MPEDA

Newsletter

VOL. IX NO. 11 FEBRUARY 2022

COVER STORY

Integrated Aqua Labs - Stakeholders' Expectations in Andhra Pradesh

IUU Fishing and Port State Management Measures

Seaweeds for a Healthy Diet

Analysis of Export Potential of Indian Seafood to CIS Market

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On the Platter

K. S. Srinivas IAS
Chairman

Friends,

Rajiv Gandhi Centre for Aquaculture (RGCA), the research and development arm under MPEDA has successfully completed its 25 years of yeoman services to the aquaculture sector of the country. RGCA had been instrumental in aquaculture species diversification, and also in establishing and operating successfully the Aquatic Quarantine Facility (AQF) at Chennai for screening shrimp brood stock and parental post larvae to prevent pathogenic introduction. As everyone would agree, the AQF has enabled the introduction of vannamei shrimp in 2009 into Indian coastal aquaculture systems which has revolutionized the aquaculture production and exports since then. RGCA has also been successful in projects such as Brood stock Multiplication Centre, Domestication of Tiger Shrimp, Nuclear Breeding Centre of Genetically Improved Farmed Tilapia (GIFT) and production of Artemia cysts. The Multi -species Aquaculture Complex (MAC) established by RGCA in Kochi caters to the seed requirements of farmers, besides analytical services.

25th year of establishment of RGCA was celebrated in all its grandeur on 3rd February 2022 at its Head Quarters at Sirkali, Tamil Nadu. On this occasion, a mobile aquaculture pathology laboratory was launched to provide testing services to the farmers at their doorsteps. RGCA has also adopted a new logo that encompasses its diverse activities in the aquaculture front.

As you may be aware, the Department of Fisheries, Thailand has imposed temporary suspension on the import of aquaculture shrimps from India, citing reports on the presence of Infectious Myonecrosis Virus (IMNV) in our shrimp aquaculture farms. Since then, MPEDA has been chipping in efforts to seek some reprieve through the Embassy of India in Bangkok. Based on the same, the Thai Department of Fisheries sought large amount of information on the disease surveillance and control mechanisms adopted in India through detailed questionnaire. Subsequently, MPEDA along with DOC and EIC coordinated a virtual audit of Indian shrimp hatchery, farm, processing unit and export inspection laboratory by the Department of Fisheries, Thailand during 14th to 15th February of this month. The Thai side has expressed satisfaction over the system followed in India, and we are hopeful that soon they will lift the temporary suspension imposed on the export of Indian aquaculture shrimps.

Meanwhile, MPEDA has also coordinated and dispatched a Turtle Excluder Device (TED) re-designed by CIFT as per US specification to the National Marine Fisheries Service (NMFS). The experts of NMFS will have trials with these TED designs and provide feedback on the effectiveness in facilitating escape of sea turtles caught in shrimp trawls. If it provides desired results, we are hopeful that it could be implemented at the field level and that would lead to certification of Indian trawl fishery for shrimps under Sec.609 of US Public Law of conservation of sea turtles. This would facilitate to restart the export of sea caught shrimps to US market.

MPEDA has organized Virtual Buyer Seller Meets with countries such as Japan, Nigeria & Ghana during the month. In addition, webinars on “Marine products export update and Unit Value analysis- shrimp” and “Regulations affecting seafood import to USA” were also organized for the benefit of the trade. MPEDA along with Indian seafood exporters is gearing up to participate physically in the Seafood Expo North America scheduled to be held at Boston during 13th to 15th March 2022, after a pandemic imposed gap of two years. We have high hopes to enhance our seafood export trade to USA and adjoining markets in the post covid scenario.

Thank you,

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India- Kuwait Business Meet on marine & aquaculture products

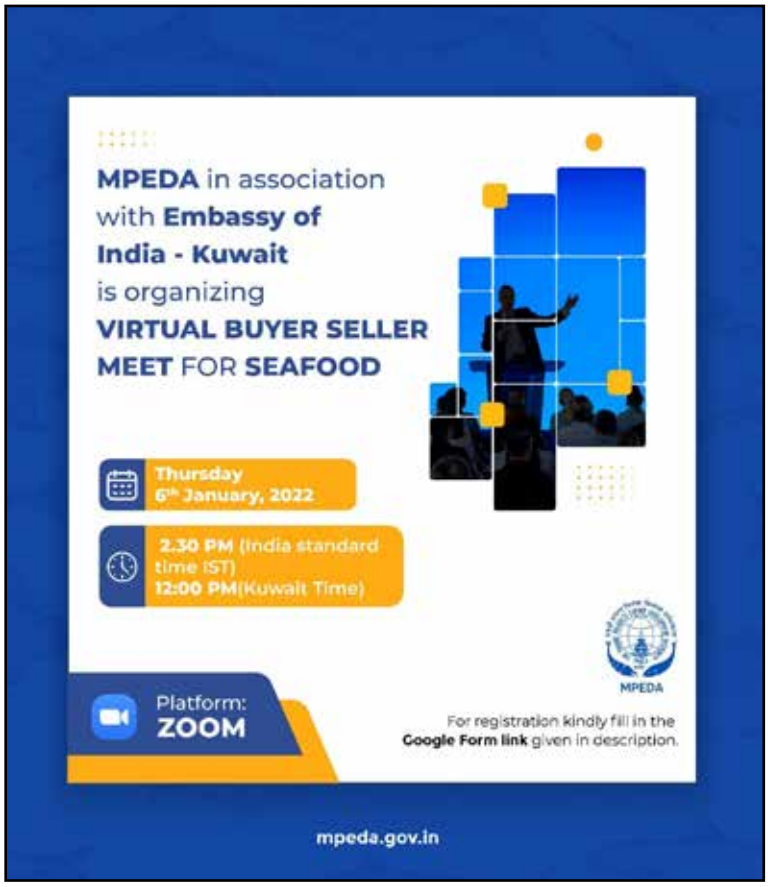
MPEDA in association with Embassy of India, Kuwait organized a business meet focusing on marine and aquaculture products on 6th January 2022. The meet was attended by over 90 exporters from India. Mrs. Smita Patil, First Secretary (Political & Commerce), Embassy of India, Kuwait welcomed the participants to the meet.

His Excellency Mr. Sibi George, Ambassador, EOI, Kuwait gave a video message, which highlighted the increased exports from India to Kuwait since last year. Mr. K. S Srinivas IAS, Chairman MPEDA appreciated the efforts taken by Embassy in association with MPEDA to improve the exports and told that within Middle East Asian countries, Kuwait is the second largest export destination of Indian marine products after UAE.

Chairman suggested the Embassy to work with the Kuwait authorities to resolve the trade issues, which would largely contribute to the exports. The milestone achievement of USD 6.1 billion marine exports during April to December 2021 was shared with the participants by the Chairman.

Dr. T. R. Gibinkumar, Deputy Director (Market Promotion & Statistics), MPEDA gave a presentation on 'Seafood exports to Middle East & Kuwait. The presentation covered the Indian fisheries scenario, activities of MPEDA and export performance of various marine products and statistics of the export to Kuwait.

Mr. Mohandas Kizhakke, Managing Director,



Captain Fisher Foodstuff Co. W. L. L. gave a brief of the history of marine product export from India to Kuwait and the seafood market updates of Kuwait.

Representing the Indian exporters, Mr. Alex Ninan, Regional President, Seafood Exporters Association of India (SEAI), Kerala shared his experience of exporting to Kuwait and emphasized on the importance of value addition to gain more share in international market.

A short video on the activities of EOI, Kuwait was shown during the meet. The business meet concluded with the Vote of Thanks by Mrs. Anju, DD (Market Promotion & Development).

MPEDA and Embassy of India, Denmark jointly organise a Virtual Buyer Seller Meet

MPEDA in association with Embassy of India, Denmark organized a preliminary Virtual Buyer Seller Meet (VBSM) with major stake holders in Denmark including Danish Seafood Association on 7th January 2022. The Agenda points for the discussion were as follows:

Identifying major importers & retail chains and convey their requirements for arranging one to one Virtual Buyer Seller Meet (VBSM).

- Possibility of using networking software for VBSM
- Conducting business meets for the sector
- Market Research on seafood in Denmark
- Participation in local seafood trade fairs in Denmark
- Possibility for reverse Buyer Seller Meet

Mr. Ashok Polur, Commercial & Marketing Officer, Embassy of India-Commerce Division, Copenhagen, Denmark welcomed the participants to this Preliminary VBSM. Mr. Poul Melgaard Jensen, representing Danish Seafood Association; Mr. Michael, Chief Advisor, Danish Business Meet Chamber of Commerce in Denmark; Ms. Lise Christiansen Walbom, CEO, Food Nation-Denmark and Mr. Simon Holst Moller from Danish Veterinary and Food Administration under the Ministry of Food, Agriculture and Fisheries, Government of Denmark attended the meeting from Denmark.

From MPEDA, Mr. Anilkumar P., Joint Director (Marketing), Dr. T. R. Gibinkumar, Deputy Director (Market Promotion & Statistics) and Mr. Bhushan Patil, Assistant Director (Statistics) attended the meet.

Dr. Gibinkumar gave a presentation focusing on export performance of marine products to European Union in general and to Denmark in particular. Presentation also mentioned the export statistics from India during 2020-21 and target achievement in the current year up to December 2021. A comparison between total seafood imports of Denmark versus India's share was also highlighted in the presentation.

The graphical representation of total seafood imports of Denmark versus India's share is given as fig 1. Presentation also highlighted the export entities and

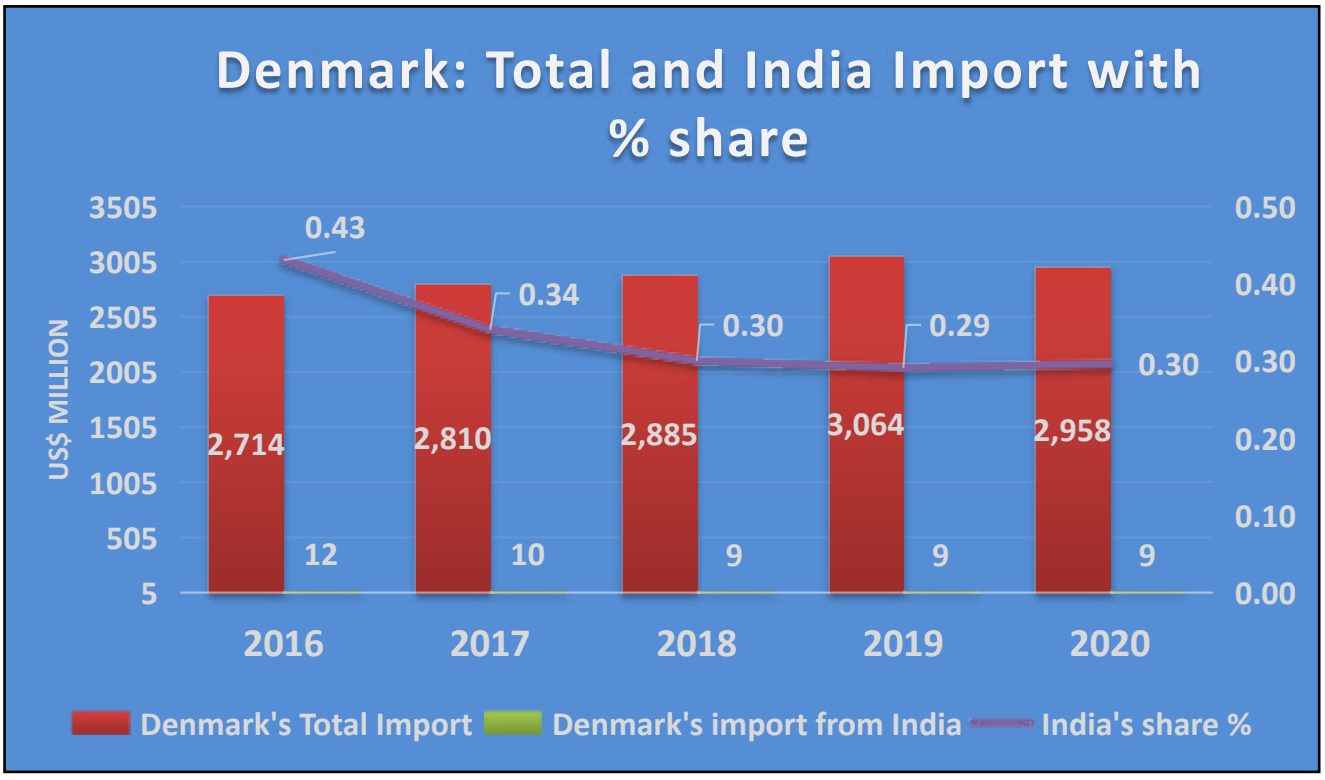


Fig.1: Seafood imports of Denmark and India's share (Trade Map)

infrastructures along with the brief of value added seafood processing facilities in India. Presentation concluded with the issues pertaining to exports to EU countries and mentioned the actions taken by MPEDA for improving export performance to EU countries.

Exports to Denmark

India has exported 924 MT of Seafood worth US$ 5.22 Million to Denmark in 2020-21. In the last five years, Indian seafood export has decreased from US$ 8.92 million in 2016-17 to US$ 5.22 million in 2020-21. All time high value of US$ 10.72 million was achieved in 2017-18. The target set for Denmark for 2021-22 is US$ 11.74 million and as on December 2021 achievement is US$ 7.0 million which is only 60% against the requirement of 75%. Export to Denmark for the last 5 years is given in table 1 and fig 2.

In the meeting, it was decided to create brief profiles of Indian exporters registered for participating in VBSM with Denmark and the same to be forwarded

Table 1: Export of marine products from India to Denmark during last 5 years

	2016-17	*2017-18*	*2018-19*	*2019-20*	*2020-21*
Q: MT	1368	*2654*	*800*	*1460*	*924*
V: Rs Crore	59.10	*68.65*	*35.12*	*59.28*	*38.32*
$: USD Million	8.92	*10.72*	*5.05*	*8.45*	*5.22*

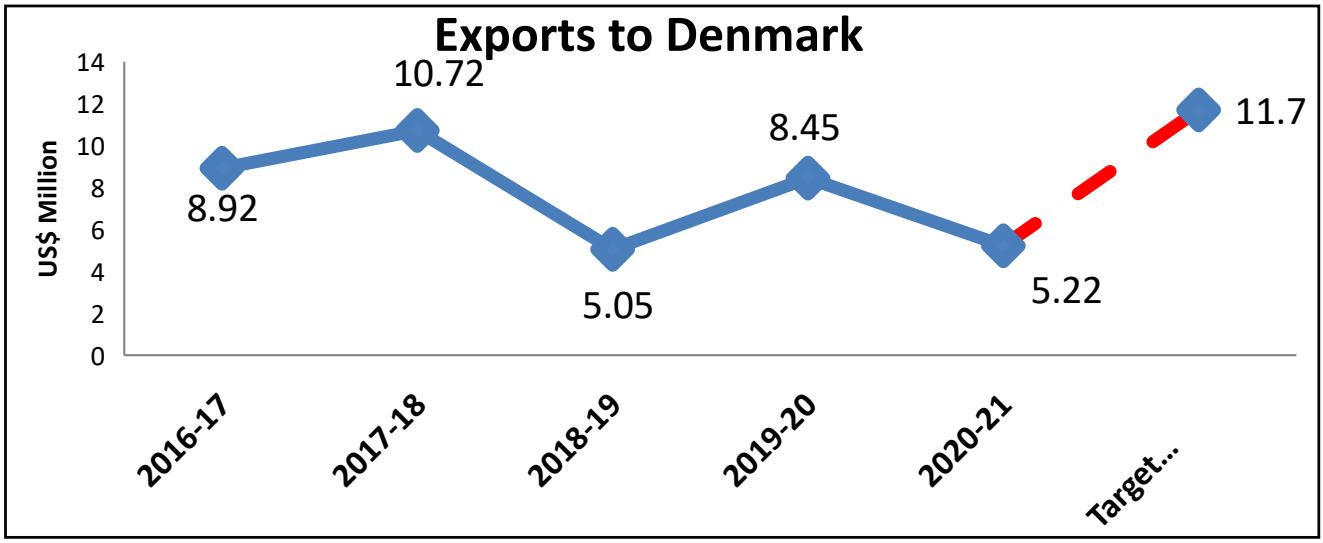


Fig. 2: Export of marine products to Denmark during last 5 years & target set for 2021-22 (Statistics MPEDA)

to Mr. Poul Melgaard Jensen for taking up meetings with the members of Danish Seafood Association. It was also tentatively decided to conduct a full fledged Business Meet cum Virtual Buyer Seller Meet on 15th February 2022. Meeting came to an end with the concluding remarks by Mr. Anil Kumar P, Joint Director (Marketing), MPEDA, who has stressed the need for market research on seafood in Denmark and requested Embassy to ascertain the possibility of participation in local seafood trade fairs in Denmark.

Business meet organised by MPEDA with EoI, Abu Dhabi

MPEDA in association with EoI, Abu Dhabi has organised a business meet on 18th January 2022. The webinar began with the Welcome address by Dr. T. R. Gibinkumar, Deputy Director (Market Promotion & Statistics), MPEDA.

Mr. Sandeep Kumar Bayyapu, Deputy Chief of Commission, EoI, Abu Dhabi in his introductory speech complimented MPEDA for its efforts to boost the exports and gave a brief on the ongoing India - UAE CEPA, which is expected to generate immense opportunities in the trade of food and agriculture products between the countries. Mr. Rajeev Arora, Second Secretary, EoI spoke about the advancements made so far in India - UAE CEPA.

Dr. Karthikeyan, Director, MPEDA brought the major issues faced by the Indian exporters to Middle East to the notice of Embassy, particularly the issues regarding the payment and limited air connectivity to the Middle East, which has severely affected the chilled and live fish exports. A brief presentation on Indian exports focusing on Middle East market in general and UAE in particular was given by Dr. Gibinkumar.This was followed by self introduction of the buyers and representatives of major buyers, which included Lulu group, Spinneys, Carrefour, KM trading etc. A brief question - answer section followed and the queries on market issues in Middle East were answered by Mr. Anil Kumar P. Joint Director (Marketing), MPEDA. Mrs. Anju, Deputy Director (Market Promotion & Development) proposed the Vote of Thanks.

VBSM with UAE

Following the business meet, a Virtual Buyer Seller Meet was organised wherein the exporters have given their presentations with details of their company, products offered and certifications. About 13 exporters participated in the meet.

Exports to UAE

India has exported 27,715 MT of seafood worth US$ 158.06 Million to UAE in 2020-21. Exports to UAE, which was increasing since 2016-17 dropped in 2020-21. In the last five years, Indian seafood export has increased from US$ 156 million in 2016-17 to all time high value of US$ 197 million in 2019-20.

Table 1: Exports to UAE for last 5 years (Q: MT; V: Rs Crore; $: US$ million)						
UAE		2016-17	2017-18	2018-19	2019-20	2020-21
	Q:	24629	28507	30114	33146	27715
	V:	1037.02	1188.42	1226.52	1380.28	1161.08
	$:	156.29	186.68	177.50	197.25	158.16

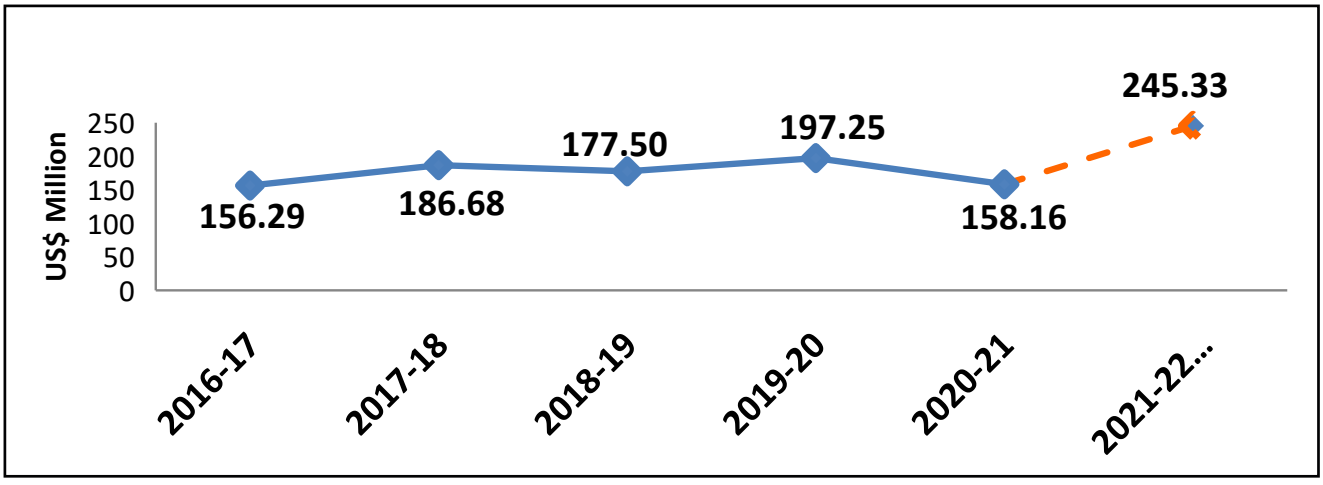


Fig.1: Marine products exports to UAE from India

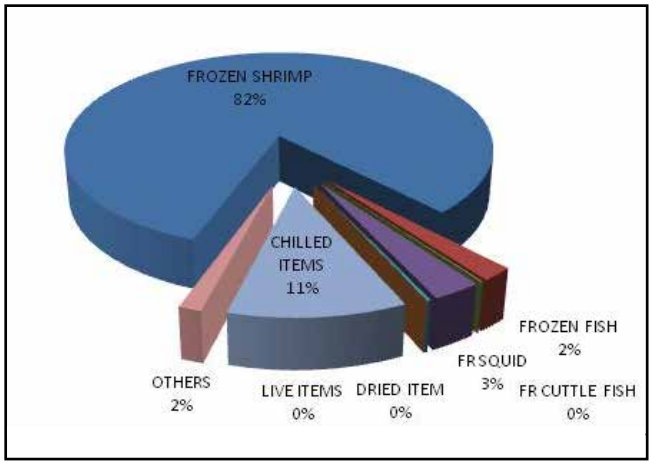


Fig.2: Item-wise exports to UAE from India

Frozen shrimp is the major item of export covering 82.24% of total exports (US$).

Export of Fr. shrimp during 2020-21 was 20,844 MT worth USD 130.08 Million. Chilled items stood second with 17.21% share in US$ value, followed by frozen Squid (4.83%) and frozen fish (3.24%).

Export target for UAE market & achievement

Target for UAE is US$ 245.33 million and achievement as on December 2021 is US$ 126.58 million which is about 52% against the requirement of 75%. It is expected that buyer seller interactions will improve the trade and aid to achieve the optimistic target set for UAE.

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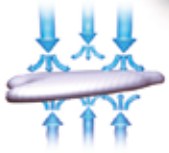

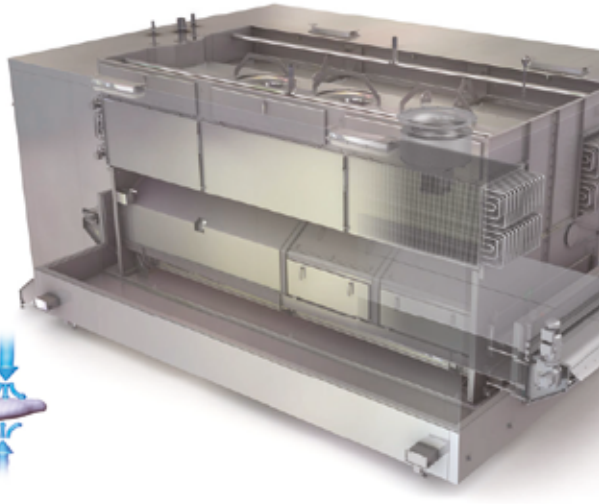

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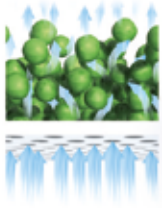

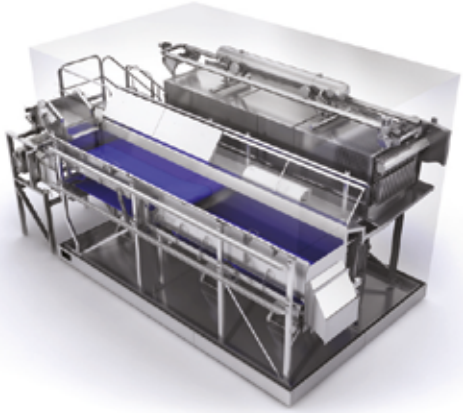

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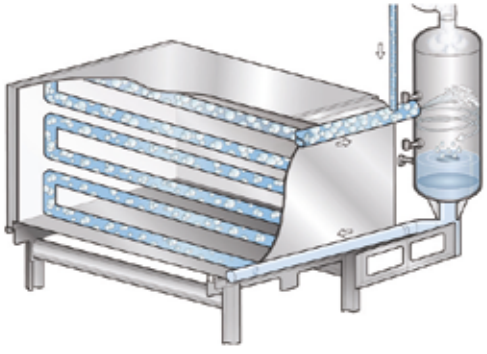

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Seaweeds as functional food for a healthy diet

Darsana K. and T. P. Tharshini Dev
Tamil Nadu Dr J Jayalalithaa Fisheries University

Introduction

The Seaweeds are macrophytic algae, which belongs to one of three divisions - the Chlorophyta (green algae), the Phaeophyta (brown algae) and the Rhodophyta (red algae). There are about 900 green, 4000 red and 1500 brown species of seaweed found in nature. In those, 221 species of seaweed are utilized commercially and around 145 species are used for food and 110 species for phycocolloid production. The rich diversity of seaweeds in the Indian marine biosphere represents an untapped reservoir of bioactive compounds with valuable pharmaceutical and biomedical use.

Functional foods are complete, fortified, enriched, or improved foods that, when consumed at effective levels as part of a diverse diet on a regular basis, provide health advantages beyond the provision of necessary nutrients. In the functional food industry, marine algae have been discovered as a major key means of innovation. Seaweeds are high in bioactive components that contribute to a variety of health advantages, making them a source of functional food ingredient. This has spurred interest in establishing methodologies and approaches for using seaweeds or extracts in the advancement of seaweed based functional foods.

The rest of this section provides an overview with some of the most important bioactive components found in seaweed and their promising applications in the development of functional foods.

Dietary fibre

Dietary fibre is primarily composed of four polysaccharide families: laminarans, alginates, fucans, and cellulose. Laminarans are polysaccharides found in brown algae that are reserved. The gelling polyuronide alginate is the main matrix component of brown seaweed.

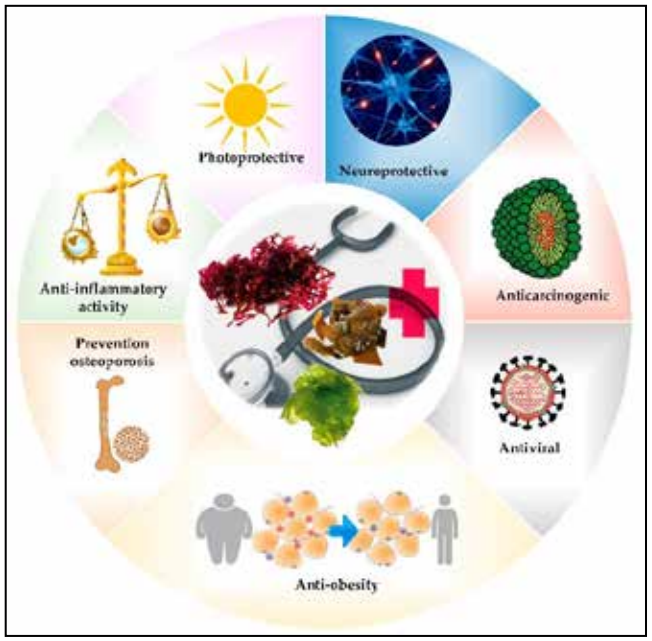

Fig.1: Functional properties of seaweed

Fucans are divided into three types: fucoidans, xylofucoglycuron and glycorunogalactofucans. Cellulose, which is primarily composed of sulphated galactans, xylans, and mannans, makes up the cell walls of brown and red algae. Addition of seaweeds and their inclusion into low dietary fibre foods can thus increase dietary fibre intake, while decreasing the occurrence of some chronic diseases related to low fibre diets, like diabetes, obesity, heart disease, and cancer.

Because seaweeds are high in fibre (33- 50g/100g), they can also be used to boost the fibre content of foods that are typically low in this component. For instance, fishery and meat products, which otherwise have high nutritional value, are low in fibre and would benefit greatly from the addition of seaweeds. It would also allow the seaweed's functional properties, such as water binding, gelling, and emulsifying abilities, to be used in the final product.

Lipids or fatty acids

Omega 3 and Omega 6 essential fatty acids are also found in seaweeds. Avoidance of atherosclerosis, protection against arrhythmia, blood pressure reduction, benefits for diabetic patients, prevention of various malignancies, promotion of bone health, and improvement in brain function in youngsters are all potential applications of omega fatty acids in health promotion. Omega 3 oils have been added to bakery items, pastas, dairy items, and nutrition bars.

Fucoidans

Fucoidans, is a bioactive ingredient found in seaweeds, have recently acquired popularity as a source of bioactive ingredients for functional meals. Fucoidans are a complex group of sulfated polysaccharides discovered in the cell walls of brown seaweeds that have antioxidative, antiviral, anticoagulant, and anti-obesity properties. These qualities have led to the use of fucoidan as a disease prevention and health promotion ingredient in functional foods.

Fucoidan is found to have strong lipid inhibition action at 200 g/ml, suggesting that this carbohydrate could be effective in the prevention or treatment of obesity by reducing lipid build - up induced by stimulatory lipolysis. Fucoidans offer a promising platform for the creation of functional beverages that address the global obesity crisis.

Fig. 2: Bread sticks incorporated with dried seaweed

Incorporation of seaweeds in food

Seaweeds have been added to food products as a full component in order to exert particular functional or structural features, according to a number of research reports. When making functional foods, it's critical to limit nutraceutical property losses, especially during processing, to guarantee that high levels of bioactivity are retained in the end product. Furthermore, functional meals should have an appropriate sensory profile and consumer appeal, as the inclusion of bioactive components can alter the flavor, aroma, or texture of the product in some situations.

Bakery products

Bakery products are consumed on a daily basis and in large quantities by many different demographic groups around the world, making them ideal candidates for the integration of marine functional ingredients. The addition of Omega-3 polyunsaturated fatty acids (PUFA) to bread is one of the most recent bakery product enhancements aimed at increasing necessary fatty acid intake. The use of Omega-3 PUFA-enriched bread is continuously increasing throughout Europe, owing to a growing awareness of the health benefits of such supplementation. As a result, the future of nutrition may include the use of breads as carriers for numerous micronutrients.

In many Western diets, dietary fibre consumption is very low compared to the recommended intake, and it is widely assumed that three out of every four people do not get their recommended daily allowance (RDA). Bakery products offers significant opportunity to increase dietary fibre intake and contribute to the prevention of diseases associated with inadequate dietary fibre consumption. Because of their popularity and appeal, bread sticks were supplemented with seaweed functional ingredients. The nutritional content, sensory evaluation and consumer appeal of the final product were then assessed. A response surface methodology (RSM) study was used to help determine the optimum concentrations of seaweed and flour blends needed to maximize phytochemical and dietary fibre levels in breadsticks.In the breadstick study, adding up to 17 % dried seaweed to the base mix increased total dietary fiber by up to 44 %, which is a significant increase over controls. Since dietary fiber value increased, the overall functional property of breadstick is increased due to the incorporation of dried seaweed.

Fig.3: Seaweed commercial products

Meat products

Meat is one of the most commonly consumed foods worldwide, and supplementing it with functional ingredients is an excellent way to increase consumption without requiring any drastic changes in eating habits. The incorporation of functional ingredients with potential biological activity, such as botanicals, plant extracts, and seaweeds, into processed meat products is thus receiving a lot of attention.

Meat is low in dietary fiber, so adding fiber-rich ingredients would be advantageous. Plant biomass and bioactive compounds derived from it have been considered as potential functional components for reducing the colorectal cancer risk associated with processed meat consumption.Seaweeds also contain a lot of phytochemicals, like phenolic compounds. As a result, incorporating seaweed into beef patties has the potential to produce healthier meat products. At the same time, utilizing the technological benefits of seaweed hydrocolloids would increase dietary fiber and decrease processing losses, resulting in increased cooking yields. In general, the inclusion of dietary fiber in cooked meat products improves hydration and fat-holding capacity, reducing fat and water loss during cooking and increasing emulsion stability. Seaweeds are an exciting ingredient form in any meat- based products, particularly those aimed at producing meat-based functional foods.

Conclusion

Over the last few years, the use of seaweeds for the development of new products and as a source for obtaining high-value compounds has attracted much interest from both food and pharmaceutical industries. Indian nutraceuticals market has been growing at the compound annual growth rate of 20 percent for the past three years. This subsequently paved the way for the development of several seaweed extracted nutraceutical products for use against arthritis, type-2 diabetes, dyslipidemia, hypothyroidism, osteoporosis, low immunity, hypertension and various chronic diseases. The latest efforts in this line of research have yielded a seaweed based probiotic nutraceutical, an anti-bacterial ointment and seaweed-based ready-to-eat products, which are gaining popularity. Seaweed polysaccharides have a wide range of applications in the food and pharmaceutical industries due to their biochemical properties to act as stabilizer, emulsifier, and gelling agent. Seaweed polysaccharides are used as a functional ingredient in a variety of food products, including frozen foods, ice cream, jam, jelly, and beverages. Several commercial seaweed food preparations, such as sea salt (moshio salt made from *Hondawara - Sargassum fulvellum*), *nori snack wasabi*, seaweed thins toasted coconuts, crunchy seaweed chips, and raw unroasted seaweed, are also available in the market under various brand names. Because of the abundance of bioactive components found in seaweeds, the functional food industry has a significant opportunity. However, seaweeds must be pre-treated before they can be used to minimize losses in their initial levels of bioactive material and to achieve sensory quality. Subsequent research is required to identify approaches to controlling or reducing the aroma and flavor issues with seaweed-based functional foods so that they are fit for consumption.

References

FAO. 2018 The global status of seaweed production, trade and utilization. Globefish Research programme Volume 124.Rome 120 pp. License CC BY-NC-SA 3.0 IGO

Jim Eenez-Ecrig, A., & Sanchez-Muniz, F. J. (2010). Dietary fibre from edible seaweeds: chemical structure, physiochemical properties and effects on cholesterol metabolism. Nutrition Research, 20(4), 585e598.

Rocío Peñalver,et al.,(2020)Seaweeds as a Functional Ingredient for a Healthy Diet, Mar Drugs. 2020 Jun; 18(6): 301, available from https://www.ncbi.nlm.nih.gov/pmc/articles/PMC7345263/.

Gujarat records the highest marine landings in January 2022

Dr. Afsal V.V. & Dr. Joice V. Thomas
NETFISH-MPEDA

Marine fish landings at selected major harbours/ landing centres in India is monitored and recorded on a real-time basis by NETFISH, as part of the Catch Certification system of MPEDA. The Harbour Data Collectors engaged at around 100 landing sites across the country record the details of the fishing vessels arriving at the harbour/ landing centre as well as the species-wise quantity and rate of catch landed by these vessels on a daily basis. This report summarizes the species -wise, harbour-wise and state-wise fish catch and boat arrival trends observed in January 2022.

I.Observations on fish catch landings

A total landing of 74,745.53 tons of marine fishery resource was recorded from the 98 selected landing sites during January 2022. About 51% of the total catch was composed of Pelagic finfish resources and it was followed by Demersal finfishes with a share of 29 %, Crustaceans with 12 % share and molluscs with a scare of 8 %(Fig.1).

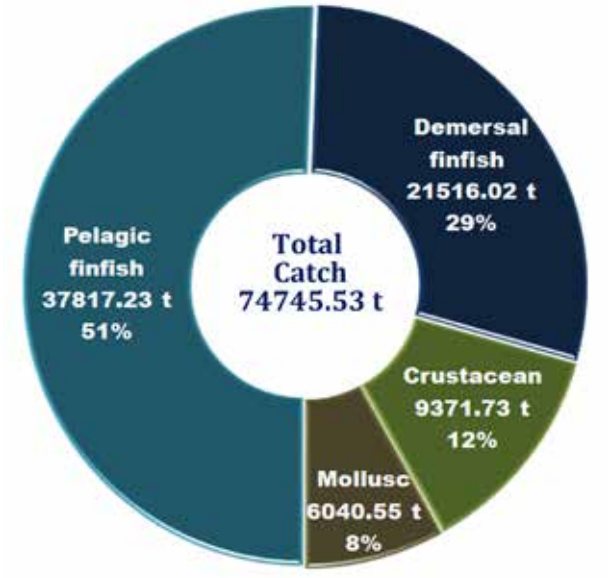

Fig.1: Catch composition of marine landings recorded in January 2022

A total of 265 species of marine fishery items were recorded in the month, of which the top five contributors were *Rastrelliger kanagurta* (Indian mackerel), *Lepturacanthus spp.* (Ribbon fish), *Nemipterus japonicus* (Japanese thread fin bream), *Otolithes spp.* (Tigertooth croaker) and *Parapenaeopsis stylifera* (*Karikkadi* shrimp) (Table1).

Table 1: Major fish species landed during January 2022

Sl. No:	Common name	Scientific name	Qty. in tons
1	Indian mackerel	*Rastrelliger kanagurta*	8,684.88
2	Ribbon Fish	*Lepturacanthus Spp*	7,521.97
3	Japanese thread fin bream	*Nemipterus japonicus*	4,195.22
4	Tiger-tooth croaker	*Otolithes Spp*	3,718.03
5	Karikkadi shrimp	*Parapenaeopsis stylifera*	2,206.52

The various species of fishery items recorded during the month were categorized group-wise and the catch trend was analyzed. Mackerels, Ribbon fish, Croakers, Coastal shrimps and Threadfin breams were the major contributors, together forming 46% of the total catch (Fig. 2).

Other major items reported were Sardines, Tunas, and Scads, each contributing more than 3,500 tons to the total catch.

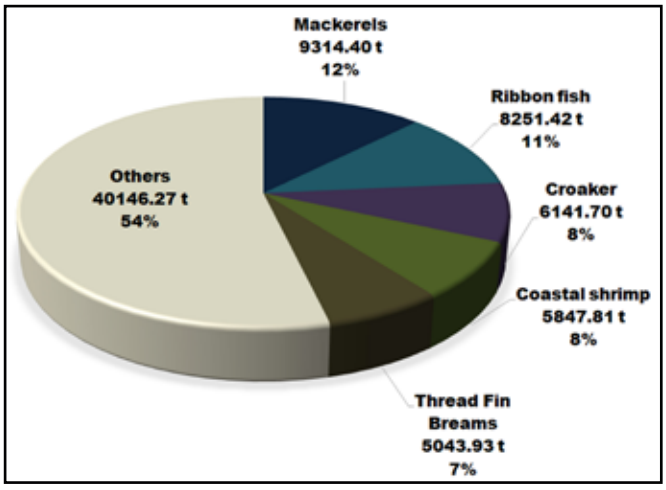

Fig. 2: Major fishery items landed during January 2022

Among Pelagic finfishes, the Indian mackerel and Ribbon fish dominated the catch, whereas among Demersal finfishes, Croakers and Japanese threadfin breams were the most landed items. About 62 % of the Crustacean catch was comprised of different species of coastal shrimps, of which the *Karikkadi* shrimp was the dominant species. In the case of the Molluscan resources, squids and cuttlefish were the major items landed.

State-wise landings: West coast states lead the table, with Gujarat in first position and contributed 18,470.39 tons (25 %) to the total catch. It was followed by Maharashtra, Karnataka and Kerala with a share of 12,658.36 tons (17 %), 11,406.11 tons (15 %) and 11,270.41 tons (15 %) respectively (Fig.3).

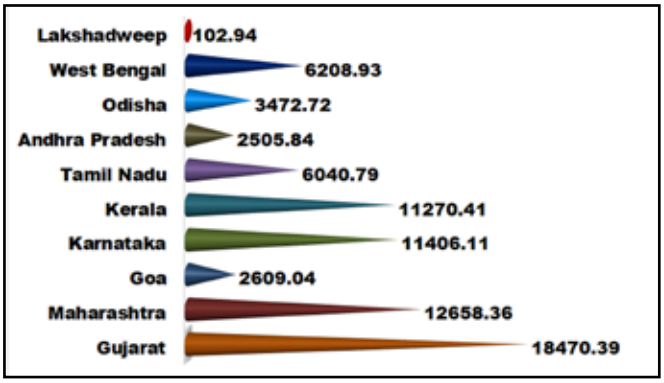

Fig. 3: State - wise fish landings (in tons) during January 2022

Harbour-wise landings: The monthly landing is reported from 98 harbours along the 9 coastal states and the Lakshadweep Island. The New Ferry Wharf harbour in Maharashtra had recorded the maximum fish landings of 5,737.06 tons (8 %), followed by Veraval and Porbandar harbours in Gujarat, with a landing of 4,532.69 tons (6 %) and 4,477.07 tons (6 %) respectively.

II.Observations on boat arrivals

A total of 41,161 nos. of fishing vessel arrivals were recorded from the 98 fish landing sites during January 2022. State-wise figures (Fig. 4) show that the highest number of boat arrivals had occurred in Kerala (24%) and then in Gujarat (21%) and Tamil Nadu (14%). Porbandar (2,238 nos.), Mangrol (1,776 nos.) and Veraval (1,475nos.) harbours in Gujarat had recorded the highest fishing vessel arrivals during the month.

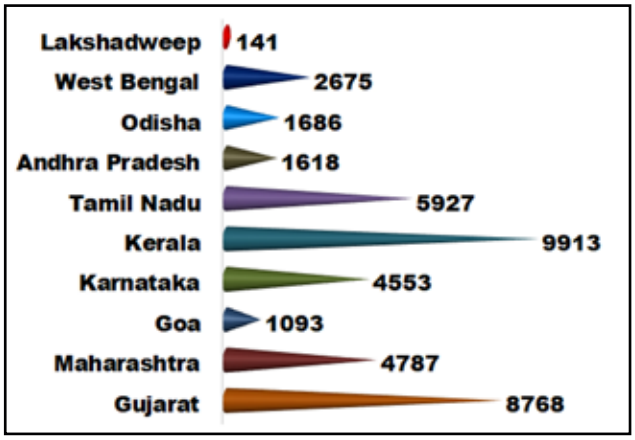

Fig. 4: State – wise number of boat arrivals during January 2022

Summary: In January 2022, 74,745.53 tons of marine landings and 41,161nos. of boat arrivals were reported from 98 major fishing harbour/ landing centres along the 9 maritime states and Lakshadweep Island. The declining trend in the marine landings continued this month as well, with a decline of 14,992.67 tons compared to the total catch recorded during December 2021. The number of boat arrivals also recorded a decrease in January 2022, with 1,404 nos. less than that of December 2021. Pelagic finfishes continued as the major contributor to the total landings, and the Indian mackerel *(Rastrelliger kanagurta)* remained as the most landed species. Gujarat had remained in the first place among the states in terms of total catch landed whereas, the most number of boat arrivals recorded during the month was from Kerala. Among the landing sites, the New Ferry Wharf harbour remained in the first position in terms of total catch landed and the Porbandar harbour continued in the first place with most number of boat arrivals.

Export potential of Indian seafood to CIS market - An analysis

Sneha Sajeev, Bhushan Patil & Dr. T. R. Gibinkumar, Statistics Section, MPEDA

Export to the countries among the Commonwealth of Independent States (CIS) increased by 79% during last 5 years and the market shows immense potential for Indian seafood

Exports to CIS market

During the financial year 2020-21, India has exported 16,639 MT of seafood worth US$ 93.82 Million to CIS countries. In the last five years, Indian seafood export has increased from US$ 61.12 million in 2016-17 to US$ 93.82 million in 2020-21 to this market, with highest figures for quantity (18,388 MT) recorded in 2017-18. Export summary given in table 1 and figure 1 shows the export performance to CIS market during the last five years.

CIS countries
1.Armenia
2.Azerbaijan
3.Belarus
4.Georgia
5.Kazakhstan
6.Kyrgyzstan
7.Moldova
8.Russia
9.Tajikistan
10.Turkmenistan
11.Ukraine
12.Uzbekistan

Table 1: Export of marine products to CIS Countries during last five years

	2016-17	*2017-18*	*2018-19*	*2019-20*	*2020-21*
Quantity (MT)	14178	*18388*	*15215*	*17613*	*16639*
Value (Rs. Crore)	405.24	*531.78*	*561.03*	*766.59*	*686.15*
Value (USD Million)	61.12	*83.61*	*81.31*	*109.57*	*93.82*

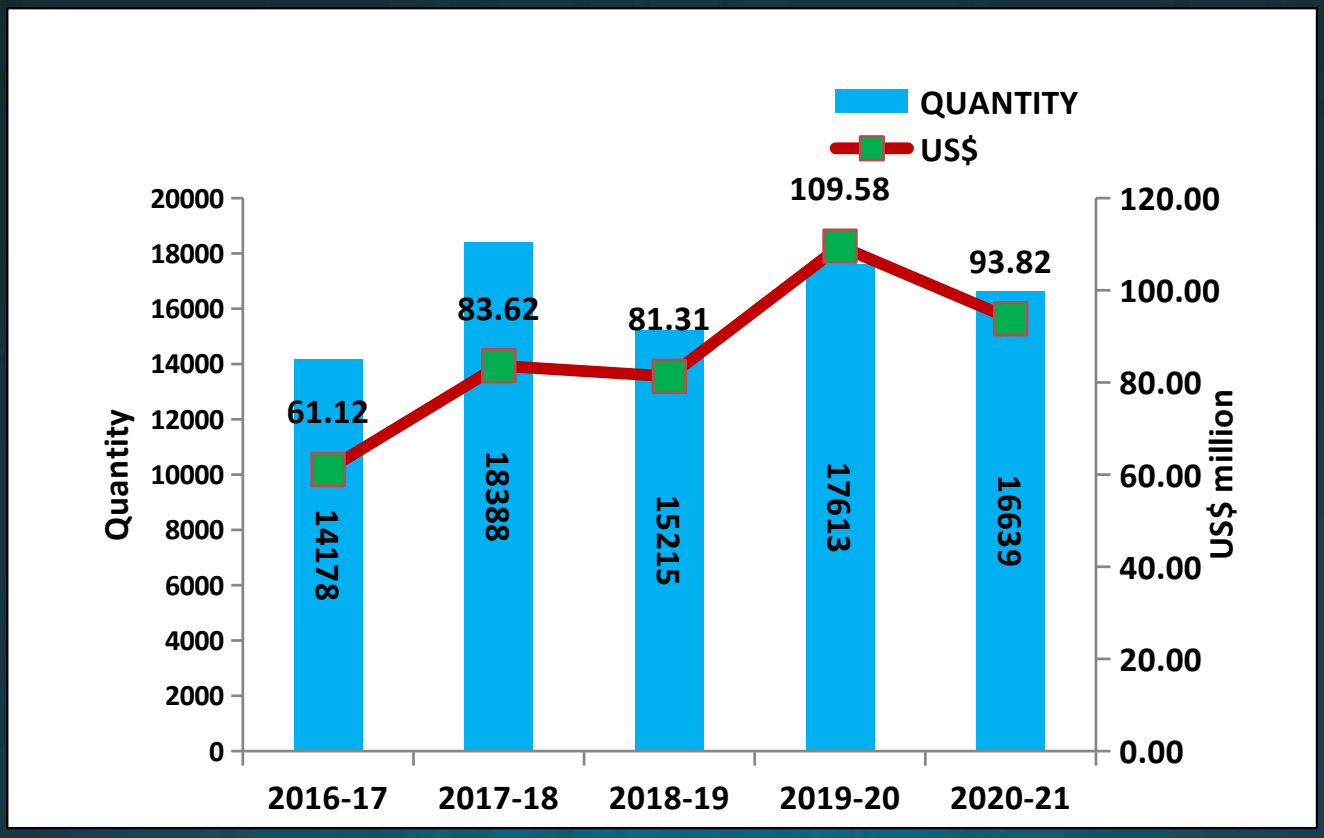

Fig. 1: Exports to CIS Market during the last five years

Country-wise exports to CIS countries

Russia is the major country of importing marine products from India. The overall exports to Russia during 2020-21 was 15,004 MT worth USD 84.32 Million. The export has increased from US$ 57.76 million in 2016-17 to US$ 84.32 million in 2020-21.

Ukraine is the second largest importer of Indian marine products and the export to Ukraine has increased from 38 MT (US$ 0.30 million) in 2016-17 to 1,371 MT (US$ 8.25 million) in 2020-21.No Indian marine products are exported to other CIS countries such as Armenia, Kyrgyzstan, Moldova, Tajikistan, and Turkmenistan. The details of country-wise exports to CIS Countries are given in table 2.

The pie diagram of country-wise marine products exports to CIS countries during 2020-21 for USD value is shown as fig. 2.

Table 2: Country- wise export of marine products to CIS countries

Q: Quantity in M T, V: Value in Rs. Crore, $: US Dollar Million

COUNTRY		2016-17	2017-18	2018-19	2019-20	2020-21
AZERBAIJAN	Q:	0	0	0	0	58
	V:	0.00	0.00	0.00	0.00	2.65
	$:	0.00	0.00	0.00	0.00	0.37
BELARUS	Q:	1072	700	113	50	100
	V:	16.19	10.85	3.80	0.63	2.09
	$:	2.43	1.71	0.53	0.09	0.28
GEORGIA	Q:	54	0	18	89	17
	V:	2.37	0.00	0.84	4.05	0.68
	$:	0.36	0.00	0.11	0.57	0.09

KAZAKHSTAN	Q:	53	18	175	54	67
	V:	1.83	0.85	6.60	3.06	3.27
	$:	0.28	0.13	0.94	0.43	0.45
RUSSIA	Q:	12961	17524	14696	16455	15004
	V:	382.87	513.12	541.62	719.95	616.66
	$:	57.76	80.68	78.56	102.93	84.32
UKRAINE	Q:	38	145	212	966	1371
	V:	1.97	6.96	8.18	38.90	60.39
	$:	0.30	1.09	1.17	5.55	8.25
UZBEKISTAN	Q:	0	0	0	0	21
	V:	0.00	0.00	0.00	0.00	0.41
	$:	0.00	0.00	0.00	0.00	0.06
TOTAL	Q:	14178	18388	15215	17613	16639
	V:	405.24	531.78	561.03	766.59	686.15
	$:	61.12	83.61	81.31	109.57	93.82

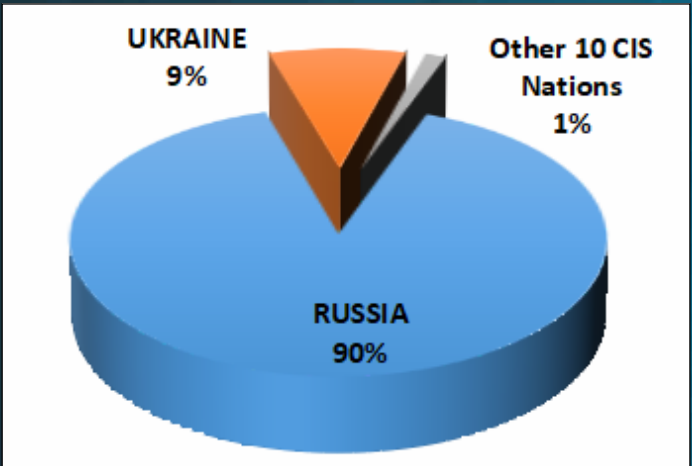

Fig. 2: Country- wise exports to CIS market in % share of US$ value (2020-21)

Major item-wise export to CIS countries

Frozen shrimp is the major item of export in terms of quantity and value. The overall exports of shrimp during 2020-21 were 10,112 MT worth USD 81.24 million. The export has increased from US$ 43.62 million in 2016-17 to US$ 81.24 million in 2020-21.

Frozen fish, frozen Cuttlefish, frozen squid, dried & live items are the other major items exported to CIS Countries.The details of major items of exports to CIS Countries during the last 5 years are given in table 3 and the items exported to CIS Countries in 2020-21 for both quantity and US$ million are also shown in fig. 3 & 4.

Table 3: Item - wise export of marine products to CIS countries

Q: Quantity in MT, V: Value in Rs. Crore, $: US Dollar Million

		2016-17	2017-18	2018-19	2019-20	2020-21
FROZEN SHRIMP	Q:	5398	6703	8065	12159	10112
	V:	289.17	370.38	423.73	682.02	594.43
	$:	43.62	58.24	61.50	97.41	81.24
FROZEN FISH	Q:	71	76	40	0	112
	V:	0.92	1.54	1.21	0.00	1.30
	$:	0.14	0.24	0.18	0.00	0.17
FR CUTTLE FISH	Q:	7	13	72	21	13
	V:	0.17	0.43	2.52	0.49	0.38
	$:	0.03	0.07	0.36	0.07	0.05

FR SQUID	Q:	23	97	89	110	35
	V:	0.42	2.59	2.59	2.54	0.84
	$:	0.06	0.40	0.38	0.37	0.12
DRIED ITEM	Q:	3	3	2	2	3
	V:	0.13	0.11	0.13	0.12	0.19
	$:	0.02	0.02	0.02	0.02	0.03
LIVE ITEMS	Q:	0	0	0	0	0
	V:	0.00	0.00	0.06	0.06	0.00
	$:	0.00	0.00	0.01	0.01	0.00
CHILLED ITEMS	Q:	3	0	0	1	0
	V:	0.13	0.00	0.00	0.01	0.00
	$:	0.02	0.00	0.00	0.00	0.00
OTHERS	Q:	8674	11496	6947	5320	6364
	V:	114.29	156.74	130.79	81.34	89.02
	$:	17.24	24.65	18.87	11.70	12.22
Total	Q:	14178	18388	15215	17613	16639
	V:	405.24	531.78	561.03	766.58	686.16
	$:	61.12	83.62	81.31	109.58	93.82

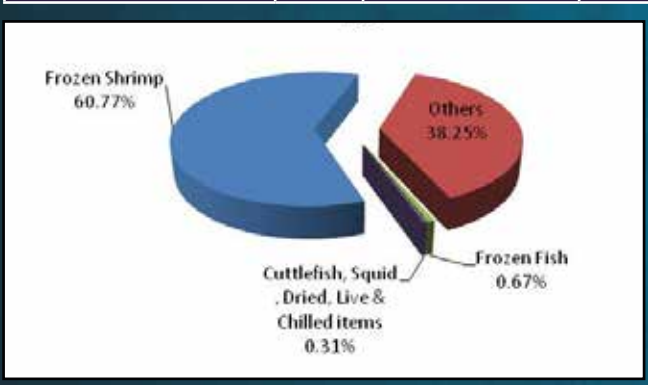

Fig. 3: Item-wise exports to CIS market in % share of quantity (2020-21)

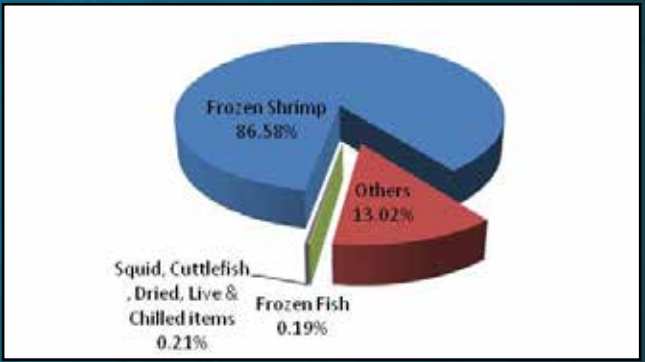

Fig. 4: Item-wise exports to CIS market in % share of US$ value (2020-21)

CIS : Global Import Scenario

Considering the last 5 years, the CIS market has showed an increase of around 36% in total seafood imports.

Though the Indian seafood exports have increased considerably in the market, it is observed that the share of Indian seafood has increased meagrely, by 0.029%.

The difference between CIS's total import and India's export to CIS shows that the market holds huge potential for Indian seafood.

The details of total and India import with % share and export potential are shown in the table 4 and fig. 5.

(Source: Trade Map (Mirror Data), HS code: 03+1604+1605+1504+230120)

Table 4: Comparison of total seafood imports by CIS, India's % share and export potential (US$ million)

	2016	2017	2018	2019	2020	Growth %
CIS's total Import	2661	3120	3518	3697	3626	36.28
India's export to CIS	61	84	81	110	94	53.50
Export potential	2600	3036	3437	3587	3532	
% Share	2.30	2.68	2.31	2.96	2.59	

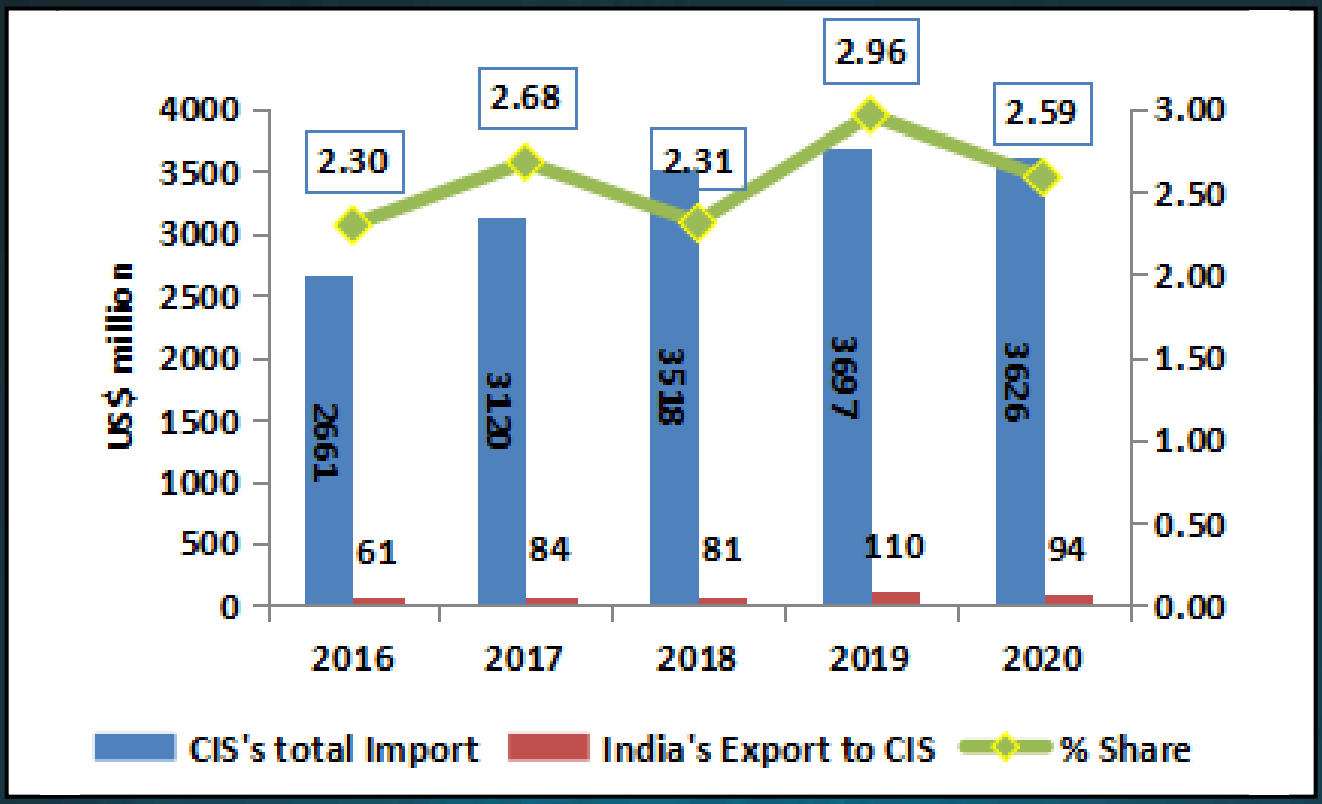

Fig. 5: Comparison of total seafood imports by CIS & India's share

CIS : Shrimp Import

Frozen shrimp is the major item of export to CIS countries for the past 5 years. During the last 5 years, the total shrimp import in CIS countries increased from USD 243 million in 2016 to USD 404 million in 2020 (Trade map) and that of India's share also increased from 18.0% in 2016 to 20.1% in 2020, with highest share of 27.2% reported in 2019. The details of total and India shrimp import with % share are shown in the table 5 and fig. 6.

(Mirror data, HS code: 030617+030695+030613+030616+030623+030627+030635+030636+030626+160521+160529+160520)

Table 5: Comparison of total shrimp imports by CIS and share of Indian shrimp (US$ million)

	2016	2017	2018	2019	2020
CIS's total shrimp Import	243	295	335	358	404
India's shrimp export to CIS	44	58	62	97	81
% Share	18.0	19.7	18.4	27.2	20.1

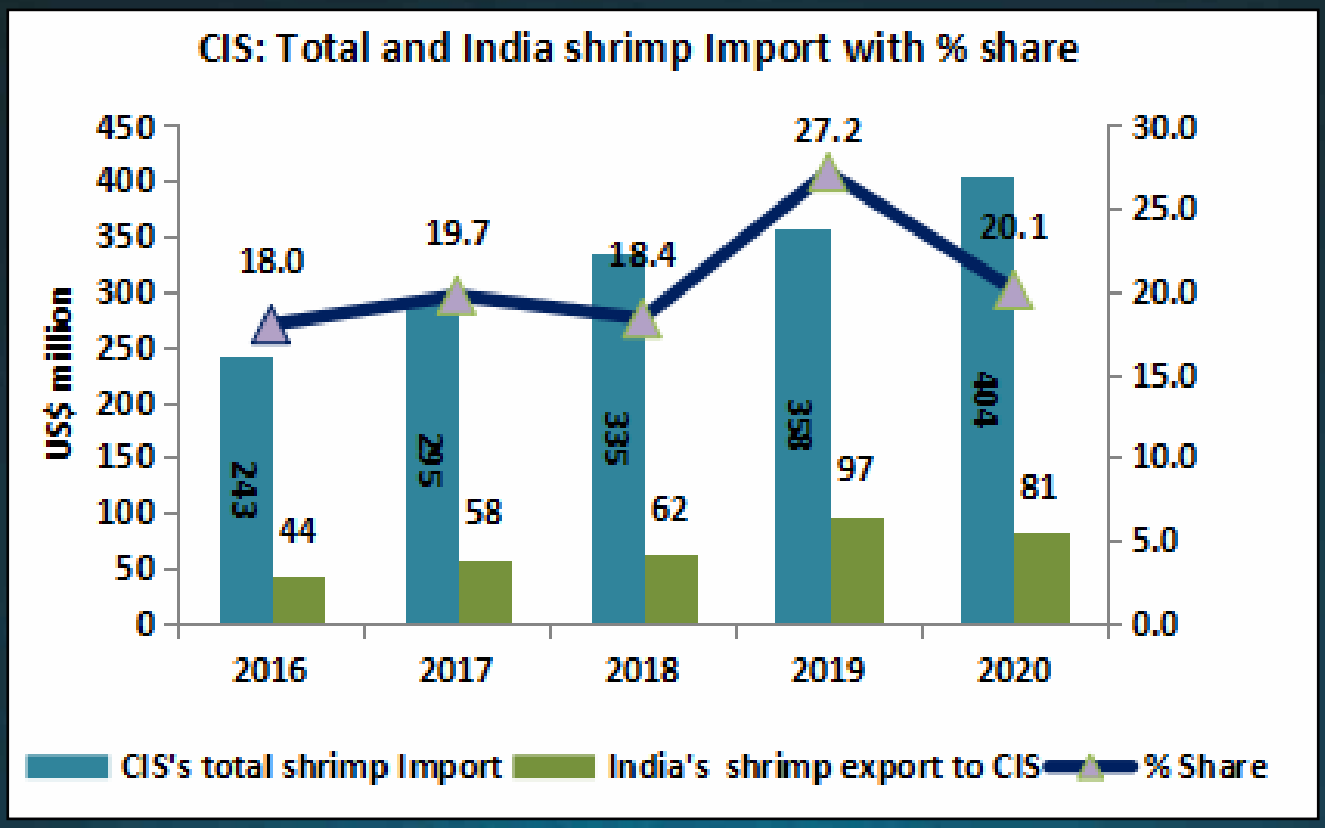

Fig. 6: Comparison of total shrimp imports by CIS and share of Indian shrimp (US$ million)

Export target for CIS market

Table 6: Target & export achievement for CIS countries

Sl. No.	Country	Target Fixed	Export Achievement (Apr-Dec 21)	% of Target achieved
1	Russia	163.8	116.4	71%
2	Other CIS Countries	21.8	22.9	105%
3	Total CIS	185.6	139.3	75%

Department of Commerce, Ministry of Commerce and Industry has set the export target of USD 7.8 billion for seafood export for 2021-22 and as on January 2022 India has achieved USD 6.7 billion, which is around 85% of the set target.

The target set for the CIS market for the year is USD 185.6 million and as on January 2022, the achievement is USD 139.3 million. The percentage achievement is around 75%, which is low compared to the required 83% in the first 10 months of 2021-22 (Table 6). Based on the current growth, the exports to CIS Region is expected to reach only USD 179 million, 4% short of target. But it will be all-time high export figure registering a growth of 75.5% compared to 2020-21.

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IUU fishing and Port State Management Measures

Dr. Ram Mohan M. K., Joint Director, MPEDA

Introduction

Illegal, Unreported and Unregulated (IUU) fishing remains one of the greatest threats to marine fisheries and surrounding ecosystem. IUU fishing has the potential to destabilize the efforts by nations and regional bodies aimed towards sustainable fishery and conservation of marine biodiversity. IUU fishing is found in all types of fisheries and sometimes gets associated with organized crime. IUU fishing removes the resources which are available to bona fide fishers, which can lead to collapse of small scale and subsistence fisheries, especially those in developing countries. Products coming out of IUU fishing find their way to various markets at the expense of local fish supply, and thereby threatens livelihood and compromises food insecurity.

Globally between 8 and 14 million metric tons of fish are caught and traded illegally every year, suggesting gross revenues of USD 9 billion to USD 17 billion associated to these catches. But the overall economic impact resulting from the trade of those illegal catches is estimated even greater: USD 26 billion to USD 50 billion globally, when the full economic effects are multiplied. Additionally, the losses in tax revenue to countries are between USD 2 billion and USD 4 billion according to a study by University of British Columbia. Though there are certain efforts in place to contain the ill effects of IUU fishing, such measures are confined to developed economies and markets, and the third world fisheries do not have the wherewithal to implement and enforce measures to prevent, deter or eliminate IUU fishing. However, certain initiatives under the aegis of FAO have been initiated to limit the harm of IUU fishing on coastal economies and global fish trade.

Measures to combat IUU fishing

a.Country regulations

Global nations are making considerable efforts to limit the ill effects of IUU fishing. The Catch Certification regulation No. 1005/2008 by the EU aims to prevent the imports of fish and fishery products sourced out of IUU fishing to the EU member states. Though UK is a non member of EU now, it also follows the same regulation to prevent entry of IUU fishing products to its market.

The US has implemented Seafood Import Monitoring Programme (SIMP) for 15 priority species from 1st January 2018. Shrimp and abalone were added to the list after 31st December 2018.

It requires the importer of record to provide and report key chain of custody data—from the point of harvest to the point of entry into U.S. commerce—for imported fish and fish products identified as particularly vulnerable to IUU fishing and/or seafood fraud.

Japan has passed a law on 4 December 2020 to ban the import of illegal, unreported, and unregulated (IUU) seafood to the country, which will enter into force from December 2022. The new law will require records on catches and transfers to be gathered and submitted to the government in order to establish traceability. For imports, a "certificate of legal catch" from a foreign government will be required.

Countries such as Thailand and Indonesia have taken a very strong stand against IUU fishing, and have upgraded their systems suitably to detect, prevent and eliminate IUU fishing activities.

b.Global Record and Unique Vessel Identifier (UVI)

The Global Record of Fishing Vessels, Refrigerated Transport Vessels and Supply Vessels (Global Record) is a global initiative that primarily involves State authorities and Regional Fisheries Management Organizations (RFMOs) in compiling an online comprehensive and updated repository of vessels involved in fishing operations.

A programme by the FAO Fisheries and Aquaculture Department, the Global Record is considered as one of the main tools to fight IUU fishing by the FAO Committee on Fisheries (COFI), which is supported within the available framework of legal instruments including the Port State Measures Agreement (PSMA), making it more difficult for vessels to operate outside the law.

A key component of the Global Record is Unique Vessel Identifier (UVI), a unique number assigned to each vessel worldwide, which remains constant throughout the vessel's lifetime regardless of change of name, ownership or flag. UVI ensures traceability through reliable, verified and permanent identification of the vessel.

A study, commissioned by FAO, concluded that the International Maritime Organization (IMO) Number was the most suitable UVI for Phase 1 which focuses on vessels of 100 gross tonnage, or of 24 metres in length, or above. In 2014, the 31st meeting of the Committee of Fisheries (COFI) agreed that the IMO Number should be used as the Global Record's UVI for Phase 1.

Additionally, in December 2017 the IMO Assembly agreed to a second amendment to the IMO Number Scheme by which "the Scheme now applies to ships of 100 gross tonnage and above, including fishing vessels of steel and non-steel hull construction and to all motorized inboard fishing vessels of less than 100 gross tonnage down to a size limit of 12 metres in length overall (LOA) authorized to operate outside waters under the national jurisdiction of the flag State".

Around 23,000 fishing vessels worldwide have IMO Numbers, and serve Global Record UVIs, which help to increase the transparency and traceability in fisheries sector activities. The programme also provides for capacity development initiatives around the world, funded by various agencies.

c.Port State Measures Agreement (PSMA)

The Agreement on Port State Measures to Prevent, Deter and Eliminate Illegal, Unreported and Unregulated Fishing was approved by the FAO Conference at its 36th Session (Rome, 18-23 November 2009) under paragraph 1 of Article XIV of the FAO Constitution, through Resolution No 12/2009 dated 22 November 2009. The Agreement entered into force on 5 June 2016.

The Agreement on Port State Measures (PSMA) is the first binding international Agreement to specifically target IUU fishing. It aims to prevent vessels engaged in IUU fishing from using ports of flag states to land their catches and sell it. In this way, PSMA reduces the incentive of such vessels to continue to operate. It also blocks fishery products derived from IUU fishing from reaching national and international markets.

Long term implementation of Port State Measures will help to combat IUU fishing and contributes to sustainable use of marine fishery resources. The provisions of PSMA apply to a fishing vessel that seeks entry into a designated port of a participatory state, which is different from the flag state of the vessel. The PSMA places a particular responsibility on RFMOs,

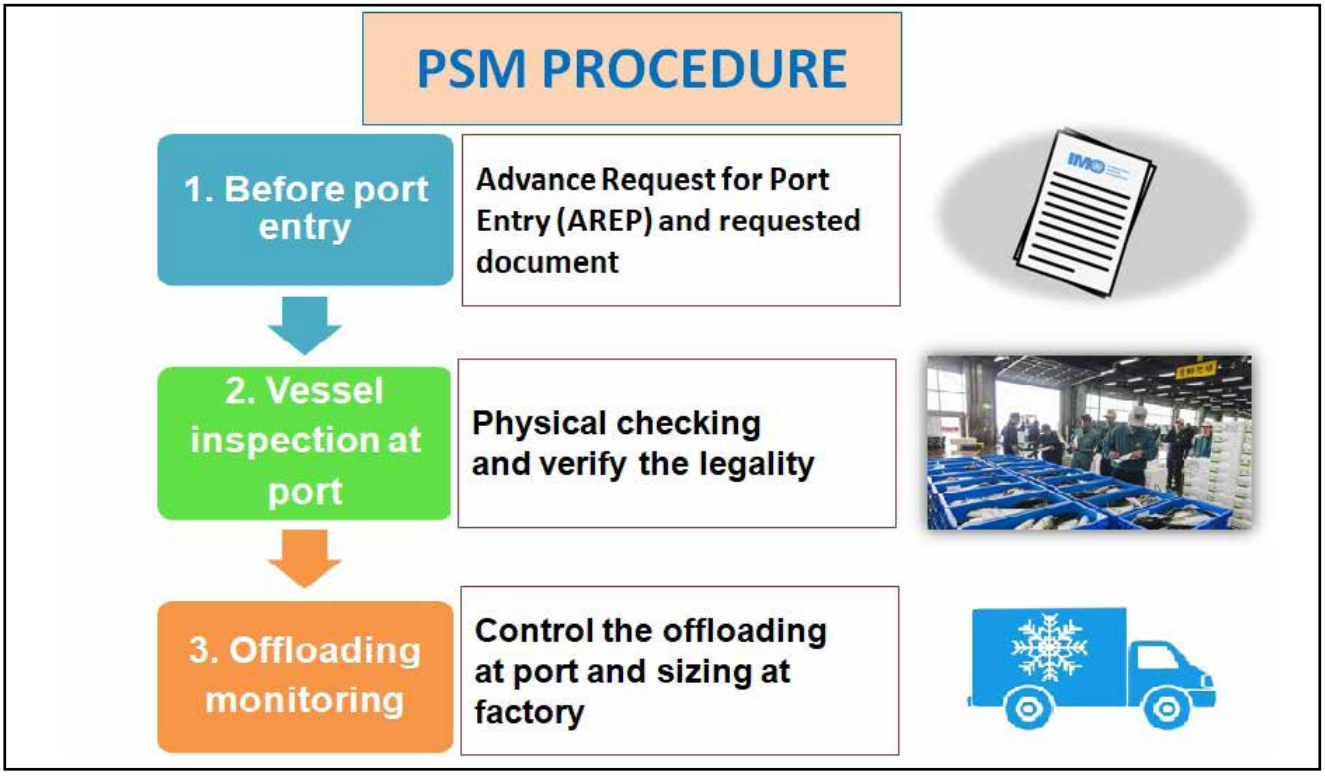

Fig. 1: Schematic diagram on PSM activity at the port of import

and several of its provisions stress the importance of regional cooperation through such bodies. The Agreement will, through the duties it places on RFMOs, facilitate and strengthen regional cooperation, including harmonization.70 countries are a part of PSMA as of December 2021, which includes USA, Japan, EU, Canada, ASEAN member states, Oman, Myanmar, Sri Lanka, Bangladesh, Maldives etc. Indian Ocean island nations such as Mauritius, Madagascar and Seychelles are also parties to PSMA. However, India and neighbouring Pakistan are yet to be signatories of PSMA.

As per the requirements of PSMA, the fishing vessel of a flag state that seeks entry to a port of another flag state requires to intimate the port of entry in advance. The port of entry verifies the records and ascertains that the vessel is authorised and not declared as engaged in IUU fishing by RFMOs or other related bodies. Once the authenticity of request is ascertained, the vessel is permitted to enter the port and berth.

Afterwards, the inspectors of the concerned department check the records available on board pertaining to the voyage, fishing activity and catch. Physical inspection of the declared catch is also done before it is permitted to unload the catch, which is considered as importation as the vessel belongs to another flag state. This activity requires cooperation of multiple departments like fisheries department, Customs, Port authority, Quarantine / Food safety department etc.

c.i. Benefits of implementing PSMA

The implementation of the PSMA should incur a number of benefits, including that it:

- Complements the efforts of flag States in fulfilling their responsibilities under international law – it provides an opportunity for port States to check and verify that vessels not flying their flags and that seek permission to enter their ports, or that are already in their ports, have not engaged in IUU fishing.

- Enhances flag States control over vessels as it requires the flag State to take certain actions, at the request of the port State, or when vessels flying their flag are determined to have been involved in IUU fishing.

- Requires better and more effective cooperation and information exchange among coastal States, flag States and Regional Fisheries Management Organization and Arrangements (RFMO / RFMA).

- Seeks to prevent the occurrence of so-called ports of non-compliance.

- Is a cost-effective tool in ensuring compliance with national law and regional conservation and management measures adopted by RFMOs.

- Contributes to strengthened fisheries management and governance at all levels.

- Has a positive influence on fisheries conservation and management by contributing to more accurate and comprehensive data collection, enhancing vessel reporting to national administrations and RFMOs, permitting assessments concerning the extent to which vessels have complied with operational authorizations and licenses to fish, promoting regional fisheries cooperation and harmonization among coastal States and RFMO Members, and facilitating the more rigorous implementation of international labour, safety and pollution standards on vessels.

- Can prevent fish caught from IUU fishing activities from reaching national and international markets. By making it more difficult to market fish through the application of port State measures, the economic incentive to engage in IUU fishing is reduced. In addition, many countries have also decided to prohibit trade with countries that do not have port state measures in place.

c.ii. Port - Lex

The Database on Port State Measures (Port-Lex) provides access to port state measures (PSM) adopted by states to prevent, deter and eliminate IUU fishing. Information can be accessed through a simple word search or advanced search using country names or measure components.

The main objective of the database is to make information available to policy-makers, national administrations, legal practitioners and civil society members worldwide, which will contribute to national capacity-building toward adoption and implementation of PSMs, and help countries and RFMOs coordinate their efforts when adopting and implementing PSM.

India and PSMA

India has effective measures in place to regulate its fishing practices by way of the Marine Fishing Regulations (MFR) Act of the coastal states. The MFR Acts provides to register the fishing vessels and license the fishing activity. It also helps to enforce the gear and legal size regulations, closed seasons and closed areas. The national registry RealCraft has the database of fishing vessels operated in the country. The catch data is collected through officials and Sagar Mitras under state fisheries departments, and Harbour Data Collectors under MPEDA – NETFISH.

Increasingly, the fishing vessels are fitted with satellite based monitoring systems in addition to devices such as RFT / VHF transmitters, which aids to track and locate the vessels while at sea. The country is also a member of Indian Ocean Tuna Commission (IOTC), the RFMO.

Since India has various measures in place that are aimed to prevent deter and eliminate IUU fishing, and as it complies with the trade requirements as per the regulations by EU and US that aims to prevent trade of products from IUU fishing, it will be appropriate for India to join PSMA at the earliest. The regional cooperation envisaged under the PSMA will help the country to harness distant water resources.

As the coastal waters face tremendous fishing pressure, such measures are imperative to sustain the coastal economy and to satiate the increasing domestic and export demand for food fish. It will also help to set up a trade channel for fish and fishery products between the country's island territories such as Lakshadweep islands and Andaman & Nicobar Islands with neighbouring country markets through carrier vessels, benefitting the fishermen of island territories.

References

1.Council Regulation No. EC/1005/2008

2.https://www.fisheries.noaa.gov/international/seafood-import-monitoring-program

3.https://www.iotc.org/vessels/current

4.Report on the third meeting of the parties to the agreement on Port State Measures to prevent, deter and eliminate IUU fishing (https://www.fao.org/port-state-measures/resources/detail/en/c/1447756/)

5.Sumaila , Zeller D., Hood L., Palomares M. L. D., Li Y. and D. Pauly. 2020. Illicit trade in marine fish catch and its effects on ecosystems and people worldwide. Science Advances, Vol 6(9). Internet edition.

6.www.seafoodsource.com

RGCA adopts new logo

The Rajiv Gandhi Centre for Aquaculture (RGCA) was established as a research & development arm of MPEDA on 5th January 1996. Soon after, first Executive Committee Meeting of RGCA held on 17th January 1996 has decided to have an emblem for the new society. The initial logo of RGCA, which was approved on 9th August 1996 is placed as Fig. 1.

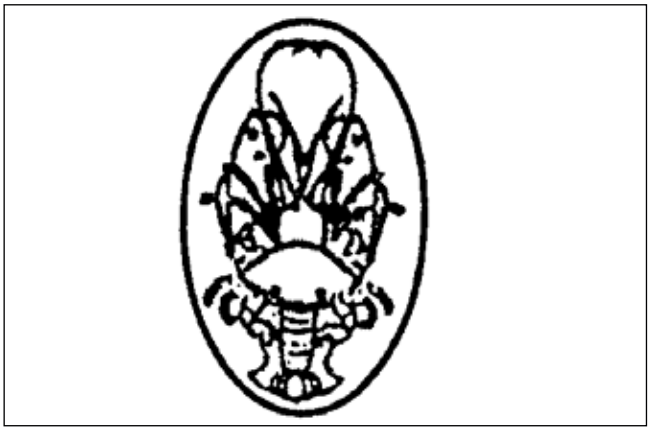

Fig.1: First logo of RGCA

Since the first logo of RGCA did not carry the inscription of the name of the organization and depicts only outline figures of some aquatic animals, it was proposed in 23rd Executive Committee Meeting of RGCA held on 22nd September 2003 to redesign the emblem in a much more impressive and communicative manner with inscription of the name of organization. Accordingly, a new logo was introduced on 26th September 2007 which was an impressive one inscribing the name of the organization in bilingual format (Fig.2).

Fig . 2: Second logo of RGCA

During last 15 years, RGCA has achieved several milestones in diversified aquaculture and in establishing and operating the first state-of-the-art facility of Aquatic Quarantine Facility (AQF) to quarantine shrimp broodstock, NBC for Black Tiger shrimp and BMC for vannamei shrimp. The Nucleus Breeding Centre of GIFT is another hallmark of MPEDA-RGCA which is supporting inland aqua farming community. It also has first NABL accredited laboratory of Aquaculture Pathology and Aquaculture Genetics, besides first Artemia project on commercial scale and Multi-species Aquaculture Complex at Kochi for technology transfer. In view of the expansion of the activities Chairman, MPEDA/ President, RGCA suggested to have relook on the logo and to release the new logo during the Silver Jubilee celebration of RGCA.

Accordingly, a new logo (Fig.3) has been designed and launched on 3rd February 2022, which represents the main objective of RGCA i.e., sustainability through diversified aquaculture. The fish and waves represent- finfish and its sustainability through R & D. Further, four small circles signify the seed production of various aquaculture species through selective breeding programmes; importance of genetic and pathology research for the aquatic animals and training programmes.

Fig.3: The new logo of RGCA

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Integrated Aqua Labs - Stakeholders' expectations in Andhra Pradesh

Dr. P. Ram Mohan Rao, Dy. Director of Fisheries (Rtd), Kakinada - 533 001
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Andhra Pradesh produces more than half of the country's farmed shrimp and fish. There is still a lot of potential to exploit the resources by expanding aquaculture. As the aqua farming has gained momentum, there seems to be a lot of bewilderment and confusion in the minds of aqua farmers on the efficacy of the inputs viz., seed, feed, chemicals, feed additives, soil conditioners and fertilizers etc. Moreover, the success in limiting disease threat depends on specific/accurate disease diagnosis and redressal measures by laboratory methods. These methods help in the detection of cases of disease as part of national aquatic animal health surveillance and control programmes. The smooth implementation of such aquatic animal health surveillance programmes requires focused attention and dedicated approach which will be contributing to sustainable aquaculture in the state of Andhra Pradesh.

Andhra Pradesh is having an approximate aquaculture area of 1.50 lakh ha. The state is in the forefront of aquaculture and often referred to as 'Aqua Hub of India'. Diseases are the major limiting factor in production of quality seed from the hatcheries of the state. Diseases are also part and parcel of aqua farming pockets. Establishing a network of laboratories and harmonizing their operations will go a long way in controlling the disease menace in aquaculture which is causing loss to a tune of about Rs.1000 crores per annum.To set right the situation and to help aqua farmers to reap good harvest in spite of disease problems, it is necessary to provide Aqua lab services and awareness on Good Management Practices in Aquaculture. At present, there are more than 300 aqua laboratories in both public and private sector in the state of Andhra Pradesh offering services to aqua farmers. Keeping in view of the vast area of aquaculture in the state, Government of Andhra Pradesh is now establishing about 35 Integrated aqua labs which will have facilities for soil testing, water analysis, feed analysis, bacteriological and viral testing as well as quality testing to cater to the needs of the aqua farmers to mitigate problems during culture and disease menace. Majority of the aqualabs functioning in the state are focusing on testing water quality as well as microbiology of water and animals. There are no genuine labs analysing the quality of the inputs. So time is ripe for establishing laboratories for testing quality of inputs as there are several products in the market whose quality is to be assessed thoroughly and guide the farmers accordingly.

Against this backdrop, it is pertinent to mention that these integrated labs should reach the expectations

of all stakeholders in general and aqua farmers in particular. So the proposed integrated labs in public sector should help the needy people and ensure the quality of inputs like Seed, Fertilizer and Chemicals to the Farmers. The major aim in establishing these integrated labs at constituency level and at district level is to help in enhancing the productivity and attaining sustainable income to aquafarmers.

The proposed integrated aqualabs should focus their attention :

- To manage the fish/shrimp culture operations by proper disease management.
- To address the challenges with respect to inputs and other disease diagnostic aspects.
- To offer an array of tests and to provide accurate and precise disease diagnosis.
- To address and redress the issues of aqua farmers by making testing simpler, accurate and cost-efficient

Perhaps all the stakeholders are foreseeing the proper functioning of these labs and expecting that these labs will provide better services for:-

- Top-class quality diagnostic services.
- Gaining the confidence of the farming community.
- Increasing access of aqua farmers to utilize the labs at affordable costs.
- Aquatic animal health surveillance programmes.
- Inculcating Good Management Practices(GMPs) among farmers
- Increasing yield and profits of aquafarmers.
- Taking up need based research to tackle critical issues in farming.
- Boosting up the exports and to generate more foreign exchange to the state

The proposed labs should test the quality of inputs such as:

- Water
- Soil
- Feed
- Antibiotics
- Pesticides
- Chemicals etc.

Integrated laboratories should help the aqua farmers in the following ways:

1.**Cost effectiveness:** For sustainable partnership, the integrated labs must be viable and at the same time affordable to all farmers.

2.**Wide coverage:** Services must cover all the basic categories of standard diagnostic tests like seed quality, pathology, water analysis, microbiological tests, PCR tests, Feed analysis, Antibiotic residue testing, Pollution studies etc.

3.**Referral Lab:** All integrated labs will be linked with designated referral laboratory. Samples for testing would also be cross checked periodically by the referral labs and monitor all integrated labs.

Way Forward

The integrated labs are to be designed for present and future needs of all stakeholders. Getting the right diagnosis is the key for the survival and growth of cultivable species. Reliable and timely laboratory-investigation results are vital in decision making and paving way for sustainable aqua sector.

Establishment of the integrated labs is one aspect and gaining the trustworthiness or credibility of aqua farmers is another important aspect.

The analysis of the lab tests and the interpretation of their findings will go a long way in achieving good yield and attain decent economic returns. At the same time,

meticulous planning is required from Government for proper monitoring, streamlining and sustaining these integrated labs.

The proficiency of lab testing and constant guidance to aqua farmers will help in disease mitigation and for harvesting a good crop. Any lapse in coordination and follow-up system will adversely affect the performance as well as reputation of these labs.

So Government should take adequate measures to see these integrated labs should go a long way in fulfilling the needs of stakeholders and all input qualities be verified and informed to the farming community time to time. In this regard, all Rythu Bharosa Kendras (RBKs) should display the results of the input quality tests analyzed so that farmers will make use of the good quality inputs during the culture operations. This will enhance the morale of the Department for the efforts they put in.

Some Considerations:

- Good Laboratory Practices are to be followed scrupulously for sustainable lab operations
- Standard Operating Procedures (SOPs) have to be developed and followed for uniformity and consistency.
- All lab technicians should be properly trained periodically to update their knowledge and skills
- Government should ensure proper infrastructure facilities at the integrated labs so as to boost the confidence of aqua farmers
- Price should be affordable by all stakeholders based on the type of testing
- The government has to properly chalk out plans for keeping a revolving fund to meet the regular salary components of staff, maintenance costs of the lab so as to make the integrated labs sustainable and to cater to the needs of the farmers/other stakeholders
- Proper mechanism to plug the bottlenecks that may arise during lab operation
- Periodical monitoring of all labs should be done and different health care services available to all farmers to fill gaps immediately.
- Government should also plan to rope in private labs with all facilities for providing Lab diagnostic services and disease surveillance aspects.
- Awareness need to be created to small and marginal farmers to utilise the lab services for better quality produce which will enhance the farmer's income.

Note: Operation of all integrated labs should scrupulously follow the rules and regulations of AP state Feed (Quality Control) Act and Seed (Quality Control) Act. Referral lab(s) should regularly monitor integrated labs.

Expected outcome

- Thorough analysis of all inputs
- Reduced crop risks due to diseases
- Reduced cost of production
- Boosting up the confidence of Stakeholders
- Increased productivity to aqua farmers
- Improved and enhanced lab services
- Disease Surveillance
- Networking of all labs
- Sustainability

Conclusion

The idea of establishing integrated labs by the Government of Andhra Pradesh is a welcome step. The coordination, follow-up, monitoring and assessment of these labs are to be done regularly to address the issues of concern so that the performance of these integrated labs will be in a sustainable way. All stakeholders should support the initiative of Government and make full use of the lab services. At the same time, Government should uphold the expectations of the stakeholders in providing effective testing of inputs and suggest the farmers regarding usage of quality of these inputs.

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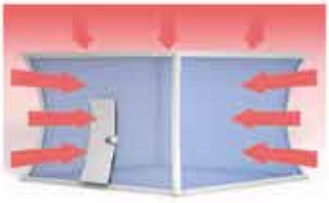

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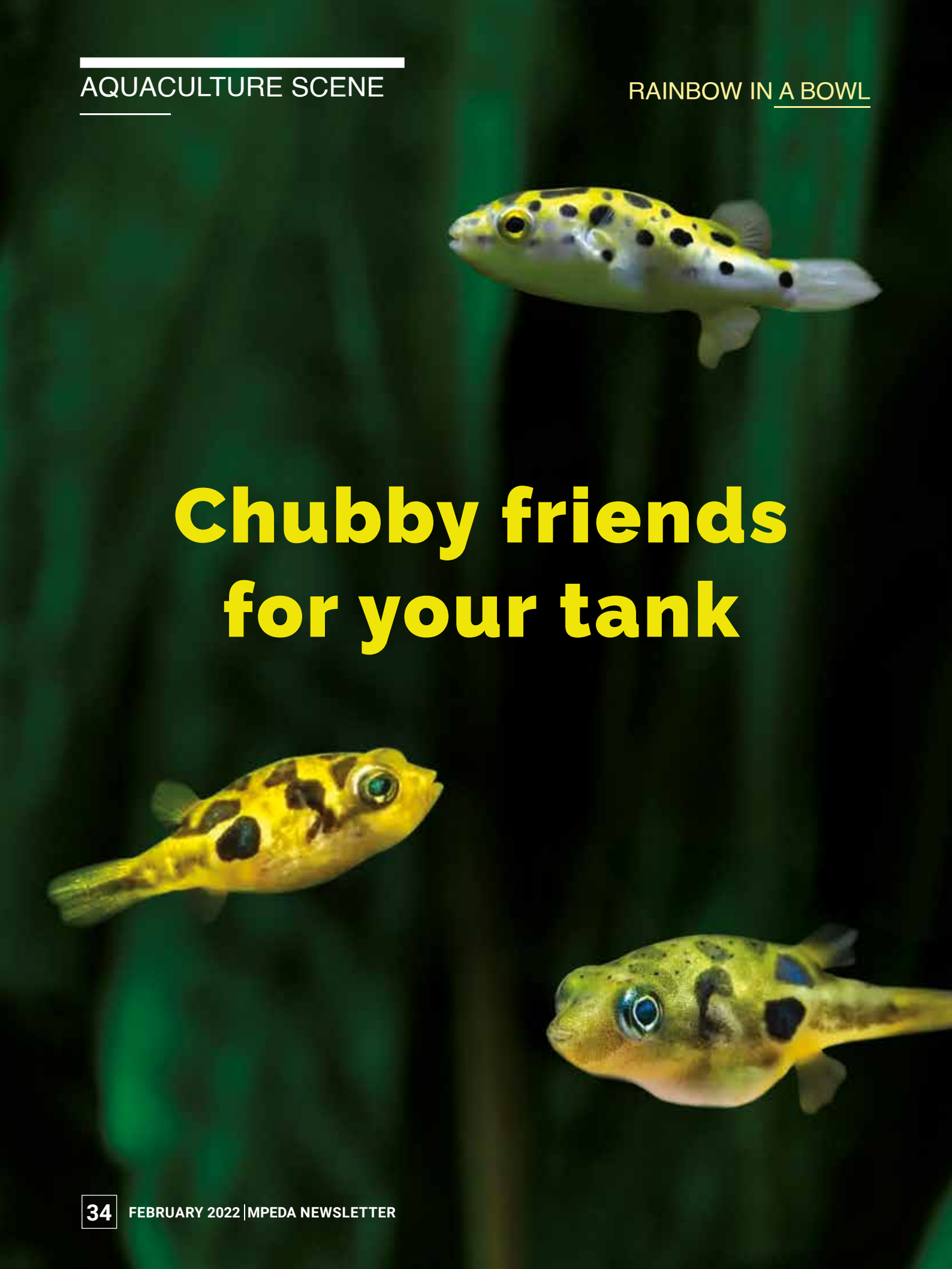

Chubby friends for your tank

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.

Puffer fish are members of the family, *Tetraodontidae*, having a worldwide distribution and found in almost every water condition. They are quite different from other ornamental fishes in appearance. Puffers get their common name from their unique defensive ability to inflate their bodies when threatened by the predator. They are also known as blow fish or balloon fish due to their ability to puff up. They seem to hover about their tank, looking distinctly like a golf ball, with bulky body contour. They are scale-less and most of them have spines on their bodies, which though are not always obvious when the fish is not inflated. Unlike other fishes, they do not have pelvic fins. Instead of using the caudal fin as the main organ to swim, puffers do so with their transparent pectoral fin, gaining guidance from dorsal and anal fins. The eyes of puffers are able to move independently of each other, giving binocular vision.

They are considered to be a long-living fish even in captivity and relatively simple to care for. They can easily acclimatize themselves to fluctuations in water conditions as long it is a gradual transition. A small variety of puffers travels into fresh water to breed although they are actually of marine origin. Though carnivorous, they will quickly adapt to prepared food. However, they prefer small molluscs, shrimp and krill with their shell on to wear down their ever-growing teeth. Puffers are quite susceptible to infectious and parasitic disease. They are known for nipping at the fins of other puffers and species of fish, which can be minimised by keeping them well fed. However, freshwater dwarf puffers do less nipping compared to other types of puffers.

Only a small number of species are of interest to the aquarium trade, although there are over 150 species known, most of which are of the fresh and brackish water environment. The fresh water puffers include *Carinotetraodon lorteti, C. salivator, Monotetrus travancoricus, Chonerhinos amabilis, C. nefastus, C. modestus, C. remotus, C. asellus, Colomesus asellus,* and *C. psittacus.* Some of the puffers belonging to the species *Tetraodon* are brackish while others are totally freshwater and a few travel between both.

M. travancoricus, popularly known as Malabar or dwarf pufferfish, is a native of India and is considered as the smallest puffer in the trade. With a maximum size of 2.5 cm, this fish is the current darling of the freshwater puffer hobbyists. They feed on small meaty foods and leave plants alone. *T. fluviatilus*, known as the Ceylon puffer, is a native of Sri Lanka, India, Bangladesh, Myanmar and Borneo. They are common puffers in the aquarium fish trade and are aggressive fin and scale nippers as they become adults. They feed on small crustaceans, worms, molluscs, algae and detritus in the wild. *T. biocellatus*, commonly known as the "figure 8" puffer or eye spot puffer, is a native of Indochina, Malaysia and Indonesia. They are of brackish water origin and are aggressive. The best water parameters are pH 6.5 - 7.5 and dH 5.0 - 12.0. The common size is a little over 5 cm.

T. leiurus, commonly known as the target puffer or twin spot puffer, is an Asian puffer. It can withstand water conditions such as fresh water to brackish with pH 7.0, dH 12.0. It is very aggressive, being a fin nipper. *T. lineatus*, better known as fahaka puffer or Nile puffer is a native of the Nile, Chad basin, Niger, Volta, Gambia, Geba, and Senegal rivers in Southern Africa. They are also known as the lined puffer. They can be acclimatised from fresh to brackish water conditions with a pH of 7.0 and dH 10.0. Maximum size is 35 cm. *T. mbu*, commonly known as the giant fresh water puffer or mbu puffer, is a native of Africa, widely distributed in Lake Tanganyika and the river Congo basin. This is one of the largest freshwater puffers and is considered a true fresh water puffer. Water conditions are pH medium with temperature of 24 - 26°C. Their maximum attainable size is more than 75 cm. *T. nigroviridis*, known as the green spotted puffer due to its characteristic emerald green colour which makes a nice contrast to the dark spots, is a native of tropical eastern Asia, from the coastal regions of Indochina and the Philippines to India. It is found in fresh and brackish water and is a common puffer in the aquarium trade. Their maximum size is about 15 cm. They are very aggressive and often kept alone. The water condition is medium to medium hard with pH 8 - 8.5, dH 9.0 and temperature 24° - 28°C.

Inauguration of 4th phase of Aquaculture Quarantine Facility and PCR lab at Chennai

Mr. Jatindra Nath Swain IAS, Secretary, Department of Fisheries, Government of India commissioned the 4th phase of Aquatic Quarantine Facility (AQF) and inaugurated PCR lab (AQF) at TNFDC complex, Neelankarai, Chennai on 10th January 2022 in presence of Mr. K. S. Srinivas IAS , Chairman, MPEDA & President, RGCA. The newly commissioned 4th phase has 6 more cubicles with modernised system that can quarantine 1.3 lakh shrimp broodstock per annum. With the additional facilities, the capacity of AQF rose to 5.30 lakh broodstock per annum. The total project was funded by National Fisheries Development Board (NFDB) under Department of Fisheries, Government of India.

Secretary (Fisheries) appreciated the efforts taken by MPEDA to support the shrimp aquaculture, which is intended to boost the foreign exchange earnings through export and support the domestic market. During the event, Secretary (Fisheries) along with Chairman, MPEDA had a brief interaction with the representatives of All India Shrimp Hatcheries Association and Seafood Exporters Association of India about the current scenario of aquaculture development and sea food exports. Dr. V. Kripa, Member Secretary and Mr. Antony Xavier, Director, Coastal Aquaculture Authority, Mr. Arul Bosco Prakash, Executive Director, NFDB, Dr. P. Krishnan, Director, Bay Of Bengal Programme and officials from Central Institute of Brackish water Aquaculture, CAA, MPEDA and RGCA were present at the event.

Aquaculture training programmes conducted by MPEDA offices

REGIONAL DIVISION MANGALORE

View of the inaugural session of the training programme on 'BMPs for sustainable aquaculture' conducted at Yadgiri district, Karnataka

Mr. Srinivas Kulkarni, Deputy Director, Dept. of Fisheries, Yadgiri district during the technical session

Mr. K. V. Premdev, Deputy Director, MPEDA RD, Mangalore interacts with the trainees from Yadgiri district

Mr. Badri Gowda, lead farmer inaugurating the training programme at Ramtnal village in Raichur

Interactive session with trainees from Ramtnal village during valedictory function

Officials of MPEDA RD, Mangalore with the trainees from Ramtal village

Field trip of the trainess from Ramtnal village to fish and scampi farms

REGIONAL DIVISION KOCHI

Mr. Job J. Neriamparambil, Assistant Wildlife Warden, Eravikulam National Park, inaugurating the training on 'Eco-friendly and sustainable aquaculture through species diversification' at Lakkamkudy, Idukki

Adv. A. Raja, Hon. MLA, Devikulam Constituency along with the participants of the training programme at Lakkamkudy, Idukki and MPEDA officials

Mr. M. Viswakumar, AD (Retired) MPEDA handling technical session on 'Eco-friendly and sustainable aquaculture through species diversification' at Ambalappuzha South, Alappuzha

Mr. Johnson D' Cruz, DD, MPEDA RD, Kochi distributes certificate to the trainees at Ambalappuzha South, Alappuzha

SUB REGIONAL DIVISION HYDERABAD

Mr. Ram Adhar Gupta, DD, MPEDA, addressing the participants of the training programme on 'Sustainable aquaculture through species diversification and BMPs in aquaculture' at Mujahidpur village, Telengana

Trainees during field visit to RAS unit at Mujahidpur village, Telegana

SUB REGIONAL DIVISION VISAKHAPATNAM

Inauguration of the training on 'Sustainable aquaculture through species diversification & BMPs in aquaculture' conducted at Budagatlapalem village

Mr. R. Prasad Naik, AD, MPEDA, Vizag takes a class to the trainees at Chintuvalasa village

Distribution of certificates & stipend to the participants of the training programme conducted at Budagatlapalem village

MPEDA officials with the trainees from Chintuvalasa village

Mr. P.V. Srinivasa Rao, JD, Dept. of Fisheries, Vizag addresses the trainees at Chintuvalasa village

Mr. K. Sivarajan, DD, MPEDA Vijayawada delivers lecture at Chintuvalasa village

Field visit of trainees to SC/ST Farm Vatsavalsa village

SUB REGIONAL DIVISION BHIMAVARAM

Dr. K. Gopal Anand, AD, MPEDA Bhimavaram delivers a lecture on BMPs & MPEDA schemes to the participants at Kalipatnam village of Mogalthuru mandal, West Godavari district

Mrs. K. Indira, Village Fisheries Assistant, Amalapuram delivering a lecture on activities and fisheries schemes of Govt. of AP at Kalipatnam village

Officials and participants of the training programme at Kalipatnam village

Farmer trainees at Adurru village of East Godavari district

Dr. K.Gopal Anand, Assistant Director, MPEDA SRD, Bhimavaram delivering lecture at Adurru village

Shri Krishna Rao, AD, Dept. of Fisheries, Razole, delivering a lecture on Penaeus vannamei farming techniques at Adurru village

MPEDA officials with trainess from Adurru village

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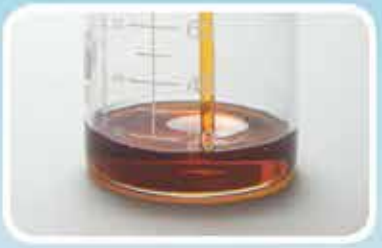
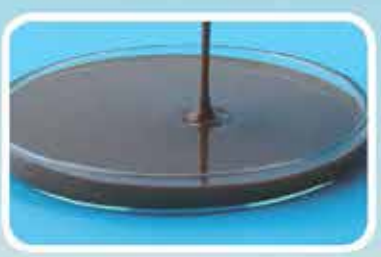

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Small- scale Aquaponics

*A. Kamalii[1], C. Aswinraj[1], Phibi Philip Naduvathu[2], Cheryl Antony[1], B. Ahilan[1]

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[2]Institute of Fisheries Post Graduate Studies [IFPGS], OMR Chennai, Tamil Nadu
*Corresponding author

Introduction

The United Nations predicts that world population will increase by more than 1 billion people within the next 15 years, reaching 8.5 billion in 2030 (UN 2015a). This increase in population is also linked with a high demand for energy, food and water. These circumstances lead to climate change, soil degradation, water scarcity, and food shortage. To face these issues, sustainable food production with less water and energy consumption is the need of hour. Aquaponics plays a pivotal role in reducing water consumption, energy consumption, and land acquisition costs. It helps in addressing water-food-energy crisis in relation to the UN's goal for sustainable development. Aquaponics is a technology that fits into the broader definition of Integrated Agri-Aquaculture Systems (IAAS) (Gooley & Gavine, 2003). It is an integrated system that links recirculatory aquaculture with hydroponic production, and is considered to be an innovative and sustainable solution (Tyson *et. al.*,2011). A well-managed aquaponics could improve profitability by simultaneously producing two cash crops (Tyson *et. al.*, 2011).

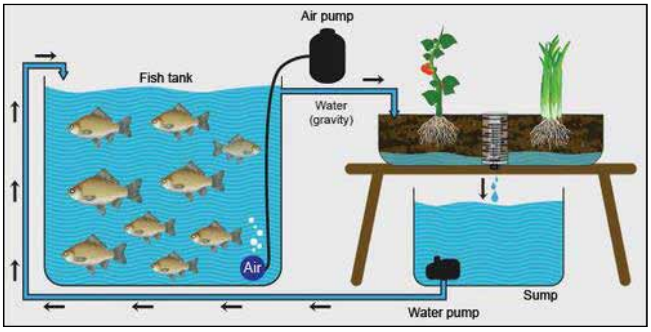

Fig. 1: Aquaponics system (Source: FAO,2014)

Small-scale aquaponics

The small-scale aquaponic unit consists of a fish tank having a capacity of 1000 litres and the growing space for the plants would be about 3 m^2 which would perfectly suit for the production of fish and vegetables to serve a family household. The small-scale aquaponics stays to be a beneficial one compared to semi-commercial and commercial one as they require only low investment with good returns.

Moreover, the system provides organic vegetables free from pesticides usage. Thus, it dually contributes financial wealth and health to the household. The major components of the aquaponic system are the fish, bacteria and the plants.

Fig. 2: Small scale aquaponics unit

Bacteria in aquaponics

The nitrifying bacteria [Nitrosomonas, Nitrobacter] convert toxic ammonia to nitrate and nitrite. The bacteria act as a bio-filter in aquaponics. The bacterial growth is influenced by several factors such as high surface area, pH [6.5-8.5], water temperature [17-34°C], dissolved oxygen [4-8mg/l], and UV light. The heterotrophic bacteria are involved in decomposing fish excretes other than NH^3 by the process called mineralization.

Along with heterotrophic bacteria, earthworm, isopods, tetrapods are also involved in mineralization process. In a new RAS set up, it takes about 3-5 weeks for occurrence of the nitrifying bacterial colony which is known as system cycling. This process is initiated by the addition of ammonia source (fish feed, ammonia-based fertilizer, up to a concentration in water of 1-2 mg/litre) into the system. Regular monitoring of all the three types of nitrogen is important and once the ammonia and nitrate level reaches below 1mg/l the tank is ready for stocking.

Plants in aquaponics

The optimum water quality parameters for plants are: The aquaponics seems to be advantageous over soil agriculture as they require low water usage; no tillage is required and has high productivity. At first, only low nutrient demand plants are cultivated. Later, after 3 months high nutrient demand can be grown in the system.

The suitable plants for the aquaponic system are lettuce, cabbage, basil, spinach, parsley, mint, arugula, beans, cucumbers, tomato, onion and radish. Staggered harvesting system is suitable for the aquaponics.Prevention is better than cure'. As said, mostly prevention of the pest formation in the early stage by netting, ventilation, hand removal, trapping etc should be followed in the system. Integrated production and pest management should be practiced. Planting using proper spacing can lead to better growth of plants as they receive equal amount of nutrients and water. Any disease spotted should be taken care of, to avoid spreading of the diseases.

pH	6-8
DO	*>3mg/l*
Temperature	*18-30°C*
Ammonia and Nitrite	*0-1mg/l*

Fish in aquaponics

Fish feeds must be in desirable size ranging from 2-10 mm which is dependent on the size of fishes. Pellets can be either sinkers or floating feeds. The check for feed conversion ratio is pivotal for analyzing the growth rate of fishes.

Optimum water quality for fishes in tropical condition:

pH	6.5-8.5
Temperature	*18-30°C*
Ammonia and Nitrate	*>400mg/l*
DO	*4-5 mg/l*
Light and Darkness	*Optimum level*

Tilapia, carps and catfishes are highly suitable for aquaponics in tropical conditions as they grow quickly and survive at low DO and poor water quality. Trout grow well in cold water but better water quality is required. Acclimatization of fishes during stocking in new tanks is a pivotal step to be carried out.

This is done by floating the sealed transportation bags containing the fish in the culture water. This should be carried out for at least 15 minutes so as to slowly acclimatize the fish, after which the fishes can be added to the new tank. Fish diseases may be biotic or abiotic. Abiotic is mainly related to water quality or toxicity and Biotic related to pathogens, pests etc. In the case of diseases, the infected fish can be isolated and separated from the pond or culture system.

Fishes affected with ectoparasites and bacterial gill contamination requires salt water bath treatment. Affected fishes are placed in salt water containing 1kg salt per 100L of water for 20-30 minutes and then moved to second tank containing 1-2g salt/l for 5-7 days.We must take adequate time to observe and regularly monitor the fishes to avoid the spreading of diseases and provide prophylactic treatment.

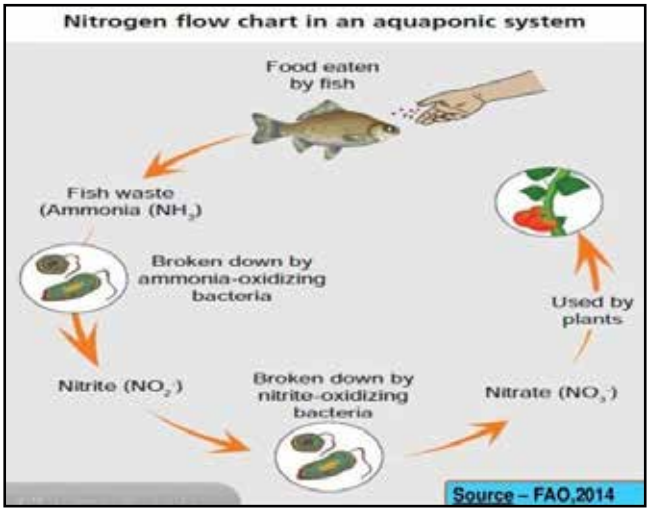

Fig. 3: Nitrogen flow chart in aquaponics system

Setting of aquaponics tank

Before setting up of aquaponics tank, we must check the stability, wind exposure, sunlight availability, fences and need for roof top.

- For setting of tanks, we must check the material [either plastic or fibre], colour, cover and shade for the tanks. Regular checking of tanks is advisable to avoid leakage and further loss.

- The plants can be grown by following any of the

following hydroponics method:

- Media bed method (particulate method)
- Nutrient film technique (NFT) method
- Deep water culture (DWC) Method

- For filtration units in tanks, biological or mechanical filters can be used. Strictly avoid chemical filtration as they kill the fish.

- For NFT and DWC units, mechanical and biofiltration components are necessary in order to respectively remove the suspended solids and oxidize the dissolved wastes (ammonia to nitrate).

- For NFT units, the flow rate for each grow pipe should be 1–2 litres/minute to ensure good plant growth.

- For DWC units each canal should have a retention time of 2–4 hours.

- High DO concentration is essential to secure good fish, plant and bacteria growth. In the fish tank DO is supplied by means of air stones. Media bed units have an interface between the wet zone and dry zone that provides a high availability of atmospheric oxygen. In NFT units, additional aeration is provided into the biofilter, while in DWC air stones are positioned in both biofilter and plant canals.

Conclusion

The global population being estimated to reach 8.3-10.9 billion people by 2050 (Bringezu *et. al.*, 2014), sustainable development of the aquaculture and agricultural sectors requires optimization in forms of production efficiency, and reduction in utilization of limited resources, in particular, land, water, and fertilizers.

The advantages of aquaponics is not just limited to the efficient use of land, water, and nutrient resources but also it allows for increased integration of smart energy opportunities such as biogas and solar power. Thus aquaponics is a promising technology for producing both high-quality fish protein and vegetables in a sustainable way.

References

1) United Nations (2015a) World population prospects, the 2015 revision vol. 2: Demographic Profiles. Available at http://esa.un.org/unpd/wpp/Publications/Files/WPP2015_Volume-II-Demographic-Profiles.pdf.

2) Gooley, G. J, and F. M Gavine. Integrated Agri-Aquaculture Systems: A Resource Book for Australian Industry Development. Barton, A.C.T.: RIRDC, 2003.

3) Tyson, Richard V., Danielle D. Treadwell, and Eric H. Simonne. "Opportunities and Challenges to Sustainability in Aquaponic Systems." HortTechnology 21, no. 1 (February 1, 2011): 6–13 pp. https://doi.org/10.21273/HORTTECH.21.1.6

4) Engle, C. R. (2016). Economics of aquaponics. Google scholar

5) König B., Junge R., Bittsanszky A., Villarroel M., &Kőmíves T. (2016). On the sustainability of aquaponics. Ecocycles, 2(1): 26-32 pp.

6) Love D. C., Uhl M. S.&Genello L. (2015). Energy and water use of a small-scale raft aquaponics system in Baltimore, Maryland, United States. Aquacultural Engineering, 68: 19-27 pp.

7) Mullins C., Nerrie B. L., & Sink T. D. (2016). Principles of small-scale aquaponics. Google scholar

8) Pérez-Urrestarazu L., Lobillo-Eguíbar J., Fernández-Cañero R. & Fernández-Cabanás V. M. (2019). Suitability and optimization of FAO's small-scale aquaponics systems for joint production of lettuce (Lactuca sativa) and fish (Carassius auratus). Aquacultural Engineering, 85: 129-137 pp.

9) Somerville C., Cohen M., Pantanella E., Stankus A., & Lovatelli A. (2014). Small-scale aquaponic food production: integrated fish and plant farming. FAO Fisheries and Aquaculture Technical Paper, (589), 11-155 pp.

10) Tokunaga K., Tamaru C., Ako H. & Leung P. (2015). Economics of small-scale commercial aquaponics in Hawai 'i. Journal of the world aquaculture society, 46(1): 20-32 pp.

11) Bringezu, S., H. Schütz, W. Pengue, M. O'Brien, F. Garcia, R. Sims, R. W. Howarth, L. Kauppi, M. Swilling, and J. Herrick. "Assessing Global Land Use: Balancing Consumption with Sustainable Supply." Assessing Global Land Use: Balancing Consumption with Sustainable Supply., 2014, 48 pp. https://www.cabdirect.org/cabdirect/abstract/20163108272

Fishing Vessel Based training programme conducted by MPEDA-NETFISH

Fishing Vessel Based Trainings were conducted by NETFISH-MPEDA at two deep sea fishing vessels IND TN 15 MM 5145 and IND TN 15 MM 4677 in Thengapattinam FH on 22nd and 23rd December.

Dr. Vinoth S Ravindran, State Coordinator, NETFISH, Tuticorin demonstrated the hygienic handling practices to be followed on board and chill processing of the catch to the fishers.

Distribution of aid materials

Demonstration of chill killing practice and hygienic handling

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Indian fisheries sectors should deploy more scientific methods of production: Parshottam Rupala

There is a need to for the fisheries sector to focus on domestic market consumption along with exports, deploying more scientific methods of production, said Parshottam Rupala, Minister of Fisheries, Animal Husbandry and Dairying.

Realising the sector's potential, the Government has committed to a national target to increase fish production to 22 million metric tons by 2024-2025, which will have a positive impact on 28 million fishers and fish farmers and almost twice that number along fish-related value chains, the minister said at an event organised by Confederation of Indian Industry in collaboration with the Ministry of Fisheries, Animal Husbandry and Dairying, National Fisheries Development Board and the Marine Products Export Development Authority on "Showcasing India as a hub for Aquaculture and fisheries Investment" on January 21, 2022.

"(At present) 74% of India's export is shrimp; however the share of value added products is low at 7%. Thus, there is a huge scope to increase value added exports and in tandem increase price points for fishermen.

Towards this, India must focus on strengthening seed quality and availability, smart farming and food safety standards," Rajnikant Rai, Chief Executive, Agri Businesses Division, ITC said.

Indian Fisheries and Aquaculture sector registering an average annual growth of 7.53% during last 5 years. The country exported 12.89 lakh metric tons of fisheries products valued at Rs 46,662 crore (USD 6.68 billion) during 2019-20.

www.economictimes.indiatimes.com

Kings Infra claims world record with 80g whiteleg shrimp weights

Indian aquaculture company Kings Infra Venture Ltd has harvested *L. vannamei* shrimps weighing 80 grams and measuring 210 mm, setting a new pond-production growth record for the species. Typically, whiteleg shrimp reach their maximum size (230 mm) in marine environments after 12 to 14 months of growth.

This growth rate is very difficult to achieve in pond-based aquaculture systems. Most shrimp farms operate 100 to 130-day production cycles and harvest shrimp weighing between 18 to 20 g. However, Kings Infra claims that recent harvest weights posted record-breaking growth during production cycle. According to a news release, Kings Infra achieved the growth by applying the SISTA360 protocols developed by its R&D wing.

"The information available with us shows that there is no record of *L. Vannamei* shrimps weighing 80 gm per piece have been grown in an aquafarm anywhere in the world. The SISTA360 protocol farming practice, a proprietary system developed by our R&D team, has enabled us to achieve such a record," said Shaji Baby John Chairman and Managing Director Kings Infra."The average weight of the shrimps in our farm during this crop has been in the range of 30 to 50 gm but we were surprised to find certain shrimps have grown to 75-80 grams during the final harvesting," he added. According to the company, the protocols integrate principles from biofloc technology, aquamimicry and IMTA. The farm used antibiotic-free feed, probiotics and other natural supplements to boost shrimp immunity and disease resistance.

"The successful harvesting is a milestone in our R&D efforts to develop an eco-friendly and economically sustainable aquaculture practice that could be replicated by small and marginal farmers," said Shaji Baby John. "The success is noteworthy as our team had achieved the same in a 90 to 130-day harvest cycle despite facing several critical issues including adverse weather conditions", said Mr.Shaji Baby John ,Chairman.

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FAO launches the International Year of Artisanal Fisheries and Aquaculture

The United Nations is formally recognising the crucial role artisanal aquaculture and fisheries play in global food security by launching an international year.

A recent webinar hosted by the FAO marked the start of the International Year of Artisanal Fisheries and Aquaculture (IYAFA). The gathering boasted a diverse set of panellists from a coalition of groups and hopes that the International Year will help empower and acknowledge those who participate in the small-scale sector.

They called for a world in which small-scale artisanal fishers, fish farmers and fish workers are fully recognised and empowered to continue their contributions to human well-being, healthy food systems and poverty eradication through the responsible and sustainable use of aquatic resources.

The launch event gathered small-scale artisanal fishers, fish farmers, fish workers, governments and other key supply chain actors to relate innovations and build and strengthen partnerships at all levels. They also focused on developing a strategy for the implementation of FAO's Voluntary Guidelines for Securing Sustainable Small-Scale Fisheries in the Context of Food Security and Poverty Eradication to guide global dialogue, policy and action.

"Millions of poor people make their living from farming fish, and their numbers are growing all around the world, especially in Africa where they contribute increasingly to regional food and nutrition security," said Rohana Subasinghe, WorldFish scientist and IYAFA International Steering Committee Vice-Chair.Though often unseen and informal, artisanal aquaculture and small-scale fisheries are essential to nourishing the poor and vulnerable and providing meaningful work in rural communities.

"Aquaculture supplies food that is essential to keeping our growing population fed, currently contributing

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about 17 percent of the total per capita consumption of animal protein. This is particularly important for food deficit countries, where aquatic animals and plants are highly nutritious and offer unique health benefits," said Subasinghe.Panellists spoke of the unique role fish and aquatic foods have in ushering a food systems transformation to change how the world produces, consumes and thinks about food.

"As the leading agency for this international year, the FAO will continue to highlight the importance of artisanal small-scale fisheries and aquaculture to the transition to more inclusive, equitable, resilient and sustainable food systems," said FAO Director General Qu Dongyu. The key aims of IYAFA are to promote aquatic foods' contributions to healthy diets, increase the adaptive capacity of aquatic food systems to climate change and recognise fishers and fish workers as custodians of natural resources tasked with their sustainable use. During the discussion, the panellists said that the IYAFA could bring visibility and increased attention from policymakers. Incorporating this sector into broader food policy could help revamp global food systems and make them more sustainable.

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PROMOTIONS

Mr. Jannu Raju deputed
as Senior Accounts Officer to RGCA

Mrs. Tulsi Nair redesignated
as Assistant Director (Official Language)

SOCIAL MEDIA REPORT: **JANUARY**

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- POSTS - 31
- VIDEOS - 2
- LIKES - 54,622

twitter

- FOLLOWERS - 5,752
- POSTS - 31
- VIDEOS - 2
- LIKES - 5,752

Instagram

- FOLLOWERS - 3,334
- POSTS - 31
- VIDEOS - 2
- LIKES - 3,334

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- POSTS: 2
- LIKES - 2,005
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