MPEDA

Newsletter

VOL. IX NO. 4 JULY 2021

Action Plan 2025 for Seafood Exports

By K.S Srinivas IAS, Chairman, MPEDA

Shri. B.V.R. Subrahmanyam joined as Commerce Secretary, GOI

Trouts and its Status In Himachal Pradesh

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Shri. B. V. R. Subrahmanyam
Commerce Secretary

Shri. B. V. R. Subrahmanyam is an Indian Administrative Service (IAS) officer of 1987 batch from Chhattisgarh cadre. He joined as Commerce Secretary, GOI on 1st July 2021. In a career spanning over 34 years, he has held many important positions. He has served in the PMO as OSD & Joint Secretary from 2012 - 2015. He has served as Sr. Adviser to Executive Director in the World Bank Washington DC from 2008-2011. He was Chief Secretary of Jammu & Kashmir from 20th June 2018 to 30th May 2021.

बी. वी. आर. सुब्रह्मण्यम
B. V. R. SUBRAHMANYAM

सत्यमेव जयते

वाणिज्य सचिव
भारत सरकार
नई दिल्ली–110011
COMMERCE SECRETARY
GOVERNMENT OF INDIA
NEW DELHI-110011

MESSAGE

The Fisheries sector in India is the second largest livelihood generating segment after agriculture. India holds the second position in aquaculture production after China. The famed *Vannamei* shrimp constitutes almost 83% of the total shrimp exports from the country, both in quantity and US Dollar value. The main markets for Indian seafood are USA, China and EU followed by South East Asia, Japan and the Middle East. The top 5 countries USA, China, Japan, Vietnam and Thailand contribute 70.72% of US Dollar earnings from the sector. USA has remained as the top import market in terms of US Dollar value for the last 6 years, contributing 41% of our marine export earnings. India stands fourth in the world exports of fish & fisheries products. Marine product exports contribute 14.5% of total agricultural exports in terms of US Dollar value.

In 2020-21, India exported 11.5 lakh MT of seafood worth US$ 5.96 billion to 112 countries. Though the COVID pandemic continued to affect the seafood sector drastically during the first half of 2020-21, the sector revived well in the last quarter. The reduction in exports was only around 10% in US Dollar value and around 6% in Rupee value as compared to 2019-20. This compares well against the expected export reduction of 15-20%, a significant revival.

The target for the export of marine products in 2021-22 has been set at US$ 7.8 billion. I am sure the seafood industry will try its best to overcome all hurdles and exceed the targets set. MPEDA should concentrate more on Market Promotion and Quality Assurance for enabling exporters to penetrate more in existing and new markets and enhance our exports. I wish the very best to MPEDA for overcoming the factors affecting exports, including the COVID-19 pandemic, and achieve a splendid growth in exports in the coming years.

20/7

[B.V.R. Subrahmanyam]

New Delhi
20th July 2021

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On the Platter

K. S. Srinivas IAS
Chairman

Friends,

As you are aware, Shri. B. V. R Subrahmanyam has joined as the new Commerce Secretary, and has already evinced keen interest about the activities of MPEDA and about the growth prospects of the marine products export sector. I am sure that under his able guidance, the marine products export sector will be able to steer through these turbulent times and achieve the export targets assigned for the sector, which is pegged at US $ 7.78 Billion for the current year.

At this moment, I would also like to express my immense gratitude to Shri. Anup Wadhawan, former Commerce Secretary, who got retired last month. He had been a guiding light for MPEDA and great inspiration for the development of the sector. We wish him a healthy and engaged life ahead.

MPEDA has prepared a strategy paper to double the export of marine products from the country by 2025. Excerpts from the strategy paper are being published as a series under my authorship from this issue of MPEDA newsletter. Through this, I intend to provide the readers an insight into the status of marine products export sector, challenges faced by it and the proposed action plan to mitigate those challenges, besides the strategies that could be adopted by the country to enhance the production and exports of marine products so as to achieve the goal of doubling it by the specified year. Seafood exports during last FY stands at US$ 5.96 billion or Rs. 43720 Crore.

The pilot scale scheme launched by MPEDA for 'SHAPHARI' certification has got total 6 hatcheries certified so far, with two more hatcheries from Andhra Pradesh certified under the scheme in July. The scheme aims to certify shrimp hatcheries and farms engaged in residue free shrimp production.

Meanwhile, MPEDA has also opened its 13th ELISA Laboratory at Pattukottai in Tamil Nadu on 5th July. The laboratory will cater to the antibiotic testing needs of aqua farmers in Thanjavur, Pudukottai, Ramanathapuram, Thoothukkudi and Kanyakumari districts of the state. MPEDA QC laboratory in Porbandar has been approved by EIC to perform Pre Export Testing for all markets as per the scope of approval, which will be a boon to the seafood exporters from Saurashtra region as it caters to their analytical needs. MPEDA QC lab in Bhubaneswar has started performing Pre Export Tests for different markets.

A Virtual Buyer Seller Meet with the representative from M/s Ocean Trading Company Limited, Kyoto, Japan was organized by MPEDA in association with the Embassy of India, Tokyo on 8th July. A second buyer seller meet on Thailand market is also scheduled with the help of Embassy of India, Bangkok this month. Two more buyer seller meets for markets such as Portugal and Korea are also planned during the month.

Thank you.

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MEL Japan –Sustainable Seafood Ecolabelling Scheme from Japan

Marine Eco-Label Japan Council Secretariat

History of MEL (Marine Eco-Label)

MEL was first developed in 2007 by Japan Fisheries Association as a marine ecolabelling scheme which certifies sustainable fisheries locally in Japan. The MEL certification standard was formulated in line with a series of guidelines issued by the Food and Agriculture Organization of the United Nations (FAO) in 2005 for the sustainable utilization of marine resources.

In 2016, Marine Eco-Label Japan Council was established as a general incorporated association with a key mission of upgrading MEL to match international standards as a credible sustainable seafood ecolabelling scheme.

MEL also included aquaculture standards to its scheme, and revised its certification standards with collaboration of many stakeholders, taking into account the characteristics of Japanese diverse fisheries and aquaculture industries and seafood culture. MEL finally obtained official recognition from Global Sustainable Seafood Initiative (GSSI) in December 2019, as ninth seafood ecolabelling scheme in the world, which is in line with FAO Guidelines and Code of Conduct for Responsible Fisheries.

Now, the total number of MEL certifications counts 116 as of May 2021 which includes 9 fishery, 42 aquaculture, and 65 chain of custody (CoC) certifications. It took 2 years and 1 month to exceed 100 certifications since the first 7 cases of new MEL were certified on February 28, 2019.

Characteristics of Japan and The Big News for Japanese Fisheries Management

The characteristic of Japanese fisheries is its diversity. Japan consists of more than 6,000 islands and has the 6th longest coastline in the world. There are more than 3,700 fish species inhabiting and more than 400 fishing methods for catching these diverse fish species. Among them, about 500 species are utilized and almost 200 species are commonly traded in central markets. The total amount of landed catch is 4.2 million tons, which ranks 10th in the world in 2019.

Japan is now in the great transitional phase of fisheries management. In December 2020, Revised Fisheries Act came into effect and policies related to fisheries management have been greatly changed in many ways, so called "Reform of Fisheries Policies".

The first MEL certified fishery: Hokkaido Chum Salmon set-net fishery.

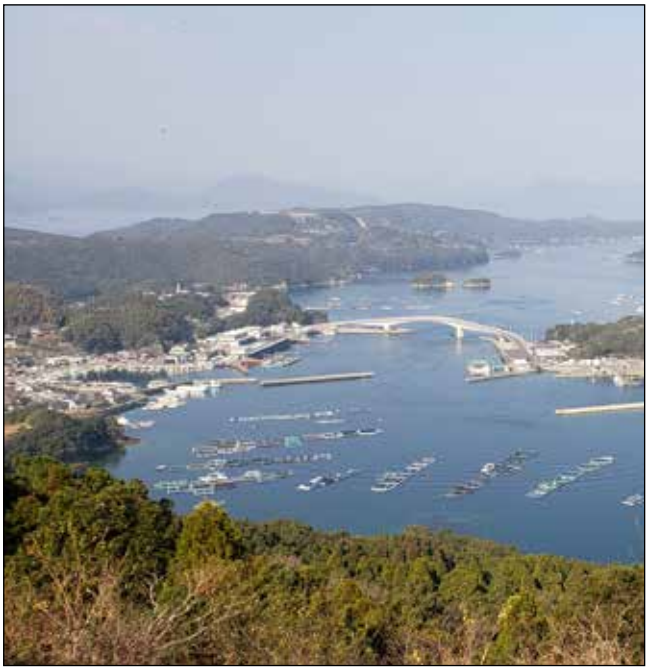
To point out a few, the number of fish species under national stock assessment was 50 in the year 2019. However, it has increased to 119 species in 2020, and is targeted to be expanded to 200 species by year 2025. Management Strategy and method of assessment is reformed to aim toward Maximum Sustainable Yield (MSY).

Total Allowable Catch (TAC) management fish is expanded to cover 80% of the total catch volume by 2023. Management based on Individual Quota (IQ) is planned to be introduced successively. Catch Record Report is obliged, and reporting and collecting by electronic means are promoted.

Overview of MEL Standards

Fishery Management Standard

Under the MEL Fishery Management Standard (FMS), the scope of certification is defined with target fish species and fishing method, and applicant is assessed



The first MEL certified aquaculture site: Azuma-cho "Buri-Oh" yellowtail.

based on the three principles of (1) management system, (2) sustainability of the stock under consideration, and (3) consideration for the ecosystem and environment, using 55 specific indicators.

The applicant group of fishers are required to operate under established and effective management rules, the stock under consideration is utilized at sustainable level, and proper measures should be practiced for the conservation of the ecosystems.

MEL certifies the fishery by the unit of application to be sustainable when indicators evaluating above requirements are met.

Aquaculture Management Standard

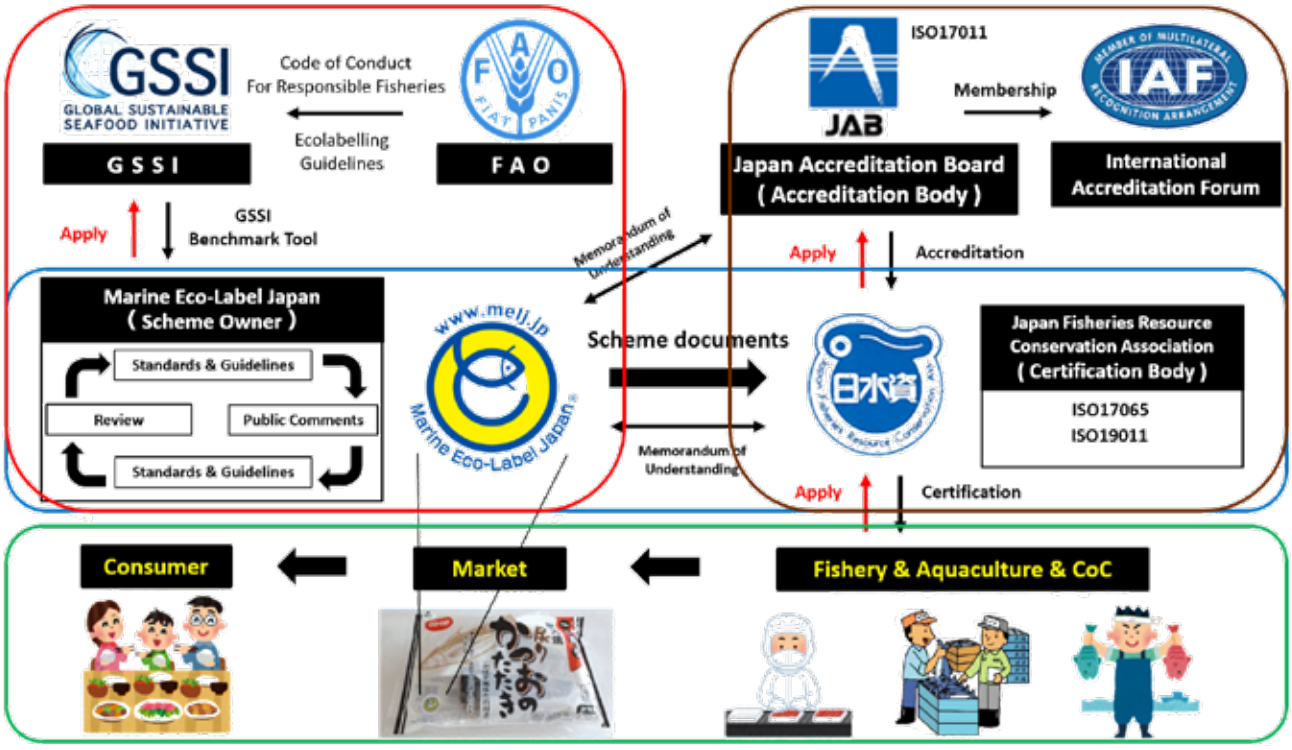
Under the MEL Aquaculture Management Standard (AMS), the scope of certification is defined with the target species and aquaculture method, and applicant is assessed based on the four principles: (1) social responsibility, (2) health and welfare of target aquatic animals, (3) ensuring food safety, and (4) consideration for environmental conservation.

Examples of MEL certified seafood: "MEL seafood is in plentiful variety!"

The unit of application is required to comply with relevant laws and regulations, animal welfare needs to be considered, the possibility of harmful substances and pollutions are minimized, aquaculture medicines are used under proper manner, negative impact on natural resources due to feed and seedlings are minimized, and appropriate measures are taken to conserve the surrounding ecosystems.

Chain of Custody Standard

Under the MEL Chain of Custody (CoC) Standard, (1) applicant is required to comply with relevant laws



Certification and Accreditation mechanism of MEL

and regulations, (2) effective management system needs to be established for handling and recording, (3) segregation and traceability must be assured, and (4) MEL logo mark must be used with responsibility.

Certification and Accreditation Mechanism

As for the international standardized eco-labelling scheme to be credible, the FAO Guidelines require a mechanism in which a certification body accredited by an accreditation body conducts assessments in accordance with certification standards. In the MEL scheme, Japan Fisheries Resource Conservation Association (JFRCA) conducts assessments on applicants by trained expert auditors as a third-party certification body.

JFRCA is accredited as a certification body for MEL standards by Japan Accreditation Board (JAB), and JAB is a member of the International Accreditation Forum (IAF) and accredits product certification bodies and inspection bodies according to ISO standards.

MEL is, thus, an internationally recognized ecolabelling scheme because this system of certification-accreditation is instituted. As a second certification body, the Marine Ecology Research Institute (MERI) is currently working to obtain JAB accreditation.

Our Mission

Rich diversity of nature, creatures, industries and food culture is the uniqueness as well as strength of Japan. The diversity should not be considered as a causation of small-scale fisheries. The diversity can be considered as the advantage.

Japan has a long history of managing and utilizing marine resources through co-management by communities. Diverse and small or medium scale fisheries can be sustainable through inclusive co-management.

MEL, a new comer of marine ecolabel, intends to contribute to the further development of Japanese fishery by using our advantage, rich diversity. Our mission is difficult but must be completed since fishery is the mother industry in Japan.

The pathway toward sustainable marine resource utilization, for now and the future, can become much more broad-and-robust with expanding collaboration to inclusive fisheries management with Indo-Pacific nations.

MPEDA gives it's website a new face

MPEDA gave a facelift to its website and the website of MPEDA (www.mpeda.gov.in) with its new look was inaugurated virtually by Mr. K. S.Srinivas IAS, Chairman MPEDA on 14th June 2021. Representatives of all the stakeholders, right from exporters, farmers and fishers attended the programme conducted in virtual mode.

The programme started with the welcome address by Dr. M Karthikeyan, Director, MPEDA. "Websites are the face of any organization and I am very happy to announce that MPEDA has got a new face", remarked Chairman, MPEDA in his presidential address.

Chairman after inaugurating the new website, requested the stakeholders to go through the new website and provide the feedback in order to bring necessary updates to make the website informative and user friendly.

Dr. T. R. Gibinkumar, Deputy Director (Market Promotion & Statistics) introduced various segments of the website to the attendees, and elaborated on the functions and contents of portals for exporters, importers, aqua farmers, fishers and seafood lovers.The home page of the new website is having the options to select separate user interfaces for Exporters, Importers, Aqua Farmers, Fishers and one additional portal for Seafood lovers.

Exporter portal will have the contents such as export data, links for registration, e-services available for exporters etc. Importer portal will focus on exporter directory, product catalogues and trade links.

Aqua Farmers' portal will provide the enrolment process, link to sustainable practices via NaCSA website and access to technology and seed via RGCA website. Fishers' portal will elaborate the production details, classification of gears and crafts, details of fishing ground information, links to NETFISH etc. A new page for seafood lovers loaded with various seafood recipes, blog and videos is one of the major attractions of the website. This portal is also having the facility for visitors to view as well as submit new seafood recipes.

Felicitations on the occasion of new website launching were given by Mr. K. S. Pradeep IFS, Secretary, MPEDA, Mr. A. Indra Kumar, President, SEAI, Andhra Pradesh, Mr. Alex Ninan, President, SEAI Kerala Region, Dr. Manoj Sharma, Mayank Aquaculture Pvt. Ltd. Gujarat, Mr. Balasubramaniam V, General Secretary, Prawn Farmers Federation of India, Mr . Madhusudan Reddy Konakanti, Director, All India Shrimp Hatchery Association, Dr. Arul Victor Suresh, President, The Society of Aquaculture Professional (SAP) and Mr. Joseph Xavier Kalapurackal, Secretary, All Kerala Fishing Boat Operators Association.

Officers and staff from MPEDA & its societies, exporters, farmers and other related stakeholders were also present in the virtual meeting. Dr. T. R. Gibinkumar, Deputy Director (Market Promotion & statistics) proposed the vote of thanks.

MPEDA WEBSITE : www.mpeda.gov.in

Indian Shrimp industry: Challenges and way forward

Dr. Shine Kumar C.S.
Deputy Director, MPEDA, Kochi – 36

Shrimp, Salmon, Tilapia and Pangasius are the prominent cultured items which are contributing major share to international seafood trade. Demand, price, commercial technologies of farming and processing of these species make them unique in international seafood trade. India is the largest producer and exporter of shrimp. This article explores the opportunities and challenges in front of the Indian shrimp industry and its potentials.

Shrimp production by aquaculture and capture fisheries:

During 2019-20, MPEDA estimated India's total aquaculture production of shrimp as 7,47,694 MT. The *Vannamei* production during the year was 7,11,3674 MT, which contributed 94% of the total shrimp aquaculture production in India.

The contribution of the native species, Tiger shrimp (*Penaeus monodon*) was 35,437 MT in terms of quantity and about 4.68% in terms of share in the total production. *Macrobrachium rosenbergii* and other penaeid shrimps. accounted for 1.26% and 0.08% respectively of the total shrimp production.

According to marine fish landing estimates of CMFRI (2018-19), penaeid shrimp landing and non penaeid shrimp landing in India was 1,92,154 tons and 1,94,011 tons respectively. Total shrimp production in India from capture and culture was 11,33,859 MT.

Export of Shrimp and shrimp products

The marine products export of India during 2008-09 was 6,02,835 MT with a value of USD 1.91 billion. Out of this frozen shrimp contributed USD 0.84 billion. After the introduction of *L. vannamei* in India, there was a significant growth in export of seafood. During 2017-18, seafood exports reached USD 7.08 billion (Qty: 13,77,244 MT).

During the period of 2008-09 to 2017-18 frozen shrimp exports increased from USD 0.84 billion (1,26,039 MT) to USD 4.85 billion (5,65,980 MT). During this period, frozen shrimp export made a growth of 577% in terms of value and 449% in terms of quantity. At the same time the contribution of frozen shrimp to total seafood export of India was increased from 44% to 68% in terms of value.

Contribution of shrimp in India's total export & agriculture exports (2019)

India's shrimp & shrimp products export under various HS	VALUE (USD Mln)
030617	4554.39
030619	2.14
030636	20.11
030695	2.92

160521	91.51
160529	257.28
Total	4,928.35
Total Agriculture product export of India	34829.84
Total export of India (2019)	323250.73
% contribution of shrimp export in agriculture export	14.15
% contribution of shrimp export in India's total export	1.52

Currently India is the 4th largest exporter of seafood and frozen shrimp alone contribute more than 73% (Rs. 34,152 Cr) Indian seafood export in value terms. This indicates the role of Indian shrimp industry in Indian seafood export and international trade.

The shrimp industry in India has experienced a tremendous growth in last decade and there is a need to continue this growth in coming years to maintain India's position in international seafood trade. Growth and achievements made by this industry is tremendous and steps taken in coming days by stake holders will be very much relevant to maintain Indian industry's predominance in international scenario. Currently shrimp is contributing to 14.15% of agriculture export and 1.52% of India's total export.

Table1. India's agricultural export during 2019

Code	Product label	Value (USD mln)	Share of each product in total export (%)
'10	Cereals	7066.84	20.29
'03	Fish and crustaceans, molluscs and other aquatic invertebrates	6300.40	18.09
'02	Meat and edible meat offal	3450.63	9.91
'09	Coffee, tea, maté and spices	3303.39	9.48
'17	Sugars and sugar confectionery	1973.22	5.67
'12	Oil seeds and oleaginous fruits; miscellaneous grains, seeds and fruit; industrial or medicinal plants; straw and fodder	1702.45	4.89
'08	Edible fruit and nuts; peel of citrus fruit or melons	1486.75	4.27
'23	Residues and waste from the food industries; prepared animal fodder	1447.55	4.16
'15	Animal or vegetable fats and oils and their cleavage products; prepared edible fats; animal or vegetable waxes	1174.47	3.37
'07	Edible vegetables and certain roots and tubers	1094.26	3.14
'24	Tobacco and manufactured tobacco substitutes	964.62	2.77
'13	Lac; gums, resins and other vegetable saps and extracts	944.05	2.71
'21	Miscellaneous edible preparations	827.84	2.38
'20	Preparations of vegetables, fruit, nuts or other parts of plants	613.60	1.76

'19	Preparations of cereals, flour, starch or milk; pastrycooks' products	537.99	1.54
'16	Preparations of meat, of fish or of crustaceans, molluscs or other aquatic invertebrates	468.42	1.34
'04	Dairy produce; birds' eggs; natural honey; edible products of animal origin, not elsewhere specified or included	445.74	1.28
'11	Products of the milling industry; malt; starches; inulin; wheat gluten	314.55	0.90
'22	Beverages, spirits and vinegar	276.00	0.79
'18	Cocoa and cocoa preparations	189.65	0.54
'05	Products of animal origin, not elsewhere specified or included	101.44	0.29
'06	Live trees and other plants; bulbs, roots and the like; cut flowers and ornamental foliage	79.35	0.23
'14	Vegetable plaiting materials; vegetable products not elsewhere specified or included	49.79	0.14
'01	Live animals	16.86	0.05
TOTAL		34829.84	

Table 2. Country-wise import details of frozen shrimp (HS 030617) with India's share.

SL NO.	IMPORTERS	WORLD IMPORT (Value in USD mln)				INDIA'S SHARE (2019)	
		2016	2017	2018	2019	Value (USD mln)	%
1	USA	4565.44	5182.84	4844.22	4814.03	2088.60	43.39
2	China	444.81	472.71	1355.61	3973.35	931.41	23.44
3	Japan	1563.54	1678.29	1505.50	1442.96	333.13	23.09
4	Spain	1145.78	1216.39	1209.34	1128.89	13.98	1.24
5	France	739.56	815.63	803.17	709.48	53.69	7.57
6	Italy	490.60	492.16	555.67	477.73	31.79	6.65
7	South Korea	357.36	434.83	460.84	450.22	14.86	3.30
8	United Kingdom	426.20	457.07	416.21	433.51	116.03	26.77
9	Netherlands	313.33	346.61	372.07	346.78	83.09	23.96

10	Canada	340.11	384.41	354.58	331.12	92.39	27.90
11	Germany	342.49	394.19	369.01	328.59	24.73	7.53
12	Hong Kong	278.51	337.45	349.65	311.34	10.78	3.46
13	Belgium	349.44	456.50	375.27	308.33	105.44	34.20
14	Taipei, Chinese	177.64	231.57	258.48	283.09	1.76	0.62
15	Russia	161.16	187.86	218.09	245.72	81.63	33.22
16	UAE	181.90	222.58	235.76	231.10	160.80	69.58
17	Viet Nam	331.65	430.05	387.55	220.94	193.73	87.68
18	Portugal	189.32	221.74	248.53	192.71	20.31	10.54
19	Australia	181.00	165.24	188.36	165.69	0.00	0.00
20	Egypt	85.61	68.99	136.63	164.14	1.08	0.66
21	Malaysia	63.31	72.01	67.84	93.61	9.32	9.95
22	Thailand	74.03	87.73	97.43	89.59	12.29	13.71
23	Singapore	58.19	68.05	70.14	74.53	4.38	5.87
24	Greece	41.50	49.16	56.75	59.92	15.34	25.60
25	Switzerland	61.06	69.55	65.42	53.71	0.27	0.51
26	Saudi Arabia	50.96	45.96	46.70	53.02	3.21	6.05
27	Denmark	46.66	67.58	46.96	43.37	5.31	12.24
28	Peru	13.05	44.39	62.38	40.82	0.00	0.00
29	Colombia	35.15	34.81	39.05	38.04	0.00	0.00
30	Poland	22.87	25.05	33.39	36.33	9.24	25.43

Table 3. Value added shrimp products under chapter16 of ITC HS with India's share

HS CODE	WORLD IMPORT (Value in USD mln)				INDIA'S SHARE (2019)	
	2016	2017	2018	2019	Value (USD mln)	%
160521	3329.00	3742.98	3829.73	3499.19	91.51	2.62
160529	992.10	1088.43	1228.10	1189.63	257.28	21.63

Investment in Value addition of shrimp products

Value addition involves a combination of skilled manpower, ingredients, machineries and packaging which ultimately leads to the production of high risk products.

Value added shrimp products are generally coming under the ITC HS codes of 16 05 21 and 16 05 29. These products include canned, battered and breaded, pickles, marinated products etc. Reduction of income tax on the producers and exporters of these products will prompt more entrepreneurs to come forward for establishing new units for production and export of these products in coming days.

100% FDI is permitted under the automatic route in seafood processing industry which will support further growth in seafood processing and export of shrimp. Technical and marketing collaborations with R&D institutes and companies within India and abroad are also required for value addition.

R&D support is very much essential for product development and marketing of value added shrimp products. This is a continuous and systematic process. At present, for R&D support, exporters have to contact the concerned research institute for getting any kind of R&D support and necessary fees need to be paid for transfer of technology. When an exporter is planning for production of value added products, he has to establish a R&D set up which is suitable for his production.

In this regard, based on the R&D proposal of exporter and due assessment on the same, R&D proposal can be supported financially & technically by the developmental agencies.

For the same, a R&D cell with adequate technical back up which can link between the exporter and research organization need to be in place. Such a R&D cell can assess the requirement of the industry in general and specific cases and can address the concerns in this regard.

Big Indian market and domestic marketing of Shrimp

Shrimp is always considered as a commodity for export due to its unique demand and price in international market. As retail marketing and cold chain facilities are not developed adequately, the possibilities of domestic marketing was not explored in India according to the potential of the shrimp.

Considering the size and opportunities in Indian market, processors and farmers need to tap this

potential for retail selling in major cities and towns of India. Raw shrimp and shrimp product retail outlets need to be popularized by strengthening the cold chain infrastructure and logistics. Breaded, marinated, pickled, freeze dried shrimp products need to be developed and popularized according to the pallets of customers of different states.

As flavors and spice combination of different states of India varies, there is enough scope for product development of shrimp products according to taste of Indian customers. Development of domestic shrimp market in India will complement the growth of export market of shrimp.

As the demand and price in international market fluctuates, domestic market in India can give a stable price and reduce the underselling in international market which is causing antidumping duty in US market. In brief development of a stable domestic market is essential for the growth of Indian shrimp export and farming industry as currently it is completely depend on export market.

Challenges to Indian shrimp Industry

Antibiotic residue and Biosecurity issues (A & B issues) affect the frozen shrimp export trade from India. The farmed shrimp consignments are rejected due to presence of banned antibiotics in markets such as EU, Japan and USA. The biosecurity issues not only affect the aquaculture sector through disease outbreaks, ultimately leading to reduced shrimp production, but also act as an impediment in market penetration.

Diseases such as White Spot Syndrome and Infectious Hypodermal Haematopoietic Necrosis cause considerable economic losses to the shrimp farmers.Currently India is facing market access issues related to banned antibiotic residue in Japan (100 % inspection for Indian farmed shrimp other than Black tiger) & EU (50 % sampling of aquaculture products from India). Due to this issue EU has de-listed certain Indian processors. Though few of them were relisted, those units and recently approved new processors are not permitted to export aquaculture products to EU.

During 2019, Europe has imported 5,80,570 MT shrimp with a value of USD 4.6 billion under HS 030617. India's contribution in this is 13.2% (USD 0.6 billion). The total seafood import (under chapter 030617) of Japan during 2019 is 1,43,913 MT with a value of USD 1.4 billion. India's share is 22.38% (USD 0.32 billion). If we are able to address the antibiotic residue issues, we can increase the market share to EU and Japan by 50% (US$ 3 billion).US is one of the major markets for shrimp, and India is the largest supplier of frozen shrimp to US market. During 2020, India has contributed 41% of US shrimp imports. An increase in the number of consignments rejected due to the presence of banned antibiotics in the recent times is affecting image of Indian shrimp in US market.

Due to biosecurity issues our shrimp exports are suspended / restricted in major markets like Australia, Saudi Arabia, Kuwait, China, Thailand and Canada. These countries have imported 7,23,730 MT worth US$ 4.65 billion frozen shrimp (under HS 030617) from world. India's share is 22.3% (US$ 1.03 billion). If we are able to address these issues, we can increase the market share to these markets by 50 %(US$ 2.3 Billion).

According to US Department of State, trawl fishing of shrimps without using Turtle Excluder Device (TED) is adversely affecting the turtle population in India, which disqualifies our shrimp fishery from being certified under Section 609 of US Public Law. US authorities also informed that the TED design by CIFT did not meet the NMFS-US dimensions.

They also has stated that TED is not being used in mechanical trawlers in India. Due to this, US banned import of wild caught shrimps from India since May 2018. By addressing this issue, India can increase the exports to USA additionally by US$ 0.3 billon.

Way forward

To regain the market access in Europe, Japan and other countries India need to strengthen its monitoring and surveillance mechanisms for banned antibiotic and various shrimp diseases.

Issues related to banned antibiotics and shrimp diseases are interrelated and need to approach this subject in a comprehensive manner to address the same. Scope of Pre- harvest test and surveillance programme for disease and banned antibiotic need to be widened in the different parts of the country.

The data generated by monitoring of banned antibiotic residue and shrimp diseases in different areas of shrimp production within the country will be helpful to address the issues related to shrimp production and shrimp diseases. The data and results generated through the analysis will be helpful to frame suitable policies to address the market access issues due to this and convince the competent authorities in importing countries.

The capacity building and implementation of better management practices and new technologies can address issues related to carrying capacity for enhancing the shrimp production. The OIE Aquatic animal health code establishes the standards for the improvement of aquatic animal health.

Competent authorities should use the standards in Aquatic Code to develop measures for early detection, internal reporting, notification, control or eradication of pathogenic agents in shrimps and preventing their spread via international trade of shrimp and shrimp products.

Aquatic animal health legislation and regulations pertaining to shrimp are a fundamental element that supports good governance and provide the legal framework for all key activities of the Aquatic Animal Health Services.

Aquatic Animal Health Services should be able to demonstrate that they are able to anticipate the requirements for and have control of, the establishment and application of aquatic animal health measures. This should be demonstrated by means of appropriate legislation and regulations, sufficient financial resources and effective organization. Aquatic Animal Health Services should define and document the responsibilities and structure of the organization. Specific policy for shrimp in farming, health service, processing and export are the need of the hour to maintain and upgrade the status of Indian shrimp industry in international scenario.

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MPEDA Tuticorin holds virtual meeting with chilled fish exporters

An online meeting with chilled fish exporters was conducted by MPEDA SRD Tuticorin on 25th May 2021. The main agenda of the meeting included discussion on various issues concerning seafood industry during the current lockdown. Enterprises such as M/s. Maria Aquacon Pvt Ltd., M/s. Island Seafood Exports, M/s. NJ Seafood and Fisheries, M/s. Vitality Aquaculture Pvt Ltd., M/s. Prince Seafood Exports, M/s. Surya Seafood Exports, M/s. Kondiya Fresh Foods, M/s. Cerabin Enterprises, M/s. Kiefer Seafoods, M/s. Sea Wonder Exports, M/s. Synergy Marine Fish Exports, M/s. Vee Too Exim, M/s. MII Foods Pvt Ltd., M/s. Kanyakumari Marine Foods, M/s. JMJ Exports, M/s. KK Fish Exports, and M/s. Neythal Fresh Exports participated.

The participants were welcomed by Mr. G. Ramar, Assistant Director, SRD Tuticorin, MPEDA. The agenda for the meeting was informed and the exporters were requested to offer their comments on various issues affecting seafood export during the lockdown. The major issues raised included the pass availability for man and material movement. Mrs. Anju, Assistant Director, SRD Tuticorin informed the exporters to avail pass for interstate travelling from the Assistant Director, Fisheries office and for workers movement from Tamilnadu e-pass registration platform. The workers, as per the Covid regulation, can travel only in company vehicles, and use of two wheelers is strictly prohibited. Exporters from Kanyakumari region informed the lack of raw material availability due to the recent cyclones and Covid related restrictions. They also informed that the Madurai airport had two flights to Kuwait but the same has been stopped due to pandemic, which has affected their exports and cargo movement. Chilled fish exporters reported a delay in the testing of packages for Covid at China and have resulted in mortality and loss of quality for chilled fish. Live fish testing takes 4-6hrs and chilled testing takes nearly one day. There is no priority for chilled or live products.

Another issue reported is the poor flight connectivity. Exporters of live fish have to transport the cargo to Chennai and then look for connection flight as Tuticorin and Madurai airports are not accepting the cargo. The container shortage issue still persists and there is increase in freight charges. The meeting lasted for an hour and concluded at 11:30 AM.

India, Philippines looking to expand cooperation in tuna, shrimp & seaweed sectors

Dr. T. R. Gibinkumar, Deputy Director
(Market Promotion & Statistics)

MPEDA along with major stakeholders in the sector had participated in India-Philippines Virtual Business Conference - Marine Fisheries and Aquaculture organised on 27th May 2021. The conference was jointly organised by Philippine Chamber of Agriculture & Food, INC and Embassy of India in Manila, Philippines.

Cooperation between India and the Philippines in the blue economy greatly taps on India's Indo-Pacific Oceans Initiative (IPOI). In 2019, Hon'ble Prime Minister Narendra Modi proposed the establishment of an IPOI for a secure and stable maritime domain.The areas of focus of such an initiative heavily rests on creating partnerships amongst interested states in enhancing maritime security, sustainably using marine resources, and disaster prevention and management. The IPBC-MFA reflects the widening of India-Philippines cooperation beyond the traditional sphere of defence engagements to that of the blue economy.

The programme commenced with the welcome remarks by Mr. Danilo V. Fausto, President Philippine Chamber of Agriculture & Food, Inc. (PCAFI). Mr. Fausto said that, Indian Ambassador to Philippines Shambhu S. Kumaran brought up the idea of holding the India-Philippines Virtual Business Conference on Marine Fisheries and Aquaculture (IPBC-MFA) in a previous meeting. He mentioned that "Indian fisheries sector produces over 7 million tons of fish and shellfish from capture fisheries and aquaculture, almost double of that produced by the Philippines, representing nearly

5 percent of the world's total fish production ". PCAFI head said that both the Philippines and India have a high chance to share the market of tuna, shrimp and seaweed through business and technical cooperation. Mr. Fausto also brought to the notice that both countries can immensely benefit from the exchange of resources & technology in developing aquaculture in the country's vast areas of swampland, freshwater and brackish water fishponds.

Opening remarks were made by H. E. Ambassador Shambhu S. Kumaran, India's Ambassador to the Philippines, Embassy of India, Manila and H.E. Ambassador Ramon Bagatsing, Jr. Philippine Ambassador to India. Mr. Shambhu Kumaran told the conference will definitely help in identifying the potentially enormous opportunities the two countries can share in through mutual cooperation.

He also mentioned that in the post-COVID world, health security is really important along with food security and called upon the participants to work together to make the food more climate resilient and the supply chain more stronger, more vibrant, and dynamic.The technical programme was divided in to three sessions dedicated to Tuna canning, shrimp aquaculture and Seaweeds. In the first session “Opportunities in Fish Canning Industry and Tuna”, Mr. Cherian Kurian, Managing Director, M/s. HIC ABF Special Foods Pvt Ltd, Kochi, Kerala and Mr. Francisco Tiu Laurel Jr., President, Frabelle Fishing Corporation, Philippines gave their presentations.

On behalf of India, Mr. Cherian Kurian said the two countries have rich potential for sharing tuna-sector resources, as India can produce tuna ready for canning while the Philippines has expertise in tuna processing and canning. India has an estimated tuna resource potential of around 2.13 million metric tons (MT), of which 54 percent of is yellowfin and 40 percent is skipjack. The South Asian country is capable of shipping large volumes of tuna to the Philippines so the latter can make full use of its processing and canning capacity, Kurian said.

For the Philippines, Frabelle Fishing Corporation President Francisco Tiu Laurel Jr. said the Philippines’ fishing fleet is eager to operate in India and tuna processors and canners are willing to establish processing facilities there. But Tuna Canners Association of the Philippines Executive Director

Francisco Buencamino said it would be more beneficial for Filipino companies to import raw tuna from India and process it in the Philippines, as the island nation enjoys lower duties for its tuna exports to the European Union. Tuna is a major seafood export item for the Philippines, with sales value of around USD 350 million to USD 400 million (EUR 287.1 million to EUR 328.1 million) annually.

In the second session "Opportunities in Aquaculture and Shrimps". Dr. Manoj Sharma, Director, M/s. Mayank Aquaculture Pvt Ltd, Surat, Gujarat and Mr. Miguel Rene A. Dominguez, Vice President, Alsons Aquaculture, Corporation, Philippines gave their presentations.

Dr. Sharma gave an overview of Indian shrimp industry and suggested the possible avenues of cooperation between India and Philippines in developing shrimp aquaculture with mutual benefit.

Mr. Dominguez said aquaculture firms in the Philippines could benefit hugely from tapping into India's knowledge on shrimp and crab aquaculture techniques. As the world's largest shrimp producer and exporter, India can help the Philippines with mitigation and treatment of shrimp diseases, with the goal of increasing the output of Filipino shellfish farms.

The third session was on the "Opportunities in Sea weeds" and the presentations were made by Dr. M Shanmugham, Vice President R&D, M/s. Aqua Agri Processing Pvt Ltd Manamadurai, Tamil Nadu and Mr. Alfredo Pedrosa III, President, Seaweed Industry Association of the Philippines. Both the presenters iterated that the time is prime to invest in aquaculture, including seaweeds.

Dr. Shanmugham informed that Government of India has allotted considerable amount in the budget to promote the seaweed industry and to provide technical and financial assistance for developing seaweed cultivation. He informed about the huge demand for seaweed hydrocolloids in India and currently 90 percent is met through imports.

He mentioned about the new areas in Gulf of Mannar and Gulf of Kutch that may be considered for seaweed cultivation to meet India's demand. He informed that, in India the processing facilities for producing carrageenan, a value-added product from seaweed, was established in 2010. On behalf of Philippines, Mr Pedrosa mentioned that Philippines is the global leader in seaweed products having technology along with processing facilities in carrageenan manufacturing and the seaweed products exports is around USD 250 million yearly.

He informed that Philippines was also the first in the world to develop seaweed species *Euchema* and *Kappaphycus* for commercial cultivation for carrageenan. He also said that Philippines still have a significant coastal area of 140,000 hectares along with 500,000 hectares of deep-sea area for expansion and currently utilising 60,000 hectares for farming seaweeds.

Mr. Pedrosa also welcomed new investments in the seaweed industry in the Philippines as the domestic demand is exceeding the supply. He also noted that the Philippines has continued its research and development activities on other seaweed species and 893 seaweed species are abundant in the Philippines, but only few species viz., Eucheuma, Gracilaria, Sargassum and Kappaphycus are used for carrageenan production.

Mr. K. S. Srinivas IAS, Chairman, MPEDA, gave the closing remarks on behalf of Indian side and Mr. Philip Ong, Chairman, PCAFI gave the closing remarks from Philippine side. The conference concluded with the vote of thanks by Mr. Nishikant Singh, First Secretary (Economic & Commerce), Embassy of India, Manila and the whole programme was moderated by Mr. Doy Salacup, Executive Director, PCAFI.

The future trajectory of a multi-dimensional India-Philippines relationship

The initiation of the IPBC-MFA serves as a ground-breaking moment in forging a closer and more dynamic Philippines-India relationship. Though the bilateral partnership of the two countries in the defence realm has significantly picked up since 2014, the commencement of such an event greatly showcased the willingness of both New Delhi and Manila to not only deepen their cooperation in existing fields, but to also broaden the scope of engagement and explore areas of untapped potential.

The success of the virtual meeting will become a major stepping stone for more diverse engagements in the future, which will effectively cultivate a more robust and multi-dimensional bilateral partnership between India and the Philippines.

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Strategies and action plan for seafood exports by 2025

K. S. Srinivas IAS, Chairman, MPEDA

This is a series published by Chairman, MPEDA on the strategies and action plan envisaged by MPEDA in enhancing the seafood exports from the country to achieve the goals set for 2025. Series 1 narrates the current scenario, expected levels of projection in exports, and identified constraints in achieving the target.

I. Status of Indian Seafood Sector

a. Marine products exports

India is one of the significant seafood exporters to the world market and is ranked 4th in global seafood export trade. The USA, European Union, East Asian markets such as China and Vietnam, and Japan are our major markets. Presently, India has got a share of 4% of the estimated world seafood trade of US$ 165.9 billion (2018). According to the FAO studies, the world seafood market is growing at a Compound Annual Growth Rate (CAGR) of 4 %.

During the financial year 2020-21, India exported 11, 49,510 MT of Seafood worth US$ 5.96 Billion. USA and China are the major importers of Indian seafood. Frozen Shrimp continued to be the major export item, followed by frozen fish.

The Covid -19 pandemic has not spared the seafood sector as well. Though the seafood export was drastically affected during the first half of the year, the sector revived well and has shown improvement in the last quarter of the year. However, the seafood export during the year has declined by 6.30% in rupee earnings, 10.81% in US dollar value and 10.87% in quantity. The average unit value remained almost same compared to last year.

Principal item that contributes to exports is frozen shrimp which comprises species such as Vannamei, Black Tiger, Indian white, flower shrimp, Scampi etc. Various species of fishes, cephalopods such as squid, cuttlefish and octopus, gastropods and bivalves also contribute to exports.

b. Export production

The fish production in India is contributed by marine, inland and coastal aquaculture. The total fish production during 2019 was 125.88 Lakh MT and the inland sector contributed to 69% of the production.

There is very less demand for the fish produced in the inland areas in the export market, though Fresh water prawn / Scampi from aquaculture ponds and reservoirs is a preferred item. The marine capture fisheries

Table 1: Export performance during 2020-21 compared to 2019-20

Export Details	2020-21	2019-20	Growth %
Quantity (MT)	11,49,510	12,89,651	-10.88
Value (Rs. Crore)	43,720.98	46,662.85	-6.31
Value (US$ Million)	5,956.93	6,678.69	-10.81
Unit Value (US$/Kg)	5.18	5.18	0.00

production in 2019 was 3.56 million tons out of a production potential of 4.40 million tons (CMFRI, 2020). The sea catch is supported mainly by shrimps, cephalopods and various species of fin fishes. The major states that contribute to marine fish landings are Tamil Nadu (7.75 lakh tons), Gujarat (7.49 lakh tons), Kerala (5.44 lakh tons) and Karnataka (5.01 lakh tons).

Export oriented aquaculture shrimp production, showed a remarkable increase during the year 2020-21. The increase in production solely depends on the increase in the production of Pacific Whiteleg shrimp (*Litopenaeus vannamei*). Total production of shrimps and Scampi during 2020-21 was estimated at 8, 51,982 MT, registering an increase of 12.51 % compared to previous year.

Vannamei production during the year was 8,15,745 MT, which is 1,04,071 MT more than the production of 7,11,674 MT achieved during the previous year, thus registering an increase of 14.62 % (Table 2).

Vannamei production contributed to around 96% of the total shrimp aquaculture production in the country. Andhra Pradesh leads the shrimp production table with 75% share in production of shrimp and Scampi, followed by West Bengal (3.36%), Odisha (1.49%), Gujarat (1.30%) and Tamil Nadu (1.02%).

The stagnation in catches in the recent years has affected its contribution to the export kitty also. The contribution of capture fisheries reduced from 56.03% to 53.56% in quantity and reduced from 36.42% to 32.02% in US$ value terms during 2020-21.

The aquaculture sector has contributed 67.98% of exported items in terms of US$ and 46.44% in terms of quantity which is respectively 4.40% and 2.48% higher compared to the figures of 2019-20.

The unit value of aquaculture products increased marginally by US$ 0.1 from 7.49 to 7.59 US$ per Kg, but the unit value of capture fisheries items reduced slightly from 3.37 to 3.10 US$ per Kg.

It has been noted that the sea catch is almost stagnant for the past few years due to various reasons. The raw material supply to the export value chain is largely contributed by the aquaculture sector as India has emerged as one

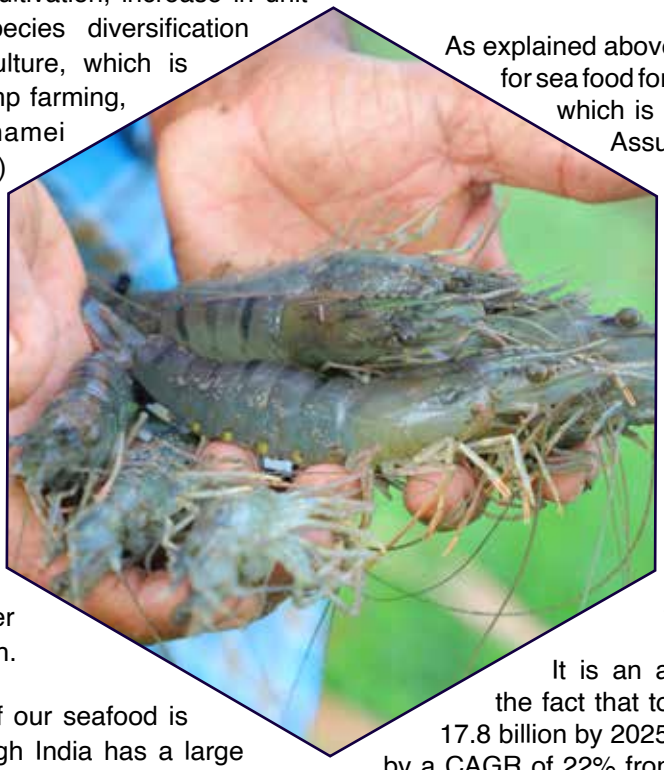
Table 2: Species-wise shrimp aquaculture production in 2020-21 vs. 2019-20

Species	2020-21	2019-20	Difference	% increase/ decrease
L . vannamei	8,15,745	7,11,674	+1,04071	+14.62
P. monodon	27,616	35,437	-7,821	-22.07
Other shrimp	318	582	-264	-45.36
Scampi	8,303	9,540	-1,237	-12.97
Total	**8,51,982**	**7,57,233**	**94,749**	**+12.51**

of the major aquaculture producers, which helps us to retain our share in the world market.

The future of India's seafood exports mainly depend on the increase in our aquaculture production, quality improvement of sea caught material by reducing post harvest losses, value addition, and brand promotion activities.

c. Augmenting raw material supply: The aquaculture production is proposed to be increased through expansion of area under cultivation, increase in unit area productivity and species diversification of export oriented aquaculture, which is currently centered on shrimp farming, especially the exotic vannamei (*Litopenaeus vannamei*) variety.



d. Quality enhancement of sea catch: The quality of sea caught material could be improved mainly through better handling and preservation of the catch onboard fishing vessels, and modernization of major fishing harbours by creating appropriate cold chain infrastructure for better handling of the landed catch.

e. Value addition: Most of our seafood is exported in raw form though India has a large number of processing units and manpower, which could be utilized for producing value added marine products not only from indigenous raw material but also from imported raw material as done by countries such as Thailand, Vietnam, China, Malaysia etc. Indian's share of value addition in total exports is 6% while that of Vietnam is 26% and for Thailand it is 66%.

As most of the units are family based entities, they have to be supported in meeting the huge investment required for production and export of value added marine products. The entrepreneurs have to be supported through fast track investment processes, facilitate institutional finance, help to foster JVs etc.

II.Seafood export projections by 2025

As explained above, the estimated world trade for sea food for 2018 was US$ 165.9 billion, which is growing at a CAGR of 4%. Assuming the same growth rate, the world trade of seafood in 2025 is estimated to be US$ 265.61 billion.

If India retains the same share of 4% in the world trade, by 2025 our export would be US$ 11 billion. MPEDA initially aimed for an export target of US$ 17.8 billion by 2025 through various strategic interventions and with the help of other departments and state Governments.

It is an ambitious task, considering the fact that to achieve an export of US$ 17.8 billion by 2025, India's export has to grow by a CAGR of 22% from 2019-20, and to increase India's share in world seafood trade to 6.7%.

However, a more realistic approach pegs India's export target at Rs. 70,000 Crore with a CAGR of 14.4% as

seen during the last decade, as indicated in figure 1 & figure 2 below, supplemented by the initiatives and action plan on investments.

III.Constraints in achieving the export target:

The major constraints that have affected the exports during 2020-21, which were production related as well as market related. Certain issues were also linked to the Covid-19 pandemic. A brief of the issues affected the trade are as follows:

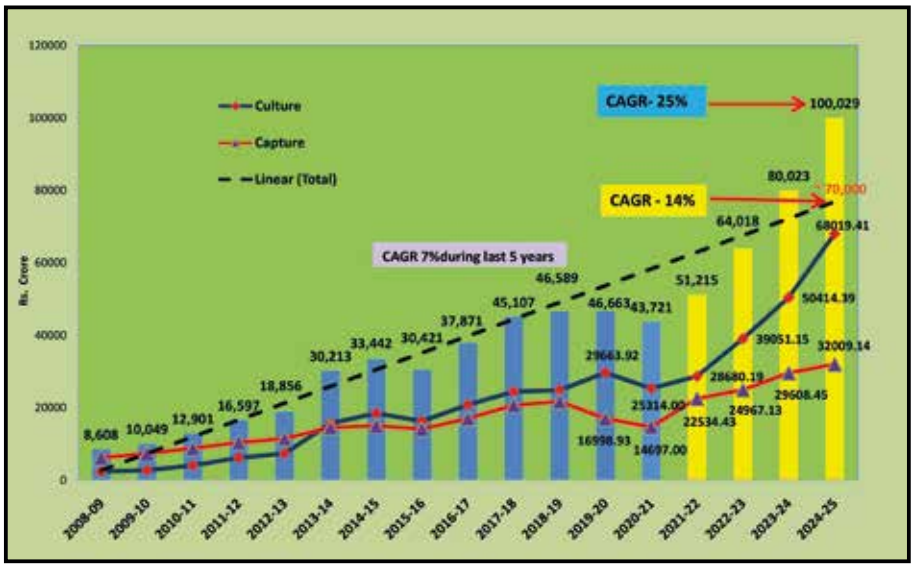


Fig.1: Projected seafood export by 2025

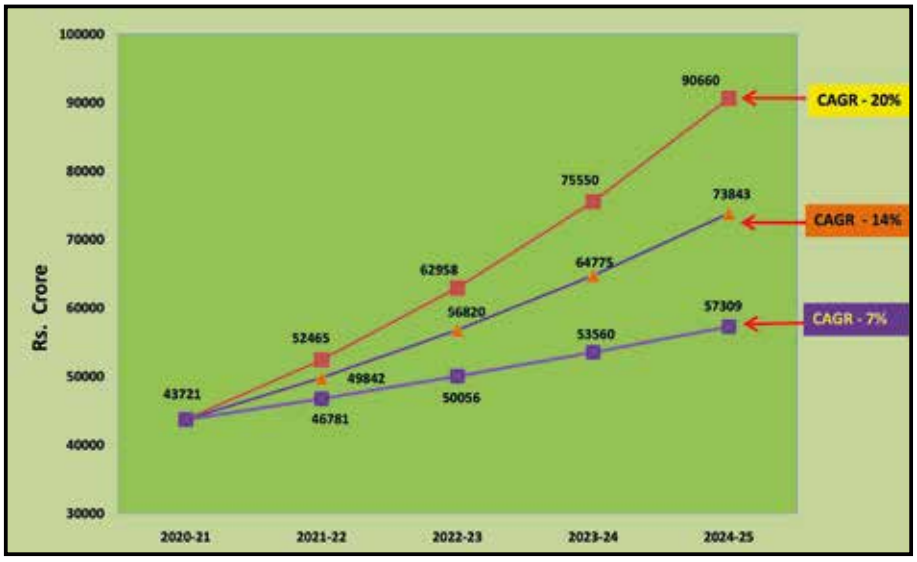


Fig. 2: Projected seafood exports by 2025 at different CAGR

(a) Stagnation/decrease in landings: The loss of fishing days due to Covid-19 and inclement weather especially along the west coast has affected the fishing operations thereby bringing down the landings. Most of the landings consisted of fishes which were more popular in the domestic market than the landings of exportable varieties.

(b) Post harvest losses & lower unit value owing to poor infrastructure & handling: Due to poor cold chain infrastructure on board fishing vessels as well as in the harbours / landing centres a lot of catch is wasted, which has to be considered as a loss for the economy. The lack of adequate cold chains also spoils the quality affecting the unit value realization in the domestic as well as export market. The fishing harbours and landing centres need to be equipped with facilities for potable water supply, ice and storage facilities. Similarly, fishing vessels shall have facilities for proper handling and storage of the catch to prevent spoilage and to ensure the quality.

(c) Stagnation of shrimp culture area and productivity: At present, around 1.58 lakh Ha area is used for shrimp farming with an average productivity of 5 MT/Ha/year. The stagnated area and productivity in turn is stagnating the farmed shrimp production around 7.00 lakh MT per year. The growing demand of global markets and Indian seafood processing sector warrants for expansion of farming areas exponentially. MPEDA has identified a potential area of 5.00 lakh Ha suitable for coastal shrimp farming especially in states like Gujarat, Odisha, Tamil nadu, West Bengal and Andhra Pradesh. Adoption of Better management Practices (BMPs), biosecurity measures and advanced technologies can propel the unit area production to 7 MT/Ha/year across India. States like Gujarat and Andhra Pradesh have already achieved such production levels.

(d) Dependency on single species: 92% of India's farmed shrimp production is contributed by a single species *Litopenaeus vannamei*, which is commercially known as Pacific Whiteleg shrimp. Other shrimp species produced are *Penaeus monodon* (Black Tiger) and *P. indicus*, which are produced in lesser quantities.

In addition, freshwater prawn / Scampi (*Macrobrachium rosenbergii*) is also produced in our country.

Dependence on a single species for production and export trade is very risky as disease occurrence can wipe out the production affecting the trade. Hence it is imperative to enhance the production of other commercially important shrimp species and also by introducing and propagating the hatchery and grow out technologies of other commercial finfish and shellfish species such as GIFT (Tilapia), Cobia, Seabass, Mud Crab etc.

(e) Non Tariff Measures: Certain market regulations effectively act as an impediment for smooth trade of seafood export trade. For example presence of antibiotic residue and related increased import sampling frequency affects the export of farmed shrimps to EU and Japan.

Biosecurity regulations associated with shrimp viruses such as WSSV have affected our shrimp export trade to China, South Korea, Australia, Thailand, Saudi Arabia, Kuwait etc. Shortfall in enforcement of regulations to protect sea turtles in India costs lack of certification for Indian wild caught shrimps for export to the USA. A similar regulation under the US Marine Mammal Protection Act (MMPA) could stop the export of all wild caught seafood from India to the USA from January 2023.

All the major markets have imposed regulations on Illegal Unreported Unregulated (IUU) fishing under which traceability details of the catch have to be validated and furnished along with every consignment as a part of global measures to curb IUU fishing operations. The US has moved a step ahead and requires the traceability details of aqua farmed products also under its Seafood Import Monitoring Programme (SIMP).

China, of late, inspects the consignments for Covid-19 nucleic material, and if found positive, they suspend the units. Sri Lanka has stopped dry fish exports from India, citing Covid-19 pandemic. Indian export sector battled all these SPS/TBT measures to ensure steady supply of seafood to the customers aboard.

(f)Low proportion of value addition: Though countries like Vietnam, China, and Thailand etc are making big strides in export of marine products through value addition of their own raw material and also through reprocessing of the imported raw material,

the share of value added products in volume in India's exports is just 6% compared to 66% of Thailand or 38% of China or 26% of Vietnam.

Many of our units still depend on wild caught material, which are seasonal in nature, and hence the capacity utilization is low. A solution to this is to import raw materials for value addition and re-export. This will also enhance the employment generation, better the profit margins, and helps to exploit our resources judiciously.

(g) Lack of brand image for Indian Seafood: Indian seafood as mostly exported in raw frozen form undergoes reprocessing and repacking abroad. Hence, the level of branding at individual exporter level is quite limited.

Most of our exporters pack Indian seafood under the established brand name of the importer / associated retailer. There is a need to create and propagate a generic branding exercise for Indian seafood tagging major international events & festival seasons utilizing the reach of visual and digital / social media.

IV.Way forward and action plan:

The seafood export can be enhanced and the target of Rs. 1.00 lakh Crore seafood export target can be achieved through coordinated efforts of Central and State departments, promotional and development bodies, regulators and stakeholders through concerted efforts to create policies to enhance production addressing the constraints and effectively implement the interventions at the field level. The strategies envisaged to achieve the target set for exports will be elaborated in the next issue.

(To be continued in the next issue)

State-wise export performance 2020-21

Bhushan Patil, Assistant Director &
Dr. T. R. Gibinkumar, Deputy Director, MPEDA Kochi - 36

During the financial year 2020-21, India exported 11,49,510 MT of seafood worth US$ 5.96 Billion. The Covid pandemic has not spared the seafood sector as well. Though the seafood export was drastically affected during the first half of the year, the sector revived well and has shown improvement in the last quarter of the year. However, the seafood export during this year has declined by 6.31% in rupee terms, 10.81% in US dollar value terms and 10.88% in quantity terms. The average unit value remained almost same compared to last year.

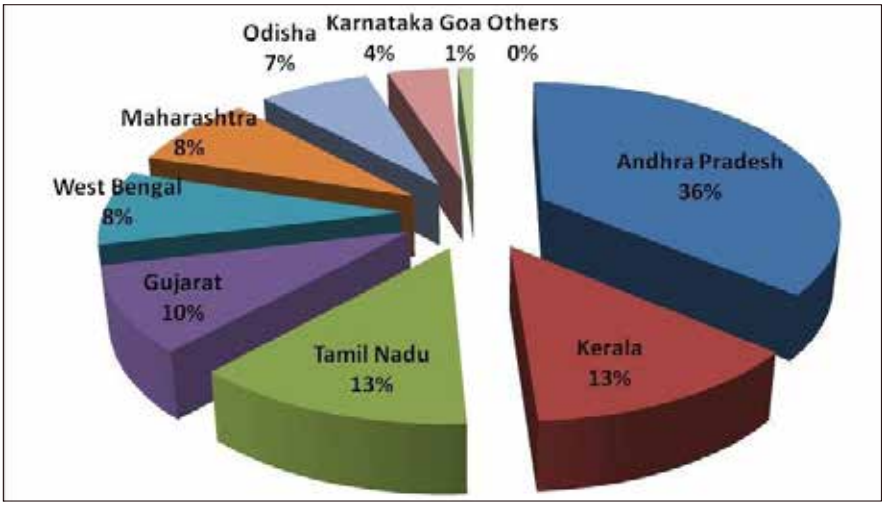


Fig.1 State-wise exports in quantity

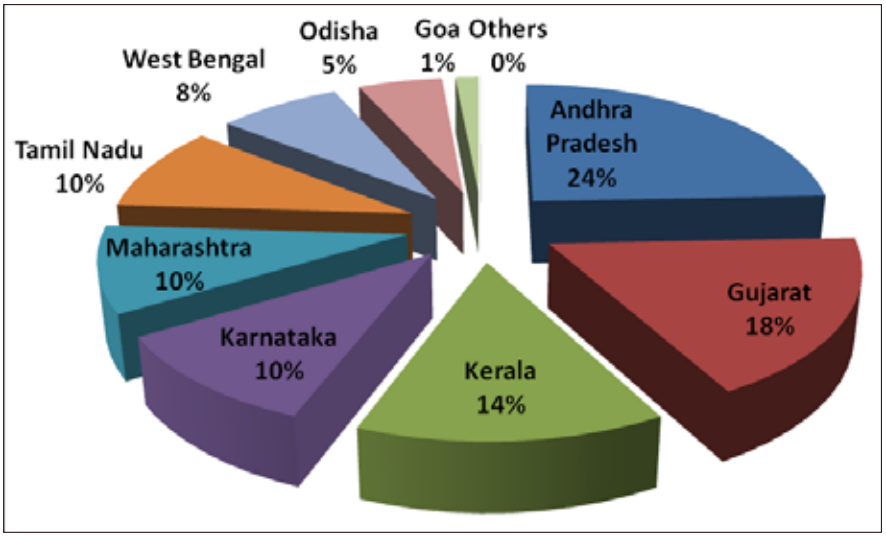


Fig.2 State-wise export in US$

If we see the performance of marine products exports from 2010-11 onward, it has grown from 2.86 billion US$ to all time record exports of 7.1 billion in 2017-18 with a CAGR of almost 14%. But for the last three years the export of marine products is witnessing a downward trend with a CAGR of -5.6% due to various issues in the market. If we see the CAGR from 2010-11 to 2020-21, it has decreased to 7.62% from the 14% CAGR showed in 2017-18. The performance of marine products by various states during 2019-20 & 2020-21 is given in table 2. The data has been tabulated based on the production and exports made by various manufacturer exporters in the state.Andhra Pradesh retained its first position both in quantity and US$ value terms contributing 24.36% & 36.17% respectively.

Kerala emerged as the second largest contributor during 2020-21 in terms of US$ value replacing Tamil Nadu. But in terms of quantity Kerala comes after Gujarat and taken the position of third largest contributor.

Gujarat is the second largest contributor in terms of quantity, due to the export of fishes with less unit value. Graphical representations of the contribution by each state in terms of quantity and US$ value are given as Fig.1 & Fig.2.

Table. 2. State-wise export performance**

US$ 2020-21 Rank	STATE	2020-21			2019-20			Growth %			% Share during 2020-21		
		Qty Tons	Rs . Cr	US$ (Mln)	Qty Tons	Rs Cr.	US$ (Mln)	Qty Tons	Rs Cr.	US$ (Mln)	Qty Tons	Rs Cr.	US$ (Mln)
1	Andhra Pradesh	279992	15831.74	2154.55	293314	15498.64	2217.94	-4.54	2.15	-2.86	24.36	36.21	36.17
2	Kerala	157698	5623.12	766.76	163563	5672.27	810.44	-3.59	-0.87	-5.39	13.72	12.86	12.87
3	Tamil Nadu	110023	5565.46	758.05	130230	6460.77	924.71	-15.52	-13.86	-18.02	9.57	12.73	12.73
4	Gujarat	203734	4185.95	571.74	251531	4984.87	711.06	-19	-16.03	-19.59	17.73	9.58	9.6
5	Maharashtra	110653	3681.22	502.35	151425	4829.17	690.7	-26.93	-23.77	-27.27	9.63	8.42	8.43
6	West Bengal	88443	3595.12	489.58	98626	3910.95	560.35	-10.33	-8.08	-12.63	7.7	8.22	8.22
7	Odisha	60718	3107.68	422.46	66654	3243.29	464.91	-8.9	-4.18	-9.13	5.28	7.11	7.09
8	Karnataka	121348	1689.14	231.13	111465	1520.1	220.89	8.87	11.12	4.64	10.56	3.86	3.88
9	Goa	16549	435.25	59.47	21498	520.65	74.56	-23.02	-16.4	-20.24	1.44	1	1
10	Others*	183	2.6	0.35	1345	22.15	3.15	-86.41	-88.28	-89.02	0.02	0.01	0.01
	Total	**1149341**	**43717.26**	**5956.42**	**1289651**	**46662.85**	**6678.69**	**-10.88**	**-6.31**	**-10.81**	**100**	**100**	**100**

*** basis manufacturer exporters of the state, * e.g. Assam, Tripura*

Export performance by various states

The marine products export in the country is primarily contributed by 9 maritime states and a minor contribution is from Assam & Tripura. The export performance during 2020-21 by various states in terms of products and markets is given at Table 3 & Table 4.

a. Andhra Pradesh

Andhra Pradesh continued to be on the top contributor of marine products for exports in terms of quantity, value and US$ during 2020-21. It exported marine products of 2,79,992 MT worth Rs. 15,831.74 Crore and US$ 2154.55 million. The rupee value grew by 2.15% compared to previous fiscal year however quantity and US$ value wise exports decreased by 4.54% and 2.86% respectively. Overall unit value fetched by the state is US$ 7.70 /kg which is the maximum among all the other states. This is because of the bulk of shrimps being produced and exported from the state.Among total exports of India, Andhra Pradesh contributed 24.36%, 36.21% and 36.17% in quantity, value and US$ terms respectively. Among the exports of Andhra Pradesh, frozen shrimp contributed 97.20%, 98.66% and 98.65% in terms of quantity, rupee value and US$ respectively. Among the major markets, in US$ terms Andhra Pradesh exported 70.74% to USA, 12.74% to China, 4.54% to EU, 3.51% to Middle East and 2.92% to South East Asia.

b. Kerala

Kerala bagged second position during 2020-21 in marine exports from India with 12.87 % share by US$ value. It exported 1,57,698 MT of marine products worth Rs. 5623.12 Crore and US$ 766.76 million. In terms of quantity, Kerala is in the third position after Gujarat. The exports of the state has been decreased by 3.59%, 0.87%, 5.39% by quantity, rupee value and US$ value respectively compared to 2019-20. Unit value of exports from the state was US$ 4.86/kg.

Among total exports of India, Kerala state has contributed 13.72%, 12.86% and 12.87% in quantity, rupee value and US$ terms respectively. Among the exports of the state, in terms of US$ value, frozen shrimp contributed 59.55% followed by frozen Squid

(15.05%), frozen Cuttlefish (10.82%), frozen Fish (8.36%). Kerala during 2020-21 has diversely exported to major markets in US$ terms viz., 28.13% to EU, 23.56% to USA, 18.11% South East Asia, 12.38% to China, 8.29% to Japan and 3.84% to Middle East.

c. Tamil Nadu

Tamil Nadu is in the third position during 2020-21 with 12.73 % share by US$ value in marine exports. It exported 1,10,023 MT of marine products worth Rs. 5565.46 Crore and US$ 758.05 million. The exports of the state has been decreased by 15.52%, 13.86%, 18.02% by quantity, rupee value and US$ value respectively. Unit value in exports of the state was US$ 6.89 /kg.

Among total exports of India, Tamil Nadu contributed 9.57%, 12.73% and 12.73% in quantity, value and US$ terms respectively. Among the exports of the state, in terms of US$ value, frozen shrimp contributed 82.30% followed by chilled items (4.22%), frozen Squid (2.96%), frozen Cuttlefish (2.50%), frozen Fish (1.64%). Tamil Nadu during 2020-21 has exported to major markets, viz., 44.48% to USA, 14.53% to EU, 11.30% to China, 9.89% to Japan, 7.46% to Middle East and 5% South East Asia in US$ terms.

d. Gujarat

Gujarat achieved fourth position by US$ value during 2020-21 in marine exports from India with 9.60% share and second position in terms of quantity by 17.73% share. It exported 2,03,734 MT of marine products worth Rs. 4185.95 Crore and US$ 571.74 million. The exports of the state has been decreased by 19%, 16.03%, 19.59% by quantity, rupee value and US$ value respectively. Unit value in exports of the state was US$ 2.81 /kg which is only second to the last. It shows that if unit value is improved by exporting value added products, Gujarat has the potential to outperform in the subsequent years.

Among the exports of the state, in terms of US$ value, frozen fish contributed 38.61% followed by, frozen shrimp (18.86%), frozen Squid (13.89%), frozen Cuttlefish (12.42%), dried items (2.74%). Gujarat during 2020-21 has exported in US$ terms 31.36% to China, 28.72% to EU, 14.11% South East Asia, 10.68% to Japan, 5.89% to USA. Exports from Gujarat to China is decreased by 42.51% and increased 8.37% to EU in US$ value terms.

e. Maharashtra

Maharashtra maintained fifth position during 2020-21 in marine exports from India with 8.43% share by US$ value. It exported 1,10,653 MT of marine products worth Rs. 3681.22 Crore and US$ 502.87 million. The exports of the state has been decreased by 26.81%, 23.69%, 27.19% by quantity, rupee value and US$ value respectively. Unit value in exports of the state was US$ 4.54 /kg.

Among total exports of India, Maharashtra contributed 9.63%, 8.4 2% and 8.43% in quantity, rupee value and US$ terms respectively. Among the exports of the state, in terms of US$ value, frozen shrimp contributed 51.32%, followed by frozen fish (8.78%), dried items (5.52%), frozen Squid (4.78%), frozen Cuttlefish (2.07%). Maharashtra during 2020-21 has exported to major markets, in US$ terms viz., 21.85% to EU, 14.45% to China, 14.26% to USA, 12.69% South East Asia, 9.41% to middle east and 8.36% to Japan. Exports from Maharashtra to USA, South East Asia and China has decreased by 44.43%, 41.59% and 37.71% respectively by US$ value.

f. West Bengal

West Bengal maintained sixth position during 2020-21 in marine exports from India with 8.22% share by US$ value. It exported 88,443 MT of marine products worth Rs.3592.12 Crore and US$ 489.58 million. The exports of the state has been decreased by 10.33%, 8.08%, 12.63% by quantity, rupee value and US$ value respectively. Unit value in exports of the state was US$ 5.54 /kg.Among total exports of India, West Bengal contributed 7.70%, 8.22% and 8.22% in quantity, rupee value and US$ terms respectively. Among the exports of the state, in terms of US$ value, frozen shrimp contributed 81.28%, followed by dried items (5.87%), frozen Cuttlefish (3.77%), Live Items (3.38%), Chilled Items (2.94%) & frozen fish (2.36%).

West Bengal during 2020-21 has exported to major markets, viz., 26.65% to USA followed by 19.05% to China, 18.17% to Japan, 17.19% to EU, 8.39% South East Asia and 2.43% to Middle East in US$ terms. Exports from West Bengal to USA and EU is increased by 15.25%, 13.92% respectively in US$ value and decreased in China, South East Asia and Japan by 36.43%, 32.32% and 22.41% respectively.

g. Odisha

Odisha remained at seventh position during 2020-21 in marine exports from India with 7.09% share by US$ value. It exported 60,718 MT of marine products worth Rs. 3107.68 Crore and US$ 422.46 million. The exports of the state has been decreased by 8.90%, 4.18%, 9.13% by quantity, rupee value and US$ value respectively. Unit value in exports of the state was US$ 6.96 /kg whichis in the top 3rd position compared to other states.Among total exports of India, Odisha contributed 5.28%, 7.11% and 7.09% in quantity, rupee value and US$ terms respectively. Among the exports

of the state, in terms of US$ value, frozen shrimp contributed 99.77%. Odisha during 2020-21 has exported to major markets, in US$ terms viz., 37.18% to USA followed by 24.82% to China, 17.34% to South East Asia & 11.05% to Japan. Exports from Odisha to South East Asia, Japan and Middle East is increased by 85.72%, 25.03% and 13.57% respectively in US$ value and decreased in USA and China by 20.61% and 30.47% respectively.

h. Karnataka

Karnataka is at the eighth position during 2020-21 in marine exports from India with 3.88% share by US$ value. It exported 1,21,348 MT of marine products worth Rs. 1689.14 Crore and US$ 231.13 million. The exports of the state has been increased by 8.87%, 11.12%, 4.64% by quantity, rupee value and US$ value respectively. Unit value in exports of the state during 2020-21 was US$1.90 /kg which was the least when compared to other states.

Among total exports of India, Karnataka contributed 10.56%, 3.86% and 3.88% in quantity, value and US$ terms respectively. Among the exports of the state, in terms of US$ value, Other items (mainly surimi) exported 40.21% followed by dried items (29.81%), frozen Fish (11.48%), frozen Squid (9.45%), frozen Cuttlefish (6.39%) and frozen Shrimp 2.63% . Karnataka during 2020-21 has exported to major markets, in US$ terms viz., 61.80% to South East Asia, followed by 11.41% to China, 7.25% to Japan, 5.86% to USA, 4.93% to EU. Exports from Karnataka to South East Asia, EU and Japan has increased by 10.61%, 79.31% and 67.65% respectively in US$ value and decreased to Middle East and China by 76.33% and 20.43% respectively.

i. Goa

Goa is in the ninth position during 2020-21 in marine exports from India with 1% share by US$ value. It exported 16,549 MT of marine products worth Rs. 435.25, Crore and US$ 59.47 million. The exports of the state has been decreased by 23.02%, 16.40%, 20.24% by quantity, rupee value and US$ value respectively. Unit value in exports of the state was US$ 3.59 /kg. Among total exports of India, Goa contributed 1.44%, 1% and 1% in quantity, rupee value and US$ terms respectively. Among the exports of the state, in terms of US$ value, frozen Shrimp contributed 48.87%, followed by frozen Fish (27.53%), frozen Squid (16.68%) and frozen Cuttlefish (5.38%).

Goa during 2020-21 has exported to major markets viz. 40.35% to South East Asia, followed by 16.73% to EU, 12.74% to China, 11.26% to Middle East and 4.54% to USA in US$ terms. Exports from Goa to USA increased by 201.36%, in US$ value and decreased to China and Middle East by 58.86% and 33.73% respectively.

Table.3. Item-wise performance by states in US$

Sl No	Item Name	Gujarat	Maha-rashtra	Goa	Karna-taka	Kerala	Taml Nadu	Andhra Pradesh	Odisha	West Bengal	Others
1	FROZEN SHRIMP	107.83	257.82	29.06	6.08	456.60	623.85	2125.55	421.48	397.93	0.00
2	FROZEN FISH	220.73	44.12	16.37	26.52	64.07	12.45	5.86	0.52	11.53	0.14
3	FR CUTTLE FISH	71.02	10.39	3.20	14.78	82.95	18.97	1.59	0.42	18.45	0.20
4	FR SQUID	79.40	24.02	9.92	21.84	115.42	22.46	0.07	0.05	0.20	0.00
5	DRIED ITEM	15.65	27.72	0.00	68.90	2.68	12.38	0.85	0.00	28.76	0.00
6	LIVE ITEMS	0.04	0.22	0.00	0.02	1.14	14.27	0.45	0.00	16.56	0.00
7	CHILLED ITEMS	0.56	5.32	0.00	0.06	1.97	32.00	10.85	0.00	14.37	0.00
8	OTHERS	76.50	133.26	0.92	92.93	41.92	21.66	9.33	0.00	1.77	0.00
	**** Grand Total ****	**571.74**	**502.87**	**59.47**	**231.13**	**766.76**	**758.05**	**2154.55**	**422.46**	**489.58**	**0.35**

Table.4. Market-wise performance by states in US$

Sl No	Market	Gujarat	Maha-rashtra	Goa	Karna-taka	Kerala	Taml Nadu	Andhra Pradesh	Odisha	West Bengal	Others
1	JAPAN	61.09	42.07	0.05	16.75	63.60	74.94	18.00	46.68	88.94	0.00
2	USA	33.65	71.64	2.70	13.55	180.68	337.18	1524.07	157.05	130.50	0.00
3	EUROPEAN UNION	164.20	109.75	9.95	11.40	215.71	110.15	97.87	18.67	84.13	0.00
4	CHINA	179.27	72.58	7.58	26.36	94.92	85.67	274.54	104.85	93.25	0.14
5	SOUTH EAST ASIA	80.68	63.81	23.99	142.85	138.86	37.91	62.99	73.26	41.06	0.20
6	MIDDLE EAST	15.99	47.26	6.70	1.59	29.43	56.53	75.54	6.22	11.88	0.00
7	OTHERS	36.86	95.75	8.50	18.63	43.56	55.67	101.52	15.73	39.81	0.00
	** Grand Total **	571.74	502.87	59.47	231.13	766.76	758.05	2154.55	422.46	489.58	0.35

Highlights of marine fish landings in selected fishing harbours of India –June 2021

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NETFISH-MPEDA

Monitoring of marine landings in terms of fish catch and boat arrivals is being done by NETFISH on a regular basis at selected major harbours/ landing centres in the 9 coastal states of India. The name, registration number and type of fishing vessels arriving every day at the harbour and the species-wise quantity of fish catch landed by these vessels are collected and recorded in the MPEDA Catch Certificate website. The data obtained during June 2021 were analyzed and the species-wise, harbour-wise and state-wise trend observed with regard to fish catch and boat arrivals is presented in this report.

I. OBSERVATIONS ON FISH CATCH

In June 2021, marine catch landing was recorded from 60 major selected landing sites, which has totalled to a quantity of 10,772.27 tons . About 44 % of the total catch ie. 4730.43 tons were composed of Pelagic finfish resources, and the share of Demersal finfishes, Crustaceans and Molluscs were 22% (2428.46 tons), 24% (2558.72 tons) and 10% (1054.66 tons) respectively (Fig.1).

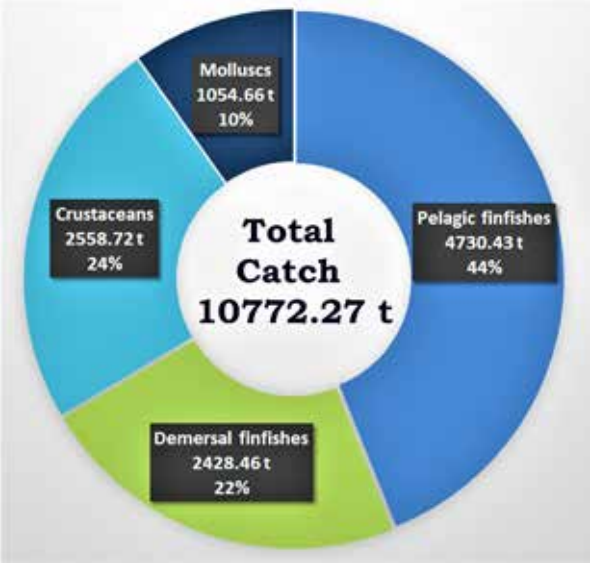

Fig.1. Catch composition of marine landings recorded in June 2021

Altogether, 214 species of marine fishery items were recorded in the month, of which, the top five contributors were *Johnius* Spp (Croaker), *Rastrelliger kanagurta* (Indian mackerel), *Metapenaeus dobsoni* (*Poovalan* shrimp), *Harpadon nehereus* (Bombay duck) and *Stolephorus indicus* (Indian anchovy) (Table1). *Parapenaeopsis stylifera* (*Karikkadi* shrimp) and *Sardinella longiceps* (Indian oil sardine) were the other major species landed during the month.

Table. 1. Major fish species landed during June 2021

Sl. No:	Common name	Scientific name	Qty. in tons
1	Croaker	*Johnius spp.*	857.58
2	Indian mackerel	*Rastrelliger kanagurta*	725.68
3	Poovalan shrimp	*Metapenaeus dobsoni*	658.94
4	Bombay duck	*Harpadon nehereus*	637.42
5	Indian anchovy	*Stolephorus indicus*	519.95

The various species of fishery items recorded were categorised into their common groups and the catch trend was analysed. Coastal shrimps, Anchovies, Croakers, Indian Mackerel and Bombay duck were the major five items landed during the month.

These five items have together formed 48 % of the total catch (Fig 2).

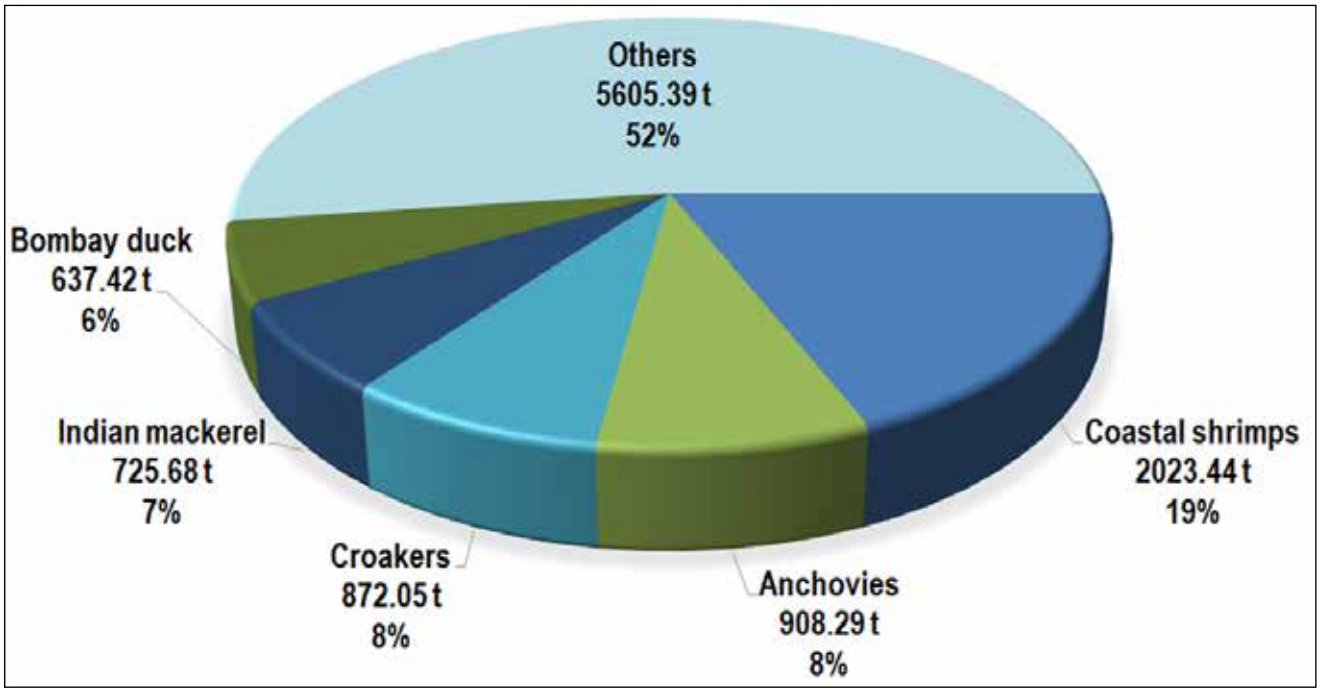

Fig.2. Catch composition of marine landings recorded in June 2021

Quantity of Pelagic finfish, Demersal finfish, Crustacean and Mollusc resources landed during June 2021 is given in Table 2. Anchovies, Indian mackerel and Bombay duck were the major contributors among the Pelagic finfishes, with each recording a landing of more than 600 tons . Croakers was the most landed item among the Demersal finfishes and it was followed by Pomfrets and Japanese Threadfin breams. About 79% of the Crustacean catch was comprised of different species of Coastal shrimps, of which the *Poovalan* shrimp was the most landed species with a share of 658.94 tons. In the case of the Molluscs, cuttlefishes and squids were the major items.

Table 2. Category - wise Landing of various fishery items during June 2021

FISHERY ITEM	QUANTITY (Tons)	% OF TOTAL CATCH
Pelagic finfishes		
Anchovies	908.29	8.43
Indian mackerel	725.68	6.74
Bombay duck	637.42	5.92
Indian oil sardine	447.57	4.15
Tunas	447.08	4.15
Scads	411.72	3.82
Ribbon Fish	302.33	2.81
Lesser sardines	279.25	2.59
Seer fish	99.57	0.92
Shads	95.61	0.89
Barracudas	62.45	0.58
Mullets	56.16	0.52
Indian Salmon	38.81	0.36
Trevallies	36.62	0.34
Needlefish	26.69	0.25
Sailfish	23.39	0.22
Other mackerel	22.43	0.21
Glossy perchlet	21.66	0.20
Sword fish	21.28	0.20

Marlins	18.37	0.17
Herrings	17.32	0.16
Queenfish	10.63	0.10
Flying fish	8.61	0.08
Mahi mahi	6.74	0.06
Halfbeaks	3.49	0.03
Cobia	0.67	0.01
Milk fish	0.60	0.01
Total pelagic	4730.43	43.91
Demersal finfishes		
Croakers	872.05	8.10
Pomfrets	364.41	3.38
Japanese thread fin bream	307.58	2.86
Catfishes	207.99	1.93
Sole fish	180.01	1.67
Rabbit fish	74.32	0.69
Lizard fish	72.52	0.67
Pony fishes	72.44	0.67
Rays	43.62	0.40
Eels	39.17	0.36
Reef cods	26.23	0.24
Snappers	22.88	0.21
Thread Fin Breams	18.85	0.17
Indian Halibut	17.14	0.16
Leatherjacket	16.71	0.16

Goat fish	13.65	0.13
Emporer breams	12.31	0.11
Whitings	11.31	0.10
Bullseye	10.10	0.09
Moon fish	10.06	0.09
White fish	9.02	0.08
Silver Biddies	8.33	0.08
Sharks	7.89	0.07
Parrot fish	2.66	0.02
Surgeon fish	2.16	0.02
Sea bass	1.26	0.01
Perches	1.13	0.01
Croaker	0.90	0.01
Groupers	0.90	0.01
Jobfish	0.50	0.00
Sea breams	0.33	0.00
Reef cod	0.05	0.00
Flat heads	0.01	0.00
Total Demersal	2428.46	22.54
Crustaceans		
Coastal shrimps	2023.44	18.78
Crabs	451.50	4.19
Deep-sea shrimps	83.54	0.78
Lobsters	0.24	0.00
Total crustaceans	2558.72	23.75

Molluscs		
Cuttle fish	530.60	4.93
Squid	456.81	4.24
Octopus	34.15	0.32
Baiga	33.02	0.31
Squids	0.09	0.00
Total Molluscs	1054.66	9.79
TOTAL CATCH	10772.27	100.00

State-wise landings: Landing data was recorded only from 7 coastal states of the country during the month. Due to the commencement of fishing ban period on 1st June 2021 in West coast, no landing was reported from Gujarat & Goa states and the catch quantity from Karnataka and Maharashtra were meagre. West Bengal along the East coast, where the fishing season has started on 15th June 2021 after 61 days fishing ban, has recorded the highest marine catch landings during June 2021,with a share of 3834.31 tons (36 %) (Fig.3). Kerala with a contribution of 2380.63 tons (22 %) stood in the second position and Tamil Nadu, with a total landing of 2180.72 tons (20%), in the third position. The least marine landing during the month was observed in Maharashtra, with a skimpy quantity of10.62 tons of catch.

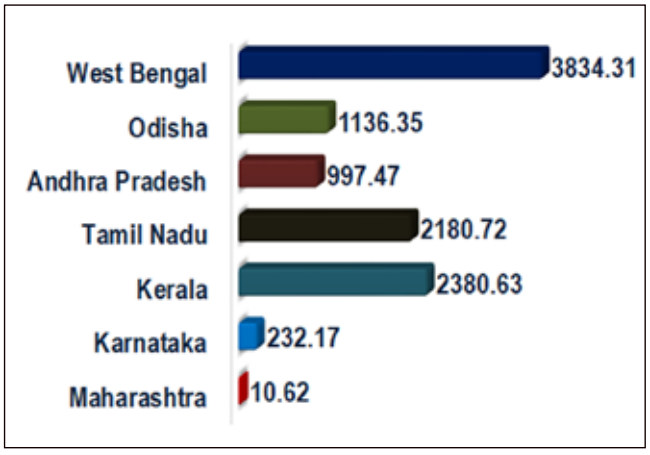

Fig.3. State-wise Fish Landings (in tons) during June 2021

Harbour-wise landings: The total marine landing reported from each harbour is given in Table 3. Among the 60 harbours, Deshapran harbour in West Bengal recorded the maximum fish landing, which was to the tune of 1220.32 tons (11 %) and it was followed by Chennai and Sankarpur harbours with 1164.33 tons (11 %) and 895.12 tons (8%) respectively. The least landing was reported from Kottaipattinam harbour in Tamil Nadu(0.12 tons).

Table 3. Harbour-wise catch quantity & boat arrivals during June 2021

Sl. No:	State	Harbour	Fish Catch (in tons)	No. of boat arrival (nos.)
1	Maharashtra	Harne	8.70	16
2		Uttan	1.03	1
3		Vasai	0.89	2
4	Karnataka	Bhatkal	9.01	67
5		Gangolli	2.33	19
6		Karwar	1.73	38
7		Malpe	219.11	145
8	Kerala	Azheekkal	3.11	30
9		Chellanam	153.95	185
10		Cheruvathur	7.91	77
11		Chettuva	240.62	178
12		Kayamkulam	222.74	255
13		Koyilandi	99.84	239
14		Mopla Bay	42.27	270
15		Munakkadavu	23.91	77
16		Munambam	655.25	416
17		Neendakara	197.75	277
18		Ponnani	45.88	103
19		Puthiyappa	3.98	8
20		Sakthikulangara	127.03	152
21		Thangassery	40.85	199
22		Thoppumpady Cochin	258.07	171
23		Thottappally	158.85	235
24		Vaadi	71.86	254
25		Vizhinjam	18.67	287
26		Vypin	8.10	11

27	Tamil Nadu	Chennai	1164.33	523
28		Chinnamuttom	15.45	339
29		Colachel	29.87	105
30		Cuddalore	54.15	314
31		Karaikal	22.49	154
32		Kodiyakarai	3.43	146
33		Kottaipatnam	0.12	1
34		Mallipatnam	5.97	106
35		Mudasalodi	24.38	163
36		Pazhayar	154.61	450
37		Pondicherry	106.41	75
38		Poompuhar	78.63	354
39		Pulicat	21.80	344
40		Tharuvaikulam	266.96	164
41		Tuticorin	232.14	470
42	Andhra Pradesh	Kakinada	87.62	38
43		Machilipatnam	74.07	44
44		Nizampatnam	29.81	15
45		Pudimadaka	40.47	251
46		Visakhapatnam	648.07	453
47		Vodarevu	58.10	159
48		Yanam	59.32	33
49	Odisha	Bahabalpur	147.42	57
50		Balramgadi	155.74	98
51		Balugaon	95.54	400
52		Dhamara	269.09	84
53		Paradeep	468.57	205
54	West Bengal	Sankarpur	895.12	339
55		Fraser Ganj	181.34	147
56		Kakdwip	326.48	212
57		Namkhana	580.06	157
58		Deshapran	1220.32	444
59		Raidighi	276.82	111
60		Soula	354.18	165
	Total		10772.27	10832

II. OBSERVATIONS ON BOAT ARRIVALS

A total of 10,832 nos. of fishing vessel arrivals were recorded from the 60 harbours during June 2021. State wise figures (fig. 4) show that the highest number of boat arrivals had occurred in Tamil Nadu (34 %) and then in Kerala(32 %) and West Bengal(15 %). Gujarat and Goa states had no boat arrival records due to the fishing ban. The harbour wise details of boat arrivals are given in table 3 above. Chennai (523 nos.), Tuticorin (470 nos.) and Visakhapatnam (453 nos.) harbours had recorded the highest fishing vessel arrivals in the month. The least number of boat arrivals was reported from Kottaipattinam harbour in Tamil Nadu.

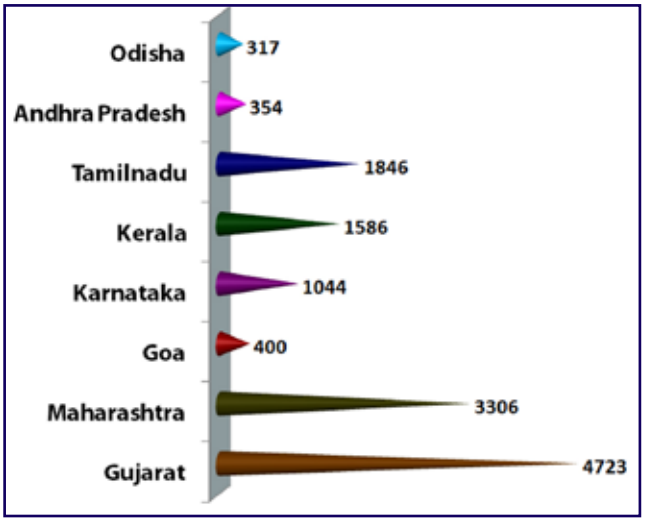

Fig.4. State-wise boat arrivals (nos.) during June 2021

Summary: In the month of June 2021, a total of 10,772.27 tons of marine catch landings and 10,832 nos. of boat arrivals were reported from 60 major fish landing sites of India. The total catch has dropped by around 7,350 tons, when compared to that of May 2021 and the number of boat arrivals has decreased by around 2,744 numbers. The reduction in catch quantity and boat arrivals during the period can be attributed to the monsoon fishing ban along the East and West coasts.

Though Pelagic finfish continued as the major contributor to the total landings and the demersal finfish species, *Johnius sp.* (Croaker), had attained the 1st position among the most landed fish species for the month. Whereas, the various species of coastal shrimps had together formed the most landed fishery item for the month. The state of West Bengal had attained the first position among the states in terms of total catch landed and the Deshapran harbour took over the prime position among the harbours. Regarding the number of boat arrivals, Tamil Nadu state and Chennai harbour had attained the lead positions.

Artificial intelligence (AI), a potent tool that can revolutionize Indian aquaculture

M. Viswakumar, Assistant Director, MPEDA Regional Division, Kochi

Introduction:

Aquaculture involves growing aquatic animals and plants in confined areas to reap commercial profits. It involves engaging in various managerial interventions like providing favourable conditions for the fast growth of the cultured species. Aquaculture sector has been making efforts in adopting technological advancements, facilitating their interventions.

Automation in monitoring and recording water quality parameters, automation in feeding, reducing carbon footprints by adopting renewable energy sources etc., are some of the areas ventured into by the aquaculture farmers. Present article does not aim to provide an in depth knowledge about the application of Artificial Intelligence and allied technologies in Aquaculture. It aims to provide a glimpse at the developments that are taking place around the world and in India vis-à-vis the use of AI in aquaculture.

Why AI in Aquaculture?

Artificial intelligence (AI) is the brains bringing together a number of technologies like cloud computing,

nanotechnology, man-machine interface, internet of things (IoT)etc. AI has found its application in some form or other in almost all industries, education, entertainment, marketing etc.

It has the potential for enhancing human capabilities. The use of computer algorithms to perform tasks that are normally performed by human beings is not new.

With the availability of computers having greater processing power, the option to store data in cloud and the ability to push or access data in mobile devices that help to accelerate the cross-industry adoption of AI and also enable machine learning.

Adoption of the modern technologies in aquaculture help farmers to reduce disease outbreaks, to analyze large volumes of data gathered in the form of daily records on water quality parameters, feed consumption, assessing impact of various factors on growth of cultivated organism, to make intelligent decisions on harvesting and marketing the produce etc.

What kind of data is being collected to create AI-based aquaculture applications?

AI based aquaculture applications are based on computer algorithms and also machine learning to perform tasks usually performed by the human beings. The machine learning algorithms are developed to learn from historical data.

Therefore application of AI in aquaculture involves collection of large volumes of historical data on farm activities, production, water quality parameters, market demand, quality requirements etc.

Data sets on water quality parameters (DO, pH, Ammonia, Alkalinity, Hardness, Suspended solids etc.) fish/shrimp health and behavior (through underwater imaging and use of hydrophones) are collected, classified and labeled to ensure that they are true enough to reflect the real culture conditions so that the predictive analytics and data driven decision making is possible and effective in managing the pond environment and shrimp health.

What are the areas of application and benefits?

Artificial Intelligence solutions have found its application in the following important areas as far as aquaculture is concerned.

i) Reduce waste of feed (better inventory management):

Feed is the largest component of the operational cost to an aquaculture unit accounting for about 50-60 % of

Fig.1. UmitronCell installed in a cage farm (Photo©Umitron)

the cost of production. Use of automatic feeders for feed dispensing and feed pellet dispersal and understanding the right time to feed through gauging of appetite of the fish/shrimp by application of AI has become a great boon to modern aquaculture.

Optimization of feeding has another positive aspect in the form of reducing pollution and improving environmental safety. Observe Technologies, eFishery and Umitron Cell (Fig.1)are a few companies which have specialized services to offer to aquaculture entrepreneurs in this area.

ii) Monitoring water quality and making informed decisions:

Maintaining optimal water quality conditions in the culture environment is another key aspect of aquaculture determining the commercial success and environmental sustainability.

Using the data collected from the sensors installed in the culture environment to monitor water quality parameters and application of AI and IoT helps farmers in getting advance information about impending water quality issues such as declining DO, building up of ammonia etc. as well as predicting diseases.Farmers

can get the information in their mobile far away from the farm and make data driven decisions to take necessary corrective actions such as switching aerators or diffusers, pumps, motors etc., on or off.

iii) Preventing diseases:

Application of AI technology can also help in preventing disease occurrence. The historical data sets on water quality parameters and shrimp/fish behavior and disease occurrences in farms can provide advance indications on the chances of disease outbreaks in culture system, based on which the farmer/entrepreneurs can initiate necessary corrective actions to avoid the outbreaks.

iv) Striking deals with buyers in markets:

Using AI technology production from ponds and demand in the markets can be forecasted. There are applications developed by some companies to calculate the growth of shrimp, helping farmers to predict most profitable harvest periods etc. There are examples of companies combining the shrimp growth data with market prices, making much easier for farmers to make right decisions. There are agencies which help strike deals, between the farmers and the buyers, using information like, what quality the buyers are looking for and matching the shrimp quality in ponds. Thus, improving quality and sustainability; increasing production, reducing costs and improving returns; and ease of marketing are some of the direct benefits targeted by application of AI and IoT solutions in Aquaculture

Examples of use of AI in Aquaculture:

XpertSea's Mobile app:

XpertSea, a company based in Quebec, Canada introduced its new, Artificial intelligence-powered smartphone mobile app at Equador's Aqua Expo in November 2020. According to Lauren Kramer (2020), "The app allows farmers to capture accurate shrimp health and quality data by taking a photograph of a sample of shrimp from their ponds using the white tray and their smart phone. XpertSea's platform, which contains growth data accumulated over many years, accurately predicts the commercial size of the shrimp and the pond value (Fig. 2). When the farmers are ready to sell their harvest they do so through the app, which puts their harvest out to bid to different shrimp processors across the country. XpertSea manages and guarantees the transactions between farmer and processor, ensuring that farmers are paid 80 % of their crop value within 24 hours of harvest the remainder within a few days." It is also reported that the farmers not only gets prompt payment but also better price than before.

Fig.2. Farmer using Xpertsea mobile app at farm.©Xpertsea

One of the advantages of the app is that, contrary to the conventional trading of shrimp as a commodity, now the farmers can get buyers who have a specific order for quality shrimp connecting with farmers who are getting better price. XpertSea offers shrimp farmers' access to a large network of buyers.

Aqua Biz Mobile app:

Aqua Biz is an app that has been developed by M/s. Sateh Feed Corporation, Philippines, to help new generation of Filipino fish and shrimp farmers (Fig.3). The app is developed to be a virtual ally for new and potential investors (Aquafarmers) besides providing technical guidance, especially feed management and the monitoring of feed performance through metrics such as feed conversion ratios (FCRs) and average daily gain (ADG). This app helps their customers a lot, especially in this times of the pandemic.

Fig.3. Aqua Biz Mobile app for Philippines (© Santeh Feeds)

The farmers can use it to:

- Search which aquaculture species to culture.
- Look up fish feeds suited to each species and culture system.
- Look up where to buy fish feeds.
- Search for hatcheries and nurseries to buy fingerlings or post-larvae from.
- Look up suppliers of various types of farm equipment.
- Know common symptoms of disease for both fish and crustaceans and how to treat or prevent them.
- Look up updates on weather, tide levels and even reservoir levels.
- Know your daily feed rates, fish growth, and a whole lot more.
- Monitor the current wholesale fish prices.
- Locate fish health laboratories.
- Look up fish buyers.

Other examples:

Singapore's Aquaculture Industry showcases several innovations incorporating AI and IoT solutions. An article published in World Aquaculture (Vol 51. No. 1 March 2020) informs: "In coastal fish farming, The Fish Farmer Pte Ltd have incorporated IoT solutions to deal with the low dissolved oxygen situations that its farms encounter. The farms are equipped with real-time water quality monitoring systems that sends an alert to the farmer when poor water quality conditions are detected. Mitigation measures such as battery-operated air blowers that are charged by solar panels can then be activated to aerate the water (Fig. 4).

Singapore's SAT is reported to have launched a Smart Aquaculture Farm incorporating self-adjusting control cycles, Iots and AI to automate processes such as feeding, regulating flow rates of water and oxygen and monitoring of growth and heath of fish (Fig. 5).These are just two examples of Singapore's Technological advancements in Aquaculture. Singapore is home to many more advanced technological innovations for producing "more from less" with sustainability.

Fig.4.Activation of solar-powered air blowers during low dissolved oxygen conditions. Photo: The Fish Farmer Pte Ltd. (Picture adopted from was.org)

Fig.5. Image of SAT's Smart Aquaculture Farm (Picture adopted from was.org)

Indian AI ventures in aquaculture:

Eruvaka Technologies:

Eruvaka Technologies is an enterprise developed in India that develops on-farm diagnostic equipment by integrating sensors, mobile connectivity and decision tools for aquaculture monitoring automation that help farmers in monitoring their farm, reduce costs and aids in decision making process.

They have come up with different products like PondGuard, PondMother, ShrimpTalk and PondLogs. PondGuard is claimed to be a cloud based aquaculture pond management solution, which facilitate real-time monitoring of ponds with intelligent control of aerators and autofeeders etc., and help the farmer in reducing risks and increasing productivity.

PondMother is an intelligent automatic feeder (Fig.6), in which the feeding schedule can be configured from smart-phone app, adjusts the feed based on water quality and weather data and ensures optimal feeding for the shrimp thereby help reducing FCR. One unit is capable of feeding about 2.5 lakh shrimp, as per the company's claim.

ShrimpTalk is an underwater acoustics based feeding system using hydrophones for sensing the shrimp appetite and delivering feed to shrimp on a 24 x7 basis thereby reducing feed wastage and increasing yields. This system makes the PondMother intelligent and helps it to feed the shrimp on demand. PondLogs is a cloud based pond management software that helps integrate the different services and solutions at a single point and makes available on any device for analysis and management. It helps in yield analysis and better decision making.

The Eruvaka technologies, which began as a startup in 2012, is now scaling up its operation and made its presence felt in at least 6 nations around the world. They claim to have assured reduction shrimp culture expenditure by 30%, which is an excellent achievement by any means. The whole array of their products may cost around Rs. 1.25 to 1.5 lakh.

Aquaconnect Farm Advisor-An AI based mobile app:

Aqua Connect, Chennai-based aquaculture startup seeks to help shrimp farmers improve their yield by maintaining optimal water quality and animal health through insights from AI technology and remote sensing interventions. Aquaconnectfarm advisor app guides farmer from stocking to harvest.

It captures real-time data throughout the crop cycle to provide actionable farm insights in the form of alerts and notifications. The company claims the model uses machine learning algorithms to provide context-sensitive suggestions and alerts to improve farm productivity, water quality parameters, feed consumption patterns, and health management.Aquaconnect also provides help to farmers in quality seed selection, farm-input purchase, growth and disease advisory, finance, market linkage etc.

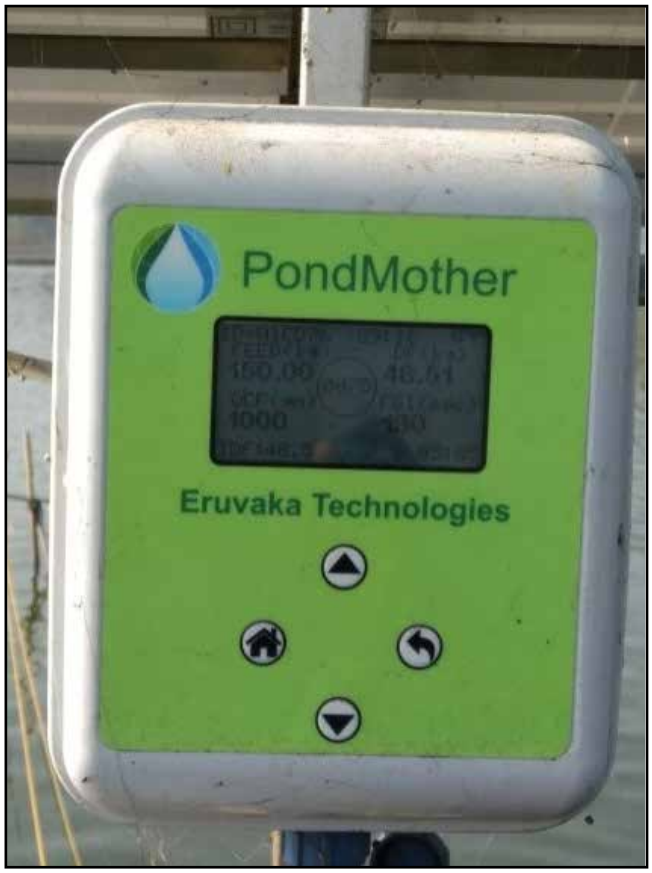

Fig. 6. PondMother set up in Aquapond.

Conclusions:

AI and IoT offer extremely useful solutions to many of the day to day problems faced by the aquaculture farmers, improving their efficiencies, reducing costs and environmental footprints of aquaculture and above all for increasing fish production. Adoption of newer and smarter technologies help the entrepreneurs to set up smart aquaculture units, producing more from less, causing minimal environmental disturbances whatsoever. It is heartening to note that there are few Indian companies also venturing into application of AI, IoT and Machine Learning technology to aquaculture and coming up with useful products to help farmers in their aquaculture production. It is also significant that the Indian shrimp farmers have also started testing these products in their farms.

The products that are developed in India are limited to improve the farming efficiency and reducing environmental foot prints. There is a need for players to integrate such products with market information and facilitation of deals between the farmers and the buyers for enabling the farmers to avail the full benefit of the tools.In the days to come there would be more players in developing the improved versions of the products based on AI and Machine learning technology and definitely pave way for more and more farmers becoming the beneficiaries of the products.

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Trouts and its status in Himachal Pradesh

Dr. T. R. Gibinkumar, Deputy Director, MPEDA, Kochi - 36

1. Introduction

The trout is a preferred table fish in the US and Europe. Besides, it has good demand from urban population in the metro cities. Salmonids, trouts and smelts contributed 19% of world finfish trade in 2018 and the production of rainbow trout touched 0.85 million in 2018. Countries like Chile, Norway and Denmark being the major producers and exporters of Salmonids and trouts. The major importers of trout are Japan, Russia, Germany etc.

Brown trout (*Salmo trutta*) (Fig. 1) and rainbow trout (*Oncorhynchus mykiss*) (Fig. 2) belongs to the salmonid family and were introduced in Indian waters by the British in the 19th century to meet the requirements of sport fishing in the country.

Introduction of trout in Kashmir was attempted for the first time around 1900 AD as a present to the Maharaja from the Duke of Bedford. Success in this venture could only be achieved in 1901 with the import of brown trout eyed ova. Between 1905 and 1969, five species of salmonids were introduced in the Himalayas from Europe, North America and Canada. These were the brown trout, rainbow trout, eastern brook trout (*Salvelinus fontinalis*), splake (hybrid from the crossing of a male brook trout and a female lake trout (*Salvelinus namaycush*), and the land-locked variety of Atlantic salmon (*Salmo salar*).

Of these, brown trout is now well established, with a number of self-sustaining populations in the streams of the Himalayas. Though the rainbow trout has failed to establish itself in the stream ecosystem, it is the preferred species for aquaculture and their stocks in the cold water bodies are sustained to some extend through ranching.

Introduction of trouts has helped the fish to become established in the Himalayan foothills, in the Kashmir valley, Uttarakhant and Himachal Pradesh as well as the upper streams of Western Ghats in the states of Karnataka, Tamil Nadu and Kerala adapting to congenial water temperature and available biotic life. The transplantations provided excellent game fishing to the anglers and at the same time it is increasingly being identified as a commercial venture for table fish production.

In the last three to four decades, however, a sharp decline was observed in the catches on account of multiple factors such as large scale road construction in the valleys followed by destruction of breeding and

Fig. 1. Brown trout © Chris Crippen

Fig. 2. Rainbow trout © Dr. S. G. Syeddain

feeding grounds of the fishes, emergence of river-valley projects, rapid urbanization, fishing pressure and of course illegal and destructive means of fishing. The matter received serious attention of the various state governments and some states have taken steps to rehabilitate the exotic trouts in the streams as well as its commercialization through raceway culture.

2. Species of trouts

2.1. Rainbow Trout

Rainbow trout attains a maximum size of about 120 cm (common length is around 60 cm) and is predominantly found in fresh, cold water and shows anadromous migratory behaviour.

The thermal regime for this species lies between 5-20°C, however, the maximum growth is obtained within the temperature range of 10 to 18°C and they require well oxygenated water above 7 ppm. Adults feed on aquatic and terrestrial insects, molluscs, crustaceans, fish eggs, minnows, and other small fishes (including other trout) and young feed predominantly on zooplankton.

2.2. Brown Trout

Brown trout attains a maximum size of about 140 cm (common length is around 72 cm) and prefer cold, well-oxygenated upland waters although their tolerance limits are lower than those of rainbow trout and favors large streams in the mountainous areas with adequate cover in the form of submerged rocks, undercut banks, and overhanging vegetation. Brown trout are carnivorous and feed on a variety of organisms, which includes aquatic and terrestrial insects, molluscs, crustaceans (especially crayfish), salamanders, frogs, rodents, and fishes. Young fishes feed predominantly on zooplankton.

3. Himachal Pradesh

The state of Himachal Pradesh as its literal meaning of 'area covered with snowy mountains' is spread over an area of 55,673 sq. km with Sub tropical, Temperate, Humid temperate and Dry temperate climatic zones based on altitude of the area. The average temperature in different zones is widely varying, and range from sub zero to 42° C.

3.1. Resource potential

The State Fishery Department has estimated the fisheries resource potential of the state, as follows:

Water resources in Himachal Pradesh	
Riverine resources	
Trout Water :	600 km
General Water :	2400 km
Reservoirs:	
Gobind Sagar :	16000 ha
Pong :	24000 ha
Chamera :	2000 ha
Pandoh :	200 ha
Total :	42200 ha
Ponds :	1000 ha
High Altitude Lakes :	725 ha

3.2. Trout streams and rivers

The details of trout stream / rivers in the state are furnished below:

1. River Pabbar from village Mahla to village Hatkoti in Shimla Dist. in Yamuna river system.

2. River Beas and its tributaries from its source to its confluence with Savari stream in Kullu district including Savari stream.

3. Pavati and Gadsa streams and their tributaries in Kullu district.

4. Sainj and its tributaries in Kullu district.

5. Tirthan streams and its tributaries above its confluence with river Beas in Kullu and Mandi district.

6. River Uhl and its tributaries in Mandi and Kangra district including balancing reservoir and feeder channels at Barot.

7. Entire Bhandal Nallah and its tributaries up streams Chakoli bridge in Chamba district.

8. River Baspa, Bhaba streams and Chisso stream in Satluj river Kinnuar district.

9. Neugal stream and its tributaries up streams Mainjha bridge and 10 kms stretch of Baner Khad up stream suspension bridge at Tikker Doli in Kangra district.

10. Kurpan stream and its tributaries in Satluj river system in Kullu district

3.3. Trout zones in Himachal Pradesh

Fisheries department has also declared certain areas of the State as Trout Zones, viz;

- Chamba Valley
- Kinnaur Valley
- Kullu Valley
- Lahul Spiti Area
- Pabbar Valley
- Uhl Valley

On the basis of above facts Himachal Pradesh is considered as one of the states having great potential for trout culture.

4. Development of trout farming in Himachal Pradesh:

In Himachal Pradesh, the trout fishery commenced in 1909 with the transportation of the eyed-eggs of brown trout from Srinagar to Kulu. In Kulu, Kangra Valleys and Chamba the introduction of brown trout commenced in 1909-10 when eyed-eggs successfully hatched at the Mahili hatchery, Katrain. From Katrain brown and rainbow trout were transferred to Chamba, Barot, Chirgaon and Sangla trout hatcheries.

Regular releases of eyed-eggs in the upper stretches of Ravi and Baner Awa and Binun (Binwa) tributaries of the Beas River between 1912 and 1947 met with little success. The failure of brown trout to establish itself in Kangra Valley is primarily due to a limited availability of suitable stretches of streams and the lack of suitable pools where fish could seek shelter during high floods when these streams become raging torrents. In 1993, there were five trout farms in Himachal Pradesh located at Barot, Patlikuhl, Sangla, Nagni and Mahili.

4.1. Department of Fisheries, Himachal Pradesh

The Fisheries Department in Himachal Pradesh was created during August 1950 as a wing of Forest Department headed by Deputy Warden of Fisheries. The main activities envisaged for the department was conservation of riverine fisheries, production and protection of sport fisheries, issuing of licenses, breeding and production of trout seed, their ranching in rivers & streams for augmenting the riverine stock. The department which was earlier under the control of forest department and agriculture, was declared independent department in the year 1966. In 1976, the Reservoir Development Committee was constituted for the judicious Management of Reservoir Fisheries and the fishing activity was completely transferred to Cooperative Societies.

4.2. Indo – Norwegian Project

During 1984, the Royal Norwegian Government agreed to provide financial and technical support in the implementation of a trout farming project in Himachal Pradesh and was emerged as a major prospective activity of the fisheries department. The major breakthrough for commercial trout farming in the state came during 1989, under the bilateral Indo- Norwegian Trout Farming Project. The main objectives of this project were as under:-

• Establishment of a well equipment trout hatchery capable of producing fingerlings required for the production of 10 tones of table size trout and import of rainbow trout seed.

• Development of economically viable artificial feed for trout.

• Dissemination of trout farming technology to rural youths.

A model trout farm, hatchery and feed mill were established in the state under the guidance of Norwegian consultants. A pathological laboratory has been set up at the Patlikuhl trout farm to monitor the fish health in the state. During the 10th & 11th plan period the trout farming technology was disseminated to the private entrepreneurs of Kullu, Mandi, Chamba and Shimla districts and Himachal became the first state to popularize the trout farming in private sector.

The trout hatchery established under project was highly successful in raising, quality rainbow trout fingerlings, with record survival rate (Fig.3). The formulation of different types of trout feeds for different growth periods of the fish also helped in growing the fish to marketable size, purely based on artificial feeding.

The production of table-size trout from the state became an instant success and trout farming in the state picked up very well in the recent period. Besides, the fish farming operations undertaken, the Dept. of Fisheries also encouraged the seed ranching programmes in the reservoirs, village ponds etc.

Fig. 3. Rainbow trout juveniles © Dr. S.G.Syeddain

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NaCSA inaugurates new AOCs

Korukollu, West Godavari District

West Godavari District is well developed in Fisheries with Resources of Fishery wealth in Marine, Brackish Water, Reservoir and Inland Fisheries. It is in fact the aqua hub of Andhra Pradesh. It has coastline of 19 kms with total culture area of 67,518 hectares both brackish and fresh water culture with 26580 farmers registered and the aquaculture exists in 29 Mandals. The aqua potential area contributed from West Godavari district is 22,261 hectares (25 %) to that of Andhra Pradesh.

An Aqua One Centre (AOC) in Korukollu, West Godavari District was inaugurated virtually by Mr. K. Venkataramana Reddy, Joint Collector (Revenue), West Godavari district on behalf of Mr. Kartikeya Misra IAS, Collector and District Magistrate, West Godavari District in presence of Mr. K. S. Srinivas IAS, Chairman, MPEDA & President, NaCSA on 1st June 2021. Mr. K. Chandra Sekhar, Joint Director of Fisheries, WG district was also present. Mr.K. Shanmukha Rao, CEO, NaCSA welcomed all the dignitaries to the virtual inauguration of AOC at Korukollu, WG Dist.

During his presidential address, Chairman, MPEDA & President, NaCSA pointed out the importance of AOC in Korukollu. The East & West Godavari districts are hub of aquaculture and the Aqua One Centres will be very much helpful to all the aqua farmers of the region. Around 26,000 farmers will be benefitted by the establishment of AOC. He advised all the aqua farmers to use the facility of AOC which is having modern equipments for analysis of soil, water and animal health.

Felicitations were offered by Dr. M. Karthikeyan, Director, MPEDA, Mr. Yogendra kumar & Mr. Chapalla Ramanaiah, NaCSA GC Members. Mr. Dhirit Ekka, Dy. CEO thanked all the participants for attending the inaugural function.

At present there are 09 registered Aqua societies in West Godavari Dist and there are 179 farmers involved in shrimp farming with a total WSA of 140 Hectares. There are 10 upcoming societies for which NaCSA staff are working to complete the procedure. With the establishment of AOC, the major farming areas of 05 Mandals (Palakoderu, Attili, Penumantra, Ganapuvaram and Bhimavaram) will be covered in the district.

With the establishment of AOC in Korukollu, West Godavari District the major farming areas will be

Inaugural function of AOC at Korukollu, West Godavari

Inaugural function of AOC at Karlapallem, Guntur

covered & will be helpful to the above shrimp farmers for getting their pond water/soil and animal health tested in the AOC. The establishment of AOC will also increase the efficiency of farms by monitoring their ponds, seed and water quality from stocking to harvest at regular intervals for high survival rate and better production under Continuous Pond Monitoring Programme (CPMP)

Karlapallem, Guntur District

Guntur District is well developed in Fisheries with Resources of Fishery wealth in Marine, Brackish Water, Reservoir and Inland Fisheries. The district is blessed with a total brackish/inland water area of 2622 Ha (2330 WSA) with 3348 farmers and the aquaculture exists in 08 Mandals.

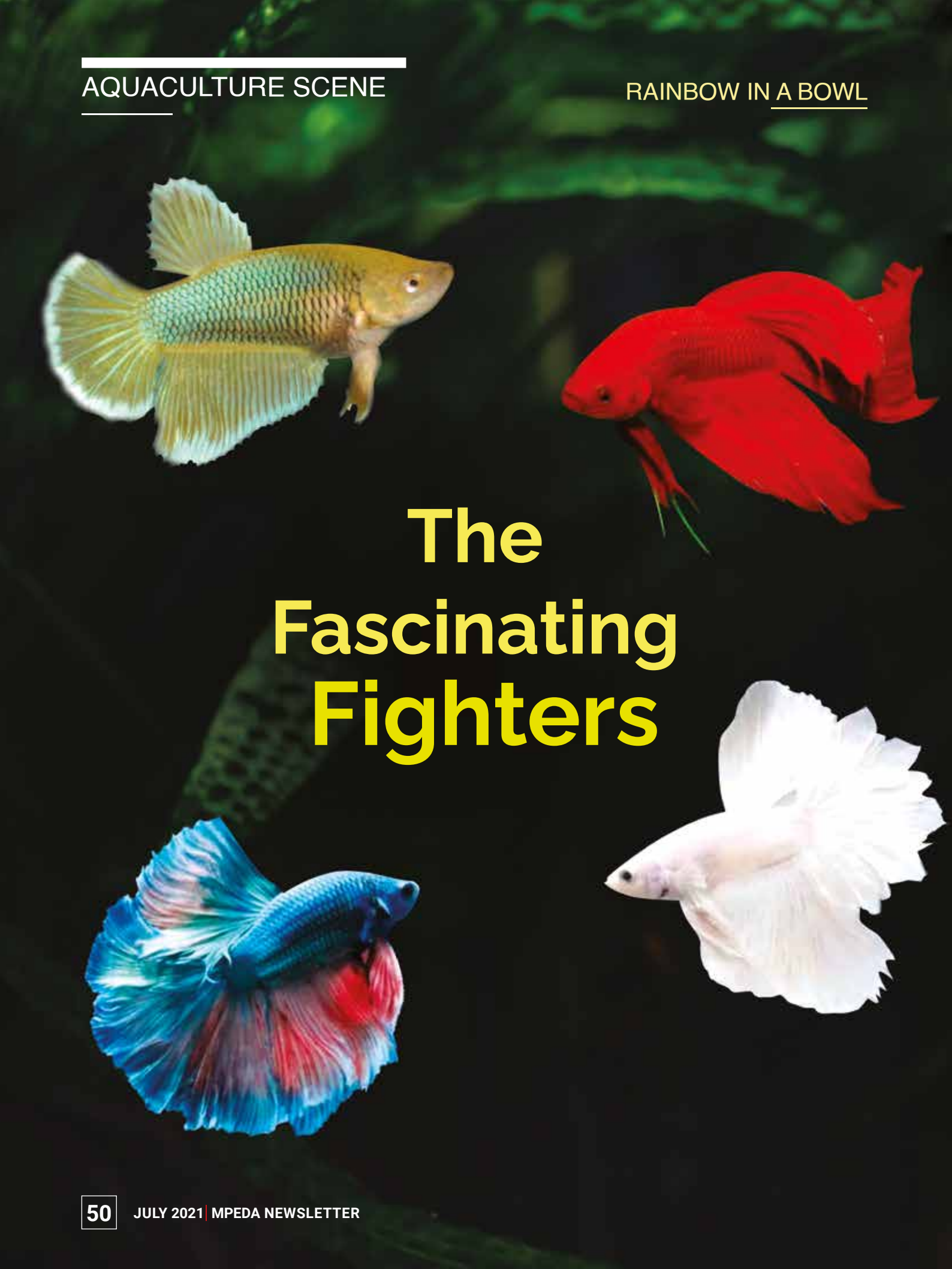
The Aqua One Centre (AOC) in Karlapallem, Guntur District was inaugurated virtually by Mr. A. S. Dinesh Kumar IAS, Joint Collector (RB & R) & Additional Magistrate, Guntur district on behalf of Collector and District Magistrate, Guntur district in presence of Mr. K. S. Srinivas IAS, Chairman, MPEDA & President, NaCSA on 9th June 2021. Mr. P. Suresh Kumar, Joint Director of Fisheries, I/C, Guntur also attended the inaugural programme.

Mr. K. Shanmukha Rao, CEO, NaCSA welcomed all the dignitaries.The function was felicitated by Dr. M. Karthikeyan, Director, and Mr. K. S. Pradeep IFS, Secretary, MPEDA, Mr. Sykem Bhaskar Rao and Mr. Chapalla Ramanaiah, NaCSA GC members. Mr. Dhirit Ekka, Dy. CEO thanked all the participants. Chairman, MPEDA & President, NaCSA informed that NaCSA has established and inaugurated the 20th AOC in Karlapallem for the benefit of small aqua farmers, and urged them to use the facility.

NaCSA is holding 73 Societies with 1570 farmers with Water Spread Area (WSA) of 1414.84 Ha and 2781 ponds in 08 Mandals of Guntur District. The AOC in Karlapallem covers 25 Aqua societies and there are 525 farmers with a total WSA of 410 Hectares. With the establishment of AOC in Karlapallem, the major farming areas of 4 Mandals (Baptla, Karlapallem, Pitlavanipallem & Nijampatnam) and under these Mandals 20 villages will be covered.

NaCSA will provide complete farm level analysis on water quality and to cover major chunk of aqua farmers both inland and brackish water areas thus reduces the cost of production with right advisory inputs during culture.

The establishment of AOC will also increase the efficiency of farms by monitoring their ponds, seed and water quality from stocking to harvest at regular intervals for high survival rate and better production under Continuous Pond Monitoring Programme (CPMP).



The Fascinating Fighters

V. K. Dey

V K Dey has over three decades of experience in diverse sectors of seafood industry in Asia-Pacific region. He was the Deputy Director of MPEDA and then associated with INFOFISH, Malaysia. As part of INFOFISH, he was involved in several studies related to seafood industry in the Asia-Pacific region and beyond, including setting up of Aqua-technology Park for ornamental fish. MPEDA has published Living Jewels, a collection of his articles on ornamental fish.

Fighting fish (Betta species) are a fascinating group of small Anabantid fish, originating from the swampy areas of Cambodia, Indonesia, Malaysia and Thailand. They are labyrinth fish, breathing air directly from the atmosphere. In the wild the Betta is dull in colour and short finned.

Due to selective breeding, it looks flamboyant and is available in an array of brilliant colours and shades. The colour pattern ranges from vivid red, blue, bright green, purple, white, black to cream with red fins. The most sought after is the solid black coloured variety. The colouration either intensifies or diminishes depending upon its surroundings.

The fighting fish has a long body and flowing dorsal, anal and caudal fins. The dorsal fin is large and is set quite far back and has iridescent stripes or marks. The caudal fin is rounded. The female is much less striking in colour, fin shape and size than the male. The males are very aggressive towards other males of their own kind and fight ferociously until death, hence the name of the fish. Because of this nature, only one male is kept in an aquarium. If the aquarium is large enough and has enough hiding places with aquatic plants, several females could be kept with a single male.

Water quality is not so critical. The water should be fairly soft to medium hard, with temperature ranging from 24 – 28°C and pH 6.5 - 8. The optimum temperature for spawning is around 28°C. They will accept a wide range of foods including insects and dried food. Sexing is easy as males are distinct and females have much shorter fins. They are easy to breed and long conditioning periods are not required like other fishes. They are bubble nest breeders with the male building the nest and guarding the eggs. Ideally the breeding tank should have two gallons of water, with a reduced water level of 3 - 4 inches from the bottom. There should not be any gravel or other bottom material in the tank.

The male could be introduced into the tank first. It would be better to place the female in a quarter jar or similar container and allow the jar to float in the tank, thus enabling the fish to get acquainted with each other. When the male has built his nest and has settled down in the new environment, the female can be released.

The eggs released by the female are collected by the male and blown into the nest. This act is repeated several times until the female releases her eggs completely. It would be better to remove the female at this stage to allow the male to take care of the eggs. Under normal conditions, hatching takes place after 2 - 3 days. The young ones should be fed with very fine food initially such as liquid fry food, boiled egg yolk sieved through cloth, infusoria, etc. After two weeks the young ones can feed on freshly hatched brine shrimp.

Bettas are extremely susceptible to a parasitic disease caused by a protozoon called Oodinium. It is known as “velvet disease” or “rust”. The common symptoms are rusty or grey patches on the body of the fish followed by lack of energy and, sometimes, avoidance of light. Velvet disease is easy to cure. As young ones are more susceptible to disease, it would be better to add 0.5% common salt to the aquarium water as a preventive measure.

MPEDA opens ELISA Lab at Pattukottai, Tamil Nadu

The farmed shrimps meant for export to EU are subject to Pre Harvest Testing (PHT) in the ELISA Laboratories set up by MPEDA. The raw material is screened for the presence of banned antibiotic residues such as Nitrofurans and Chloramphenicol. MPEDA has set up 12 ELISA Laboratories for this Pre Harvest Testing certification programme in the farming clusters of coastal states right from Gujarat to West Bengal. Responding to the demands from the aqua farmers of Thanjavur district in Tamil Nadu, MPEDA has opened its 13th ELISA Laboratory at Pattukottai on 5th July 2021. The laboratory is expected to cater to the antibiotic testing needs of aqua farmers in Thanjavur, Pudukottai, Ramanathapuram, Thoothukkudi and Kanyakumari districts.

The lab was formally inaugurated by Shri K.S. Srinivas IAS, Chairman, MPEDA in a virtual function organized from MPEDA Head Quarters in Kochi. The function was attended by Dr. M. Karthikeyan, Director, MPEDA, Shri K.S. Pradeep IFS, Secretary, MPEDA, Dr. Ram Mohan M.K., Joint Director (QC), MPEDA, Shri K. V. Viswa Mohanan, Vice Chairman MPEDA & President of SEAI Tamil Nadu region, Shri V. Balasubramanian, General Secretary- Prawn Farmers Federation of India & Secretary - Tamil Nadu Coastal Aqua farmers Federation and Shri Sethuraman, Vice President- Tamil Nadu Coastal Aqua Farmers Federation (Pattukottai region), besides other dignitaries.

In his inaugural address, Chairman reiterated that the farmers shall restrain from using any banned antibiotics in the shrimp culture system. He also emphasized the need to contain the detection of antibiotic residues in farmed shrimp consignments in markets such as EU, USA and Japan for enhancing our market share. He stressed that Indian seafood can take up a larger market share, if the quality is ensured. He urged the farmers to utilize the laboratory services at its maximum so that they will get a better sales value by ensuring the quality and traceability of the produce. He has informed that the Pre Harvest testing process is completely made through online platform so that the farmer need not visit the lab to get the test done.

The ELISA Lab at Pattukottai has samplers to collect samples for testing based on the online request placed by the farmer. Chairman, MPEDA also reminded the farmers and other stakeholders to remain vigilant about Covid -19 infections and requested them to follow the prescribed protocols to prevent the pathogen and nucleic material contaminating the value chain.

MPEDA audits processing plants on implementation of Covid 19 protocols

To verify the adherence to the Covid19-guidelines prescribed by MPEDA, the Officials of the Regional Divisions of MPEDA in Veraval has inspected the seafood processing units in their region.MPEDA Regional Division, Veraval officials had visited the processing plants of M/s. JM Sea Foods, M/s. Rich Marine Exports and M/s. Siddiq Sea Foods to ensure the implementation of COVID guidelines.

During the inspection, it has been observed that the units are following the guidelines properly and they are fully aware of COVID 19 guidelines and properly implemented in facility as well as in all operations. Regular awareness is extended to all workers and staff by supervising team as per COVID guidelines. It was also recommended to them to maintain separate checklist and monitoring records for COVID 19 guidelines.

In addition, MPEDA has also formed a task force of MPEDA officials to inspect the seafood processing units suspended by Chinese Authorities. 18 units in states such as West Bengal, Odisha, Andhra Pradesh, Tamil Nadu & Kerala were inspected since 29th June 2021 for implementation of Covid-19 safety protocols and seafood safety management system. The non conformities noticed were communicated to the units for rectification within a stipulated time frame.

Global seafood market to reach USD 133.9 billion by 2026

A new market study published by Global Industry Analysts Inc., (GIA) the premier market research company, today released its report titled "Seafood - Global Market Trajectory & Analytics". The report presents fresh perspectives on opportunities and challenges in a significantly transformed post COVID-19 marketplace.

Seafood, referring to edible marine and aquatic creatures including finfish, molluscs and crustaceans, has been an integral part of food for mankind since the beginning of evolution. Right from hunter-gatherer period through to modern civilization, fish and seafood remained a part and parcel of human food, and importance of seafood remains pivotal especially among communities living in and around coastal areas and large riverine systems.

Amid the COVID-19 crisis, the global market for Seafood estimated at US$ 113.2 Billion in the year 2020, is projected to reach a revised size of US$ 133.9 Billion by 2026, growing at a CAGR of 2.9% over the analysis period. Ground Fish, one of the segments analyzed in the report, is projected to record a 2.6% CAGR and reach US$ 37.3 Billion by the end of the analysis period. After a thorough analysis of the business implications of the pandemic and its induced economic crisis, growth in the Pelagics segment is readjusted to a revised 3.6% CAGR for the next 7-year period.

Tuna is considered to be the most favorite seafood in the west and accounts for nearly 25% of the total seafood consumption. In the global Tuna segment, USA, Canada, Japan, China and Europe will drive the 2.7% CAGR estimated for this segment. Led by countries such as Australia, India, and South Korea, the market in Asia-Pacific is forecast to reach US$5.1 Billion by the year 2026, while Latin America will expand at a 2.4% CAGR through the analysis period.

Source: Global Industry Analysts, Inc.

Cabinet approves Deep Ocean Mission to tap vast marine living and non-living resources

The Centre approved the Deep Ocean Mission to tap vast marine living and non-living resources, develop deep sea technologies for sustainable use of ocean resources conduct research on climate variables and support the country's Blue Economy initiatives including marine fisheries, off-shore energy and coastal tourism.The Mission will help India to explore and mine strategic polymetallic nodules such as Copper, Nickel, Cobalt and Manganese in 75,000 sq. km of area in the central Indian Ocean Basin and put the country in the category of a select group of nations, including US , China , Japan, Germany and Canada in conducting oceanographic designs in the deep sea.

The Mission has been allocated Rs 4,077 crore for a period of five years. It'll be implemented in a phased manner by the ministry of earth sciences (MoES) through multiple institutions such as ISRO, BARC, CSIR, DRDO, Department of biotechnology and others. The estimated cost for the first phase of the Mission for the three years (2021-2024) will be Rs 2,823 crore.

The Mission consists of six major components including the development of technologies for deep-sea mining and manned submersible; development of ocean climate change advisory services; technological innovations for exploration and conservation of deep-sea biodiversity; deep ocean survey and exploration; off-shore energy and fresh water from the ocean; and advanced marine station for ocean biology. A manned submersible under the Mission will be developed to carry three people to a depth of 6000 metres in the ocean with a suite of scientific sensors and tools.

"The technologies required for deep-sea mining have strategic implications and are not commercially available. Hence, attempts will be made to indigenize technologies by collaborating with leading institutes and private industries. A research vessel for deep ocean exploration would be built in an Indian shipyard which would create employment opportunities," said the statement.

Source: www. timesofindia.indiatimes.com

Shrimps with Pasta & Spinach

Recipe Card

Shrimps peeled and deveined	: 450 gm
Cherry tomatoes	: 12 nos
Spinach	: 100 gm
Garlic	: 2 tablespoon
Butter	: 2 tablespoon
Olive oil	: 1 table spoon
Lime	: Half a slice
Salt	: to taste
Red chilly flakes	: 1/2 teaspoon
Paprika	: 1/2 teaspoon
Fettucini Pasta	: 150 gm
Grated Parmesan	: 4 tablespoon
Chopped Parsley	: 1 tablespoon

Instructions

Cook the pasta in salted water, drain and keep it aside.

Heat half the butter and olive oil in a skillet.

Add half the garlic and freshly peeled Indian Vannamei shrimps, and make sure the shrimps are placed evenly.

Sprinkle paprika and salt.

Turn the shrimps and cook for another couple of minutes until both sides are peach in colour.

Add cherry tomatoes, spinach, remaining garlic and cook for one minute.

Add red chilly flakes and give it a quick stir.

Add the cooked pasta to the skillet.

Add in the remaining butter and half the grated parmesan, stir well to coat the past the pasta and shrimps.

Add lime juice, pepper, salt and mix gently.

Garnish with the remaining parmesan.

Prep time : 20 minutes

Cooking time : 20 minutes

Serves 4

Scan the QR code to watch the recipe in Youtube

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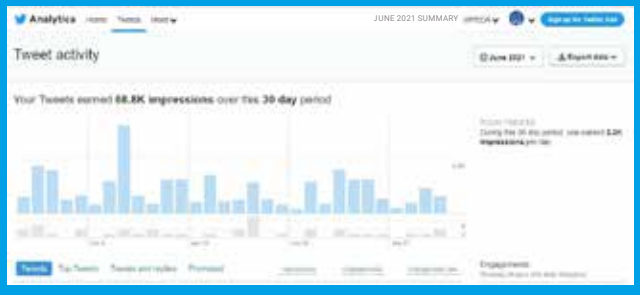

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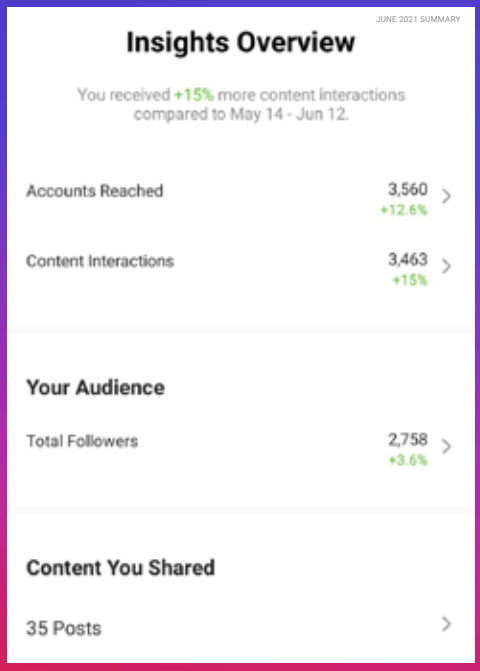

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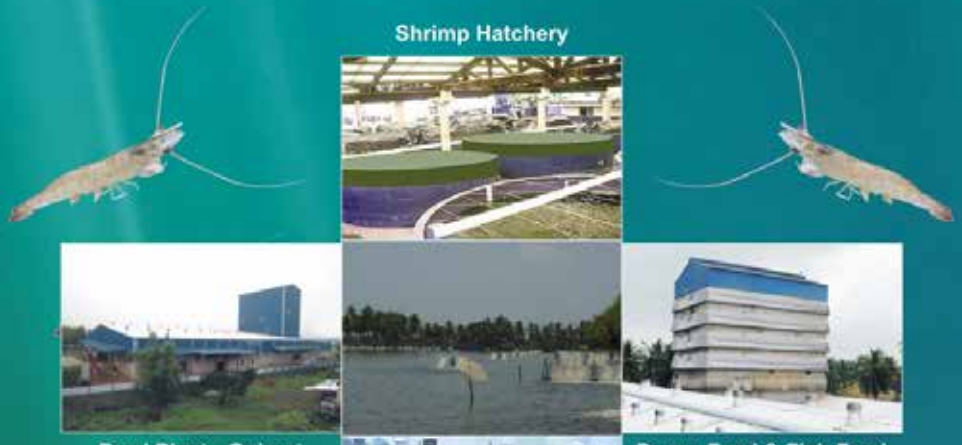

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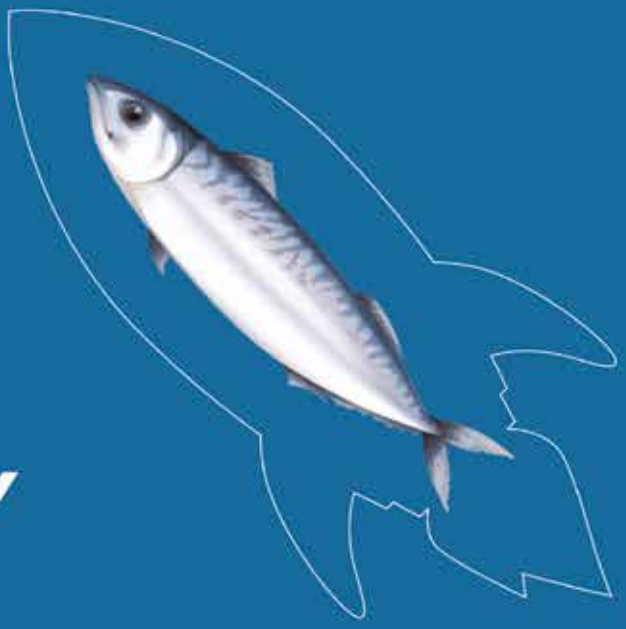

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