



# MPEDA

## Newsletter

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# CPF-TURBO PROGRAM

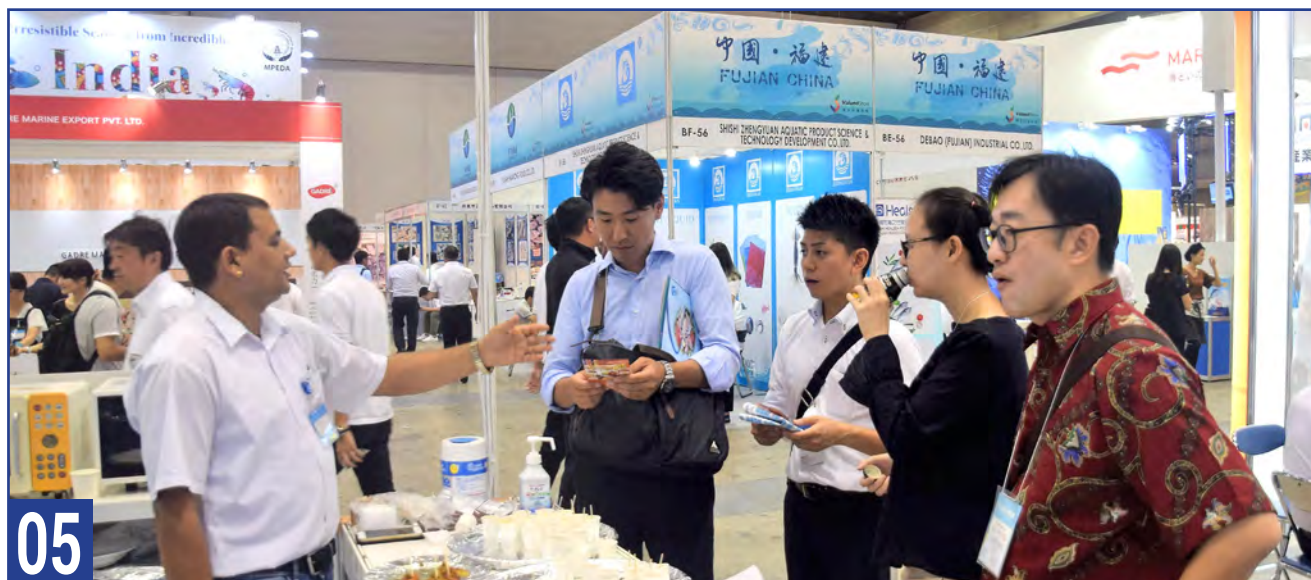
The shrimp industry has seen major developments and tasted success over the years, And not only are we proud to be part of it, but also take pride in pioneering it. To ensure the success and profitability of the Indian Shrimp Industry, our highly determined team with committed Aquaculture specialists constantly provide the shrimp farmers with access to the latest and updated technology.



**CPF-TURBO PROGRAM -**  
**Pioneering Successful and Profitable Shrimp Aquaculture**

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## In the Platter



**K. S. Srinivas IAS**  
Chairman

Dear friends,

**M**PEDA has taken the active role in sensitizing the stakeholders across the seafood industry and the State Department Officials through a series of participatory programmes on the Seafood Import Monitoring Programme by the US Government. A two member delegation from US National Marine Fisheries Services has visited India during 17<sup>th</sup> to 20<sup>th</sup> September, 2018. MPEDA has facilitated their visit to the fishing harbour, seafood processing units and shrimp farms so that the US team will get first hand information on the production and traceability systems followed in our country and how equipped we are in catering to the needs of the US programme.

The US officials have also presented the Seafood Import Monitoring Programme among the stakeholders in the sensitization programmes organized by MPEDA at Kochi and Vijayawada. The US officials as well as the embassy of USA in India have thanked MPEDA for all the arrangements and facilitation of the visit.

Further to the US visit, MPEDA has also conducted regional sensitization programmes among the exporters, farmers and fishing community on the Seafood Import Monitoring Programme right from Porbandar to Kolkata so that the stakeholders will get well equipped on the requirements under the Programme.

I am hopeful that the sensitization efforts facilitated by MPEDA have been helpful for the stakeholders in clarifying the doubts and prepare the necessary data inputs to be furnished to their importers on record enabling smooth clearance of the consignments.

MPEDA has also conducted two "Train-the trainers" programmes on seafood HACCP and Good Fishing Vessel Practices along with Joint Institute of Food Safety and Applied Nutrition under USFDA and the Universities of Maryland, USA. The training programmes had been very successful with the overwhelming participation from technologists, scientific institutions and fishermen representatives. The programmes were focused on the food safety requirement for export to US market.

In addition, MPEDA has also organized two training programmes to upskill the seafood processing personnel on value addition of seafood with the assistance of the Central Institute of Fisheries Technology at Kochi and Vizag.

The interventions by MPEDA are aimed to infuse the advanced concepts in the hygienic handling of seafood, traceability and value addition. Taking forward such initiatives will help the seafood export production and export sectors to develop their standards further up, and will prove to be a metaphor in capturing the minds of customers on a wider scale.

Thank you.



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# MPEDA makes a mark in Tokyo

Over the world in the fish sector, Japan holds an esteemed position because of the highly important role of fish in its traditional and contemporary economy, culture and food pattern.

Japanese are among the most important consumers of fish in the world (53.7 kg/cap in 2013, Source FAO). The supply of Japanese market has changed gradually from a national supply to an increasing share of imports.

It is a market that looks forward for consistent supply of quality products in all forms. The Japanese quality requirements are stringent than other markets related to residues and contaminants.

Besides, the end users are also concerned about the origin, taste and presentation of the product. With Tokyo hosting the Olympics in 2020, Japanese economy and trade is expected to be more positive in the coming years. The approach of Olympics is also expected to boost seafood consumption.

Changing lifestyles and family structure have made more Japanese consumers now to prefer ready-to-cook or ready-to-eat value-added products.

Food makers compete to bring out new varieties of food to the market on a daily basis. The market is also touchy about cost as seen towards latter half of 2014 when the shrimp consumption dropped due to high prices.

Japan is one of the world's top seafood markets and was the third largest seafood importer by value in 2017. Japanese seafood imports were worth around USD 14.71 billion in 2017. The values were close to the import figures during 2013 (Table 1).

The country imported seafood worth USD 11.72 billion in 2017 that falls under Chapter 03 (Table 2), and that worth USD 1.44 billion and USD 1.54 billion respectively under Chapter heads 1604 and 1605 (Tables 3 & 4).



## MARKETING NEWS

Table 1. Japanese imports of fish & fisheries products (value in USD billion)

Imported value in 2013	Imported value in 2014	Imported value in 2015	Imported value in 2016	Imported value in 2017
14.9	14.4	13.1	13.6	14.7

Table 2. Import of fish and fishery products under Chapter 03 (Value in USDmillion)

Rank	Exporters	Imported value in 2013	Imported value in 2014	Imported value in 2015	Imported value in 2016	Imported value in 2017
1	United States of America	1134.92	1217.27	1260.56	1175.62	1406.69
2	Chile	1093.84	1296.44	1027.35	1009.42	1304.76
3	China	1131.23	1107.42	992.99	1118.95	1240.43
4	Russian Federation	1229.58	1118.03	872.78	1018.28	1107.30
5	Norway	792.65	868.54	831.66	957.87	926.91
6	Viet Nam	600.17	609.94	518.09	508.97	630.26
7	Taipei, Chinese	436.08	467.70	459.31	522.34	564.18
8	Korea, Republic of	628.18	556.21	496.69	536.13	534.80
9	Indonesia	669.86	576.96	461.96	464.73	478.29
10	Canada	384.67	419.54	384.79	401.41	443.67
11	India	416.62	441.38	377.57	403.16	431.25
12	Thailand	505.63	411.99	347.61	337.51	328.14
13	Argentina	161.38	190.20	165.61	177.49	230.17
14	Morocco	159.88	130.86	152.16	158.34	154.25
15	Australia	217.16	195.87	160.52	179.43	150.52
16	Mauritania	148.75	105.22	122.37	111.47	134.66
17	New Zealand	134.17	127.22	111.57	125.96	133.09
18	Malta	138.76	68.77	121.23	121.11	130.72
19	Iceland	117.24	105.79	100.60	112.37	124.77
20	Philippines	145.79	132.05	91.66	94.77	88.47
	Others	1536.35	1302.94	1186.37	1260.45	1181.89
	World	11782.90	11450.35	10243.44	10795.76	11725.23

Table 3. Import of fish and fishery products under Chapter 16 04 (Value in USD million)

Rank	Exporters	Imported value in 2013	Imported value in 2014	Imported value in 2015	Imported value in 2016	Imported value in 2017
1	China	901.12	827.08	851.69	807.67	826.29
2	Thailand	324.76	311.60	286.46	302.52	324.77
3	Viet Nam	66.61	76.81	80.22	100.75	123.41
4	Indonesia	88.21	84.98	73.49	77.76	99.61

## MARKETING NEWS

5	Philippines	63.79	52.78	50.21	68.46	64.69
6	United States of America	59.97	28.64	30.48	29.93	39.08
7	Korea, Republic of	38.49	34.89	18.78	18.10	20.64
8	Italy	8.12	7.63	7.38	6.20	6.97
9	Taipei, Chinese	1.71	3.18	15.29	4.78	4.86
10	Canada	4.96	4.40	3.56	4.913	4.28
11	India	5.15	4.79	3.51	3.27	3.45
12	France	2.49	2.59	2.31	2.67	2.53
13	Maldives	2.68	2.49	2.93	1.25	2.43
14	Latvia	0.74	0.35	0.57	1.38	2.17
15	Spain	2.10	2.16	1.91	2.66	2.06
16	Germany	0.97	0.68	0.38	0.64	1.82
17	Morocco	2.84	2.47	2.41	2.11	1.72
18	Poland	1.00	1.22	0.72	1.24	1.38
19	Peru	1.41	1.81	0.95	1.47	1.37
20	Denmark	1.63	1.31	1.37	1.37	1.32
	Others	7.72	7.15	5.34	5.16	6.32
	World	1586.49	1458.97	1439.74	1444.28	1541.16

Table 4. Import of fish and fishery products under Chapter 16 05 (Value in USD million)						
Rank	Exporters	Imported value in 2013	Imported value in 2014	Imported value in 2015	Imported value in 2016	Imported value in 2017
1	China	638.06	613.16	518.30	544.43	590.19
2	Thailand	430.31	333.69	295.26	301.73	305.45
3	Viet Nam	250.75	291.47	255.64	257.01	291.71
4	Indonesia	99.05	97.56	100.19	98.95	110.02
5	Korea, Republic of	56.55	64.38	52.01	51.88	54.19
6	India	7.85	10.21	14.37	12.62	13.40
7	Peru	9.10	9.38	10.73	15.95	12.76
8	Canada	11.90	15.87	14.36	12.53	12.12
9	Chile	16.30	15.25	18.80	11.77	10.10
10	Greenland	3.60	5.40	10.48	4.09	7.19
11	Bulgaria	5.39	5.30	7.07	6.59	6.23
12	Australia	7.41	5.92	4.49	4.44	3.93
13	United States of America	3.07	2.04	3.50	6.73	3.92
14	New Zealand	3.94	3.26	3.81	3.91	3.62

## MARKETING NEWS

15	Lithuania	2.43	3.74	2.90	2.85	3.56
16	Myanmar	3.73	4.79	4.76	2.97	3.56
17	Philippines	1.71	2.10	2.08	1.84	2.64
18	Turkey	6.73	4.70	2.24	3.24	2.60
19	Russian Federation	0.80	2.97	2.57	0.85	1.53
20	Taipei, Chinese	1.95	1.79	1.48	1.46	1.18
	Others	9.56	9.18	9.98	7.40	3.79
	World	1570.16	1502.17	1334.99	1353.25	1443.67

The main suppliers to the Japanese market are China, the United States of America, Chile and Russia. The top products of imports are shrimp, tuna, salmon

and trout.

The top 15 seafood suppliers to Japan under Chapters 03 and 16 are given in Table 5 below.

Table 5. Top seafood suppliers to Japan in value terms under Chapters 03 and 16 (2017 ) (Value in USD million)					
Rank	Country	Chapter 03	Chapter 1604	Chapter 1605	Total
1	China	1240.43	826.29	590.19	2656.90
2	United States of America	1406.69	39.08	3.92	1449.68
3	Chile	1304.76	0.04	10.10	1314.89
4	Russian Federation	1107.31	0.37	1.53	1109.20



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5	Viet Nam	630.26	123.41	291.71	1045.38
6	Thailand	328.14	324.77	305.45	958.36
7	Norway	926.91	1.05	0.07	928.04
8	Indonesia	478.29	99.61	110.02	687.92
9	Korea, Republic of	534.80	20.64	54.19	609.62
10	Taipei, Chinese	564.18	4.86	1.18	570.21
11	Canada	443.67	4.28	12.12	460.08
12	India	431.25	3.45	13.40	448.10
13	Philippines	88.47	64.69	2.64	155.80
14	Australia	150.52	0.04	3.93	154.50
15	Peru	55.94	1.37	12.76	70.07

India is ranked 11<sup>th</sup> in supplies under Chapter 03 and 1604, while it is ranked 6<sup>th</sup> under head 1605 in terms of value. Overall ranking for India is 12<sup>th</sup> in terms of value as our exports are mostly focused on conventional

products meant for further use in processing units and restaurant chains, rather than retail chains. Item-wise export of marine products from India to Japan during 2017-18 is given in Table 6 below.

Table 6. ITEM WISE EXPORT OF MARINE PRODUCTS TO JAPAN				
Q: Quantity in M T, V: Value in Rs. Crore, \$: US Dollar Million				
ITEM		2015-16	2016-17	2017-18
FROZEN SHRIMP	Q:	34204	31284	33828
	V:	2044.29	2019.74	2126.76
	\$:	316.34	304.95	334.31
FROZEN FISH	Q:	335	119	1589
	V:	10.48	3.71	14.50
	\$:	1.62	0.56	2.28
FR CUTTLE FISH	Q:	148	86	67
	V:	3.90	3.15	2.34
	\$:	0.60	0.48	0.37
FR SQUID	Q:	1246	1366	1710
	V:	47.54	66.30	90.29
	\$:	7.30	10.00	14.19
DRIED ITEM	Q:	1414	616	2816
	V:	14.52	5.26	23.70
	\$:	2.25	0.79	3.73
LIVE ITEMS	Q:	2	1	2
	V:	0.77	0.87	0.61
	\$:	0.12	0.13	0.10
CHILLED ITEMS	Q:	1	0	0

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	V:	0.06	0.02	0.01
	\$:	0.01	0.00	0.00
OTHERS	Q:	38043	35568	45639
	V:	489.17	522.32	588.08
	\$:	75.24	77.60	90.30
TOTAL	Q:	75393	69039	85651
	V:	2610.74	2621.37	2846.30
	\$:	403.48	394.50	445.26

Indian exports to Japan are dominated by frozen shrimp. During 2017-18, the country has exported 85,651 MT of seafood worth USD 445 million. The frozen shrimp items are dominated by *Vannamei* shrimp. The total export of frozen shrimp last year was 33828 MT with a value of USD 334 million, which means 75% of the value comes from shrimp exports. Other major items of exports are surimi and fish meal.

Japan's fish exports are marginal in comparison with the total value of Japanese imports. In 2017, the Japanese import was around 8 times more than that of its exports. Seafood products have traditionally played an important role in the Japanese diet, but according to the Japan Fisheries Agency, consumption has been on the decline as younger generation prefer meat to fish for economic and aesthetic reasons. However, Japan is still known as the world's biggest consumer of fish, especially tuna, which is an essential element of its food culture.

There are organized promotional measures to increase the fish consumption considering health point of view. Japanese production 3.87 million tons of seafood items from capture and culture resources in 2016, of which 83% was accounted for by capture fisheries. The fishing industry is focused on supplying the domestic market and 90% of the catch is consumed locally. The contribution of culture fisheries in total production is generally increasing while the capture fishery production is declining.

Late 2007 saw the establishment of the Marine Eco-Label Japan (MEL Japan) which, according to the Japan Fisheries Association, aims to certify Japanese commercial fishing operations that actively address the protection of marine resources and ecosystems. At the same time, MEL Japan caters to the needs of foreign markets by promoting exports of sustainable Japanese seafood. So far, 23 products have been certified at the production stage and 53 at the distribution and processing stage (Source: Japan Fisheries Agency). The Comprehensive Economic Partnership Agreement

(CEPA) between India and Japan was signed on February 16, 2011 and came into force from August 1 of the same year. Apart from accelerating business activities, the deal aimed to eliminate tariffs on 90 percent of Japanese exports to India, including agricultural and fisheries products, until 2021. Regional Comprehensive Economic Partnership (RCEP) is another agreement under negotiation in which both India and Japan are members.

As in other major markets, shrimp is the most important marine product traded from India to Japan. India is also a major supplier of Surimi and fish meal to Japanese market. Other items that are catered to Japanese market include squid, cuttlefish, octopus, clams, lobsters, whelks, and fish fillets. Considering the importance of the market, Government of India has established a Trade Promotion Office of the Marine Products Export Development Authority (MPEDA) at Tokyo in 1978 for market promotion activities.

With changing market preferences, Indian processors also started offering value-added products such as cooked shrimp, sushi shrimp, nobashi shrimp, kneaded products, peeled deveined shrimps, peeled deveined tail on shrimps, marinated shrimps, tray pack cephalopod products, seafood mix and fish fillets. However, the percentage of value addition done in India is relatively small compared to that in Thailand, Indonesia, Vietnam or China. Many Japanese importers ship raw material from India to the Southeast Asia or China, add value and import to Japan. They are also sourcing material for other markets such as EU, USA and China. With better air connectivity, products can also be offered in chilled condition to Japan. Certain samples of chilled tuna have reached Japan this year and with fair remarks, it is expected that more tuna imports happen.

The expansion and diversification of coastal and inland aquaculture will enhance shrimp production and bring in more varieties such as Tilapia, Mud Crab, Scampi

## MARKETING NEWS



and Cobia to the export trade. Indian exporters shall actively pursue with Japanese importers to foster tie-up in exporting new varieties as value added products that suits the Japanese palette to minimize the over dependence on shrimp. Items such as boneless fish fillets, soft shell crabs, cephalopods and clams etc enjoy regular demand in Japanese market.

Value addition in India is economical and will help to judiciously utilize our resources ensuring sustainability and constant supply, besides effective utilization of the processing infrastructure and better employment.

### Japan International Seafood and Technology Expo

The 20<sup>th</sup> Japan International Seafood and Technology Expo 2018 (JISTE) from 22-24 August 2018 took place at Tokyo Big Site Hall 5 and 6 and was organised by Seafood show management office/Exhibition Technologies endorsed by the Japan Fisheries Association.

The JISTE comprised of 4 events taking place simultaneously at the same venue. The events are Sushi Expo, International Aquaculture Technology Expo 2018, Freshness Keeping and Distribution Technology Expo and Fish Next Expo.

#### The Sushi Expo

The Sushi Expo focussed on Sushi, the representative Japanese food which has been registered as UNESCO world intangible cultural heritage. Over 25 types of product/technologies were exhibited at the Sushi Expo in addition to an international sushi competition.

Products/Technologies exhibited at Sushi Expo 2018	
1	Sushi Topping
2	Frozen Sushi

3	Creative Sushi
4	Local Sushi
5	Rice
6	Sliced Ginger (Sushi Gari)
7	Vinegar
8	Salt
9	Seaweed
10	Flavouring
11	Japanese tea and beverages for Sushi restaurant
12	Dessert
13	Seaweed roller machine
14	Sushi related souvenirs & goods
15	Live fish tank
16	Refrigeration technology
17	Frozen sushi thawing machine
18	Sushi processing equipment
19	Home delivery system
20	Delivery tray, Delivery equipment
21	Desktop order system
22	Conveyor belt for Rotation sushi
23	Rice cooker, rice cooking robot
24	Picture plates used for rotary sushi
25	Sushi Rice moulding machine

#### The international Aquaculture Technology Expo

The Expo exhibited various kinds of aquaculture technologies especially on marine cage culture and fin fish including Tuna culture technology and accessories.

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### Freshness Keeping and Distribution Technology Expo

The expo exhibited freezers and packaging equipment that can maintain freshness over a long period of time through moisture control. Frozen and refrigerated equipment, Freezing/refrigerating equipment, thawing technology, ice making equipment, etc. Packaging/



*A discussion with buyers in MPEDA booth*

Logistics equipment and labelling machine, conveyor, temperature management transportation technology, equipment and services for HACCP countermeasures/ Food hygiene control equipment/technology, Sterilization water production equipment, Sanitation management material, Food inspection, Quarantine technology, Food hygiene inspection institution, Food traceability technology etc were exhibited in this co-event.

### Fish Next Expo

Capture fishery is the fundamental to Japan's seafood industry and by introducing new technology in fishery, it is possible to improve the environment by saving energy, increase efficiency, reducing the labour etc., while meeting the increasing demands for modernization. The "Fish Next EXPO", a co-hosted event presented robot technology, AI (Artificial Intelligence), Internet of Things (IoT) and other advanced technologies/ ideas.

### MPEDA in JISTE 2018

Dr. Ram Mohan M.K. and Mr. Anil Kumar P., Joint Directors, MPEDA were deputed to organise the participation of MPEDA in Japan International Seafood and Technology Expo 2018 held at Tokyo from August 22 to 24.

The deputed officials were also instructed to assist the visiting delegation from Tamil Nadu in business discussions and market visits involving the Commerce wing of the Embassy of India, Tokyo. However, the officers were able to reach Tokyo only on August 22 morning due to the unprecedented floods in Kerala. The officers were assisted by Mr. Jun Nakayama, Executive Assistant, MPEDA Trade Promotion Office, Tokyo.

The stall displayed a variety of seafood delicacies from India including conventional frozen and value added products. Publicity literature in Japanese language and Exporters Directory CD were distributed to buyers and visitors.

The stall of MPEDA and that of two co-exhibitors had cooking demonstrations which attracted many visitors. The Tamil Nadu delegation was led by Mr. K Gopal IAS, along with Mr. G Sameeran IAS, Director of Fisheries, Mr. John IAS, Joint Director and Mr. Jude, Managing Director, TNFDC.

The India pavilion in East hall 5 was organized by MPEDA with the assistance of the Tokyo Trade Promotion office. This year, MPEDA took a record space of 152 sq. m. and had a participation of 13 exporters listed below.

No.	Company
1	Gadre Marine Exports, Ratnagiri
2	Forstar Frozen Foods, Mumbai
3	Seaboy Fisheries, Kollam
4	Digha Seafoods, Kolkatta
5	Vasai Frozen Foods, Mumbai
6	Stellar marine Foods, Mumbai
7	Britto Seafood Exports, Tuticorin
8	Ulka Seafoods, Mumbai
9	Goan Fresh Marine Exports Pvt. Ltd., Goa
10	Castlerock Fisheries Pvt. Ltd., Mumbai
11	Sharief marine Products Pvt. Ltd.
12	S. S. Seafoods
13	Tamil Nadu Fisheries Development Corporation

## MARKETING NEWS



*Visit to the Toyosu fish market along with Tamil Nadu delegation*

Mr. Sujan R Chinoy, H.E. Ambassador of India to Japan, visited the show and Indian Pavilion on August 22.

manner. The market is said to have additional tourist attractions like hotel, shopping mall by 2022.

### **Visit to Toyosu Fish Market**

The Tsukiji market in Tokyo, one among the largest and the oldest fish market in the world is scheduled to be shifted to a new location at Toyosu in Tokyo. The Toyosu fish market is about to be completed and the Tsukiji market was to be shifted over there by November 2018. The MPEDA officials have accompanied the visiting Tamil Nadu delegation to the newly constructed fish market in Toyosu on August 22. The visit was arranged through MPEDA TPO, Tokyo and the officials of the Toyosu market received the delegation. The Toyosu market has two segments, one for seafood and other for vegetables and fruits. The market has a built up area of 40 ha, which is almost double the size of the Tsukiji market.

The market consists of three buildings, of which two are for seafood and the third building is for vegetables and fruits. One building for seafood is exclusively for Tuna auction with a viewing gallery for visitors and tourists. The second hall is expected to house around 40 seafood stalls moved from the Tsukiji market. The Toyosu market is connected to the metro station through a covered over bridge giving an all-weather access to the market.

The Tuna auction hall building has an advanced tuna receiving platform separated by air curtains and auto opening doors to the auction hall. The auction has hygienic floor with facilities for fast drainage, cold storage with capacity to store tuna at -20 or less degrees, auction platforms etc. The building for stalls have pre designed stall with facilities for display, dressing and filleting the fish, waste disposal etc in a most modern

### **Areas identified for export development**

#### **a. Antibiotic Residue**

Japan has 100% testing requirement for farmed shrimps imported from India. There is very good scope for shrimp and other value-added products in Japan market, if India could exercise better control on antibiotic contamination in the export value chain and provide 3<sup>rd</sup> party certified products like Aquaculture Stewardship Council (ASC), Best Aquaculture Practices (BAP) certification.

#### **b. Value addition and product certification**

There is good demand for shrimp and its value added products. The demand for certified products is expected to rise as the Tokyo Olympics 2020 is approaching. Major retail stores are coming up with either exclusive stores for organic and certified products or making exclusive display and sale areas for such products

#### **c. Export of live kuruma shrimp *Penaeus japonicus***

Australia is known to farm and export live Kuruma shrimp, *Penaeus japonicus* to Japan and China. One of the farmers in Andhra Pradesh had tried trial production of Kuruma shrimp in collaboration with CIBA and was successful in the preliminary trials.

The capital and operating cost of Kuruma shrimp farming is generally higher than that of black tiger shrimp due to longer grow out periods, higher cost of feed due to high protein requirement etc. Japan, China, South Korea etc are good markets for live Kuruma shrimp, which can fetch a high price in the

## MARKETING NEWS

international market. Further leads into a technical collaboration are underway in this regard.

### d. Sea urchin processing and export

Sea urchin is an echinoderm closely related to organisms like star fish and sea cucumbers. The ripe roe (egg mass) of sea urchin, which is yellow coloured, is a delicacy in many countries including USA and those in Europe and East Asia. Farming of sea urchin is also quite popular in certain countries. Sea urchin is not harvested commercially in India and thrown back as trash. There were enquiries in this regard too.

### e. Eel aquaculture for export

Fresh water eel is a major delicacy in Japan. The eel is marinated/baked/grilled and consumed along with rice as Eel bowl. The availability of the traditional fresh water Rice eel has dwindled and is being replaced by the cultured eel from China. The commercial breeding of eel is not yet successful anywhere in the world. The eel culture depends on the collections of juvenile called elvers or glass eel. India also has abundant resources of eel species like *Anguilla bicolor*, which could be explored for developing eel aquaculture.

There is good market for eel in South Korea and China also. India can very well look into exporting farmed freshwater eel to the East Asian markets.

### f. Tempura & Sushi Shrimp

Shrimps are mainly used for Tempura and Sushi preparations, besides curry. Tempura and sushi products are very popular food in Japan and are getting popular in other markets like USA, Europe, South East Asia etc. Sushi shrimp are shrimp on vinegared rice. For sushi shrimp cooked or fresh butterfly shrimp is used. Sushi shrimp has a large market appeal as Sushi considered being a common man's food in Japan and is expanding outside Japan as well. These products fetch a higher value than raw frozen shrimp.

Tempura shrimp is a Japanese seafood delicacy that have been battered and deep fried. It is eaten along with rice, vegetables and sauces and is very popular in Japan and across the globe. The frozen tempura shrimp could be ready to cook and ready to eat item for export. Hence there is considerable scope for initiating the export of Sushi and tempura shrimp from India.

For supply of nobashi shrimp for tempura or for that matter ebi fry (shrimp in breaded form), the quality of the harvested shrimp needs to be higher. The finesse

in processing is also quite important in addition to the hygienic standards to be followed while preparation.

These are products that directly go to tempura or sushi shops and hence demand high product and process standards. Sushi shrimp demands very high product quality and process protocols in terms of colour, freshness, bacterial load etc.

Thailand is supplying large quantities of Sushi shrimp to Japan. The shrimp harvested from farms is brought to the processing plant in live condition and they also add approved colour enhancing ingredients in the shrimp feed during the last part of shrimp grow out culture. The Vannamei culture in India is capable of advancing to this level, if technology intervention is made at the farming level.

More and more exporters shall come forward to take up such projects. The production and marketing of the sushi and Tempura shrimp may be initiated on a pilot scale and scaled up on standardising the techniques. However, stringent quality and aesthetic requirements has to be met to tap the sushi market.

### g. Export of Sashimi grade Tuna

Tuna is a favourite delicacy in Japan. The country sources tuna from its fishing fleets operating in the Pacific and elsewhere, through imports and also by farming. Tuna is consumed raw, cooked, and as various other preparations that includes smoked and dried (Katsuobushi), canned curry, jerky, burgers, patties etc. The most preferred tuna for raw consumption (sashimi) are Pacific / Atlantic Blue fin tuna and Yellow fin tuna. Species such as Long tail, and Big eye are also preferred. However, smaller species such as Little tunny or Skip jack are mostly used for canned curry and smoked products.

There were attempts from India to export sashimi (super fresh for raw consumption) grade tuna to Japan. However, lack of consistency in quality has affected the supplies. For supply of sashimi grade tuna, one must catch the fish with minimum stress / struggle and shall stun the fish, remove the gills and viscera before plunging into slurry ice for super cooling to keep freshness and to arrest histamine content.

The blood red colour of the meat shall be preserved, avoiding white patches / darkening of flesh, which indicates poor quality of the meat. The sashimi grade tuna are mostly transported in chilled form by air, though there is a market for frozen sashimi grade tuna also. The price is 30-40% for frozen product. Smaller and

## MARKETING NEWS



neighbouring countries like Sri Lanka, Maldives, Fiji, Papua New Guinea, etc are regular suppliers of sashimi grade tuna to the Japanese market. They have also perfected the breeding and farming technology of Blue fin tuna, and commercial ventures are already there. Trials are also on for Yellow fin tuna in the Mediterranean with Japanese technology and funding.

Indian Ocean region doesn't have Blue fin tuna due to warmer waters, and can supply only Yellow fin tuna. The preferred market size of Yellow fin is above 35 kg. Currently, our fishing boats do not have the technical expertise to properly harvest and preserve tuna for sashimi purpose. Many countries are using electric shockers to stun the tuna while on the long line to avoid struggling and deterioration of meat quality.

Tamil Nadu Government is constructing some fishing vessels aimed at exploiting distant water resources such as tuna. With focused approach and better air connectivity, India can become a leading supplier of sashimi grade tuna to various markets.

### **h. Tuna patties from good quality frozen tuna**

Tuna Patties, burgers etc has a major share in the Tuna market in Japan. India has a healthy stock of Skipjack and Yellow fin tuna. With better handling and preservation on board, the quality of the tuna landed could be improved to meet the requirement of this segment of the market which is less stringent than Sashimi grade tuna.

Treatment methods for good quality tuna to qualify it make burgers, patties, saku, onigiri etc is available and could be used to improve the tuna exports from India.

### **i. Bivalves and gastropods**

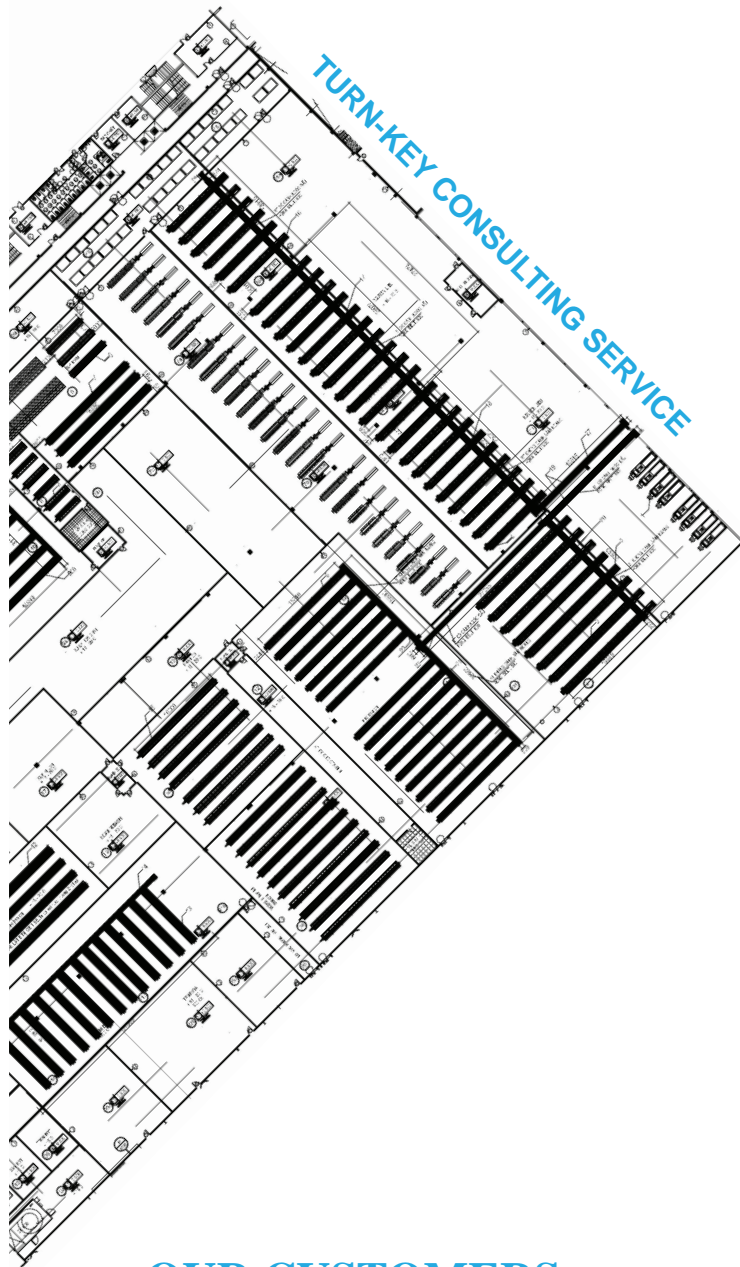
Japan imports mussels from New Zealand and France. Clams are sourced either locally or imported from China, Taiwan, Philippines, Indonesia etc. India is also exporting black clam (shijimi), yellow clam (akigai) and baigai (whelk) to the Japanese market. There is further scope for improvement in the export of clams, mussels and gastropods.

The green mussels (*Perna viridis*) could be cultured in India and the aquaculture techniques for grow out has been standardised. The farming of green mussel in India is carried out in Northern Kerala and some parts of Karnataka. Trial marketing may be done to see the acceptance of Indian green mussel in the Japanese market. The Indian mussel will be much more competitively priced than mussels imported from New Zealand and Europe.





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# Training Programme on Bombay duck



*Inauguration of the training programme*

**T**he Regional Division of MPEDA, Mumbai organised a one-day training programme on "Utilization of Bombay duck for value addition and its marketing opportunities" at M/s. Castlerock Fisheries Pvt. Ltd, Taloja, Navi Mumbai on September 21.

The purpose of the training programme was to empower the supervisors and trainers of the seafood processing establishments in Maharashtra region with techniques to produce value-added products and enable them to train others.

At present, only 1% of landed Bombay duck is used for export purpose and there is tremendous scope to increase export by better utilization and value addition. The training programme was attended by 26 participants, among whom were processors (Dry and Frozen), NGOs and NETFISH officials.

In his welcome address, Mr. Rajakumar Naik, Deputy Director, Regional Division, Mumbai, advised the trainees to take maximum advantage of the experienced training faculty. Deputy Director, Regional

Division Mumbai appreciated the overwhelming interest shown by exporters in sponsoring trainees, even though the new fishing season has already begun and was at its peak.

In the inaugural address, Dr. L.N. Murthy, Principal Scientist, ICAR-CIFT, Regional Centre, Mumbai emphasized on the importance of value-addition of seafood products exported from the country, especially from unutilized fish like Bombay duck and its market opportunities.

Mr. Haridas Nair, General Manager of M/s. Castlerock Fisheries Pvt.Ltd. also expressed his views on the training programme. Mr. M B Boghani, Executive Director, Manavvikas NGO, Dahanu shared the dias and thanked MPEDA for arranging such training and inviting them.

The training sessions that followed were led by Dr. L.N. Murthy, Principal Scientist-CIFT along with his team. In his presentation, Dr. Murthy demonstrated the importance of value addition for export growth especially from low-cost fishes like Bombay duck,

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its handling, preservation, preparation of different products and market opportunities. Dr. Murthy along with his team demonstrated different products from Bombay duck like solar dried fish; ready-to-eat items like pickle, cutlets, fish fingers, wafers, pasta etc and hands-on trials were given to trainees.

In the afternoon session, two chefs from M/s. Royal Rasoi, Navi Mumbai demonstrated different products from Bombay duck, like bread crumb coated fillets, rava fish fry and fish cutlets.

At the end of the training programme Mr. Rajakumar Naik, Deputy Director, RD Mumbai, thanked the management of M/s. Castlerock Fisheries Pvt. Ltd for providing the facility for the training session, despite being in the middle of a peak tourism season. Dr. Murthy offered support for any member in the audience requiring technology partnership with CIFT.



*Dried Bombay duck product display*

Most of the participants were happy to have learnt about ways in which Bombay duck could be utilized. The programme was ended with vote of thanks by Mr. Bhushan Patil, Assistant Director, Mumbai.

## Value-added Products from Bombay duck

### Laminated Bombay duck



#### Method of Preparation:

Fresh Bombay duck

Remove gut, wash and keep at 40°C for 2hrs (to bring down the moisture content to 85%)

Remove tails, fins and cut longitudinally on the ventral side.

Dip treatment of fish with 1% salt (fish: brine in 2:1) for 20 minutes

Drain the brine and spread the fish on stainless



steel trays

Dry in tunnel dryer at 50°C for 12-14hrs (to bring down the moisture content to 16 - 17 %)

Dried fish flattened by roller press

Sides trimmed to get fish pieces of uniform size

Dry for 1-2 hours to bring the final moisture content to about 14%

Packing and storage

## FOCUS AREA

### Fish Pickle

#### Ingredients

1. Dried fish : 100g
2. Mustard: 10g
3. Green chilli (cut into pieces) : 50 g
4. Garlic (peeled): 200g
5. Ginger (peeled and chopped) : 150 g
6. Chilli powder: 50 g
7. Turmeric powder : 2 g
8. Gingelly oil: 200g
9. Vinegar (acetic acid 1.5%) : 400 ml
10. Salt: 60 g
11. Pepper (powdered): 2.5 g
12. Sugar: 10 g
13. Cardamom, clove, cinnamon (powdered): 1.5 g

#### Method of preparation

Dried fish  
Chopped into small piece  
Fried in oil  
Set apart the fried fish  
With remaining oil fry mustard and add the paste of garlic and ginger, green chili, chili powder, pepper powder and turmeric powder, cardamom, clove, cinnamon, sugar and remaining salt  
Mix well  
Add Vinegar (After cooling of ingredient mixture)  
Transfer to clean, sterile glass bottles and seal with acid proof caps or packing in bottle / pouches



### Fish Wafers



#### Ingredients

Cooked fish meat : 1kg  
Corn flour : 500 g  
Tapioca starch : 1kg  
Common salt : 25 g  
Water : 1.5 litres

#### Method of preparation

Homogenise the processed fish meat with 1 litre of water for 10 mins. in a mechanical grinding machine



Add the corn flour, tapioca starch and salt and rest of the water and blend the whole mass  
Spread the homogenised mass uniformly in aluminium trays in a thin layer of 1-2 mm thickness and cook in steam for 3-5 mins.  
Cool to room temperature.  
Cut the cooked material into desired shapes and dry under sun or preferably in artificial dryer (at 45° C to 50° C) to a moisture content below 10%  
Pack suitable lots of the dried product in sealed polythene bags or glass bottles and store in a cool and dry place till marketing.

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### Battered and Breaded Products

#### Fish Cutlets

##### Ingredients

Cooked fish meat	: 1000 g
Salt	: 25g (approx- to taste)
Oil	: 125 ml
Green chilli	: 15 g
Ginger	: 25g
Onion	: 250 g
Potato (cooked)	: 500 g
Pepper (powder)	: 3 g (to taste)
Clove (powdered)	: 3 g (to taste)
Cinnamon (powdered)	: 2 g (to taste)
Turmeric	: 2 g
Eggs	: 4 Nos.
Bread powder	: 200g

##### Method of preparation

Cook fish mince in boiling water for 20 min. Drain off the water. (In case of whole fish, dress the fish and cook for 30 min. and drain). Remove skin, scales and bones and separate the meat. Add salt and turmeric to the cooked meat and mix well. Fry chopped onions in oil till brown. Fry chilli and ginger. Mix these with the cooked meat. Add mashed potato and spices and mix well with the meat. Shape 40 g each of this in oval or round form, dip in beaten eggs, roll in bread powder and fry in oil



#### Fish Fingers

##### Method of preparation

Fish fingers can be prepared either by using the fish fillets or by using minced meat. The fillets are cut into shape of fingers. The finger shaped meat is dipped in battering solution and breaded. The battered or breaded fish fingers can be stored in deep freezer and served hot by frying in oil or in microwave oven. Fish finger can also be prepared from the skinless and bone less fish mince.



#### Pasta Product

**Basic Ingredients:** Wheat flour and refined wheat flour (1:1), salt, fish mince

##### Method of preparation

Weighing and mixing of ingredients

Optimization of moisture content  
Cold extrusion of pasta flour  
Steaming (5 minutes)  
Drying at 600 C for 2 hours  
Packing



# MPEDA at AAHAR 2018



*Visitors to the MPEDA stall*

**M**PEDA participated in the 12<sup>th</sup> regional edition of Aahar - The Food & Hospitality Fair 2018, which was held at Chennai from August 23 to 25 at Chennai Trade Centre. The event was organized by India Trade Promotion Organisation (ITPO), the premier trade promotion body of the Government of India and Tamil Nadu Trade Promotion Organisation (TNTPO – a joint venture of ITPO and TIDCO, Govt. of Tamil Nadu).

India's food and grocery market is the sixth largest in the world. Indian food sector is a high growth rate sector with immense potential for value addition. It is expected to touch US\$482 billion by 2020. The Indian food processing industry accounts for 32% of the country's total food market and 14% of the manufacturing GDP. It has been estimated that the Indian food processing sector has the potential to attract US\$ 33 billion investment in the next 10 years.

The 'Aahar 2018' provided an excellent platform for food and hospitality, food processing and packaging products, refrigeration and bakery sector, commercial kitchen equipment, tableware and glassware, I.T. Solutions and POS systems, cleaning and house-keeping related technologies and service providers including textiles, bed/table/kitchen linen, terry and non-terry products to display. The expo gave space for the participants to discuss their latest innovations

in the above sectors. The Fair is being organized every two years in Chennai with the support of the Ministry of Food Processing Industries, Government of India, APEDA and co-associated by Food & Hospitality Support Association of India (FHSAI), Resource companies for the Hospitality Industry (ARCHI), New Delhi, Hotel and Restaurant Equipment Manufacturers Association of India (HOTREMAI), Indian Federation of Culinary Associations (IFCA), Chennai, South Indian Hotel & Restaurant Association (SIHRA), Chennai, Agro &



*A view of MPEDA stall*

Food Processing Machinery Equipment & Technology Providers Association of India-AFTPAI.

The highlight of the show was a three-day culinary festival organized by the Southern Indian Culinary Association (SICA). MPEDA officials had interaction with the visitors all through the event and clarified the queries related to MPEDA activities.



# Training on Good Fishing Vessel Practices



*A view of the Dignitaries on the dias*

**T**he Marine Products Export Development Authority (MPEDA) along with the Joint Institute of Food Safety and Applied Nutrition (JIFSAN) and U.S. Food and Drug Administration (USFDA) organised training programmes on Good Fishing Vessel Practices (GFvP) and Seafood HACCP at Kochi, Kerala and Visakhapatnam, Andhra Pradesh in September.

The workshop was held from September 4 to 7 at Hotel Avenue Regent, Kochi and from September 10 to 13 at Hotel Fairfield Marriott, Visakhapatnam.

The training programmes were held as part of the train-the-trainers programme and covered topics like seafood safety, seafood safety hazards, conducting



*Dr. Brett Koonse( USFDA) interacting with the audience*



*A view of trainees*

## FOCUS AREA

hazard analysis, establishing critical limits, corrective actions, verifications and record keeping, sanitation of fishing vessels, monitoring of fishing vessels and record keeping on fishing vessels, primary processor Scombrotoxin controls and strategies for controlling Scombrotoxin, harvest vessels records, fishing vessel sanitation plan, harvest vessel records, fishing vessel food safety controls etc.

The main objective of these training programmes were to inculcate knowledge on Good Fishing vessels practices, Sanitation Standard Operating Procedures, Principles of HACCP, and Development of HACCP plan form for effective implementation of HACCP in Capture fisheries. It also aimed to disseminate the information to meet the national and international quality standards by minimizing the risk of food borne illness in wild caught material.

JIFSAN or Joint Institute for Food Safety and Applied

Nutrition is the foundation of public and private partnerships that provides the scientific basis for ensuring a safe, wholesome food supply as well as the infrastructure for contributions to national food safety programs and international food standards.

The JIFSAN was established between the United States Food and Drug Administration (FDA) and the University of Maryland (UM) in April 1996. The Institute is a jointly administered, multidisciplinary research, education and outreach programme.

The Institute fosters the missions of FDA and the University through the creation of partnerships to increase the quantity and quality of research, which will provide the basis for sound public health policy. It promotes food safety, human nutrition, and animal health and production through integrated research, education, and outreach programmes. Opportunities exist for collaborative projects with Federal and state



*Vote of Thanks by Mr. A. Sakthivel, Assistant Director, MPEDA*



*Sensory evaluation*



*Trainees conducting freshness tests*



*Quality assessment of Fishes*



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*A view of the programme*

agencies, private industry, consumer and trade groups, and international organizations with mutual interests.

US Food and Drug Administration or USFDA, the other partner in the programme, is responsible for protecting the public health by assuring the safety, efficacy, and security of human and veterinary drugs, biological products, medical devices, food supply in US, cosmetics, and products that emit radiation. The FDA also provides accurate, science-based health information to the public.

their technology and standards to the international level by way of good capacity building exercises. The fishing force, which has done a commendable work during the recent Kerala floods, may exhibit their efficiency and skill in upgrading the quality of the fishes caught. He thanked MPEDA for organizing the training programme in order to propagate the hygiene concept across the value chain.

Dr. Brett Koonse, USFDA recalled the capacity building practices organized along with MPEDA in various states of India on Seafood HACCP since 1997.



*Dr. Brett Koonse (USFDA) interacting with the audience*

Inaugurating the session at Kochi, Mr. T. Dola Sankar IOFS, Director (Marketing), MPEDA, urged the trainees to fully utilize the resourcefulness of the experts from JISFAN and USFDA, so that the technology and expertise would come into reality in field practices.

Mr. Alex K. Ninan, President, SEAI, Kerala, highlighted the fact that seafood processing units in India has upgraded

Dr. Alexandra, Lead Instructor JISFAN, Affiliate Faculty, University of Alaska, gave an introduction to the workshop during the inaugural programme. Dr. Christina De Witt, Director and Associate Professor, Seafood Lab, Oregon State University and Mr. Ken Gall, former faculty of Cornell University, were the other trainers who represented JISFAN.

Certificates were distributed to the trainees at the valedictory function. The programme was a part of the capacity building programme exercised by MPEDA so as to improve the hygienic practices followed in the fishery value chain.

Thirty-three participants representing officials of state fisheries department, Export Inspection Agency, CIFT, NIPHAT, MPEDA and export companies' quality assurance team and representatives of fisherman associations involved in the field of capture fisheries attended the training programme held at Visakhapatnam.

## FOCUS AREA



*Participants and Instructors with the Chairman and Secretary, MPEDA*

Ms. Christina DeWitt, Director, Oregon State Univ. Seafood Lab, was the lead instructor and Mr. Kenneth Gall, Cornell University (Retired), Fort Lauderdale, FL, Dr. Brett Koonse, U.S. Food and Drug Administration, College Park, MD USA and Dr. Alexandra Oliveira, Affiliate Faculty, University of Alaska were other instructors.

Mr. V. Padmanabam, President of the Seafood Exporters Association of India (SEAI), inaugurated the training programme along with JIFSAN/USFDA and MPEDA officials.

Mr. S.S. Shaji, Dy. Director, MPEDA welcomed the gathering and explained the importance of Good Fishing vessel Practices (GFvP) and Seafood HACCP Train-the trainer program conducted by MPEDA.

In his inaugural address, Mr. Padmanabam elaborated on the seafood quality management and traceability in India. He also stressed on the need of quality control and compliance of seafood standards rules in order to sustain Indian exports to USA and advised all the participants to make use of the opportunity and utilize the services of the eminent faculties to enrich their knowledge and apply the same in their processing activity so as to improve further.

Dr. Brett Koonse of USFDA appreciated the effort of MPEDA for arranging this training programme so as to enhance the quality and thus increase the seafood exports from India.

The JIFSAN instructors Ms. Christina DeWitt, Dr. Alexandra Oliveira and Kenneth Gall also advised the participants to carry out the knowledge gained in the training to the field. The inaugural function ended with Mr. Ratnakar Nayak, Assistant Director, MPEDA

proposing the vote of thanks.

During forenoon sessions of three days, technical presentation on various subjects related to HACCP and GFvP were made. The afternoon sessions were mostly used for group exercises and group presentations based on the topics presented in the day. Evaluation was carried out at the end of the day.

On the second day, Mr. S.S. Shaji, Deputy Director, MPEDA made a presentation on HACCP programmes, implementation, training in India. Next day, Mr. Atanu Ray, NETFISH state coordinator, Kolkata, made a presentation on Good Fishing Vessel Practices in India.

A 35-minute Video on Primary Processor Scombrotoxin Controls – Harvest Vessel Records was exhibited on the third day. Another video on Primary Processor Scombrotoxin Controls – Overview and Testing at Receiving was displayed on the fourth day, followed by a group discussion and overview of both the videos by the instructors.

There was a practical session on decomposition activity and sensory analysis too on the fourth day. An interactive session of MPEDA officials, participants and instructors was held on day three afternoon. This was attended by Mr. K.S. Srinivas IAS, Chairman, MPEDA, Mr. B. Sreekumar, Secretary, MPEDA and Mr. P. Anilkumar, Joint Director (Aqua), MPEDA.

Participants and instructors shared their experiences and provided feedback on the programme. Mr. K.S. Srinivas suggested that all the participants make use of the knowledge they attained from the programme for the benefit of the industry and thus enabling the growth of seafood exports from India in future.

## FOCUS AREA



Mr. Sreekumar stressed the need for adhering to the requirements of HACCP & Good Fishing Vessel Practices for survival and growth of the industry.

Mr. Anilkumar requested the participants to train the technical hands in their establishments, based on the knowledge attained from this programme, so as to streamline the quality of material produced as well as hygienic aspects.

An adjourn meeting was held on the fourth day. Mr. M. Shaji, Deputy Director, Regional Division, MPEDA Visakhapatnam appreciated the sincere efforts taken by the instructors in successful conduct of the programme as well the trainees, who benefitted out of the programme by their active participation. Mr. Ratnakar Nayak, Assistant Director, MPEDA Regional Division, Visakhapatnam proposed the vote of thanks.





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# Awareness programmes for School students



*Providing height and weight check scales to the school*

An awareness programme on NETFISH and its activities, various farming systems, conservation of marine resources, HACCP, capture fisheries, crafts and gear was organised for the students of B.T. Sir Rajendra Vocational Higher Secondary School, North 24 Parganas, West Bengal on August 2.

Mr. B.K. Sengupta of Science Association of Bengal and Mr. Ujjwal Kr. Sar of Sarbodaya Sangha led classes on the various topics in the programme.

Another school programme was conducted at Government Fisheries School, Satpati on August 16 through the member NGO-MVSS, Thane. The programme covered topics such as juvenile fishing, marine pollution, conservation of marine environment, sustainable fisheries, etc. The programme was meant for around 105 students from 8<sup>th</sup> standard of the school.

On August 18, an awareness programme was conducted at U P School, Nehru Bungalow, Paradeep in which 15 students attended. The programme included lectures on various themes like types of fishes, ice and fish, fish quality, hygiene and sanitation, fishing harbour, fishing boats, fish processing, exports, etc.

The school children awareness programme organized at KDPM HS, Visakhapatnam on August 31 by NETFISH along with NGO DFYWA, was attended by Mr. Ratnakar

Naik, Assistant Director, Regional Division, MPEDA, Visakhapatnam. The programme had a participation of around 50 students and teachers of the school to whom messages on hygiene and sanitation and importance of sustainable fisheries were conveyed. The participants were made to take an oath "to avoid marine pollution and to take up conservation of sea" at the end of the session. NETFISH had provided a set of height and weight check scale to monitor the health of the school students.



*School children awareness programme in Vizag*

Leaflets on conservation and fish quality were distributed among the participants in all these sessions and videos on hygiene and conservation were screened. School management as well as students appreciated NETFISH for conducting the training programmes and they requested to conduct more programmes in future.

# Natural plants extracts as seafood preservatives

**M. BHARGAVI PRIYADARSHINI, VIGNAESH DHANAPALAN,  
K.A. MARTIN XAVIER AND A.K.BALANCE**

**T**he keeping quality is an important criteria with respect to seafood products, as they are highly perishable. A longer shelf life of the seafood facilitates sales in more geographically distant markets<sup>1</sup>. The freshness of the fish vanishes slowly after its death due to various biochemical reactions and microbiological spoilage<sup>2</sup>. Food preservatives are commonly used to enhance their quality, shelf life and safety. These preservatives include nitrates, benzoates, sulfites, sorbates, formaldehyde, which possess life-threatening side effects<sup>3</sup>.

It is now advised to resort to sources alternative to synthetic compounds for better consumer safety, such as novel and naturally occurring compounds for preserving the sensory and microbial quality of meat products<sup>4</sup>. In several research studies, the plant extracts have been proven to possess the antioxidant and anti-microbial activity.

THE APPLICATION OF PLANT EXTRACTS TO FISH AND FISH PRODUCTS CAN BE APPLIED IN THE FORM OF DIP TREATMENT, COATINGS (EDIBLE) AND IN THE FORM OF ICE MADE BY INCORPORATING THE PLANT EXTRACTS.

The chemical substances of plant extracts such as polyphenols, flavonoids, tannins, alkaloids, terpenoids, isothiocyanates, lectins, polypeptides or their oxygen-substituted derivatives are well known as antimicrobial properties and significantly increase the quality of meat products. The application of plant extracts to fish and fish products can be applied in the form of dip treatment, coatings (edible) and in the form of ice made by incorporating the plant extracts.

### **Plant extracts used in extension of shelf life of fish**

Rosemary (*Rosmarinus officinalis*) is a plant species of the Labiatae family, and its major and most active extract

components (e.g., carnosol, carnosic acid, rosmarinic acid etc.) have been proved to be effective against cancer and inflammation diseases in experimental animals and humans<sup>5</sup>. Rosemary extract combined with nisin treatment effectively improved physicochemical quality parameters and the sensory, and reduced microbial growth of pompano (*Trachinotus ovatus*) fillet in comparison to control, when stored 15 days at  $4 \pm 1^\circ\text{C}$  <sup>6</sup>. In abalone (*Haliotis discus hannai*) when treated with sodium alginate coating (SAC) and rosemary extract (ROE) stored exhibited an enhancement of sensory properties, delayed pH change and decreased total volatile basic nitrogen (TVBN) at chilled storage conditions<sup>7</sup>.

Grape seed extract or tea polyphenols were incorporated with chitosan coating and quality parameters such as microbiological, physicochemical, and sensory attributes were assessed.

The incorporation of extracts extended the shelf life of the fish fillets effectively by 6–8 days when stored at  $4 \pm 1^\circ\text{C}$  <sup>8</sup>. The effect tea polyphenols and rosemary extract, on microbiological, chemical, texture and sensory changes of air-packaged whole crucian carp (*Carassius auratus*) stored at  $4 \pm 1^\circ\text{C}$  was investigated and found to increase the shelf life by 7 to 8 days in comparison with the untreated group<sup>9</sup>. Ginkgo biloba leaf extract (GBLE) had effect on the quality of silver pomfret (*Pampus argenteus*) stored at  $4 \pm 1^\circ\text{C}$  and extended the shelf life in ice for 18 days<sup>10</sup>.

Anchovy (*Engraulis encrasicolus*) stored in ice containing thyme (0.04% w/v), oregano (0.03% w/v) and clove (0.02% w/v) extracts shown extension in shelf life of the anchovy<sup>11</sup>.

The ice is prepared from aqueous extracts of oregano (*Origanum vulgare*) and rosemary (*Rosmarinus officinalis*) leaves was applied as chilling system and compared to traditional ice in extending the keeping the quality of Chilean jack mackerel (*Trachurus murphyi*) fish and found positive effects<sup>12</sup>.

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Antimicrobial and antioxidant effects of essential oils extracted from oregano, thyme, and star anise enhanced the quality of grass carp fillets by delaying lipid oxidation, and retarding the increase of TVB-N, putrescine, hypoxanthine, and K-value<sup>13</sup>. Cinnamon bark oil enhanced the shelf life of grass carp fillets at  $4 \pm 1^\circ\text{C}$  by increasing organoleptic quality, inhibiting microbial growth, and delaying the increase of TVB-N, putrescine, cadaverine and K-value<sup>14</sup>. Clove bud extract (CBE) and grape seed extract (GSE) acted as a natural antioxidants for retarding lipid and protein oxidation in silver carp fillets stored at  $4 \pm 1^\circ\text{C}$  and improved the shelf life.

The application of 3% (w/v) Ajwain seed extracts (*Trachyspermum ammi* (L.) Sprague) exhibited the best antioxidative and antimicrobial activities and increased storage, followed by 3% shallot fruit extract (*Allium ascalonicum* L) in semi-fried coated rainbow trout (*Oncorhynchus mykiss*) fillets at refrigerated storage<sup>15</sup>.

Utilization of locally available and natural plant extracts in the form of food preservatives will not only extend the shelf life, but enrich the fish and fish products with anti-oxidants, which possess beneficial effects on the health of consumers.



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# Awareness training for fishermen



*Dr. Joice V Thomas, Chief Executive NETFISH delivering the lecture on sea safety and navigation*

In the wake of recent incidents challenging the safety of fishers at sea, NETFISH extended its focus to safety of fishermen at sea and started providing awareness trainings to fishers, boat owners, boat crews etc. on safe fishing. During August, six awareness programmes on Sea Safety and Navigation were conducted at Odisha, Kerala, Karnataka and Maharashtra.

On August 9, NETFISH in association with Department of Fisheries and Marine Enforcement, Neendakara, organised an awareness programme on Sea Safety, Sustainability, First Aid and Coastal Security for 60 fishers at Neendakara.

Mrs. Maya Vimala Prasad, President of Neendakara Grama Panchayath inaugurated the programme. Mr. P. Jayaprakash, Vice Chairman of MPEDA, Dr. Joice V. Thomas, Chief Executive of NETFISH, Mr. R. Ramesh Sasidharan, Assistant Director of Fisheries, Mr. Sumesh, Sub Inspector of Marine Enforcement, Mrs. Sangeetha. N. R., State Coordinator of NETFISH, Mr. Peter Mathias, State President of Boat Operators Association and Mr. Charley Joseph, President of District Boat Operator's Association were present on the occasion.

During the programme the trainees were explained about importance of following safety measures at sea, equipment for safe navigation and also about the new mobile application for sea safety named as 'SAGARA' developed by Government of Kerala.

A training programmes on operation of Global Positioning System (GPS), Fish Finders and Automatic Identification System (AIS) was conducted at Dhakti Dahanu region, Palghar on August 18, which was attended by 30 fishers. Operation and troubleshooting of safe navigation equipment such as GPS, fish finders and AIS were demonstrated in the programme.

On August 28, a Sea Safety programme was conducted at Paradeep with the coordination of member NGO SRMSS in which 30 skippers and crew members attended. The trainees were enlightened about the safety and security at sea, importance of registration and license of fishing boat, safety measures at boat, use of different life saving equipment such as life jacket, life buoy, life raft, distress alert transmitter machine and different communication measures during distress.

Three awareness programmes on "Use of Electronic Equipment in fishing vessels" were conducted at Mudga fishing harbour, Amdalli, Karwar on August 27, at Baithkol fishing harbour, Karwar on August 28 and at Mandovi fishermen society, Malim jetty, Panaji, Goa on August 29 respectively. A total of 107 participants including boat owners and boat crews attended the training programmes. The trainees were made aware about the operation of AIS, GPS, Fish Finder, SONAR and other electronic equipment through theory and practical sessions. Mr. Rahul Cowhan, Senior Engineer and Mr. Santosh Patil, AGM, M/s. Furuno, Mumbai were the resource persons for the programmes.

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Resource persons from Furuno, Mumbai handling the class in the Training programme at Karwar



GPS training programme held at Malim



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# Highlights of marine fish landings in selected harbours of India during August 2018

**N. R. SANGEETHA, V. V. AFSAL, N.J. NEETHU AND JOICE V. THOMAS**  
NETFISH-MPEDA

To facilitate the MPEDA's Catch Certification scheme, NETFISH records the marine fish landings and boat arrivals occurring at the major harbours of India. In this report, the analysis result of fish landing and boat arrival data obtained during August 2018 is presented.

## Data Collection & Analysis

The Harbour Data Collectors stationed at selected major landing sites across the country (see Table 1) had recorded Fish Catch and Boat arrivals information on a daily basis, both from primary and secondary sources. Approximate quantity of various fish species landed in a day at the harbour was obtained by eye estimation. The name, registration number and type of fishing vessels arrived at the harbour were also recorded. These data were further analysed using online applications and MS office (Excel) tools to arrive at species-wise, region-wise, state-wise and harbour-wise estimations. Data from 45 harbours belonging to 9 maritime states were obtained during the month which was analysed for this report.

**Table 1. List of harbours and landing centres selected for data collection**

Sl. No.	State	Fishing harbour
1	West Bengal	Deshapran
2		Namkhana
3		Raidighi
4		Kakdwip
5		Digha (Sankarpur)
6	Odisha	Paradeep
7		Balaramgadi
8		Bahabalapur
9		Dhamara

10	Andhra Pradesh	Visakhapatnam
11		Nizampatnam
12		Kakinada
13		Machilipatnam
14	Tamil Nadu	Nagapattinam
15		Karaikal
16		Chennai
17		Pazhaiyar
18		Cuddalore
19		Pondicherry
20		Chinnamuttom
21		Mandapam
22		Tuticorin
23		Colachel
24	Kerala	Thoppumpady
25		Vizhinjam
26		Thottappally
27		Kayamkulam
28		Beypore
29		Sakthikulangara
30		Munambam
31		Puthiyappa
32	Karnataka	Tadri
33		Karwar
34		Mangalore
35		Honnavar
36		Malpe
37		Gangoli
38	Goa	Cutbona

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39	Goa	Malim
40	Maharashtra	Ratnagiri (Mirkarwada)
41		Sasson Dock
42		Harne
43	Gujarat	Veraval
44		Mangrol
45		Porbandar

### Evaluation on fish landings

The fish catch data obtained from 45 landing sites during August 2018 totalled to a quantity of 47,118.88 tons, which was comprised of 13,585.64 tons (29%) of Pelagic finfishes, 15,360.49 tons (33%) of Demersal finfishes and 18,172.75 tons (38%) of Shellfishes, whereby the Shellfish resources contributing the maximum quantity (Fig. 1).

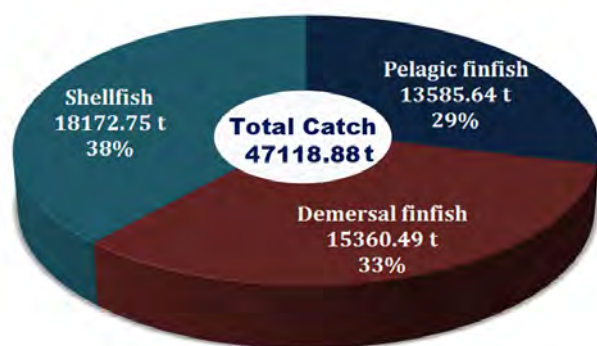


Fig. 1. Category-wise fish landings during August 2018

The total catch was comprised of 104 varieties of marine fishery items, among which the top five contributors in the chronological order were Japanese threadfin bream, Cuttlefish, Squid, Ribbon fish and Indian mackerel (Fig. 2). These 5 fishery items together formed 49% of the total catch. The other major fishery items were *Karikkadi* shrimp, Croakers & Snappers, each variety contributing more than 1500 tons to the total catch. The Double barred spine foot, which recorded a quantity of 0.15 tons, was the species that registered least landing during the month.

The quantity of various fishery items recorded during August 2018 is given category-wise in Table 2. Ribbon fish and Indian mackerel were the pelagic finfish varieties which contributed more during the period. In the case of demersal finfishes, the major contributors were Japanese threadfin bream, Croakers & Snappers, whereas among the Shellfish stock, Cuttlefish was the major contributor and followed by Squid and *Karikkadi* shrimp.

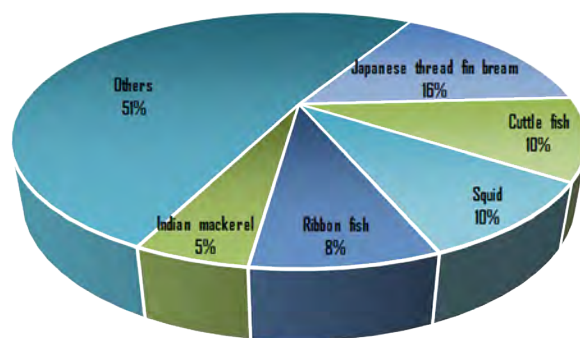


Fig. 2. Major fishery items landed during August 2018

Table 2. Category-wise landing of various fishery items during August 2018

Fish item	Quantity in tons
<b>Pelagic finfish</b>	
Ribbon fish	3874.19
Indian mackerel	2385.33
Hilsa	1396.46
Bombay duck	1172.57
Anchovies	987.13
Tuna	959.59
Indian oil sardine	712.02
Scads	388.20
Seer fish	234.05

Trevallies	211.39
Lesser sardines	200.31
Barracuda	191.10
Horse mackerel	188.29
Herrings	165.26
Leather jacket	158.21
Mullet	85.87
Indian salmon	79.08
Sail fish	50.54
Queen fish	40.52
Silver sillago	28.70

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Dolphin fish	28.03
Sea bass	12.86
Cobia	12.70
Marlins	10.82
Oriental bonito	7.20
Indian ilisha	2.80
Indian thread fish	2.45
<b>Total</b>	<b>13585.64</b>
<b>Demersal finfish</b>	
Japanese Thread fin bream	7431.93
Croakers	1933.79
Snapper	1739.22
Reef cods	997.10
Pomfrets	966.70
Cat fish	504.40
Sole fish	464.72
Lizard fish	368.31
Eel	224.46
Bull's eye	204.80
Pony fishes	149.60
Rays	85.08
Goat fish	81.98
Black tip shark	38.10
Silver biddy	31.70
Parrot fish	29.99
Spine foot	21.05
Moon fish	18.10
Emperor bream	17.86
Perch	17.85
Filefish	12.40
Indian halibut	10.07
Ghol	9.72
Guitar fish	0.80
Yellow fin sea bream	0.50
Batfish	0.30
<b>Total</b>	<b>15360.49</b>

<b>Shellfish</b>	
<b>Crustaceans</b>	
Penaeid Shrimps	6330.10
Sea Crab	1070.67
Non-penaeid shrimps	143.24
Mud Crab	39.20
Lobsters	3.66
<b>Total crustaceans</b>	<b>7586.88</b>
<b>Molluscs</b>	
Cuttlefish	4882.44
Squid	4440.42
Octopus	1262.72
Whelk	0.30
<b>Total molluscs</b>	<b>10585.87</b>
<b>Total shellfish</b>	<b>18172.75</b>
<b>Grand Total</b>	<b>47118.88</b>

### Region-wise landings

In August 2018, the maximum quantity of fish landings was recorded from the South West coast, where a total of 17,055.22 tons (36% of total catch) of fish catch was reported from the selected harbours of Kerala, Karnataka and Goa. The North West coast comprised of Maharashtra and Gujarat, which had contributed 26% of the total catch, held the second position. From the South East coast, landings were recorded from 14 harbours in Tamil Nadu and Andhra Pradesh which totalled to a quantity of 6,290.29 tons whereas along the North East coast 11,519.21 tons of fish catch was recorded altogether from 5 harbours of West Bengal and 4 harbours of Odisha (Fig. 3).

The five major fishery items which had contributed predominantly to the landings in each region are given in Table 3.

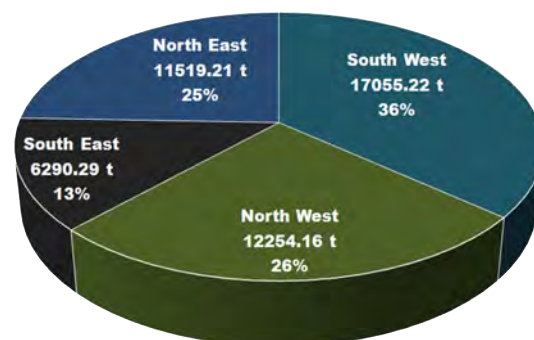


Fig. 3. Region-wise landings recorded during August 2018

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**Table 3. Major items landed in each region during August 2018**

Item	Quantity in tons	% of total landings of the region
<b>South West</b>		
Japanese Thread fin bream	5742.43	33.7
Cuttlefish	1875.82	11.0
Squid	1814.17	10.6
Snapper	1624.10	9.5
Indian mackerel	1526.84	9.0
<b>North West</b>		
Ribbon Fish	2852.21	23.3
Cuttlefish	1813.98	14.8
Squid	1683.66	13.7
Japanese Thread fin bream	1530.67	12.5
Reef cod	759.03	6.2
<b>South East</b>		
Cuttlefish	957.19	15.2
Squid	623.79	9.9
Tuna	615.76	9.8
Brown shrimp	264.20	4.2
Indian mackerel	260.73	4.1
<b>North East</b>		
Hilsa	1395.86	12.1
Croaker	1357.01	11.8

Bombay duck	870.56	7.6
Marine shrimp ( <i>Karikkadi</i> )	780.17	6.8
Sea crab	700.32	6.1

### State-wise landings

In August, the maximum landing was recorded from Kerala which was to the tune of 12,177.63 tons, forming 26% of total catch (Fig. 4). This was followed by West Bengal with 8,950.56 tons (19%) and then by Gujarat with 8,046.02 tons (17%).

The state which reported least landing was Goa, where only 250.32 tons of marine fish catch was recorded during the period. The five West coast states together formed 62% of the total catch and the rest of the 38% only belonged to the four East coast states.

The major five fishery items which had contributed significantly to the landings in each state during August are given in Table 4.



**Fig. 4. State-wise fish landings (in tons) during August 2018**

**Table 4. Major items landed in various states during August 2018**

Item	Quantity in tons	% of total landings of the state
<b>Kerala</b>		
Japanese Thread fin bream	2867.58	23.5
Squid	1780.90	14.6
Snapper	1624.10	13.3
Cuttlefish	1229.82	10.1
Marine Shrimp ( <i>Karikkadi</i> )	993.52	8.2
<b>Karnataka</b>		
Japanese Thread fin bream	2874.85	62.1

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Cuttlefish	646.00	14.0
Indian mackerel	439.82	9.5
Reef cod	121.51	2.6
Octopus	104.22	2.3
<b>Goa</b>		
Indian mackerel	146.77	58.6
Scad	29.20	11.7
White Prawn	21.45	8.6
Horse mackerel	8.10	3.2
Squid	7.67	3.1
<b>Maharashtra</b>		
Squid	1024.66	24.3
Brown Shrimp	479.37	11.4
Japanese Thread fin bream	460.87	11.0
Ribbon Fish	407.61	9.7
Marine Shrimp ( <i>Karikkadi</i> )	316.84	7.5
<b>Gujarat</b>		
Ribbon Fish	2444.60	30.4
Cuttlefish	1782.40	22.2
Japanese Thread fin bream	1069.80	13.3
Squid	659.00	8.2
Reef cod	605.50	7.5
<b>Tamil Nadu</b>		
Cuttlefish	814.45	20.0
Squid	503.36	12.3
Tuna	195.89	4.8
Indian Oil Sardine	168.76	4.1
Indian Scad	166.25	4.1
<b>Andhra Pradesh</b>		
Tuna	419.87	19.0
White Prawn	175.37	7.9
Sea Crab	155.46	7.0
Brown Shrimp	153.97	7.0
Cuttlefish	142.74	6.5
<b>Odisha</b>		
Croaker	480.53	18.7
Marine Shrimp ( <i>Karikkadi</i> )	298.40	11.6
Tuna	161.20	6.3

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Sea Crab	147.65	5.7
Hilsa	138.25	5.4
<b>West Bengal</b>		
Hilsa	1257.61	14.1
Croaker	876.48	9.8
Bombay Duck	822.30	9.2
Sea Crab	552.68	6.2
Marine Shrimp ( <i>Karikkadi</i> )	481.77	5.4

### Harbour-wise landings

Figures 5 and 6 represent the fish landings recorded during the month at the selected harbours. Of the 45 harbours, Veraval harbour in Gujarat registered the maximum landing of 5,130.00 tons (11%) and it was followed by Munambam harbour with a contribution of 3,946.00 tons (8%). Along East coast the Deshapran harbour registered the maximum landing which was to the tune of 3,735.20 tons, thus forming nearly 8% of total catch. The least landing was recorded from Gangolli harbour in Karnataka (6.00 tons).

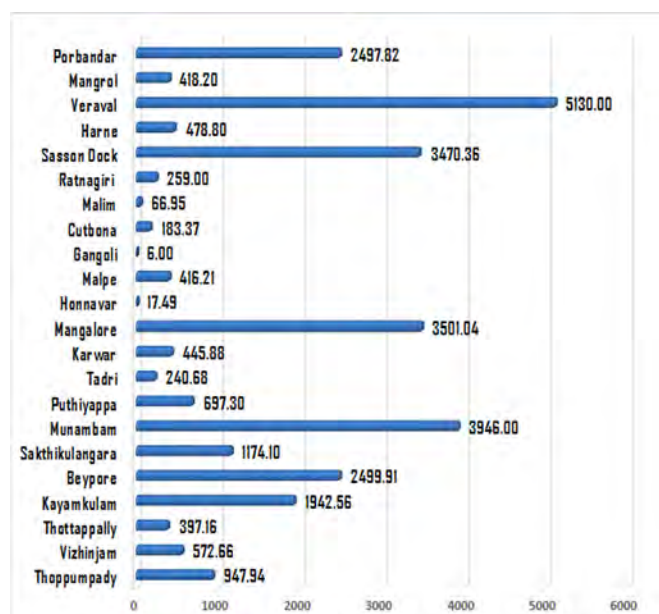


Fig. 5. Landings (in tons) recorded at harbours in west coast during August 2018

### Appraisal of boat arrivals

A total of 17,296 boat arrivals were recorded during August 2018, of which the highest number of boat arrivals was recorded at Deshapran harbour (1,268 nos.). The Veraval harbour with 1,121 numbers of boat

arrivals held the next position. More than 75% of the fishing vessels which landed their catch at the harbours belonged to the category of Trawlers and the remaining landings were by Purse seiners, Gill netters, Long liners and Traditional crafts.

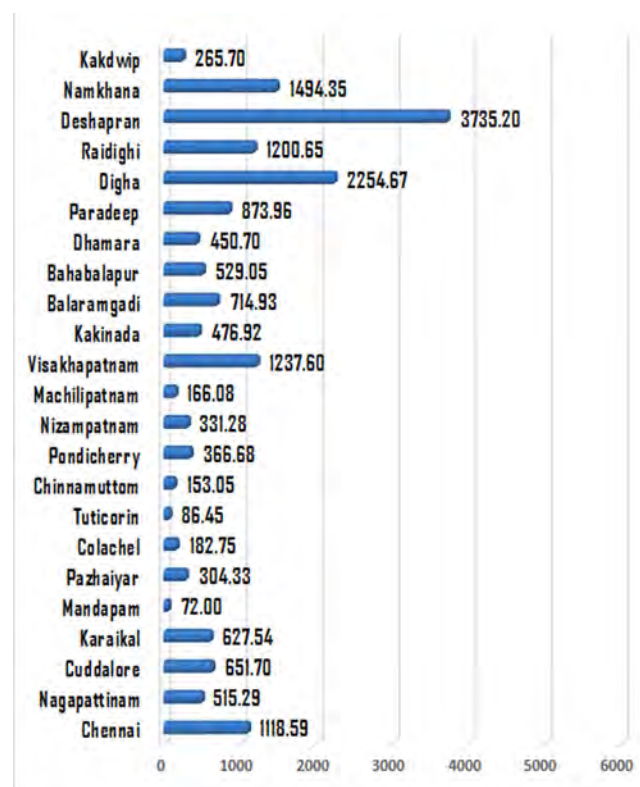


Fig. 6. Landings (in tons) recorded at harbours in east coast during August 2018

### Comparative analysis

Table 5 presents the comparison of the data of August-2018 with that of previous months. The total fish catch had increased over the months, with the landing almost double in August than that of July. On analysing the catch compositions, the contribution by Shellfishes outnumbered the other two categories during August whereas in previous months it was

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pelagic resources which formed the maximum share. In August the contribution by Pelagic fish resources was the least while the demersal resources had registered 13% growth in its share. Japanese threadfin bream had registered as the topmost contributor among the various fishery items landed during the period and the Indian mackerel could only attain the fifth position. In August, Kerala had regained its top position among the states, moving West Bengal to the second position. The Veraval harbour had accomplished the topmost position among the harbours in terms of quantity of fish landed during August and the Deshapran harbour was downscaled to third place. The total number of boat arrivals recorded had increased in August when compared to that of previous months.

### Summary

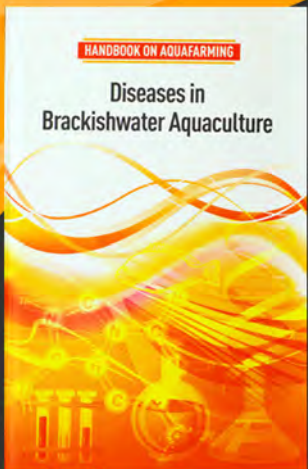
In August 2018, a total landing of 47,118.88 tons of marine fishery resources were recorded from the 45 major fishing harbours of India, wherein Shellfish stocks contributed more quantity than demersal and pelagic finfishes. Considering the fishery item-wise landings, Japanese threadfin bream was the major contributor during the month. About 62% of the total catch recorded during August was from the West coast. Kerala was the state which recorded maximum landing during the period and the Veraval harbour in Gujarat had registered the highest landing. However, the maximum number of boat arrivals was reported from Deshapran harbour.

**Table 5. Comparative analysis of the data**

	June 2018	July 2018	August 2018
<b>Total Catch</b>	<b>11619.06 t</b>	<b>23957.27 t</b>	<b>47118.88 t</b>
Landing of Pelagic finfishes	4439.45 t (38%)	11037.42 t (46%)	13585.64 t (29%)
Landing of Demersal finfishes	2889.96 t (25%)	4685.39 t (20%)	15360.49 t (33%)
Landing of Shellfishes	4289.65 t (37%)	8234.45 t (34%)	18172.75 t (38%)
Species recorded highest landing	Poovalan shrimp (11%)	Indian Mackerel (10%)	Japanese threadfin bream (16%)
State recorded highest landing	Kerala (35%)	West Bengal (45%)	Kerala (26%)
Harbour recorded highest landing	Kayamkulam (16%)	Deshapran (20%)	Veraval (11%)
<b>Total Boat Arrivals</b>	<b>6,564</b>	<b>11,564</b>	<b>17,296</b>

\*Percentage of total catch





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**Diseases in Brackishwater Aquaculture**

THE MARINE PRODUCTS EXPORT DEVELOPMENT AUTHORITY (Ministry of Commerce & Industry, Government of India)  
Head Office, MPEDA House, Building No: 27/1162, PB No:4272, Panampilly Avenue, Panampilly Nagar PO, KOCHI-682 036

## AQUACULTURE SCENE



*Mr. Ram Shankar Naik IAS, Commissioner of Fisheries, Department of Fisheries, A. P. addressing the farmers*

## Farmers Meet at Bhimavaram

**M**r. K. Nageswara, AMC, Chairman, Bhimavaram, West Godavari District, inaugurated the one-day farmers' meet, organised by the Sub Regional Division of MPEDA at Hotel Ananda Inn, Bhimavaram, West Godavari district on August 10. The main objective of the meet was to create awareness on farm enrolment and against the use of banned antibiotics in aquaculture. The programme was attended by 161 farmers, traders, aqua technicians and officials.

Among the officials who attended the meeting were Mr. Ram Shankar Naik IAS, Commissioner of Fisheries, Department of Fisheries, A.P., Mr. K. Nageswara Rao, AMC, Chairman, Bhimavaram, West Godavari District, Mr. U.K. Viswanatha Raju, Chairman Ananda Group, Progressive aqua farmer and exporter, Bhimavaram, Mr. P. Anil Kumar, Joint Director, MPEDA, Regional Division, Vijayawada, Dr. S Angeli, Joint Director of Fisheries, West Godavari District, Mr. D. Krishnam Raju, President, Andhra Pradesh Aqua Dealers Welfare Association and Dr. P. Sreenivasulu, Assistant Director, MPEDA, Sub Regional Division, Bhimavaram.

Dr. P. Sreenivasulu, Assistant Director, MPEDA, Sub Regional Division, Bhimavaram welcomed the gathering. He talked about the objective of the programme.

Mr. Ram Shankar Naik I.A.S., Commissioner of Fisheries, Department of Fisheries, Andhra Pradesh spoke about

antibiotic issues in aquaculture and rejection of export consignments from EU and USA. He also explained about SIMP and its implications on aquaculture export. He requested all farmers to enrol immediately as per the requirement of SIMP. He also explained to those present that the farm enrolment process was being done by the State fisheries Department in association with the MPEDA.

Mr. P. Anil Kumar, Joint Director, MPEDA, Regional Division, Vijayawada made a presentation on statistics on rejections of consignment in EU and USA last 5 years. He urged the farmers to concentrate on the new market such as Russia and Korea. He made a presentation on introduction of SIMP programme by USA. He requested the farmers to enroll the farms at the earliest. He also answered the doubts raised by the farmers.

Mr. U.K. Viswanatha Raju, Chairman, Ananda Group, who is also a progressive aqua farmer and exporter from Bhimavaram, stressed on importance of farm enrolment for better future of aquaculture exports. He requested the farmers to cooperate with MPEDA by submitting all relevant documents for completion of the enrolment.

Mr. D. Krishnam Raju, President, Andhra Pradesh Aqua Dealers Welfare Association explained about antibiotics

## AQUACULTURE SCENE

issue in aquaculture and informed that aqua dealers are not selling antibiotics. However, some farmers are taking it directly from poultry medicine shops. He requested all the farmers that not to purchase any product without bills and explained how bills can improve the chance of traceability. He warned those present against practice by some of the companies that are supplying suspicious products to the farm directly.

Mr. K. Nageswra Rao AMC, Chairman, Bhimavaram requested to all farmers for enrol their farms with the MPEDA. He suggested the MPEDA to make awareness regarding farm enrolment and start to complete the process mandal-wise. He added that a special campaign in AMC Market yard building, Bhimavaram could be done to speed up the farm enrolment process. He appreciated commendable work done by the MPEDA during the last few years for the benefit of the aqua farmers.

Dr. P. Sreenivasulu, Assistant Director, MPEDA requested all the stake holders to cooperate with MPEDA and Fisheries officials by extending help in collection of related land documents to complete the enrolment in time. He explained about the launching of MPEDA Fish Exchange Portal for eliminating the middlemen and importance of traceability for betterment of aquaculture. He too answered doubts raised by the farmers.

Dr. S. Angeli, Joint Director of Fisheries, Department of Fisheries, Eluru spoke on activities of the Taskforce committee and inspection of aqua shop in West Godavari district for controlling the sale of banned

antibiotics. Mr. J. Das, Secretary, Andhra Pradesh Aqua Dealers Welfare Association, explained about innovative culture practices developed by the West Godavari district farmers for enhanced shrimp production by minimising the disease problems. He also appreciated MPEDA for creating awareness on farm enrolment, EU rejections and SIMP regulation by USA by organising series of programmes.

Mr. A.B. Ch Mohan presented on BAP certification programme and its use in aquaculture. He has also explained the procedure to be followed for getting BAP certification.

The programme ended with the vote of thanks by Mr. K. Ramanjaneyulu, Junior Technical Officer, MPEDA, Sub Regional Division, Bhimavaram, the central them of which was "No Antibiotic in Culture System".



A view of the audience







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# Meet on Shrimp Farming



*Mr. K. Shanmukha Rao, CEO, NaCSA delivering the keynote address*

Mr. Sathyanarayana, Assistant Director, Department of Fisheries, Kavali, inaugurated a farmers' meet on 'Problems and Prospects in Shrimp Farming', organised by MPEDA Satellite centre, Nellore at Thummalapenta, an aquaculture village at Kavali Mandal, Nellore district on July 19.

Addressing the 155 beneficiaries from the region, Mr Sathyanarayana appreciated the steps taken by MPEDA to bring the farmers in to main stream and he also offered the full support from the department to achieve the goal.

The main theme of the meet was to discuss on the burning issues in aquaculture and the possible approach/mitigation measures to produce healthy shrimp from the country.

Mr. P. Prasad, Fisheries Development Officer, Kavali pointed out that in Kavali Mandal farmers were very enthusiastic and always preferred scientific farming. They were totally against usage of any unknown inputs to their farms. He also appreciated the steps taken by NaCSA to popularise the need for society formation in Thummalapenta and nearby villages.

In his keynote address, Mr. K. Shanmugha Rao, Chief Executive Officer, NaCSA gave a detailed overview of the present aquaculture scenario, where the farmers were facing several issues like low price for their products, disease incidence, high input costs etc. He

emphasized that the main reason for the low prices was due to the surplus production in other countries and surely within a couple of months the situation would take a turn for better. But, the farmers should always be alert in input usage in the light of the recent export rejections, mainly due to antibiotic issue. He also suggested farmers should follow Best Management Practices and in this connection farmers could get the support from MPEDA and NaCSA office.



*Mr. P. Venkata Sathya Narayan, Assistant Director, Department of Fisheries, Kavali inaugurating the meet*

During the technical session Mr. P. Brahmeswara Rao, Assistant Director, MPEDA, Regional Division, Vijayawada, highlighted the importance of traceability and SIMP, which would become mandatory from January 2019 onwards. He suggested the farmers to come forward if their farms were not yet enrolled by

## AQUACULTURE SCENE

MPEDA. He also emphasized the importance of farm certification as certified products were having more demand and premium price in international market. Mr. P. A. Pavanamurthy, Field Manager, NaCSA, also spoke on the technical session about the role of NaCSA in Aquaculture development in the country. Mr. Yallamgaari Parvathaiah, President, Sri Mundara Pottamma Thalli Aqua Farmers Welfare Association and Mr. Vaila Chitti Babu, President, Sri Mundara Pottamma Aqua Farmers Welfare Society, also spoke. It was followed by a group discussion where officials of MPEDA, NaCSA and Fisheries department responded to various queries raised by the farmers. The programme concluded with the vote of thanks by Dr. Ganesh K, Assistant Director, MPEDA Satellite Centre, Nellore.



*A view of the participants*



## Field Trips to Shrimp Nurseries



*Shrimp farm of Mr. Pankaj Patel, Katpore.*

**S**hrimp farmers from Valsad and Navasri districts were taken to field trips by MPEDA Regional Division, Valsad on August 4 and 7. These farmers were facing issues like Running mortality syndrome White faecal syndrome and white gut syndrome and growth retardation during this monsoon crop.

Farmers of other coastal districts of Gujarat have overcome these problems by setting up on-farm shrimp nursery system. There are around 50 nurseries set up by Bharuch district farmers and in Katpore alone, there are 32 nurseries.

Ten farmers from Valsad were taken on August 4 and ten from Navsari on August 7 to the shrimp nursery set up by Mr. Pankaj Patel and Mr. Dipak Patel at Katpore, Bharuch district. Mr. Maruti D. Yaligar, Deputy Director and Mr. Bhavin Gheravara, Field Supervisor accompanied the farmers in these trips.

Mr. Dipak Patel explained the advantages of shrimp nursery such as, properly designed shrimp nursery systems having high bio-security facilities to grow post larvae at high densities from 5 mg to one gram and permitting better and more precise management of ponds. Well-managed nursery systems provide for faster growth

## AQUACULTURE SCENE



*Mr. Maruti D Yaligar, Deputy Director and Mr. Bhavin, Field Supervisor, MPEDA with farmers of Navsari District at the On-Farm Shrimp Nursery, Katpore*

and production of bigger and stronger juveniles with better survival chances. Stocking juveniles from nursery system rather than direct stocking of post larvae, increases the number of grow out production cycles by reducing culture time to market size in the grow ponds. Larger and older shrimp will have a more developed immune system.

As a management strategy for EHP and white gut, a nursery phase permits the stocking of large juveniles, with better resistance to the disease in the grow out ponds. The small confinement provides for significant control of water quality, proper feeding and disease exclusion. Shrimp nursery requires greater infrastructure investment, high operational cost and presence of a trained biologist.

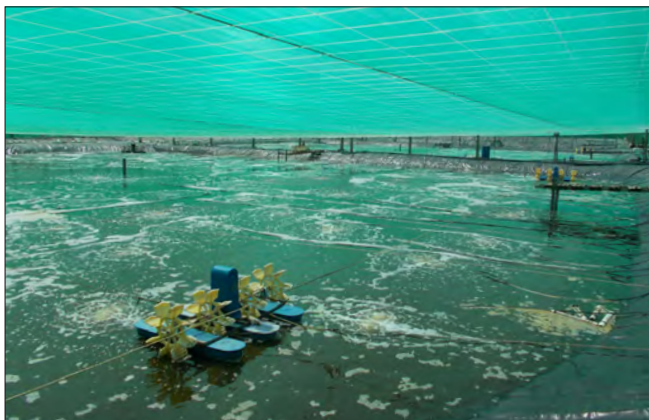
Mr. Dipak Patel also briefed about their nursery operation. They have set up four nurseries of 1200 sq m each (30x 40 mt) last year, which included lined tanks and covered with plastic green house with central drainage system and having 5 feet deep water. Stocking with two million seed in each nursery and rearing for 30 to 45 days, to cover seed requirement for 20 Ha grow-out area and grow-out culture period is around 100-120 days. He also told the participants that 294 MT of shrimp of 40,30 and 25 count material was harvested during the year 2017 -18.

This was of six-month culture period and the yield was

from 20 Ha farm. During this year, they were expecting more than 180 MT from 10 Ha area.

He also said that his twenty Ha farm (P-Lined) is free from Running mortality, White faecal syndrome, white gut syndrome and WSSV. Mr. Maruti D. Yaligar noted that nurseries have the potential to enable increasing biosecurity and better disease control.

Farmers of Valsad and Navsari districts, who visited these nurseries, were convinced to take up on-farm shrimp nursery to overcome the disease problems and improve farming practices.



*A view of On-Farm Shrimp Nursery set up by Mr. Dipak Patel and Mr. Pankaj Patel, Katpore*

## AQUACULTURE SCENE

# Training on diversified aquaculture



*Field visit to cage farm at Puthenvelikkara*

A general training programme on 'Diversified Aquaculture – Species Diversification' was held at Thekkumkara Grama Panchayat Hall, Thrissur from July 25 to 27. Twenty-three trainees attended the programme.



*Field visit to aquaculture farm at Pullut*

Topics covered during the training programme were MPEDA and its role, species diversification in aquaculture with special reference to Kerala, general practices in aquaculture, best management practices in aquaculture, scientific farming of Scampi (*Macrobrachium rosenbergii*), Asian Seabass (*Lates calcarifer*), Genetically Improved Farmed Tilapia (GIFT), Vannamei shrimp (*Litopenaeus vannamei*) and Black Tiger shrimp (*Penaeus monodon*), cage farming, schemes and services of Fresh water Fish Farmers Development Agency (FFDA), Thrissur district, abuse of antibiotics in aquaculture, moving towards certification, RGCA facilities in Tamil Nadu and

Vallarpadom and enrolment of hatcheries and farms. The participants did a field visit to a scientific farm at Pullut and visited cage farming site at Puthenvelikkara.

As a response to the training programme, farmers came forward for Asian Seabass culture as a new candidate species. They also approached MPEDA for technical assistance on GIFT farming in ponds and cage culture in abandoned granite quarry ponds. Farmers are already approaching for bankable project report to diversify the aquaculture with species such as Asian Seabass, GIFT, Pompano, Cobia etc.

The trainees assured the officials present at the programme to go for farm enrolment with MPEDA and also to approach local bodies to avail permission for conducting cage culture at Padasekharams, dams, and other water bodies.



*Mrs. Elsamma Ithack, Assistant Director, MPEDA welcoming the participants*

## AQUACULTURE SCENE



*Mr. Suman Saha, Asst. Director of Fisheries, South 24 Parganas addressing the farmers*

## Farmers meet at Kolkata

**T**he MPEDA Regional Division, Kolkata organised a farmers' meet on 'Aquaculture Enrolment of aqua farms and diversified aquaculture' at the Old Court Auditorium in Kakdwip, South 24 Parganas District on August 31, where 102 aquaculture farmers attended.

Welcoming the participants, Mr. Archiman Lahiri, Deputy Director, MPEDA highlighted the problems faced by the aqua farming community on a whole and farmers in particular. He made some suggestions on overcoming the difficulties as well.

Mr. S.S. Shaji, Deputy Director stressed the need of doing enrolment of aquaculture needs. Mr. Suman Saha, Assistant Director of Fisheries, South 24 Parganas highlighted the works done by Department of Fisheries for betterment of aqua farming community. Mr. Kamal Nayak, Director, M/s. Bhubaneshwari Seafood, a progressive exporter from the region, appealed to the farmers for taking up the farm enrolment seriously so that their produce attract reasonable price. Mr. Atanu Ray, Regional Coordinator, NETFISH expressed the practical problems faced while farm enrollment in past and need to overcome it.

The inaugural session was followed by a detailed technical session. Mr. Archiman Lahiri presided over the session. In his presentation, Mr. Lahiri talked about price fall of shrimp across the world with special reference to India and West Bengal along with the culture status and farm enrollment with implications of traceability.

This was followed by presentations by Mr. Pradip Maity, Field Manager, NaCSA on 'Role of NaCSA', by Mr. Jhonson D'Cruz on 'Diversification in Aquaculture' and Mr. D. Ekka on SIMP. The farmers were made aware about the need for enrolling their farms and the implications of introduction of SIMP by USA with full fledged idea on traceability.

Post lunch, an interaction session was organised where exporter and farmer perspectives were presented. The farmers requested MPEDA to provide technical and market related inputs for betterment and understanding of the culture scenario. The farmers expressed their satisfaction and urged to conduct village level meeting frequently. The meet ended with Mr. Dhriti Ekka, Assistant Director, MPEDA proposing the vote of thanks.

## AQUACULTURE SCENE



Mr. Archiman Lahiri, Deputy Director addressing the Farmers meet at Kakdwip



Mr. S. S. Shaji, Deputy Director addressing the farmers



## Awareness programme on the illegal use of antibiotics

An awareness programme was held to create awareness among shrimp farmers on illegal use of banned antibiotics/chemicals in aquaculture at Krishnanagar village, Khejuri-I, Purba Medinipur district on August 24.

Forty-one farmers attended the meeting where the topics covered included abuse of antibiotics in aquaculture, list of banned antibiotics, responsibility of farmers, eco-friendly sustainable aquaculture, diversification in aquaculture, role of MPEDA/Schemes of MPEDA, formation of aqua societies, disease management and PHT registration and ELISA test.

The session was led by Dr. Debasish Roy, Junior Technical Officer (Aq), MPEDA, Sub Regional Centre, Contai. He explained the different promotional schemes of MPEDA for the development of aquaculture. Then, he talked about the stringent quality standards maintained by the European Union and United States on imported sea food items.

Due to rejection of consignments in the recent past, Indian sea food export trade has suffered a setback. To revive the reputation of our aquaculture products, there is a need to produce antibiotic free shrimp/ scampi. He also emphasized upon the quality assurance of the product by not using any banned antibiotics or chemicals directly or indirectly so as to ensure hazard free export of aquaculture products. He has explained

the harmful effect of antibiotics and pharmacologically active substances in human being, if consumed through aquaculture products.

He explained the purpose of conducting such programmes. He told the participants about the pre-harvest testing of shrimp/scampi samples by ELISA laboratories set up by MPEDA for detection of antibiotics/chemicals. This can be done 10 days prior to harvest and requested farmers to come forward for PHT registration.

He has explained the list of banned antibiotics and chemicals and suggested not to use them in shrimp farming. He cautioned the farmers that exporters would not buy their product unless it is tested in the ELISA Lab and detected negative.

He suggested to form cluster-based Aqua Farmers Welfare Societies and to adopt BMPs for sustainable production. He also requested farmers to apply for farm enrolment for traceability of harvested product and better price realization.

He has advised farmers to follow Best Management Practices to secure disease free crop. Dr. Roy then shared the list of 20 banned antibiotics and chemicals against the use in shrimp culture and the harmful effect on human health upon consumption of shrimps having residual antibiotics.

## AQUACULTURE SCENE

Mr. Biswajit Ojha, Field Manager, NaCSA, explained the benefits of cluster-based shrimp farming and Aqua Society formation. He mentioned the procedure of forming Aqua Society and BMPs in shrimp culture.

During the sessions, farmers interacted and discussed with MPEDA and NaCSA officials and cleared their doubts on issues like water quality management,

disease management and product diversification. Related literatures on abuse of antibiotics printed in Bengali vernacular were distributed to the participants.

A similar session of an awareness campaign programme against the use of banned antibiotics in aquaculture was held at Bajbajia village too in Purba Medinipur district on the same day, in which 40 farmers attended.



## Awareness campaigns held at Karwar



Following the rejection of some of the consignments of Indian aquaculture shrimps due to presence of the residue of banned antibiotics, the campaigns to spread awareness among farmers got underway.

These sessions were held to make farmers more aware about the scenario, to avoid use of banned antibiotics and follow Best Management Practices. MPEDA, Sub Regional Division, Karwar organised seven such campaigns on abuse of antibiotics in different farming villages, namely Harwada, Makeri, Kanasgiri, Ankola, Kumta and Haldipur during from June to September.

Mr. Vijayakumar Yaragal, Deputy Director, explained how in overseas markets especially in US, EU and Japan, the presence of the residue of banned antibiotics creates problems and affects the importers and consumers as well. He briefed about concepts of eco-friendly

and sustainable shrimp farming and biosecurity. He explained the enrollment procedure of MPEDA, importance of Pre Harvest Test (PHT) and advised not use antibiotics in aquaculture.

Mr. Gurusamy Ramar, Junior Technical Officer explained concept of Best Management Practices (BMPs) in Aquaculture and motivated the farmers to form Aqua Club or Society for effective implementation of BMPs to produce antibiotic free shrimp for export. Mr. Sheshendra M. Shirodkar, Junior Technical Officer talked about the National Residue Control Plan (NRCP) for shrimp samples, responsibility of farmer to avoid use of antibiotics and farm monitoring programme. During the campaign the participants were provided with the leaflet on abuse of antibiotics in aquaculture farms. Antibiotics campaigns were attended by 116 farmers.



### Awareness campaign at Bhimavaram

A one-day awareness campaign was organised by Sub Regional Division of MPEDA, Bhimavaram against the use of banned antibiotics in aquaculture and distributions of farm enrolment card on August 20. The meeting was held at Uppalaguptam village and Mandal, East Godavari district of Andhra Pradesh.

The programme was attended by 36 farmers and officials. Mr. K. Ramanjaneyulu, Junior Technical Officer, MPEDA Bhimavaram welcomed the gathering and explained about the objective of the programme. He also explained about introduction of SIMP by USA and requested to farmers to maintain Pond Data Register for traceability.

Mr. D. Venkata Laxmi Narayana, Zilla Parishad Territorial Constituency, requested all farmers to enrol with MPEDA immediately and cautioned against using any banned antibiotics in culture. He also requested to

farmers to bring the seed from registered hatcheries. Mr. Ch. China Venkata Rao, Fisheries Development Officer, Government of Andhra Pradesh stressed on farmers enrolling with MPEDA for betterment of the shrimp export.

Farmers cleared their doubts on the subject during the interactive session held at the end of the programme. Mr. Chakradhara Rao, Mandal Parishad Development Officer, Mr. D. Venkata Laxmi Narayana, Zilla Parishad Territorial Constituency, and Mr. Ch. China Venkata Rao, Fisheries Development Officer, distributed farm enrolment cards.

The programme was concluded with vote of thanks by Mr. Balakrishna, Multiple Extension Assistant, Uppalaguptam Mandal, East Godavari district.

The participants were given the message of having "No Antibiotic in Culture System".



### Stakeholders meeting on aqua farm enrolment



*Mr. Archiman Lahiri, Deputy Director, MPEDA, Regional Division, Kolkata explaining the enrolment programme to the Stakeholders*

A stakeholders' meet was held at Contai, the hub of scientific aquaculture in West Bengal, on June 22 to sensitize stakeholders about traceability requirements becoming mandatory in export consignment and the enrolment programme initiated by MPEDA. More than 50 people participated in the meet.

Traceability is one of the mandatory requirements for exports to EU together with PHT. Of late, with the inclusion of Shrimp under SIMP for exports to USA, traceability has become the ultimate necessity for safeguard of export interest of the country.

Dr. Debashish Roy, JTO, Sub Regional Division, Contai welcomed the participants and stressed on the importance of traceability in the seafood. Mr. Archiman Lahiri, Deputy Director, MPEDA, Regional

## AQUACULTURE SCENE

Division, Kolkata inaugurated the seminar and explained about the present problems faced by the aquaculture industry. Mr. Ramkrishna Sardar, Assistant Director, Department of Fisheries, East Medinipur district, gave the statistics of CAA registration of aqua farms in East Medinipur district.

Mr. Archiman Lahiri later explained about the causes that led to fall in shrimp prices globally. He also explained about the traceability of aqua products. He gave a detailed account of scheme of enrolment of aqua farms undertaken by MPEDA. He also talked about rejection of containers due to detection of antibiotics in aqua products by importing countries. He invited all the participants to make the enrolment drive a big success by active and massive participation and displayed a model of the aquaculture enrolment card. The presentations were followed by active discussion by the participants. The main points taken up for discussion included immediate registration of chemical, material, feed dealers/ agents etc. by authorities concerned, who play a crucial role in aquaculture business, low quality shrimp seeds produced in shrimp hatcheries in West Bengal with no control on quality either from

CAA or from State Fisheries Department, early warning about fall of prices and market intelligence demanded to safeguard from going for full-fledged farming of shrimps, linking of enrolment scheme with crop insurance and term loan from banks and absence of any action from concerned department on registration of farms outside the CRZ.

The meeting created a good response from the participants regarding repeated requests for enrolment of aqua farms. Mr. Jhonson, Asst. Director, Regional Division, Kolkata proposed the vote of thanks.





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# Farmers' meet on Sustainable Shrimp Farming



*Honable MLA Sri Dinkar Shetty addressing the farmers*

**T**he farming of *L. vannamei* has been riddled with instances of crop loss due to WSSV, running mortality syndrome and white faeces syndrome in recent times. Heavy losses have made farmers consider shifting over to farming of Black Tiger Shrimp, with concentration on low densities and bigger size. Drop in sale price has also led to farmers losing interest in aquaculture, causing an overall lull in seed stocking in coastal Karnataka.

The Sub Regional Division of MPEDA in Karwar organised a farmers' meet on eco-friendly sustainable aquaculture and diversification at Hotel Vaibhav, Kumta on August 23 to understand the problems in aquaculture industry and to encourage farmers and make them aware of new subsidy guidelines. The programme was organised in association with Lions Club, Kumta, in which 90 persons participated.

Mr. Dinkar K. Shetty, the Member of Legislative Assembly of Kumta and Honnavar constituency, inaugurated the farmers meet. Being a shrimp farmer himself during the Nineties, Mr. Shetty provided the right perspective on aquaculture. He added that though shrimp farming is lucrative business with quick return, it demands proper planning and management skill. MPEDA's assistance would help the shrimp farmers, but farmers themselves have to follow Better Management Practices. He assured the farmers that he would make earnest attempts to resolve farmers issues.

Mr. Vijaykumar Yaragal, Deputy Director MPEDA, welcomed the guests and farmers and talked about aquaculture potential of Karnataka and explained recent technology in *L. vannamei*, Biosecurity, RAS

and Biofloc systems being adopted in Karnataka. He emphasized not to use any banned antibiotics in aquaculture farms and explained the importance of enrolment and GPS for traceability.

Mr. Venkatrama Hegde, Deputy Director of Fisheries, Dept. of Fisheries, Karwar, highlighted the importance of balance eco-system and responsible shrimp farming. He advocated to follow the best management practices and talked about State Fisheries Subsidy Scheme.

Mr. Vishnu Batger, Secretary of Lions Club, Kumta and a lead shrimp farmer in area, talked about several problems like low sale price, high feed cost, high electric tariff and frequent disease outbreaks due to which most of the farm areas have become non-operational at present.

Mr. P.M.Pinjar, Chief District Lead Manager (Syndicate Bank) explained the procedure for availing bank loan and requested the farming community to put up the proposal to banks and to the NABARD for re-financing also.

Mr. G.V. Naik, former Professor of Marine Biology, University of Karnataka, Mr. Ganesh Hebbar, President, Shrivathi Aquaculture Farmers Society, Honnavar, Mr. Poojari, a farmer of Honnavar, Director of SYND RSETI, Kumta and leading feed dealers and input suppliers spoke at the meeting and expressed the techniques to avoid and overcome the common problems in aquaculture. During interaction session that followed, queries on various subjects were answered and suggestions were noted. Mr. G. Ramar, Junior Technical Officer, MPEDA Karwar, proposed the vote of thanks.



# Training on Mangrove Crab Farming

**T**he Mangrove and Marine Bio Diversity Conservation (known as Mangrove Foundation) has been established under the Mangrove Cell of the Department of Forest, Government of Maharashtra, with an objective on conservation of coastal and marine diversity and improving the livelihood of coastal communities through conservation linked eco-friendly intervention.

As part of the livelihood programme to the coastal communities, particularly for the traditional fisher folk, a pilot project on stock enhancement programme on Mangrove (Mud) Crab farming was launched in Sindhudurg under UNDP – GEF Project with the support of MPEDA – RGCA during the end 2013. As a long term initiative for the sustenance and to improve the livelihood of the coastal communities, the Mangrove Foundation decided further this initiative by promoting Mangrove (Mud) Crab Farming in all coastal districts of Maharashtra.

Encouraging results were got from the pen culture of Mangrove crab after a successful intervention in Sindhudurg. The objectives of this programme were to improve the livelihood of the traditional fisher communities in coastal districts of Maharashtra through sustainable mangrove crab aquaculture activities in mangroves, to get familiarize/basic knowledge on mangrove crab farming in pens through skill development, enhancement of mangrove crab production through pen culture of mangrove crab along with conservation of mangroves and to improve the survival rate of crab instars through nursery rearing.

### Feasibility on Suitable Sites

As part of the Konkan Fisheries Action Plan, MPEDA took up survey of sites in selected villages of coastal districts of Maharashtra with the coordination of Mangrove Foundation. Accordingly, as first phase, MPEDA has taken up detailed survey considering various criteria on the suitability and feasibility on pen sites and finalized on about 18 new sites having the

total extent of 14.05 ha. out of 21 sites identified. This included four existing sites of 3.80 acres in Sindhudurg district. Similarly, 11 sites have been having the total extent of 17.50 acres surveyed and 9 sites having the extent of 14.50 acres in Ratnagiri district.

### Nursery Rearing and Pre Growout Culture

Nursery rearing and pre grow out culture of mangrove crab has been initiated by stocking 80,000 crab instars in 2 batches received from RGCA Mangrove Crab Hatchery, Thoduvai, Sirkali, Tamil Nadu. Crablets reared at Niviti Village, Sindhudurg have been shifted for pre grow out culture in pens and second batch of nursery rearing is successfully in progress at brackish water farm in Paratavane, Ratnagiri. To motivate the SHG members in nursery rearing, a group members is being involved in rearing of crab instars/crablets.

### Hands-on Residential training

Out of 300 group members proposed, 200 beneficiaries from Sindhudurg and Ratnagiri districts showed their interest in first phase of training programme. 87 candidates proposed for residential during the first phase, 77 SHG members and Project Associates or Livelihood Specialists from the selected villages of Ratnagiri and Sindhudurg districts have been selected. They were given hands-on residential training at Training Complex at College of Fisheries, Shirgaon, Ratnagiri. The training involved 2 days theoretical classes and 2 days of field visits.

The training was formally inaugurated by Dr. T R Gibinkumar, Deputy Director, MPEDA, Sub Regional Division, Ratnagiri. Dr. Ashish Mohite, Head of the Department (Fisheries Engineering), COF, Ratnagiri, spoke on the importance of training and facilitated MPEDA for taking initiatives in organizing training for welfare of fisher folk. Mr. S. Pandiarajan, Assistant Director, Regional Division, Panvel, gave an over brief about activities of Mangrove Crab Aquaculture in Sindhudurg and Ratnagiri and MPEDA and



Dr. T R Gibinkumar,



Mangrove crab (S marketabl



Vis

## AQUACULTURE SCENE



Kumar, Dy Director, SRD, Ratnagiri addressing during the inaugural session of the Mangrove Crab Training at COF, Ratnagiri



crab (*Scylla serrata*)  
marketable size



A view of Mangrove Crab Nursery Rearing at BW Farm Paratane, Ratnagiri



Visit of Trainees at Mangrove Crab Pen Culture managed by M/S Dharba Narayan SHG at Taramumbri

RGCA's technical support in implementation of activities.

The trainees were given basic information through presentation on biology of Mangrove Crab with identification of species of *Scylla serrata*, infrastructure and concepts on hatchery operation, criteria for site selection, infrastructure requirements for mangrove crab aquaculture including nursery rearing, pre grow out and pen culture, management measures including transport, acclimatization, stocking, feeding and feeding regime, monitoring of feed, sampling, stock assessment on growth and survival, grading, harvesting and packing of crablets/juveniles in nursery and pre grow out phases, pen construction and management, stocking, observation on check trays, sampling and assessment of growth of marketable size crabs, crab fattening and options, soft shell crab production including infrastructure, harvesting, transport and marketing of crabs, and economics and business options of mangrove crab aquaculture. The faculty members from technical officers Regional/ Sub Regional Centres of Panvel and Ratnagiri led the technical sessions.

On the first day of the field visit, trainees were taken to mangrove crab nursery and pre grow out culture ponds at Paratavane, and shown the infrastructure and management as well as MPEDA demonstration pond at Bhakale, Ratnagiri, where trainees were demonstrated on monitoring of water quality assessment, sampling and monitoring of growth. Dr Vishnudas R. Gunega, Junior Technical Officer, SRD, Ratnagiri, coordinated the team.

On the second day, the trainees were taken to the farm of pen culture of mangrove crab at Taramumbri, Devgad, Sindhudurg. Mrs. Priyanka Khawle and Mr. Laxman Tari, members of M/s. Dharba Narayan SHG explained their experiences. They have been engaged for the last two years in crab farming in pen culture and interacted with trainees. The hands-on training was provided on monitoring of check trays, harvesting, tying of crabs etc,

The trainees were also taken to MBRS (Marine Biological Research Station), Zadgoan, Ratnagiri to show the new technology developed by the MBRS for crab fattening. The plastic boxes of desired sizes placed in horizontal and vertical rows with continuous water circulation are being used for crab fattening purpose. Various activities of MBRS were also explained to the trainees by MBRS /MPEDA officials. During the visit, trainees clarified their various doubts on crab farming with MBRSS/MPEDA officials.

# MoU signed with Gujarat Fisheries



ICAR-CIBA, Chennai and the Department of Fisheries, Gujarat signed a Memorandum of Understanding for the sustainable development of brackish water aquaculture in Gujarat on September 5. Dr. K. K. Vijayan, Director, ICAR-CIBA, Chennai and Mr. Mohammed Shahid (IAS), Commissioner of Fisheries, Department of Fisheries, Gujarat signed the MOU in the presence of Mr. R. C. Faldu, Minister for Agriculture, Rural Development, Fisheries, Animal Husbandry and Transport, Government of Gujarat.

During the interaction Dr. K. K. Vijayan, Director, ICAR-CIBA, Chennai expressed that Gujarat with its huge brackish water resource spread across the 1600 km of coastline, can make significant progress in the fish production through brackish water aquaculture.

Through this MoU, CIBA would initiate farming in partnership with Department of Fisheries at Matwad Village, Navsari. Navsari Gujarat Research Centre (NGRC) of CIBA, as CIBA is engaged in research, training and demonstration of brackish water aquaculture of finishes (Asian Seabass, Milkfish, Red Snapper, Grey Mullet, etc) and shellfishes (Shrimps, Crabs, etc).

This partnership would aid in utilising the untapped potential for aquaculture by developing appropriate brackish water aquaculture production systems and location specific farming practices suitable for the state. Mr. Pankaj A. Patil, Scientist & Officer In-Charge, ICAR-CIBA NGRC, Navsari, Mr. K. R. Patani, Deputy Director of Fisheries coordinated the event.

Already CIBA is partnering with the State in the promotion of shrimp farming and cage farming with seed and feed technologies of CIBA. Brackish water can provide alternative livelihood options with fish production, income and employment.

- ICAR-CIBA



## Diseases of Cultured Shrimp and Prawn in India



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# Skill Development Programme on Pre-processing and Drying of Fish

A Skill Development Program (SDP) on "Pre-processing and drying of fish", sponsored by National Fisheries Development Board, Hyderabad, was held at ICAR-CIFT from September 4 to 6. The training programme was attended by 25 participants from all over Kerala, of which 17 belonged to the training organization under Kerala Institute for Local Administration (KILA) - Extension Training Centre, Mannuthy and remaining were entrepreneurs interested in solar fish drying. The programme was inaugurated by Dr. Ravishankar C.N.,

Director, ICAR-CIFT in presence of Dr. A.K. Mohanty, Principal Scientist and Nodal Officer and Dr. Manoj P. Samuel, Course Director, SDP, officials of KILA, Mannuthy, Heads of Divisions and staff of ICAR-CIFT. The training programme covered areas related to pre-processing, drying, quality evaluation, packaging of

dried fish and fishery waste management. Participants were also given an opportunity to visit and familiarise with the Agri-Business Incubation process of CIFT



*Inaugural session in progress (L to R: Dr. A.K. Mohanty, Dr. Ravishankar C. N., Dr. Renil and Dr. Manoj P. Samuel)*

developed technologies. A visit was arranged to the dry fish market at Chambakkara, owned by an incubatee of ICAR-CIFT. A B2B meet was conducted with the empanelled list of manufacturers of ICAR-CIFT solar dryers and participants who were interested to establish solar fish dryer.

- CIFT 

## A success story of women entrepreneurship development from Gujarat

Veraval is a coastal town in Gir Somnath district in Gujarat. 'Kharwa', the fishermen community, form a sizable part of the local population in the coastal regions of Gujarat like Veraval. Fisheries have always been the main industry in Veraval and are dominated by the Kharwas. The Kharwa fisherwomen belonging to one of the backward classes in Gujarat are already involved in fresh fish selling in the local markets, peeling of shrimps, fish drying and pre-processing and processing activities in seafood export units as workers. In Veraval, fish is sold either in fresh or dried form in the domestic market by these women. There are other fish related micro enterprises such as preparation

of value added products like fish pickle, fish ball, fish cutlet, fish samosa etc., which has not been explored.

### ICAR-CIFT Intervention

Fish is a highly perishable commodity, which requires proper handling, processing and distribution if it is to be utilized in a cost effective and efficient way. Technological interventions are essential for better utilization of fishery resources for better profitability. Product diversification can be an option to expand the marketing of fishery products. Various value-added products can be prepared out of fish without much

## NEWS SPECTRUM

investment. Although the demand for such kind of products is huge, fisherwomen do not venture much into entrepreneurship of value-added fishery products, due to lack of skills and marketing opportunities.

Veraval Research Centre of ICAR-CIFT (Central Institute of Fisheries Technology) extended technical knowhow to Kharwa fisherwomen through a series of NFDB (National Fisheries Development Board, Hyderabad) funded skill development programmes aiming at livelihood enhancement of fisher folk. The first in the sequence of yearlong training programmes started on July 24 on value addition of fish and fishery products. As many as 25 participants including fishermen/fisherwomen and small scale entrepreneurs from Gujarat participated in each of the hands-on training programmes.

The fisherwomen were trained on different value-added products from fish namely burger, samosa, cutlets, pickle, balls, fingers etc. The three-day programme was designed for improving the skill of women for preparing variety of fish products to increase consumer appeal and to empower the budding women entrepreneurs of fishermen community to enhance their income and improve their livelihood.

### Impact of ICAR-CIFT intervention

The intervention programmes by ICAR-CIFT facilitated women from a disadvantaged community to organise into groups to empower themselves as businesswomen, taking their families and community forward in the process. The regular training programmes organized by ICAR-CIFT resulted in the women being able to produce low cost higher value fish products that will generate increased income. 25 women from a group named 'Sagar Manthan Machhimar Utthan Mandal' trained at ICAR-CIFT participated in the recently held Chorwad Fair in Gujarat and could earn handsome amount as profit by selling the seafood delicacies in the three-day Fair from September 8 to 10. The profit earned in the fair was distributed to the members by Collector of Gir-Somnath District, Mr. Ajay Prakash, IAS in a programme organized at Veraval Research Centre of ICAR-CIFT to congratulate the women entrepreneurs on September 19. Taking a cue from the success at the Chorwad Fair, the group is planning to attend similar fairs and festivals in and around Gir-Somnath District. They will be soon opening a stall in Veraval for selling fish-based value-added products in addition to home delivery of seafood snacks.

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### CSR Partnership established Community Development Centres to support brackish water farmers

The Karam Chand Thapar (KCT) group in collaboration with ICAR-CIBA, Chennai established Community Development Centre for Learning, Livelihood and Research (CDC-LLR) at Bhimavaram, West Godavari district, Andhra Pradesh (AP). The farmers' community centre and state-of-the-art aquaculture diagnostic laboratory, the second in Andhra Pradesh, was inaugurated on September 12 by Dr. K. K. Vijayan, Director, CIBA in the presence of Mr. P. Koteeswara Rao, Additional Director of Fisheries, Government of Andhra Pradesh, Mr. Ramakanth V. Akula, CEO, the Waterbase Limited (TWL), Ms. Shomasree Dey, Head of CSR, KCT group. Large number of farmers, scientists, officials, input dealers and other stakeholders gathered at the centre, and took notice of the novel facility.

In the welcome speech, Ms. Shomasree Dey highlighted the objective of this initiative that the partnership brings quality diagnostic services to the farming community at affordable rates, subsidised by KCT. Mr. P. Koteeswara Rao, Additional Director of Fisheries, Andhra Pradesh thanked KCT and CIBA for establishing the lab at Bhimavaram, which is one of the aquaculture hubs in Andhra Pradesh.

Prevention of diseases is the better option in aquaculture for that diagnostic labs are very important he observed. He appreciated the role of CIBA in providing standard operating protocols and novel diagnostics to the lab and hailed the model of corporate research partnership in delivering quality diagnostic services to the farmers. Mr. Ramakanth Akula in his address emphasized that the strategic partnership with CIBA is a natural alliance to

serve the aqua farmers without any commercial interest, and the next lab will be established in Gujarat, followed by West Bengal. He called upon the farmers to make use of this diagnostic service centre to manage their farms efficiently for sustainable production.

Dr. K. K. Vijayan, in his inaugural address, highlighted that CSR partnership with research institutions such as CIBA could benefit farmers in getting access to quality and affordable diagnostic services, required for aqua-farming. He noted that novel diagnostics such as cost effective real-time PCR kits to screen WSSV and EHP etc. would be available at this lab to provide quality results. This is the better-fit model to bridge the gap between the research institutions and their client farmers he added.

Reach out to the farmers and have dialogue with them through ICT modes is an efficient approach and CIBA has already launched Vanami Shrimp app, a mobile app for this purpose and results of the diagnostic services could be sent through this app he expressed. CIBA has also developed a system to issue soil and water health cards to the farmers through the KCT labs, few farmers of Bhimavaram region received soil and water health card on this occasion.

During the interaction farmers raised queries on disease prevention, diversification, market and crop rotation and were clarified by the scientists and officials. Dr. M. Muralidhar, Principal Scientist and Scientist-in-charge, Environment Division and Dr. M. Kumaran, Principal Scientist from Social Science Division of CIBA coordinated the programme with KCT group.

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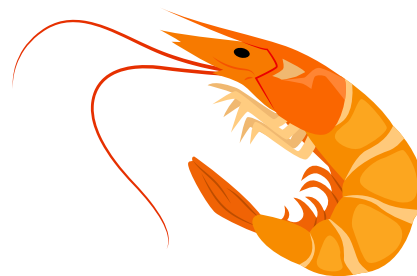
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