better nutritive option against junk foods. It will also benefit the fishermen. At present only meat based products are available in the market. In this context, the participants themselves suggested the popularization of more nutritious fish based products. The participants were familiarized with a range of innovative products developed under the project and informed about the technical support, which the project team will be able to offer to the clients. At the end of the workshop most of the participants expressed their confidence to begin a new venture involving production, distribution and marketing of fish based products.



Dr. P.T. Lakshmanan inaugurating the workshop

केन्द्रीय मात्स्यिकी प्रौद्योगिकी संस्थान, कोचिन में एक एक दिन की कार्यशाला 'मत्स्य आधारित व्यापार के लिए उद्यमवृत्ती' पर 3 नवंबर को संचालित की गई। यह कार्यशाला रा कृ नवो प (राष्ट्रीय कृषि नवोन्वेषी परियोजना) मूल्य श्रृंखला उप-परियोजना 'चयनित छोटे वेलापवर्ती एवं स्वच्छ जल मत्स्यों का उत्तरदायी प्रग्रहण' के अधीन संचालित किया गया, जिस का उद्देश्य मूल्य श्रृंखला आधारित व्यापार उद्यम को प्रोत्साहित करना है।

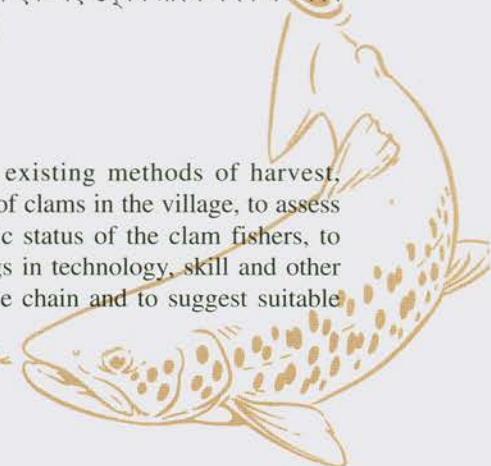
इस कार्यशाला का उद्घाटन डॉ. पी.टी. लक्ष्मणन, के मा प्रौ सं के प्रभारी निदेशक, कोचिन द्वारा किया गया। श्री एम. नासर परियोजना के प्रधान अन्वेषक द्वारा उद्यमवृत्ती विकास पर एक प्रस्तुतिकरण किया गया। इस दिन के अन्य वक्ता थे डॉ.एस. बालसुब्रमणियम, प्रभागाध्यक्ष, वि सू सां, डॉ. एस. संजीव, प्रधान वैज्ञानिक, डॉ. एस. आशालता, डॉ. बी. गीतालक्ष्मी और डॉ. आर. आनन्दन, वरिष्ठ वैज्ञानिक। इस कार्यक्रम में करीब 40 उदीयमान् उद्यमी सहभागिता किए।

बाँगडा एवं सार्डीन जैसे ज्यादा मात्रा में मिलने वाले मत्स्य जो उच्च पोषणविक है और उनका कम उपयोग किया जाता क्योंकि यह बाजार में अच्छे मूल्य को प्राप्त नहीं करते। इस कारण से मछुवारे के साथ उपभोक्ता भी इस मत्स्यों से फायदा नहीं उठा रहे हैं। वे अधिक भू एवं हड्डियों को रखने के कारण इस के उत्पाद तैयार नहीं किए जा रहे हैं। इस परियोजना का उद्देश्य ऐसे मत्स्यों के मूल्य वर्धन को प्रोत्साहित करना और इसे नवोन्वेषी बाजार योग्य उत्पाद में परिवर्तित करना है। यह जंक खाद्य के विरुद्ध उत्तम पोषक विकल्प उपभोक्ता को उपलब्ध करा सकता है। यह मछुवारों को फायदा भी पहुँचता है। इस समय बाजार में केवल मांस आधारित उत्पाद उपलब्ध है। इस संदर्भ में, सहभागी खुद अधिक पोषक मत्स्य आधारित उत्पादों को लोकप्रिय बनाने का सुझाव दिए। इस परियोजना के अधीन विकसित नवोन्वेषी उत्पादों से सहभागी परिचित हुए, इस परियोजना दल द्वारा ग्राहकों को दिए जाने वाले तकनीकी सहायता के बारे में सूचित किया गया। इस कार्यशाला की समाप्ति के बाद, अधिकतर सहभागी मत्स्य आधारित उत्पादों के उत्पादन, वितरण एवं विपणन से सम्मिलित एक नए उद्यम प्रारंभ करने के अपने आत्मा विश्वास को व्यक्त किए।

## Consultancy Report Handed Over

The consultancy report on the 'Diagnostic Study on Development of Clam Cluster at Perumbalam Village, Cherthala block, Alappuzha district, Kerala' was handed over to the office bearers of the Haritha Farmers' Club on 17 December, 2011 at CIFT, Cochin. The consultancy was

carried out to study the existing methods of harvest, processing and marketing of clams in the village, to assess the present socio-economic status of the clam fishers, to identify gaps/short comings in technology, skill and other inputs in the existing value chain and to suggest suitable





Dr. T.K. Srinivasa Gopal handing over the report

interventions to make the value chain more efficient and develop a strategy for a sustainable and profitable livelihood option through clam cluster. As per NABARD's Cluster Development Strategy, a diagnostic study had to be conducted, which was undertaken by CIFT under a consultancy agreement with the Haritha Farmer's Club, which is the Cluster Development Agency in this particular cluster development initiative. The copies of the report were handed over to Shri K.A. Sreekumar, President and Shri Anoopraj, Secretary of the Club by Dr. T.K. Srinivasa Gopal, Director, CIFT in the presence of Dr. S. Balasubramaniam, Head, EIS Division, Dr. T.V. Sankar, Head, QAM Division and In-Charge, ITMU of CIFT and the project team.

## Inauguration of Solar Fish Drying Plants /सौर मत्स्य शुष्कन संयंत्र का उद्घाटन

Dr. B. Meenakumari, Deputy Director General (Fisheries), ICAR inaugurated the Solar Fish Drying plant with LPG back-up named 'CIFT Dryer JSDL-55 SM' designed, and developed by CIFT and installed and commissioned at ICAR Research Complex, Manipur on 24 October, 2011. Dr. Meenakumari also inaugurated the Solar Fish Dryer with electrical back-up installed and commissioned under the technical consultancy of CIFT at Directorate of Fisheries, Manipur on 24 October, 2011.



Dr. B. Meenakumari inaugurating the fish drying plant

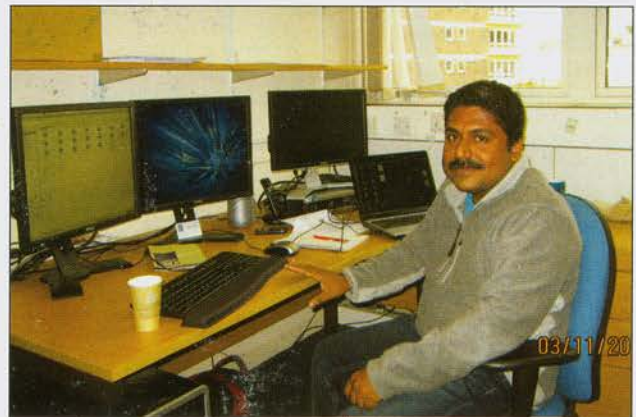
डॉ.बी. मीनाकुमारी, उप महानिदेशक (मात्स्यिकी), भा कृ अनु प ने सौर मत्स्य शुष्कन संयंत्र एल पी जी समर्थित 'सी आई एफ टी शुष्कक जे एस डी एल-55 एस एम' नामक को भा कृ अनु प कांम्पलेक्स, मणिपूर में के.मा.प्रौ.सं. द्वारा अभिकल्पित, स्थापित एवं अधिकृत का उद्घाटन 24 अक्टूबर, 2011 को किया। डॉ. मीनाकुमारी के मा प्रौ सं के तकनीकी परामर्श के अधीन इलक्ट्रीकल समर्थित सौर मत्स्य शुष्कक को मात्स्यिकी निदेशालय, मणिपूर में भी 24 अक्टूबर, 2011 को उद्घाटन की।

## Deputation Abroad

Dr. P. Muhammed Ashraf, Senior Scientist, Fishing Technology Division was deputed to attend a training on Nanotechnology at the University of California, USA during 19 September to 19 December 2011. The training sponsored by NAIP, imparted advanced knowledge on the application of nanosized particles for fisheries research especially in the area of nano biosensors. Training focused on the preparation and handling of nano materials, fabrication of biosensors using interdigitated electrodes and sensing of different molecules using the prepared devices. Prepared a biosensor by incorporating single walled carbon nano tubes and calixresorcinarane in an interdigitated electrode for sensing of TVBN molecules responsible for fish odours.

Shri V.R. Madhu, Scientist, Fishing Technology Division was deputed to undergo training on Deriving ecological indicators from spectral radiometry at Plymouth Marine Laboratory, UK, funded by Partnership for Observation of the Global Oceans and Scientific Committee on Ocean Research (POGO-SCOR) Fellowship for the year

2011 from 5 October to 22 December 2011. Shri Madhu was also deputed to Plymouth Marine Laboratory, UK to attend the Blue Horizon Conference as part of 4<sup>th</sup> Annual Plymouth Marine Sciences Education Fund Conference held on 14 December 2011.



Shri V.R. Madhu at Plymouth Marine Laboratory





## Consultancy Agreements Signed / हस्ताक्षरित परामर्श समझौते

### With Directorate of Fisheries, Andamans & Nicobar Administration

CIFT, Cochin has signed an agreement with Department of Fisheries, A&N Administration for acting as a consultant organization for providing drawing, design, cost estimate and technical specifications of Intermediate Mechanized Fishing Craft. The Department of Fisheries is implementing a scheme under the 'Rashtriya Krishi Vikas Yojana'. The scheme envisages 50% back-ended subsidy subject to a maximum of ₹ 7.50 lakhs for the construction of new mechanized fishing craft of size not less than 10 m. and not more than 13.7 m. The Fisheries Department has received altogether 140 applications for availing assistance under the scheme. The scheme is aimed to encourage the local fishers to venture in mechanized fishing activity in the islands. CIFT would also supervise the construction of the boats at the boat building yards. In connection with the finalization of drawing, design and estimates of the proposed Intermediate Mechanized Fishing Crafts, Shri M.V. Baiju, Senior Scientist & Naval Architect of CIFT, Cochin visited the Islands during 11-13 October 2011. The Department of Fisheries organized a meeting of the bankers and interested applicants (fishermen) with Shri Baiju to discuss the modalities for the implementation of the scheme. The introduction of these fishing crafts are bound to increase the fish catch, thereby opening avenues for the development of fish based industries in the islands. The consultancy fee charged was ₹ 4.00 lakhs.

### With Directorate of Fisheries, Maharashtra

CIFT, Cochin has signed an agreement for a consultancy with Directorate of Fisheries, Govt. of Maharashtra for providing detailed specifications, general arrangement drawing, preparation of estimate and supervision of construction of the FRP vessel at different stages for a 15 m long training cum patrolling boat. The agreement was signed between Shri Parag Nanautia, IAS, Commissioner of Fisheries Govt. of Maharashtra and Dr. T.K. Srinivasa Gopal, Director, CIFT, Cochin on 15 October 2012. The consultancy fee is 2% of the project cost.

### With Prawn Peeling Owners Association

CIFT, Cochin has signed an agreement for setting up of an Effluent Treatment Plant (ETP) at the cost of ₹ 75,000/- with All Kerala Prawn Peeling Association, Ambalapuzha. The agreement was signed between Shri A. Safer, General Secretary, All Kerala Prawn Peeling Owners

### मात्स्यिकी निदेशालय, अंडमान एवं निकोबार प्रशासन के साथ

के मा प्रौ सं, कोचिन मात्स्यिकी विभाग, अंडमान और निकोबार प्रशासन के साथ माध्यमिक यंत्रिकृत मत्स्यन यान के आरेखण, अभिकल्प, लागत परिकलन एवं तकनीकी विनिर्देशन को उपलब्ध करने के लिए परामर्श संगठन के रूप में कार्य करने हेतु एक समझौते पर हस्ताक्षर किया। मात्स्यिकी विभाग इसे 'राष्ट्रीय कृषि विकास योजना' के अधीन एक योजना के रूप में कार्यान्वयन कर रहा है। यह योजना 10 मीटर से ज्यादा और 13.7 मीटर से कम आकार के नए यंत्रिकृत मत्स्यन यान निर्माण के लिए अधिकतम ₹ 7.50 लाख की 50% बक एन्डेड सब्सिडी पर विचार करती। इस योजना के अधीन सहायता प्राप्त करने के लिए सब मिलाकर 100 आवेदन पत्र मात्स्यिकी विभाग द्वारा प्राप्त किए गए हैं। यह योजना इस द्वीप में यंत्रिकृत मत्स्यन सक्रियता में उद्यम के लिए स्थानीय मछुवारों को प्रोत्साहन करने से उद्देशित है। के मा प्रौ सं यान निर्माण यार्ड में यान के निर्माण का पर्यवेक्षण कर सकता है। प्रस्तावित माध्यम यंत्रिकृत मत्स्यन यान के आरेखण, अभिकल्प और आकलन में अंतिम रूप देने के संबंध में, श्री एम.वी. बैजु, वरिष्ठ वैज्ञानिक एवं के मा प्रौ सं, कोचिन का नौ-वास्तुकार इस द्वीप का 11-13 अक्टूबर, 2011 के दौरान दौरा किया। श्री. बैजु से इस योजना के कार्यान्वयन करने की रूपात्मकता पर विचार करने के लिए मात्स्यिकी विभाग द्वारा बैंकर एवं रुचि रखने वाले आवेदकों (मछुवा) की एक बैठक आयोजित की। यह मत्स्यन यान के परिचय से मत्स्य शिकार में, वृद्धि होती इस के द्वारा इस द्वीप में मत्स्य आधारित उद्योग के विकास के लिए रास्ता खुलता है। ₹ 4.00 लाख की परामर्श शुल्क प्रभारित की गई।

### मात्स्यिकी निदेशालय, महाराष्ट्र के साथ

के मा प्रौ सं, कोचिन ने 15 मी लम्बे प्रशिक्षण सह गश्त यान के लिए विस्तृत विनिर्देशन, आरेखण की सामान्य व्यवस्था, आकलन की तैयारी और भिन्न अवस्थाओं में एफ आर पी जहाज के निर्माण पर्यवेक्षण को उपलब्ध कराने के लिए मात्स्यिकी निदेशालय महाराष्ट्र सरकार से एक परामर्श समझौते पर हस्ताक्षर किया। यह समझौता श्री पराग नानौटीया, भा प्र से, मात्स्यिकी आयुक्त, महाराष्ट्र सरकार एवं डॉ. टी.के. श्रीनिवास गोपाल, निदेशक, के मा प्रौ सं, कोचिन के बीच 15 अक्टूबर 2012 को किया गया। इस परियोजना की लागत का 2% परामर्श शुल्क होगा।

### झींगा छिलका मालिक एसोशिएशन के साथ

के मा प्रौ सं, कोचिन ने केरल झींगा छिलका एसोशिएशन, अम्बलापुष्पा के साथ ₹ 75,000/- लागत से एक बहिःस्त्राव उपचार संयंत्र की स्थापना के लिए एक समझौते पर हस्ताक्षर किया। यह समझौता श्री ए. सफेर, महामंत्री, केरल झींगा छिलका मालिक एसोशिएशन, अम्बलापुष्पा तालुका



Director handing over the MoU to Shri A. Safer







Association, Ambalapuzha Thaluk Committee, Alappuzha district and Dr. T.K. Srinivasa Gopal, Director, CIFT, Cochin on 29 September 2012.

### With M/s Kraftwork Solar Pvt. Ltd.

CIFT, Cochin has signed an agreement with M/S Kraftwork Solar Pvt. Ltd., Poonithura, Cochin for necessary knowhow and guidance for the commercial production of Solar Dryers (CIFT Dryer JSDL-55 SM, CIFT Dryer JSDL 110 SM and CIFT Dryer SDE 5) at the cost of ₹ 45,000/-. The agreement was signed between Shri K.N. Iyer, Managing Director, M/s Kraftwork Solar Pvt. Ltd. and Dr. T.K. Srinivasa Gopal, Director, CIFT, Cochin on 2 December 2012.

### With Kerala Livestock Development Board

Another consultancy agreement was signed between Dr. R. Rajeev, Deputy General Manager, Kerala Livestock Development Board, Mattupatti Farm, Idukki district and Dr. T.K. Srinivasa Gopal, Director, CIFT, Cochin at the cost of ₹ 60,000/- for renewal of HACCP certification for the Sperm Station, Mattupatti Farm.

## CIFT Participates in the Expedition to Southern Ocean / दक्षिण सागर की खोज यात्रा में के मा प्रौ सं की सहभागिता

**Shri S.S. Shaju**, Senior Research Fellow, Fishing Technology Division, CIFT, Cochin participated in the "5<sup>th</sup> Indian Expedition to Southern Ocean (ISOE 2011)" organized by National Centre for Antarctic and Ocean Research, Goa on deputation. The expedition started from Port Luis, Mauritius on 21 January, 2011 onboard ice-class vessel FORV *Sagar Nidhi*, up to the latitude of 60°S, along the meridian of 57°30'E and ended at Chennai on 8 April 2011. The expedition was conducted mainly for multi disciplinary studies and collection of samples from the Subtropical to Polar Regions of Indian sector of Southern Ocean. The objective of the expedition for CIFT was to study the bio-optical characteristics of Southern Ocean. The Project was conceived by Dr. B. Meenakumari (PI) and Dr. P.



Director handing over the MoU to Shri K.N. Iyer

समिति, अम्बलापुष्पा जिला और डा. टी.के. श्रीनिवास गोपाल, के मा प्रौ सं, कोचिन के बीच 29 सितंबर 2012 को किया गया।

### सर्वश्री क्राफ्टवर्क सोलर प्राइवेट लिमिटेड के साथ

के मा प्रौ सं, कोचिन ने ₹ 45,000/- की लागत से सौर शुष्ककों (के मा प्रौ सं शुष्कक जे एस डी एल - 55 एस एम के मा प्रौ सं शुष्कक जे एस डी एल 110 एस एम और के मा प्रौ सं शुष्कक एस डी ई 5) के वाणिज्यिक उत्पादन के लिए सर्वश्री क्राफ्टवर्क सोलर प्राइवेट लिमिटेड के साथ हस्ताक्षर किया। यह समझौता श्री के.एन. अय्यर, प्रबंध निदेशक, सर्वश्री क्राफ्टवर्क सोलर प्राइवेट

लिमिटेड और डॉ. टी.के. श्रीनिवास गोपाल, निदेशक, के मा प्रौ सं, कोचिन के बीच 2 दिसंबर 2012 को किया गया।

### केरल पशुधन विकास बोर्ड के साथ

एक और परामर्श समझौता स्पर्म स्टेशन माट्टुपट्टी फार्म के लिए एच ए सी सी पी प्रमाणीकरण के नवीकरण के लिए ₹ 60,000/- लागत से डॉ. आर. राजीव, उप महाप्रबंधक, केरल पशुधन विकास बोर्ड, माट्टुपट्टी फार्म, इडुकी जिला और डॉ. टी.के. श्रीनिवास गोपाल, निदेशक, के मा प्रौ सं, कोचिन के बीच हस्ताक्षरित किया गया।

**श्री एस.एस. शाजू**, वरिष्ठ अनुसंधान अध्येता, मत्स्यन प्रौद्योगिकी प्रभाग, के मा प्रौ सं, कोचिन ने 'पाँचवीं भारतीय खोज यात्रा दक्षिण सागर के लिए (आई एस ओ ई 2011)' प्रतिनियुक्ति पर राष्ट्रीय एन्टारटीक और सागर अनुसंधान केन्द्र (एन सी ए ओ आर), गोवा द्वारा आयोजित में सहभागिता किया। यह खोज यात्रा पोर्ट ल्यूइस मरिशियस से 21 जनवरी, 2011 आइसग्रास जहाज ओ आर वी सागर निधी बोर्ड पर 60° एस. अक्षांशक, याम्योत्तर रेखा 57°, 30' ई के साथ 8 अप्रैल,



Shri S.S. Shaju in Southern Ocean

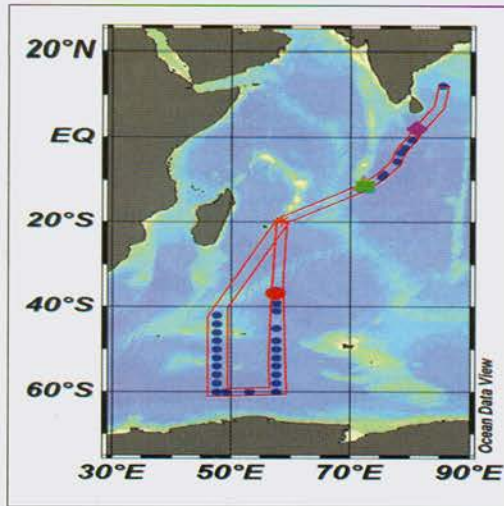
2011 को चेन्नई में समाप्त हुई। यह खोज यात्रा मुख्यतः बहु विषय अध्ययन के लिए और दक्षिण सागर के भारतीय सेक्टर के उपोष्णिय से ध्रुवीय क्षेत्र नमूना एकत्रण के लिए किया गया। इस खोज यात्रा का के मा प्रौ सं का उद्देश्य दक्षिण सागर के दक्षिण सेक्टर के जैव प्रकाशीय विशेषताओं का अध्ययन करना है। इस परियोजना का प्रारंभ डॉ. बी. मीनाकुमारी (प्र अ) एवं डॉ. पी. मुहम्मद अशराफ





Muhammed Ashraf (Co-PI). The scientific expedition team included 17 members from various institutions such as CIFT, Cochin; NCAOR, Goa; CMFRI, Cochin; Federal University of Rio Grande, Brazil; JNU, Delhi; IISc, Bangalore; BIT, Ranchi and Goa University, Goa.

During the expedition, water samples were collected and used for analyzing Inherent Optical Properties like Coloured Dissolved Organic Matter, Phytoplankton and Non Algal Particle absorptions, Total Suspended Matter absorbance, nutrients, salinity, plankton diversity and trace metals at 23 stations in six different depths (0 m, 30 m, 50 m, 75 m, 100 m and DCM). Time series samplings were carried out in two stations viz. one at Polar Front and other at Sub-tropical Antarctic Front in every 3 hrs interval for 3 days. These data will be used for ocean colour monitoring, the *in situ* estimation of primary production, validation of satellite derived primary production estimation and to study the effect of climatic change on the primary production in Southern Ocean.



Stations covered during 5<sup>th</sup> Southern Ocean Expedition



Sediment coring operation in progress

(स-प्र अ) द्वारा किया गया। इस वैज्ञानिक खोज यात्रा में भिन्न संस्थानों जैसे के मा प्रौ सं, कोचिन, एन सी ए ओ आर, गोवा, के स मा अनु सं, कोचिन, फेडरल यूनिवर्सिटी ऑफ रिओ ग्रांडा, ब्रजील, ज ने वि, दिल्ली, भा वि सं, बेंगलूरू, बि प्रौ सं, रंची और गोवा विश्वविद्यालय आदि के 17 सदस्य शामिल थे।

खोज यात्रा के दौरान, जल नमूने एकत्रित किए गए और रंग विलीन, जैव पदार्थ पादप्लवक और अशैवल अंश अवचूषण, कुल पिंड पदार्थ, अवचूषण, कुल पिंड पदार्थ अवचूषण, पोषक, लवणता, प्लवक विविधता जैसे सहज प्रकाशीय गुणों और 23 केन्द्र में छः भिन्न गहराई (0 मी, 30 मी, 50 मी, 75 मी, 100 मी और डी सी एम) लेश धातुओं के विश्लेषण के लिए प्रयुक्त किया गया। दो केन्द्रों में एक ध्रुवीय क्षेत्र एवं दूसरा उपोष्णीय एन्टरक्टिक क्षेत्र में प्रति 3 घंटों के अंतराल के लिए 3 दिन समय श्रृंखला प्रतिचयन किया गया। इस आँकड़े सागर रंग मानीटरन, प्राथमिक उत्पादन का स्वस्थाने आकलन, उपग्रह उत्पन्न प्राथमिक उत्पादन आकलन का मान्यकरण और दक्षिण सागर में प्राथमिक उत्पादन पर पर्यावरण परिवर्तन प्रभाव के अध्ययन के लिए प्रयुक्त किया जा सकता है।

## Surveys Conducted

The following surveys were conducted by the Scientists and Officers of the Institute during the quarter:

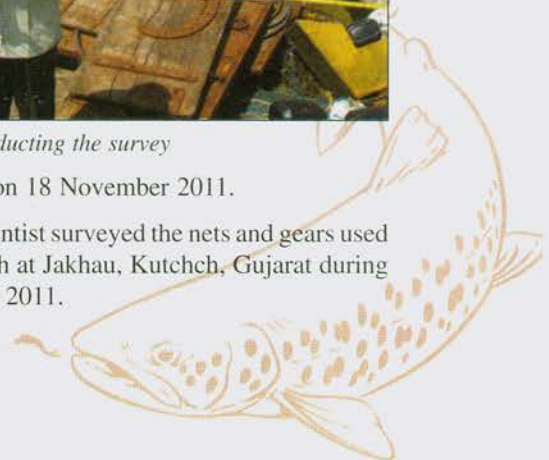
- i. Dr. Saly N. Thomas and Dr. George Ninan, Senior Scientists undertook a preparatory survey at Lanja, Ratnagiri, Maharashtra to consolidate the requirements for optimizing the harvest and post harvest technology for the reservoirs at Lanja during 12-14 October 2011.
- ii. Dr. G. Rajeswari, Senior Scientist and Shri C. Sriharibabu, Tech. Officer (T6) conducted a survey on fishing gears at Machilipatnam in Andhra Pradesh during 17-19 October 2011.
- iii. Dr. G. Rajeswari, Dr. R. Raghu Prakash, Senior Scientists, Shri M.S. Kumar, Tech. Officer (T7-8) and Shri C. Sriharibabu, Tech. Officer (T6) conducted a survey on reservoir fishing gears in and around Thandava reservoir villages viz. Golugonda, Jogumpeta, Ammapeta, Gadampalem and Pappusettipalem in



Shri C. Sriharibabu conducting the survey

Andhra Pradesh on 18 November 2011.

- iv. Dr. A.K. Jha, Scientist surveyed the nets and gears used for jelly fish catch at Jakhau, Kutchch, Gujarat during 14-16 November 2011.





## Cruise Undertaken

Dr. U. Sreedhar, Senior Scientist, Visakhapatnam Research Centre of CIFT participated in the Cruise No. 291 of FORV *Sagar Sampada* as Chief Scientist. The Cruise was exclusively programmed to undertake studies on "Stock assessment and biology of deep-water demersal resources and collection of environmental data along the east coast of Indian EEZ". The cruise commenced from Chennai on 22 October and concluded at Chennai on 10 November. Gear parameter studies were conducted using the Simrad ITI system. Two hauls were conducted one at 100 m depth and the next at 1000 m depth. The study clearly confirms that the vertical opening of the trawl is greatly affected at deeper waters with the same parameters used at 100 m depth. The equations of the buoyancy of the head rope and weights for the foot rope have to be recalculated for deeper waters. The

continental slope region from 100 to 1050 m depths of east coast of Indian EEZ was studied for the stock assessment studies of deep-sea fishes. A total of 17 fishing operations were done with a CPUE of 112.9 kg. Teleost fishes (77%) were the dominant group followed by Elasmobranches (14%). The groups which contributed were Chimaera (3%), Molluscs (3%), Crustacean (2%) and Echinoderms (1%). A total of 74 species of deep-sea resources were identified during this cruise. The catches were mainly dominated by *Lamprogrammus* sp. (774.5 kg) followed by Rays (170 kg) and *Gavialiceps* sp. (111.7 kg). Seven species of cephalopods (5 squids and 2 octopods) were recorded during the survey. The identified squids are *Ancistrocheirus lerueuri*, *Ommastrephes* sp., *Vampyroteuthis* sp. and octopods as *Cistopus indicus*.

## Dr. Kasturirangan Visits CIFT / डॉ. कस्तूरिरंगन का के.मा.प्रौ.सं. दौरा

Dr. K. Kasturirangan, Member (Science), Planning Commission, New Delhi and eminent scientist visited CIFT, Cochin on 7 December 2011. Addressing the scientists of the Institute he stated that the XII Plan Approach paper has been approved and the plan is proposed to be finalized by 31 March 2012. He said that the next decade has been declared as the decade of innovations and there is a need to focus on innovations in fisheries that can be adapted to local environments which are unique, simple and affordable to the fisher population. He emphasized the need to focus on secondary agriculture which has remained largely untapped in the country. Talking about the fisheries sector in specific, he stated that the over-exploitation of fishery resources, climate change, impact of oil spills on marine environment etc. are going to be significant issues. He stressed that the larger economic impact of technologies has to be looked at closely to measure the socio-economic dimension of the technologies. Dr. Vandana Dwivedi, Joint Advisor, Planning

डॉ. के. कस्तूरिरंगन, सदस्य (विज्ञान), योजना आयोग, नई दिल्ली और प्रतिष्ठित वैज्ञानिक 7 दिसंबर, 2011 को के मा प्रौ सं, कोचिन का दौरा किए। संस्थान के वैज्ञानिकों को सम्बोधित करते हुए वे कहे कि XXII योजना प्रस्ताव प्रपत्र अनुमोदित किया गया और इस योजना को 31 मार्च, 2012 को अंतिम रूप दिया जाएगा। उन्होंने कहा कि अगले दशक को नवोन्वेषी वर्ष के रूप में घोषित किया जाएगा और इसलिए मात्स्यिकी में नवोन्वेषी पर ध्यान दिया जाने की आवश्यकता है जिसे स्थानीय पर्यावरण में अपनाया जा सके और मछुवारों के लिए बेजोड, सरल एवं किफायती हो। उनका जोर अनुपूरक कृषि पर ध्यान देने की आवश्यकता पर था जिसे देश में बड़ी मात्रा में काम में नहीं लाया गया है। मात्स्यिकी सेक्टर के बारे में विशेष रूप से बात करते हुए उन्होंने कहा कि मत्स्यन संपदा का अति शोषण, पर्यावरण परिवर्तन, समुद्री पर्यावरण आदि पर तेल बिखरने का प्रभाव आदि विशेष मामले हो सकते है। उन्होंने जोर दिया कि प्रौद्योगिकियों के सामाजिक - आर्थिक के माप के लिए प्रौद्योगिकी के बड़े आर्थिक प्रभाव को ध्यानपूर्वक देखा जाना चाहिए।



Dr. T.K. Srinivasa Gopal, Dr. K. Kasturirangan and Dr. Vandana Dwivedi



On the Cruise with Fishing Technology staff



Commission and Dr. T.K. Srinivasa Gopal, Director, CIFT were also present. Earlier Dr. Kasturirangan visited the laboratories of the Institute and interacted with the scientists about the on-going research work.

Dr. Kasturirangan also participated in a short cruise in the departmental vessel M.V. Matsyakumari-II and discussed with the scientists and staff of the vessel regarding the research projects undertaken by the Fishing Technology Division.

## Celebrations / समारोह

### Vigilance Awareness Week

The Institute celebrated Vigilance Awareness week during 31 October – 5 November 2011. On 31 October the staff of the Institute assembled together and took Vigilance Awareness Pledge.

### Quami Ekta Week

The Institute celebrated Quami Ekta Week during 19-23 November, 2011. On 23 November the staff of the Institute assembled together and took National Integration Pledge.

## Workshop in Official Language / राजभाषा में कार्यशाला

A Workshop in Official language on UNICODE was conducted at CIFT, Cochin on 9 November 2011 for the benefit of administrative personnel of the Institute. Shri V.T. Santhosh, Technical Director, National Informatics Centre, Cochin introduced the concept of UNICODE to the participants.

At Mumbai Research Centre, Hindi Workshops were conducted on 28 November, 2011 and 30 December, 2011. Smt. Susmita Bhattacharya, AD (Imp.), Regional Implementation Office (W), Navi Mumbai was the faculty.



Shri V.T. Santhosh speaking on UNICODE. Also seen are Dr. K. Sobha and Shri P. Shankar, Tech. Officers

## Radio Talk

During the quarter **Shri M.S. Kumar**, Tech. Officer (T7-8) delivered a radio talk on “How fish as food useful

डॉ. वन्दाना द्विवेदी, संयुक्त सलाहकर, योजना आयोग और डॉ. टी.के. श्रीनिवास गोपाल, निदेशक, के मा प्रौ सं भी उपस्थित थे। इस से पहले वे संस्थान के प्रयोगशालाओं का दौरा किए और इस समय चल रहे अनुसंधान कार्य के बारे में वैज्ञानिकों से विचार-विमर्श किए।

डॉ. कस्तुरीरंगन एम.वी. मत्स्यकुमारी-II विभागीय जहाज की सवारी और एक छोटी नौ यात्रा में भी भाग लिए और वैज्ञानिकों एवं जहाज के कर्मचारी सदस्यों से मत्स्यन प्रौद्योगिकी प्रभाग द्वारा लिए गए अनुसंधान परियोजनाओं के संबंध में बात किए।

### सतर्कता अभिज्ञा सप्ताह

यह संस्थान 31 अक्टूबर - 5 नवंबर, 2011 के दौरान सतर्कता अभिज्ञा सप्ताह मनाया। 31 अक्टूबर को संस्थान के कर्मचारी एक जगह एकत्रित हुए और सतर्कता अभिज्ञा प्रतिज्ञा लिए।

### क्रामी एकता सप्ताह

यह संस्थान 19-23 नवंबर 2011 के दौरान क्रामी एकता सप्ताह मनाया। 23 नवंबर को कर्मचारी सदस्य एक जगह एकत्रित हुए और राष्ट्रीय एकता प्रतिज्ञा लिए।

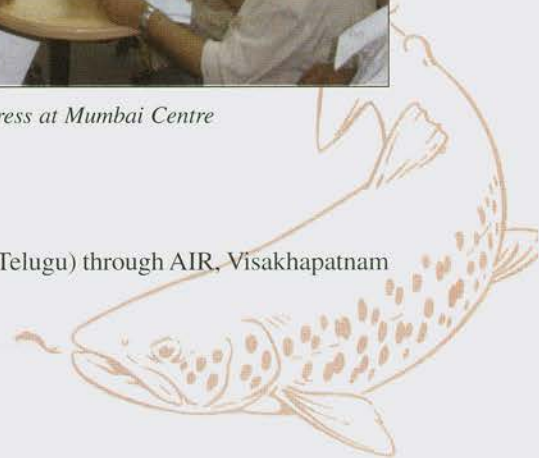
के मा प्रौ सं, कोचिन में यूनिकोड पर राजभाषा में एक कार्यशाला 9 नवंबर 2011 को संस्थान के प्रशासनिक कार्मियों के फायदे के लिए संचालित की गई। श्री वी.टी. संतोष, तकनीकी निदेशक, राष्ट्रीय सूचना केन्द्र, कोचिन सहभागियों को यूनिकोड की धारण का परिचय कराया।

मुंबई अनुसंधान केन्द्र में 28 नवंबर, 2011 और 30 दिसंबर, 2011 को हिन्दी कार्यशालाएं संचालित किए गए। श्रीमती सुष्मिता भट्टाचार्य, स.नि. (का), क्षेत्रीय कार्यान्वयन कार्यालय (पश्चिम), नवी मुंबई संकाय थी।



Hindi Workshop in progress at Mumbai Centre

for human health” (In Telugu) through AIR, Visakhapatnam on 6 December 2011.





## Awards and Honours / पुरस्कार एवं सम्मान

**Dr. T.K. Srinivasa Gopal**, Director has been conferred with Fellow of the Academy of Science, Engineering and Technology (F.ASET) for outstanding contributions in the field of Fish Processing Technology during the 9<sup>th</sup> Indian Fisheries Forum held at Chennai on 19 December 2011. The Fellowship was conferred to him by Dr. S.N. Dwivedi, President, Academy of Science, Engineering and Technology (ASET), Bhopal.

The Best Poster Award for the theme - Fishing Resources, Recreational Fishing and Sustainable Management at the 9<sup>th</sup> Indian Fisheries Forum was awarded to the poster presentation titled, "Marine recreational fishing in Andamans, India" by **Saly N. Thomas, P. Pravin and M.P. Remesan**.

The Best Poster Award for the theme - Harvest and Post Harvest Technology at the 9<sup>th</sup> Indian Fisheries Forum was awarded to the poster presentation titled, "Effect of pulsed light on shelf life of Pearls spot (*Etroplus suratensis*) stored at 2+1°C" by **T.R. Ananthanarayanan, C.T. Nithin, R. Yathavamoorthi, Toms C. Joseph, J. Bindu and T.K. Srinivasa Gopal**.

**Dr. George Ninan**, Senior Scientist, Fish Processing Division, CIFT, Cochin received the A.V. Jones Young Scientist Award from His Grace the Most Rev. Dr. Joseph Mar Thoma, Metropolitan of the Mar Thoma Syrian Church of Malabar at a function held at Cochin on 22 December 2011. The award was instituted by the Mar Thoma Syrian Church for



*Dr. T.K. Srinivasa Gopal receiving the Fellowship*



*Dr. Saly N. Thomas with the award winning poster*



*Shri Ananthanarayanan and Shri Yathavamoorthi receiving the award*



*Dr. George Ninan receiving the award*

डॉ. टी.के. श्रीनिवास गोपाल, निदेशक को 19 दिसंबर 2011 को चेन्नई में संपन्न नवीं भारतीय मात्स्यिकी फोरम के दौरान, मत्स्य संसाधन प्रौद्योगिकी के क्षेत्र में उत्कृष्ट योगदान के लिए विज्ञान, अभियांत्रिकी एवं प्रौद्योगिकी अकादमी (एफ. ए. एस. ई. टी.) की अधिसदस्यता प्रदत्त की गई। यह अधिसदस्यता उन्हें डॉ. एस.एन. द्विवेदी, अध्यक्ष, विज्ञान, अभियांत्रिकी एवं प्रौद्योगिकी अकादमी (ए. एस. ई. टी.), भोपाल द्वारा प्रदत्त की गई।

विषय के लिए उत्तम पोस्टर पुरस्कार - मत्स्यन संपदा, मनोरंजन मत्स्यन एवं सतत प्रबंधन नवीं भारतीय मात्स्यिकी फोरम में **साली एन. थॉमस, पी. प्रवीन एवं एम.पी. रमेशन** द्वारा तैयार 'अंडमान, भारत में समुद्री मनोरंजन मत्स्यन' शीर्षक पोस्टर प्रस्तुतिकरण को पुरस्कृत किया गया।

प्रग्रहण एवं पश्च प्रग्रहण प्रौद्योगिकी विषय के लिए उत्तम पोस्टर पुरस्कार - नवीं भारतीय मात्स्यिकी फोरम में **टी.आर. अनंतनारायण, सी.टी. नितिन, आर. याथवमूर्ति, टॉमस सी. जोसफ, जे. बिन्दू और टी.के. श्रीनिवास गोपाल** द्वारा तैयार '2+1<sup>0</sup> सी में संग्रहित करीमीन (*इट्रोप्लस सुराटेन्सीस*) की निधानी आयु पर स्पन्दित प्रकाश का प्रभाव' शीर्षक पोस्टर प्रस्तुतिकरण को पुरस्कृत किया गया।

डॉ. जॉर्ज नैनान, वरिष्ठ वैज्ञानिक, मत्स्य संसाधन प्रभाग, के मा प्रौ सं, कोचिन को कोचिन में 22 दिसंबर 2011 को संपन्न एक कार्यक्रम में मरथोमा सीरियन चर्च ऑफ मलाबर के कृपामूर्ति परम आदरणीय डॉ. जोसफ मरथोमा, मेट्रोपोलिटन से ए.वी. जोन्स युवा वैज्ञानिक पुरस्कार प्राप्त किया। यह पुरस्कार विज्ञान एवं



achievements in the field of Science and Technology. This year the other awardees were Dr. P.K. Warriar, Kottakal Arya Vaidya Sala, Dr. Mammen Chandy, Director, Tata Medical Centre, Mumbai and Dr. Samuel Varghese, Project Manager, NEST Group, Cochin.

प्रौद्योगिकी के क्षेत्र में उपलब्धियों के लिए मरथोमा सीरियन चर्च द्वारा स्थापित है। इस वर्ष के अन्य पुरस्कृत हैं डॉ. पी.के. वारीयर, कोट्टकल आर्य वैद्यशाला, डॉ. माम्मेन चाण्डी, निदेशक, टाटा चिकित्सा केन्द्र, मुम्बई और डॉ. समूएल वर्गीस, परियोजना प्रबंधक, नेस्ट समूह, कोचिन।

## Post Graduate Studies / स्नातकोत्तर अध्ययन

### Ph. D. Awarded

**Smt. K. K. Asha**, Scientist, Biochemistry & Nutrition Division, CIFT, Cochin was awarded Ph. D. degree of Cochin University of Science and Technology, Cochin, for her thesis entitled, "Biochemical studies on protective effect of taurine in experimentally-induced fulminant hepatic failure in rats". She worked under the guidance of Dr. K. Devadasan, former Director, CIFT, Cochin.



### पीएच.डी. प्राप्ति

**श्रीमती के.के. आशा**, वैज्ञानिक, जैव रसायन एवं पोषण, के मा प्रौ सं. कोचिन को उनके 'चूहों में फूलमीनेट हेप्टीक विफल प्रयोगिक रूप में प्रेरित टौरिन का संरक्षी प्रभाव पर जैव रसायनिक अध्ययन' शीर्षक शोध-प्रबंध को कोचिन विज्ञान एवं प्रौद्योगिकी, विश्वविद्यालय की पीएच.डी. उपाधि प्रदान की गई। वे डॉ. के. देवदासन, पूर्व निदेशक, के मा प्रौ सं, कोचिन के मार्गदर्शन के अधीन यह कार्य की हैं।

## Invited Talks / आमंत्रित भाषण

The following invited talks were held at CIFT, Cochin during the quarter:

1. **Shri Vishnu K. Joshi**, Consultant, LIMS, Bangalore – Implementation of Laboratory Integration Management System (31 October)
2. **Dr. Ambedkar E. Eknath**, Director General, Network of Aquaculture Centres in Asia-Pacific (NACA), Bangkok, Thailand – Role of NACA in aquaculture development and aquatic resource management (26 November)
3. **Mr. Ken Gossen**, Executive Director, Food Processing Development Centre, Alberta, Canada – Business incubation – Canadian approach (8 December)
4. **Dr. P.C. Sarkar**, Senior Scientist, IINRG, Ranchi – Applications of natural resins and gums (16 December)
5. **Smt. S. Sindhu**, Chief Dietitian, Medical Trust Hospital, Cochin – Health through better nutrition and disease prevention (17 December)

इस तिमाही के दौरान के मा प्रौ सं, कोचिन में निम्नलिखित आमंत्रित भाषण संपन्न हुए।

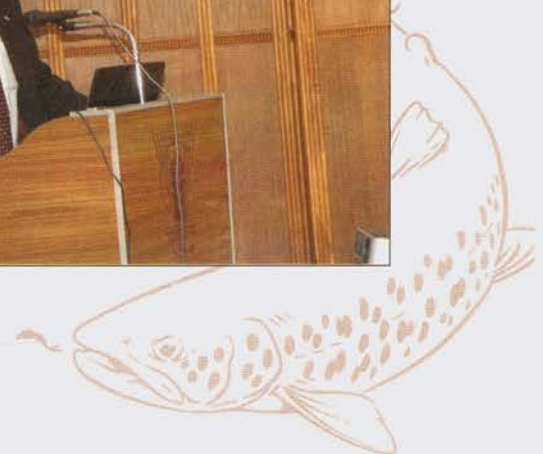
1. **श्री विष्णु के. जोषी**, परामर्शदाता, एल आई एम एस, बेंगलुरु - प्रयोगशाला एकीकरण प्रबंधन प्रणाली का कार्यान्वयन (31 अक्टूबर)
2. **डॉ. अम्बेडकर ई. एकनाथ**, महानिदेशक, एशिया-प्रशान्त में जलकृषि केन्द्रों का नेटवर्क (एन ए सी ए), बेकॉक, थाइलैंड - जलकृषि विकास एवं जलीय संपदा प्रबंधन में एन ए सी ए की भूमिका (26 नवंबर)
3. **श्री केन गोसेन**, कार्यकारी निदेशक, खाद्य संसाधन विकास केन्द्र, एल्बर्टा, कनाडा - व्यापार उद्भवन कनाडी पहल (8 दिसंबर)
4. **डॉ. पी.सी. सरकार**, वरिष्ठ वैज्ञानिक, आई आई एन आर जी, रंची - प्रकृतिक रिसीन एवं गम्स का अनुप्रयोग (16 दिसंबर)
5. **श्रीमती एस. सिंदु**, मुख्य आहार-विज्ञानी, मेडिकल ट्रस्ट हस्पताल, कोचिन - उत्तम पोषण द्वारा तन्दुरुस्ती एवं रोग निवारण (17 दिसंबर)



Dr. Ambedkar E. Eknath



Mr. Ken Gossen





## Recreation Club Charity Box Opened / मनोरंजन क्लब की दान पेटी खोली गई

The Charity Box maintained by CIFT Recreation Club at the Head Quarters was opened during the quarter. An amount of ₹ 8027/- was realized. Dr. T.K. Srinivasa Gopal, Patron, Recreation Club and Director, CIFT handed over the medicines worth ₹ 8027/- to the Government Hospital authorities in presence of the Executive Committee members of the Club.



Dr. T.K. Srinivasa Gopal handing over the medicines to Dr. Usha Varma, Oncologist

इस तिमाही के दौरान मुख्यालय में के मा प्रौ सं मनोरंजन क्लब द्वारा अनुरक्षित दान पेटी को खोला गया। ₹ 8027/- की राशि प्राप्त की गई। डॉ. टी.के. श्रीनिवास गोपाल, संरक्षक, मनोरंजन क्लब एवं निदेशक, के मा प्रौ सं क्लब के कार्यकारी सदस्यों की उपस्थिति में सरकारी हस्पताल प्राधिकारियों को ₹ 8027/- की दवायाँ सौंपे।

## Important priced publications available from CIFT

1. Improved trawls developed at CIFT (₹ 50/-)
2. Biochemical composition of Indian food fishes (₹100/-)
3. 'Kadalekum Kanivukal' (Bounties of the sea) (Hindi) (₹ 75/-)
4. Laboratory Manual - Enzyme linked immunosorbent (ELISA) for Chloramphenicol residue in shrimp (₹ 50/-)
5. Manual - PCR technique for detection of white spot syndrome virus (₹ 50/-)
6. Spl. Bulletin - 11 Synthetic fish netting yarns (₹ 25/-)
7. Spl. Bulletin - 12 CIFT-TED for turtle-safe trawl fisheries (₹ 30/-)
8. Spl. Bulletin - 12 CIFT - TED for turtle-safe trawl fisheries (Tamil) (₹ 50/-)
9. Spl. Bulletin - 12 CIFT - TED for turtle-safe trawl fisheries (Telugu) (₹ 50/-)
10. Fish canning - Principles and practices (₹ 125/-)
11. Laboratory Manual on Microbiological examination of seafood (₹ 90/-)
12. Spl. Bulletin - 13 - Rubber wood for marine applications (₹ 40/-)
13. Value added products from low priced fish (Malayalam) (₹ 50/-)
14. The seafood canning industry in India (Monograph) (₹ 35/-)
15. Gillnets in marine fisheries of India (Monograph) (₹ 100/-)
16. Manual of biochemical methods for determining stress and disease status in crustaceans (₹ 90/-)
17. Electronic Instrumentation Technology developed by CIFT (₹ 60/-)
18. Immunological and metabolic alterations during infection and stress in Crustacea (₹ 60/-)
19. Responsible fishing contribution of CIFT (₹ 70/-)
20. Fish dishes for healthy living (₹ 75/-)
21. Seafood packaging (₹ 65/-)
22. Sensors and measurement systems for environmental, marine, fisheries and agricultural applications (₹ 180/-)
23. Stake nets of Kerala (₹ 40/-)
24. Fishtoons (Hindi) (₹ 80/-)
25. Seafood quality assurance (₹ 120/-)
26. Community fish smoking kilns (₹ 40/-)
27. HACCP concepts in seafood industry (₹ 100/-)
28. Food safety guidelines for common food items (₹ 50/-)
29. Fishing traps of Assam (₹ 300/-)
30. Handbook of fishing technology (₹ 500/-)
31. Inland fisheries gears and methods of northern Kerala (₹ 150/-)
32. Modern analytical techniques (₹ 100/-)
33. Semi pelagic trawl system - An eco-friendly alternative to bottom trawling for small scale mechanized sector (₹ 50/-)

## Personnel News

### Participation in Seminars/Symposia/Workshops etc.

- **Dr. T.K. Srinivasa Gopal**, Director – CAC Meeting on Post Harvest Technology, New Delhi (22 October)
- **Dr. T.K. Srinivasa Gopal**, Director – II<sup>nd</sup> Indian Chitin and Chitosan Society Symposium - 2011, University of Hyderabad (5 December). Dr. Srinivasa Gopal also
- gave a Key Note address on “Applications of chitin and chitosan – An overview” in the Symposium.
- **Dr. T.K. Srinivasa Gopal**, Director **Dr. Leela Edwin**, HOD, FT and **Dr. T.V. Sankar**, HOD, QAM - 9<sup>th</sup> Indian Fisheries Forum on the theme 'Renaissance in fishery:





Outlook and strategies', Chennai (19-23 December). Dr. Srinivasa Gopal chaired the Session on Harvest and Post Harvest Technology while Dr. Leela Edwin and Dr. T.V. Sankar Co-chaired.

- **Dr. T.K. Srinivasa Gopal**, Director, **Dr. Leela Edwin**, HOD, FT and **Dr. C.N. Ravishankar**, HOD, FP - 'Innovations 4 Industry' – Crop Science Meet, NAARM, Hyderabad (19 November)
- **Dr. T.K. Srinivasa Gopal**, Director, **Dr. R. Chakrabarti**, SIC, Mumbai, **Dr. C.O. Mohan** and **Dr. S. Vishnuvinayagam**, Scientists – Meeting for setting up of the processing unit in the campus, Hindustan Agro Limited, Anu Sakthi Nagar, Maharashtra (15 November)



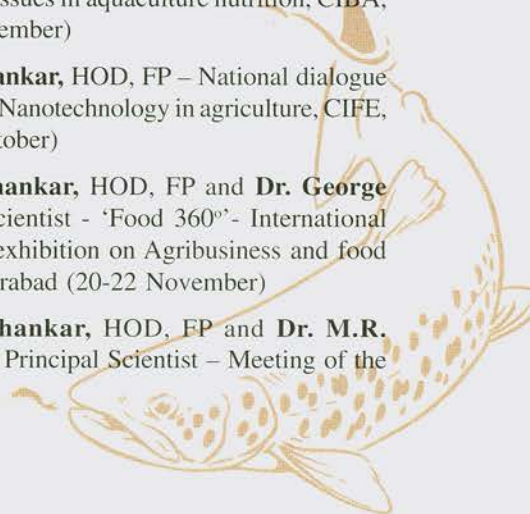
Dr. T.K. Srinivasa Gopal and the team at Hindustan Agro Ltd.

- **Dr. T.K. Srinivasa Gopal**, Director, **Dr. R. Chakrabarti**, SIC, Mumbai and **Dr. C.O. Mohan** Scientist – 3<sup>rd</sup> National R&D Workshop in Food processing sector, Mumbai (17 November)
- **Dr. T.K. Srinivasa Gopal**, Director, **Dr. J. Bindu**, Senior Scientist and **Shri R. Yathavamoorthy**, Research Associate – International symposium on Recent trends in processing and safety of specialty and operational foods, DFRL, Mysore (23-25 November). Dr. Srinivasa Gopal presented an Invited paper on "Development of value added fish and fishery products for defence purpose". Dr. Bindu and Shri Yathava-

moorthy made the following Poster presentations:

- i. Ready to serve mussel biriyani in High Impact Polypropylene (HIP) containers by J. Bindu, C.N. Ravishankar, C.K. Kamalakanth and T.K. Srinivasa Gopal
- ii. Shelf life evaluation and nutritional composition of masmin powder from skipjack tuna (*Katsuwonus pelamis*) by R. Yathavamoorthy, J. Bindu, Suseela Mathew and T.K. Srinivasa Gopal

- **Dr. P.T. Lakshmanan**, HOD, B&N – Brain storming session on Health foods, IASRI, New Delhi (17 November)
- **Dr. Leela Edwin**, HOD, FT – Discussion meeting on Innovation incubation platform proposed by IP&TM Division, ICAR, New Delhi (9-10 November)
- **Dr. Leela Edwin**, HOD, FT – Meeting of the Executive Committee of National Institute of Fisheries Administration and Management, Thiruvananthapuram (13 November)
- **Dr. K.V. Lalitha**, HOD, MFB – State level workshop on Biological Techniques, MA College, Kothamangalam (14-16 December). Dr. Lalitha delivered an invited talk on 'Molecular methods for detection of food-borne pathogens'.
- **Dr. S. Balasubramaniam**, HOD, EIS, **Dr. Nikita Gopal**, Senior Scientist, **Smt. P. Jeyanthi** and **Shri V. Chandrasekar**, Scientists – Summing up Workshop of the DAHD&F project on An assessment of literacy, income and health status of fishers in India, CMFRI, Cochin (17-18 November)
- **Dr. T.V. Sankar**, HOD, QAM – Workshop on Educational framework for analytical personnel, New Delhi (3-4 November)
- **Dr. T.V. Sankar**, HOD, QAM – Institute Management Committee Meeting, CIBA, Chennai (18 November)
- **Dr. T.V. Sankar**, HOD, QAM – Brainstorming session on the Network project 'Fish Health', CIBA, Chennai (12 December)
- **Dr. T.V. Sankar**, HOD, QAM – Brainstorming session on Researchable issues in aquaculture nutrition, CIBA, Chennai (14 December)
- **Dr. C.N. Ravishankar**, HOD, FP – National dialogue on Application of Nanotechnology in agriculture, CIFE, Mumbai (8-9 October)
- **Dr. C.N. Ravishankar**, HOD, FP and **Dr. George Ninan**, Senior Scientist - 'Food 360°'- International conference cum exhibition on Agribusiness and food processing, Hyderabad (20-22 November)
- **Dr. C.N. Ravishankar**, HOD, FP and **Dr. M.R. Boopendranath**, Principal Scientist – Meeting of the







nominated scientists of National Agricultural Research Systems (NARS) with Hon'ble Union Minister and deliberations on the state of Indian fisheries and visioning for XII Plan and beyond, New Delhi (8 November)

- **Dr. C.N. Ravishankar**, HOD, FP and **Dr. J. Charles Jeeva**, Scientist, Senior Scale – International conference on Innovative approaches for agricultural knowledge management: Global extension experiences, New Delhi (9-12 November). Dr. Ravishankar also presented an invited paper on 'Business incubation – Prospects in Indian fisheries'. Dr. J. Charles Jeeva presented the paper entitled, 'Client-led-technology generation: A study among the research system in fisheries' by J. Charles Jeeva, J. Vasanthakumar and S. Balasubramaniam.
- **Dr. R. Badonia**, SIC, Veraval – Meeting of the 12<sup>th</sup> Five year plan formulation of Gujarat Fisheries Department, Gandhi Nagar (15 October)
- **Dr. M.M. Prasad**, SIC, Visakhapatnam – Meeting for approving seafood processing plants for export under the MPEDA Logo scheme, Visakhapatnam (4 November)
- **Dr. M.M. Prasad**, SIC, Visakhapatnam, **Shri M.S. Kumar**, Tech. Officer (T7-8) and **Shri P. Radhakrishna**, Tech. Asst. (T4) – 6<sup>th</sup> National conference of Krishi Vigyan Kendras, JNKVV, Jabalpur (3-5 December). Dr. M.M. Prasad also delivered a talk on 'Zonal Technology Management Cell and Business Planning and Development Unit, South Zone for 2011 – An appraisal'.



Dr. M.M. Prasad delivering the talk

- **Dr. M.M. Prasad**, SIC, Visakhapatnam, **Dr. G. Rajeswari**, **Dr. R. Raghu Prakash**, Senior Scientists, **Dr. L.N. Murthy**, Scientist, Senior Scale, **Smt. P. Jeyanthi**, Scientist and **Shri M.S. Kumar**, Tech. Officer (T7-8) – International symposium on Ecosystem approach to fisheries in the Bay of Bengal large marine ecosystems, Chennai (21 December)

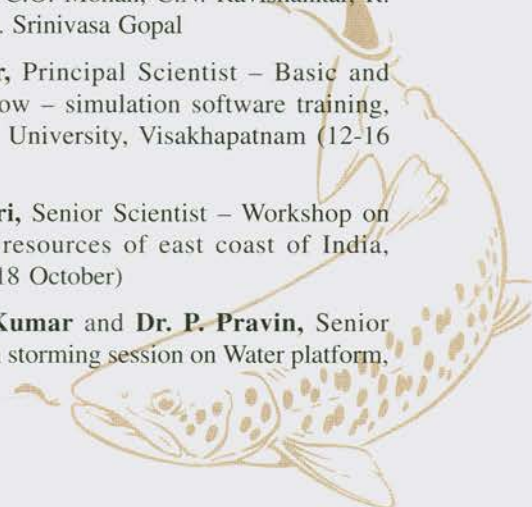
- **Dr. M.M. Prasad**, SIC, Visakhapatnam, **Dr. T.K. Thankappan**, Principal Scientist **Dr. G. Rajeswari**, **Dr. Saly N. Thomas**, **Dr. R. Raghu Prakash**, **Dr. Femeena Hassan**, **Dr. V. Geethalakshmi**, **Dr. S. Ashaletha**, **Dr. J. Bindu**, **Dr. U. Sreedhar**, **Dr. G.K. Sivaraman**, Senior Scientists, **Shri V. Radhakrishnan Nair**, **Dr. L.N. Murthy**, **Dr. K.K. Asha**, Scientists, Senior Scale, **Smt. P. Jeyanthi**, **Dr. P.K. Binsi**, **Shri C.G. Joshy**, Scientists, **Shri M.S. Kumar**, Tech. Officer (T7-8), **Shri R. Yathavamoorthy** and **Shri T.R. Ananthanarayanan**, Research Fellows – 9<sup>th</sup> Indian Fisheries Forum on the theme 'Renaissance in fishery: Outlook and strategies', Chennai (19-23 December). The following papers from CIPT were also presented in the Symposium:

1. Marine recreational fishing in Andamans, India – Saly N. Thomas, P. Pravin and M.P. Remesan (The paper received the Best Poster Award under the theme Fishing Resources, Recreational Fishing and Sustainable Management)
2. Effect of pulsed light on shelf life of Pearlsport (*Etroplus suratensis*) stored at 2+1°C – T.R. Ananthanarayanan, C.T. Nithin, R. Yathavamoorthi, Toms C. Joseph, J. Bindu and T.K. Srinivasa Gopal (The paper received the Best Poster Award under the category Harvest and Post Harvest Technology)
3. Scaling up of quality of dried anchovies, *Stolephorus indicus* with a eugenol-based product – M.M. Prasad and T.V. Sankar
4. Studies on nutritional and biochemical quality evaluation of scampi *Macrobrachium rosenbergii*, a freshwater prawn of Visakhapatnam riverine systems - L.N. Murthy, B. Madhusudana Rao and M.M. Prasad
5. Nutritional composition and quality evaluation of male and female black tiger shrimp, *Penaeus monodon* - L.N. Murthy, B. Madhusudana Rao and M.M. Prasad
6. Shelf life of chill stored *Pangasiodon hypophthalmus* fish fillets: Effect of vacuum and poly phosphate - B. Madhusudana Rao, L.N. Murthy and M.M. Prasad
7. Jelly fish: An aquatic food product – L.N. Murthy and M.M. Prasad
8. Evaluation of nutritive value of bivalve mollusks and crustaceans - B. Madhusudana Rao, L.N. Murthy and M.M. Prasad
9. Standardization of processing and packaging technology and future prospects of Bombay duck – L.N. Murthy
10. An assessment of seafood processing waste from Gujarat – L.N. Murthy
11. Study on quality upgradation of salt-cured lesser sardines, *Sardinella gibbosa* with chitosan – a product





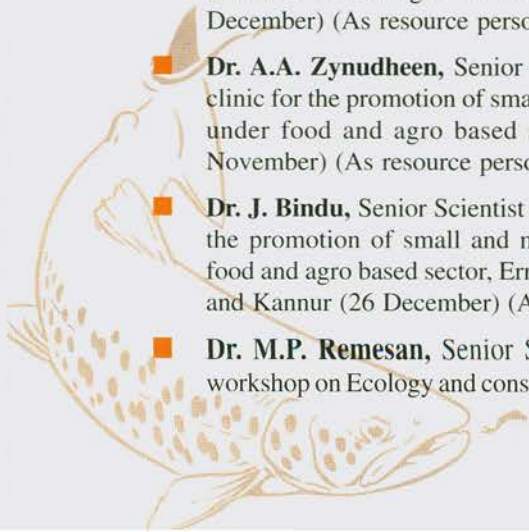
- of prawn shell waste – L.N. Murthy, B. Madhusudana Rao and M.M. Prasad
12. Monitoring of trace metals accumulation and biochemical composition in *Squilla (Oratosquilla nepa)* off Saurashtra coast – L.N. Murthy, C.O. Mohan and R. Badonia
  13. Quality characteristics of smoke cured freshwater shellfish sold in major markets of western Odisha – M.M. Prasad and T.V. Sankar
  14. Size selectivity of diamond and square mesh codends for large head cutlass fish (*Trichiurus lepturus*) (Linnaeus, 1758) off Visakhapatnam coast – G. Rajeswari, R. Raghu Prakash and U. Sreedhar
  15. Heavy metal content and biochemical evaluation of fish meal and squid meal samples from Gujarat region – L.N. Murthy, C.O. Mohan and R. Badonia
  16. Quality assessment of chitin and glucosamine hydrochloride prepared from aquatic sources – T.K. Thankappan, George Ninan and A.A. Zynudheen
  17. Study of population genetic polymorphism and gene flow rate in *Schizothorax richardsonii* (native) Asaila, Indian Snow trout – G.K. Sivaraman, A. Bharat, S. Ali and P.C. Mahanta
  18. Assessment of population genetic structure and diversity among Indian Snow trout, *Schizothorax richardsonii* - G.K. Sivaraman, Chainika Negi, A. Bharat, S. Ali, K.D. Joshi and P.C. Mahanta
  19. Marketing of Black clam (*Villorita cyprinoides*) in Perumbalam island, Alappuzha district, Kerala – Nikita Gopal, P. Jeyanthi and V. Chandrasekar
  20. Comparison of extruded and conventional bread crumbs coated on fish balls – J. Bindu, C.K. Kamalakanth, C.N. Ravishankar and T.K. Srinivasa Gopal
  21. Physical, chemical and functional properties of gelatin extracted from the skin of Rohu (*Labeo rohita*) and Yellow fin tuna (*Thunnus albacares*) – George Ninan, A.A. Zynudheen, C.G. Joshy and K. Sumna Yousuf
  22. Optimization of process parameters for the production of chitin from prawn shell (*Metapeneus dobsoni*) – C.G. Joshy, A.A. Zynudheen and George Ninan
  23. Socio economic profile of FRP craft fishermen in Nagapattinam, Tamil Nadu: A special focus on poverty and income inequality – P. Jeyanthi, S. Balasubramaniam and J. Charles Jeeva
  24. Preparation and characterization of an edible film based on chitosan and virgin coconut oil – P.K. Binsi, C.N. Ravishankar and T.K. Srinivasa Gopal
  25. A methodological study to generate a 3-D view of medium size reservoir using GIS – A case study – V. Radhakrishnan Nair, P. Pravin and M.N. Reddy
  26. Consumer preference and willingness to pay for value added fish products in Palakkad district of Kerala – V. Geethalakshmi, S. Ashaletha, Daniel Raj and M. Nasser
  27. An estimation of seafood processing waste from Gujarat – V. Geethalakshmi, Nikita Gopal and L.N. Murthy
  28. Studies on biochemical composition and acceptability of pet food from tuna processing waste - R. Yathavamoorthi, J. Bindu, Suseela Mathew and T.K. Srinivasa Gopal
  29. Role of gear selectivity in conservation of fishery resources with special reference to size selectivity of square mesh codends for *Suarida tumbil* (Bloch, 1795) and *Nebea maculate* (Bloch & Schneider, 1801) in Bay of Bengal – R. Raghu Prakash, G. Rajeswari and U. Sreedhar
  30. Role of fishing technology in responsible fishing for sustainable fisheries development and conservation of resources - R. Raghu Prakash, G. Rajeswari and U. Sreedhar
  31. Freshness indicators for Horse Mackerel (*Megalopsis cordyla*) stored under chilled conditions – C.O. Mohan, C.N. Ravishankar, R. Badonia and T.K. Srinivasa Gopal
  32. The protective effect of PUFA on Streptozotocin-induced diabetes in male albino rats – K.K. Asha, Suseela Mathew and P.T. Lakshmanan
  33. Reproductive cycle and maturity stages of *Jonius carutta* (Bloch, 1793) off Visakhapatnam, southeast coast of India – M.S. Kumar, G. Rajeswari and B. Kishore
  34. Food and feeding habits of *Jonius carutta* (Bloch, 1793) off Visakhapatnam, southeast coast of India – M.S. Kumar, G. Rajeswari and B. Kishore
  35. Comparative evaluation of *Lethrinus lentjan* fillets stored in flake ice and gel ice under chilled storage – Femeena Hassan, C.G. Joshy and T.V. Sankar
  36. Quality changes of chitosan edible coated unicorn leather jacket (*Altuterus monoceros*) steaks stored in iced condition – C.O. Mohan, C.N. Ravishankar, R. Badonia and T.K. Srinivasa Gopal
- **Shri M. Nasser**, Principal Scientist – Basic and advanced Shipflow – simulation software training, Indian Maritime University, Visakhapatnam (12-16 December)
  - **Dr. G. Rajeswari**, Senior Scientist – Workshop on Marine fishery resources of east coast of India, Machilipatnam (18 October)
  - **Dr. K. Ashok Kumar** and **Dr. P. Pravin**, Senior Scientists – Brain storming session on Water platform,





NBFGR, Lucknow (17-20 October)

- **Dr. P. Pravin**, Senior Scientist – Case study workshop on Lobster fisheries, Nagercoil (19 November)
- **Dr. P. Pravin**, Senior Scientist – State level workshop on Fisheries management – Understanding current status and discussion on future options, Chennai (23-24 November)
- **Dr. K. Ashok Kumar**, Senior Scientist – Lead Auditor course on Food safety management system as per IS/ISO 22000: 2005, NITS, Noida (12-16 December)
- **Dr. Nikita Gopal**, Senior Scientist – 19<sup>th</sup> Annual conference of the Agricultural Economics Research Association on Dynamics of supply and demand for labour in Indian agriculture, AAU, Jorhat (28-30 November). Dr. Nikita Gopal also presented a paper titled, “The labour economy of the ring seine fishery in Kerala” by P.H. Dhiju Das, Nikita Gopal and Leela Edwin.
- **Dr. Nikita Gopal**, Senior Scientist – National seminar on Promotion of fisheries and alternative livelihood in fisheries sector, FCRI, TANUVAS, Chennai (10-11 November). Dr. Nikita Gopal also gave an invited talk on “Alternative livelihood option for the fisherwomen”.
- **Dr. Femeena Hassan**, Senior Scientist and **Dr. P.K. Binsi**, Scientist – Training programme on Synthesis and characterization of nano materials and their applications in agriculture, CIRCOT, Mumbai (16-29 November)
- **Dr. George Ninan**, Senior Scientist – Chennai Aquaculture Technology Meet-11, TANUVAS, Chennai (16-17 November). Dr. George Ninan also presented the Key Note address on ‘Recent advances in aquaculture developments and new products for domestic and international markets’.
- **Dr. George Ninan**, Senior Scientist – Brain storming session on Secondary agriculture, IASRI, New Delhi (18 November)
- **Dr. George Ninan**, Senior Scientist – Technology clinic for the promotion of small and micro enterprises under food and agro based sector, Kottayam (23 December) (As resource person)
- **Dr. A.A. Zynudheen**, Senior Scientist – Technology clinic for the promotion of small and micro enterprises under food and agro based sector, Alappuzha (16 November) (As resource person)
- **Dr. J. Bindu**, Senior Scientist – Technology clinic for the promotion of small and micro enterprises under food and agro based sector, Ernakulam (13 December) and Kannur (26 December) (As resource person)
- **Dr. M.P. Remesan**, Senior Scientist – Indo-Swiss workshop on Ecology and conservation of Chilika lake, Wetland Research Centre, Balugaon (25-26 November). Dr. Remesan gave a talk on ‘Responsible fishing in Chilika lake’.
- **Dr. P. Muhamed Ashraf**, Senior Scientist – Training on Nanotechnology, University of California, USA (19 September – 19 December)
- **Shri M.V. Baiju**, Senior Scientist – India Innovation Summit, Mumbai (3 October)
- **Shri M.V. Baiju**, Senior Scientist – Expert committee meeting for providing subsidy for conversion of fishing vessels to Tuna long liners and construction of insulated fish hold for existing boats, MPEDA, Cochin (17 October)
- **Shri M.V. Baiju**, Senior Scientist – Subsidy Committee Meeting, MPEDA, Cochin (20 December)
- **Dr. Sanjoy Das**, Senior Scientist, **Dr. Toms C. Joseph** and **Dr. B. Madhusudana Rao**, Scientists (SG) – Impact assessment meet of International training in frontier areas of agricultural sciences, New Delhi (28-30 November)
- **Dr. B. Madhusudana Rao**, Scientist (SG) – National training on Entrepreneurship development and management for scientists and technologists working with the government sector, EDII, Ahmedabad (19-23 December)
- **Dr. J. Charles Jeeva**, Scientist, Senior Scale – Meeting of ATIC Managers, Bangalore (4 November)
- **Dr. J. Charles Jeeva**, Scientist, Senior Scale – National seminar on Innovations in farming system research and extension for inclusive development, Madras Veterinary College, Chennai (24-25 November). Dr. Charles Jeeva also presented a paper entitled, “Market-led livelihood interventions in rural aquaculture sector – Participatory monitoring of self help groups” by J. Charles Jeeva, Femeena Hassan and Saleena Mathew. The paper was adjudged as the ‘Best presentation’ in the Seminar.
- **Dr. J. Charles Jeeva**, Scientist, Senior Scale – Result sharing workshop of Fisheries Management for Sustainable Livelihoods Project, Chennai (12 December)
- **Dr. S.K. Panda**, Scientist – Training course on Application of ICP-OES, Thermo Fisher Ltd., Mumbai (29-30 November)
- **Shri V.R. Madhu**, Scientist – Training on Deriving ecological indicators from spectral radiometry, Plymouth Marine Laboratory, UK (5 October – 22 December)
- **Shri V.R. Madhu**, Scientist – Blue Horizon Conference as part of 4<sup>th</sup> Annual Plymouth Marine Sciences Education Fund Conference, Plymouth



Marine Laboratory, UK (14 December)

- **Dr. R. Venkateswarlu**, Scientist – National dialogue on Application of nanotechnology in agriculture, TNAU, Coimbatore (11-12 November)
- **Shri V. Chandrasekar**, Scientist – Training programme on Data analysis in social sciences research using SAS, IASRI, New Delhi (10-15 October)
- **Shri V. Chandrasekar and Shri Ankur Nagori**, Scientists – DST-Lockheed martin India Growth Programme 2012, Cochin (22 December)
- **Dr. C.O. Mohan and Smt. S. Tanuja**, Scientists – National training on Non thermal, non chemical processing and membrane technology, CIAE, Bhopal (12-21 October)



*Dr. C.O. Mohan receiving the participation certificate*

- **Smt. Arathy Ashok**, Scientist – 94<sup>th</sup> Foundation Course for Agricultural Research Service, NAARM, Hyderabad (15 September – 13 December)
- **Shri K.J. Francis Xavier**, Tech. Officer (T9) and **Shri T.N. Sukumaran**, Tech. Officer (T5) – Training on Automatic identification system, marine electronic equipments, navigational equipments and safety at sea, CIFNET, Cochin (19-21 October)
- **Dr. A.R.S. Menon**, Tech. Officer (T9) – Training programme on Re-engineering office process in the context of Right to Information Act, ISTM, New Delhi (21-23 November)
- **Shri M.S. Kumar**, Tech. Officer (T7-8) – Farm and Home Unit Rural Programme Subject Committee Meeting, AIR, Visakhapatnam (23 November)
- **Dr. Santhosh Alex**, Tech. Officer (T5) – Executive

committee meeting of TOLIC, Visakhapatnam (12 October)

- **Dr. Santhosh Alex**, Tech. Officer (T5) – Hindi workshop, HPCL, Visakhapatnam (30 November) (As resource person)
- **Shri P.P. Anil Kumar**, AF&ACO and **Shri K. Das**, Asst.– Training programme on Fixation of pay, ISTM, New Delhi (3-5 October)

## Personalia

### Appointments

1. Ms Jesmi Debbarma, Scientist, Fish Processing Technology, Cochin
2. Ms A. Jeyakumari, Scientist, Fish Processing Technology, Cochin
3. Ms S. Remya, Scientist, Fish Processing Technology, Cochin
4. Ms V. Renuka, Scientist, Fish Processing Technology, Cochin
5. Smt. S.J. Laly, Scientist, Fish Processing Technology, Cochin
6. Shri Deu Umesh Aroskar, LDC, Cochin

### Promotions

1. Shri A. George Joseph, AAO, Cochin as AO
2. Shri T. Viswanathan, PA, Cochin as AAO
3. Shri S. Appa Rao, LDC, Visakhapatnam as UDC
4. Shri M. Arockya Shaji, LDC, Veraval as UDC

### Transfers

1. Smt. S. Tanjua, Scientist, CIFT RC, Visakhapatnam to DRWA, Bhubaneswar
2. Shri Ramesh Mirdha, LDC, Cochin to Veraval

### Retirements

1. Dr. P.N. Joshi, Principal Scientist and Acting Head, Engineering Division, CIFT, Cochin
2. Shri S.P. Damle, Senior Scientist, Mumbai Research Centre of CIFT (Voluntary Retirement)
3. Shri A. George Joseph, AO, Cochin

