



भारत सरकार
GOVERNMENT OF INDIA
मत्स्यपालन विभाग
Department of Fisheries



FISHTech Report



“To Explore Technologies in Fisheries and Aquaculture Sector”



20
26
JULY



MANAGE Fisheries Innovation and Startup Hub (MANAGE - FISHub)

(A National Fisheries Incubation Centre Supported by the Ministry of Fisheries, Animal Husbandry and Dairying, Govt. of India)

National Institute of Agricultural Extension Management (MANAGE)

(An Autonomous Organization of Ministry of Agriculture and Farmers Welfare, Govt. of India)

Rajendranagar, Hyderabad – 500 030, Telangana, India

<https://www.manage.gov.in/managefishub/>

MANAGE-FISHub

MANAGE – Fisheries Innovation and Startup Hub (MANAGE-FISHub) is a national-level incubation and innovation hub hosted at the National Institute of Agricultural Extension Management (MANAGE). It was established at MANAGE in 2025 with the support of the Department of Fisheries (DoF), Ministry of Fisheries, Animal Husbandry and Dairying (MoFAHD), Government of India, to transform the fisheries and aquaculture sector through innovative technology, entrepreneurship, and ecosystem development.

Vision

The Vision of MANAGE-FISHub is to foster sustainable innovation and entrepreneurship in the fisheries and aquaculture sector by nurturing startups, accelerating technology adoption, and promoting inclusive growth across the value chain.

Collaboration Partner

ICAR–Central Marine Fisheries Research Institute (ICAR–CMFRI)

The ICAR–Central Marine Fisheries Research Institute (ICAR–CMFRI) played a central role by collaborating with MANAGE-FISHub for the FISHTech Webinar Series.

Established on 3 February 1947, the ICAR–Central Marine Fisheries Research Institute (ICAR–CMFRI), headquartered in Kochi, Kerala, is one of the world's leading tropical marine fisheries research institutes under the Indian Council of Agricultural Research (ICAR). Renowned for its excellence in marine fisheries, mariculture, biotechnology, and coastal ecosystem research, ICAR-CMFRI develops innovative technologies, scientific knowledge, and skilled human resources to promote the sustainable growth and resilience of India's marine fisheries and aquaculture sector.

FISHTech Webinar

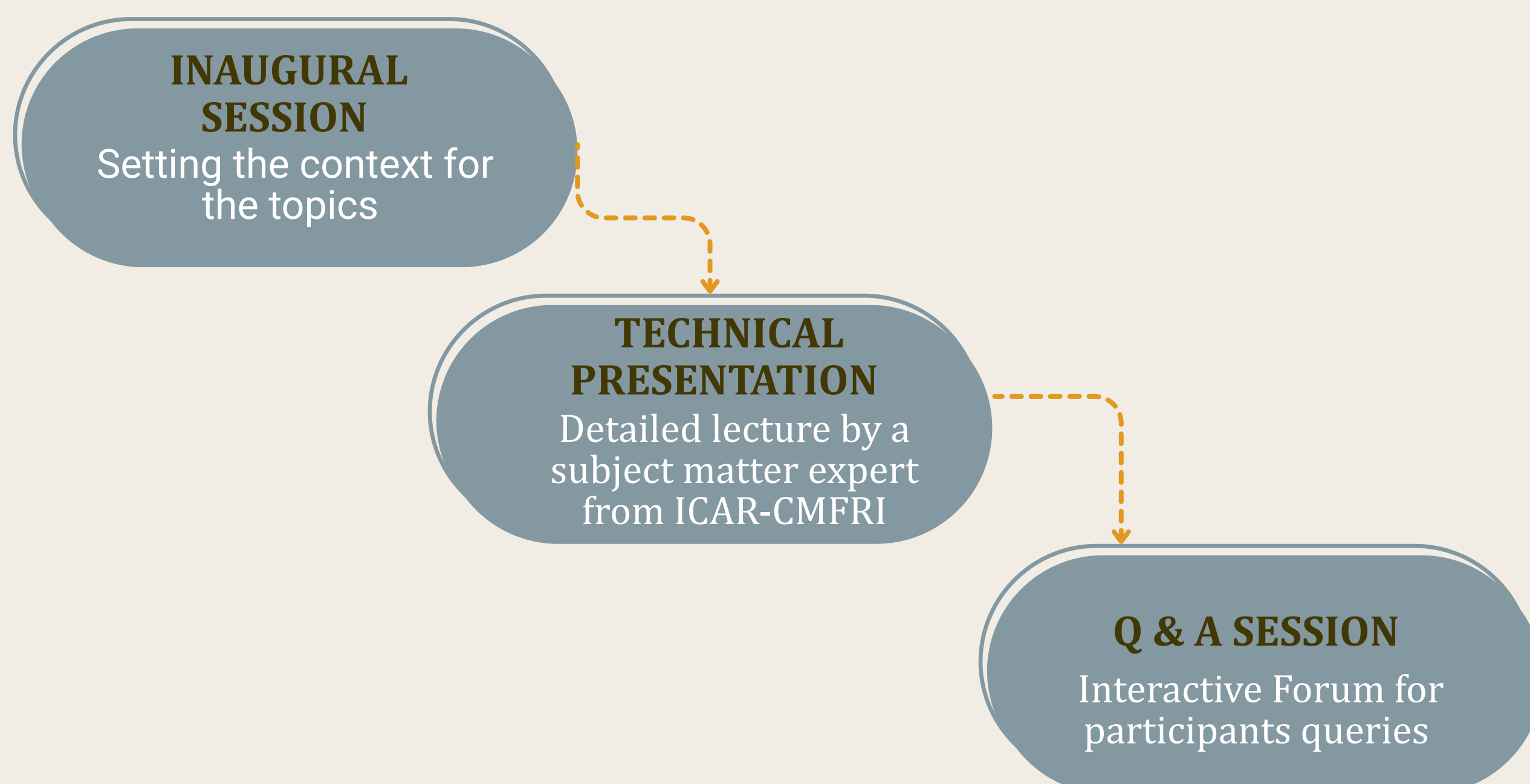
FISHTech Webinar series is a flagship online knowledge-sharing initiative of MANAGE–FISHub, designed to showcase innovative technologies developed by fisheries research institutions, ICAR institutes, State Fisheries Universities, and other academic and R&D organizations across India. The series aims to bridge the gap between technology developers and end users by creating a structured national platform for technology dissemination.

Objective of the Webinar

- To disseminate knowledge on emerging fisheries technology developed by fisheries institutes.
- To facilitate technology awareness among budding aquapreneurs, innovators, rural youth, students and fisheries professionals.
- To showcase commercialization pathways and startup opportunities linked with institution-developed fisheries technology
- To strengthen capacity building through expert-led sessions.
- To facilitate interaction among scientists, startups, aspiring aquapreneurs and students, thereby fostering collaborative learning and innovation ecosystems.

Program Schedule

The MANAGE-FISHub Webinar Series was organized as a structured 15-day intensive program, with each day dedicated to covered cutting-edge technologies and emerging trends within the fisheries sector.



Promotional Activities

The outreach focused on both institutional and public digital platforms

Regular updates and speaker profiles shared across social media handles

Short coming soon posters were used to redirect the participants

A key collaborating partner, **CMFRI** promoted the series through their internal WhatsApp Group

Information brochures and daily session links were shared through all WhatsApp groups



Formal invitation and program posters were sent to various fisheries colleges, KVKs and participants of MANAGE-FISHub Program

Personalized emails were sent to the MANAGE-FISHub participants

Regularly reminder Email were sent to registered participants 12 hours and one hour before each live session

MANAGE-FISHTech Webinar Meet Our Speakers



MANAGE-FISHTech Webinar



MANAGE-FISHTech Webinar



MANAGE-FISHTech Webinar



MANAGE-FISHTech Webinar



MANAGE-FISHTech Webinar



MANAGE-FISHTech Webinar



MANAGE-FISHTech Webinar



MANAGE-FISHTech Webinar



MANAGE-FISHTech Webinar



MANAGE-FISHTech Webinar



Integrated Multi Trophic Aquaculture (IMTA)



Dr. Johnson B
Senior Scientist
ICAR-CMFRI
Regional Centre, Mandapam
jsfaith@gmail.com

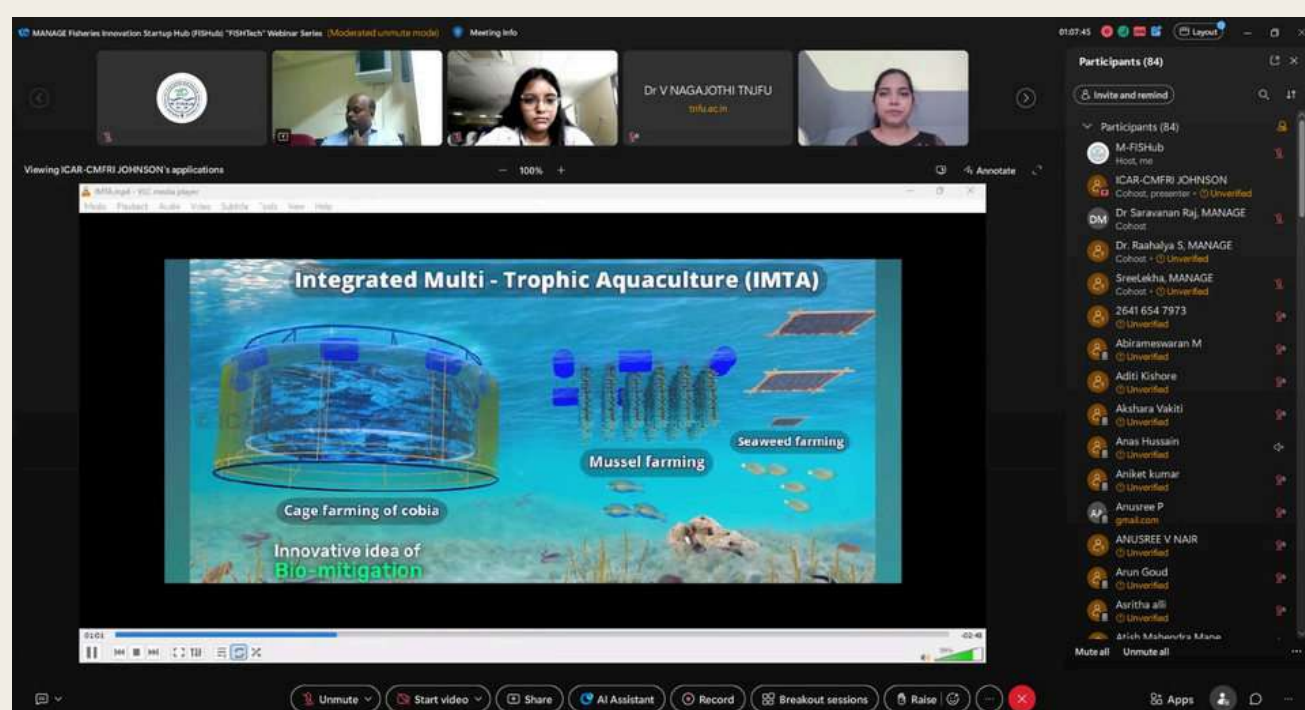
Dr. Johnson delivered a session focused on the emerging and sustainable aquaculture approach of Integrated Multi-Trophic Aquaculture (IMTA), providing an overview of IMTA as a sustainable production system that recycles nutrients within the aquaculture environment

Dr. Johnson highlighted the growing importance of aquaculture and mariculture in meeting the increasing demand for food and nutritional security, particularly in the context of shrinking agricultural land and rising demand for animal protein. He emphasized that India's extensive coastline offers significant potential for sustainable marine food production.

The speaker explained the three major components of IMTA: fed species, such as finfish, shrimp and lobster; extractive species, including shellfish such as mussels, oysters and clams; and seaweeds, which absorb dissolved inorganic nutrients. Uneaten feed and fish excreta are utilized by shellfish and seaweeds, thereby promoting nutrient recycling, improving water quality and reducing environmental pollution.

The speaker elaborated on the environmental, economic and social benefits of IMTA, including reduced nutrient pollution, improved water quality, enhanced biodiversity, diversified production, additional income generation, employment opportunities and improved coastal livelihoods.

The distinction between polyculture and IMTA was also explained, highlighting that IMTA specifically integrates species occupying different trophic levels to utilize and recycle waste nutrients.



Economic Benefits in seaweed through IMTA (16 rafts/ one cage/4 cycle)

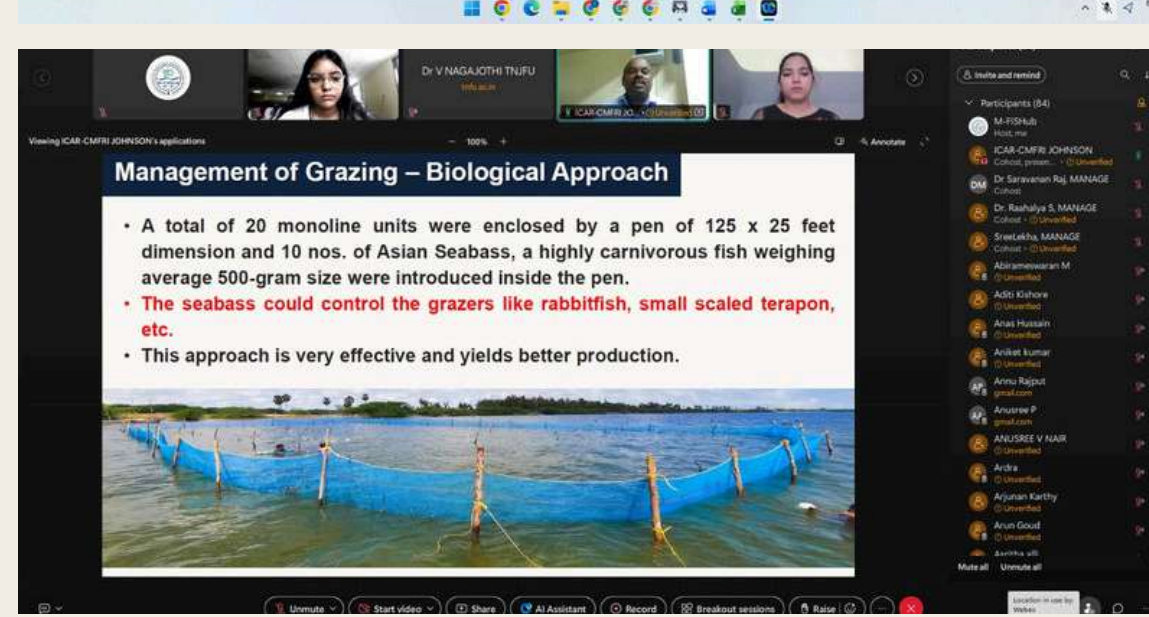
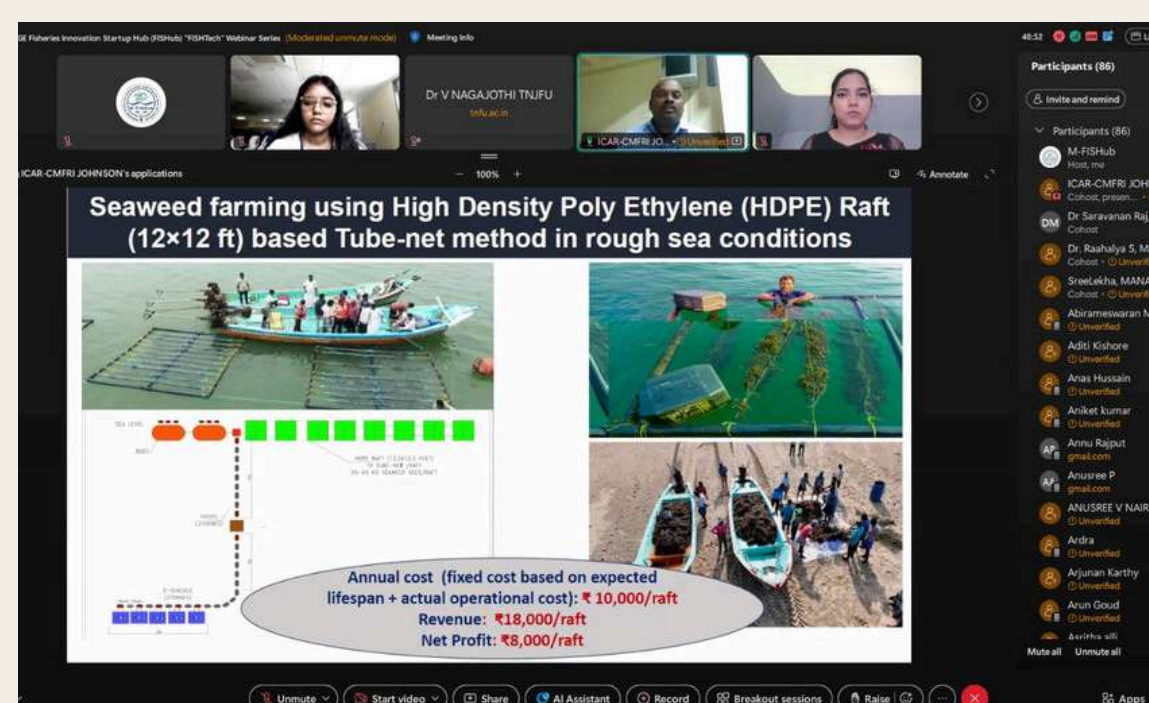
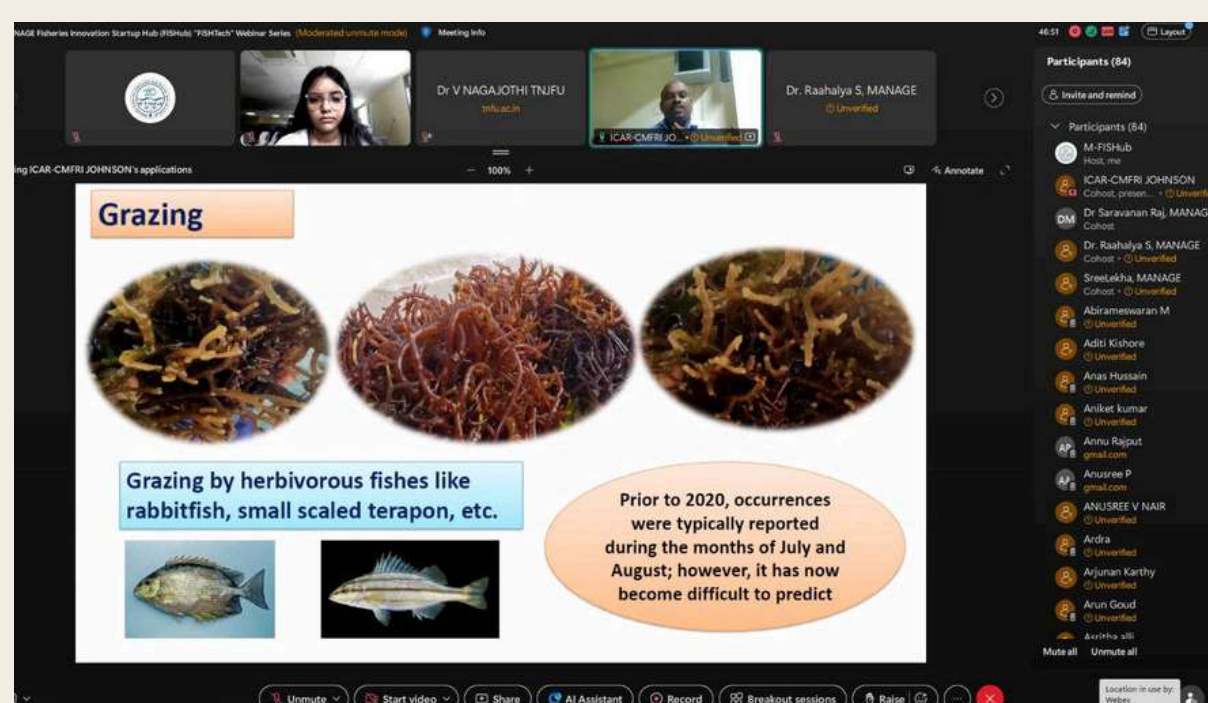
Particulars	With IMTA	Without IMTA	Gain
Production of fresh seaweed, omitting seed material: 60 kg per raft (16 rafts total over 4 cycles).	21,176 kg	12,180 kg	+ 8,996 kg
Production of dried seaweed (for 4 cycles, 16 rafts)	2,117 kg	1,218 kg	+ 899 kg
(10% of dry weight)			
The cost of dried seaweed, per kilogram.	96.00	96.00	-
Gross revenue (Rs.)	2,03,232	1,16,628	+ 86,304
Prices (Rs.2,000 /raft; excluding seed cost)	32,000	32,000	-
Net income in Rupees	1,71,232	84,628	+ 86,304

The session covered the major components of marine IMTA, including cage farming of high-value finfish, mussel culture and seaweed farming. Examples of species and culture systems were discussed, along with different seaweed cultivation methods such as raft, monoline and tube-net systems. The speaker also highlighted challenges in seaweed farming, including disease, epiphytism and grazing, and discussed management and biological approaches to minimize production losses.

Several national and international case studies were presented from countries such as Canada and China, demonstrating the potential of integrating finfish, shellfish and seaweed for improved environmental sustainability and diversified revenue. Indian trials involving the integration of fish cages with seaweed and mussel culture in different coastal regions were also discussed. The results demonstrated improvements in production, additional income, nutrient removal and carbon sequestration under integrated systems.

The speaker also outlined the major challenges affecting IMTA adoption, including high initial investment, technical complexity, disease management, regulatory limitations, inadequate awareness and the absence of a comprehensive mariculture policy framework. He emphasized the need for government support, farmer training, awareness programmes and enabling policies to promote wider adoption.

Looking ahead, the session highlighted opportunities for smart and AI-based aquaculture, automated water-quality monitoring and climate-resilient aquaculture technologies. The speaker concluded that IMTA can effectively combine aquaculture productivity with environmental responsibility, social acceptability and economic viability, offering a promising pathway towards sustainable and low-waste aquaculture in India.





Q & A Session

Q1. How can IMTA be established in freshwater ponds, and which species can be used?

Ans: The speaker explained that freshwater or brackish-water IMTA can integrate fish or shrimp with suitable salinity-tolerant seaweed species such as *Gracilaria spp.* The seaweed can be cultured using ropes, poles or tube-based systems to absorb nutrients released from the culture system. Herbivorous fish should be avoided.

Q2. What are the criteria for selecting species for IMTA, and can diseases spread between integrated species?

Ans: Species should be selected based on seed availability, environmental compatibility and their ability to utilize different nutrient resources. Fish, shellfish and seaweed can be combined appropriately. The speaker noted that disease risks are comparatively lower in seaweed and shellfish; if disease occurs in fish, early detection and harvesting can help prevent its spread.

Q3. Has IMTA been tested with shrimp farming?

Ans: Trials integrating shrimp with seaweed are being conducted in different regions, including Nagapattinam and Andhra Pradesh. However, the technology is still at the trial stage and requires further refinement, particularly to manage fluctuations in salinity caused by rainfall and high evaporation in open ponds.

Q4. What suitable IMTA combinations can be adopted along the Kerala coast?

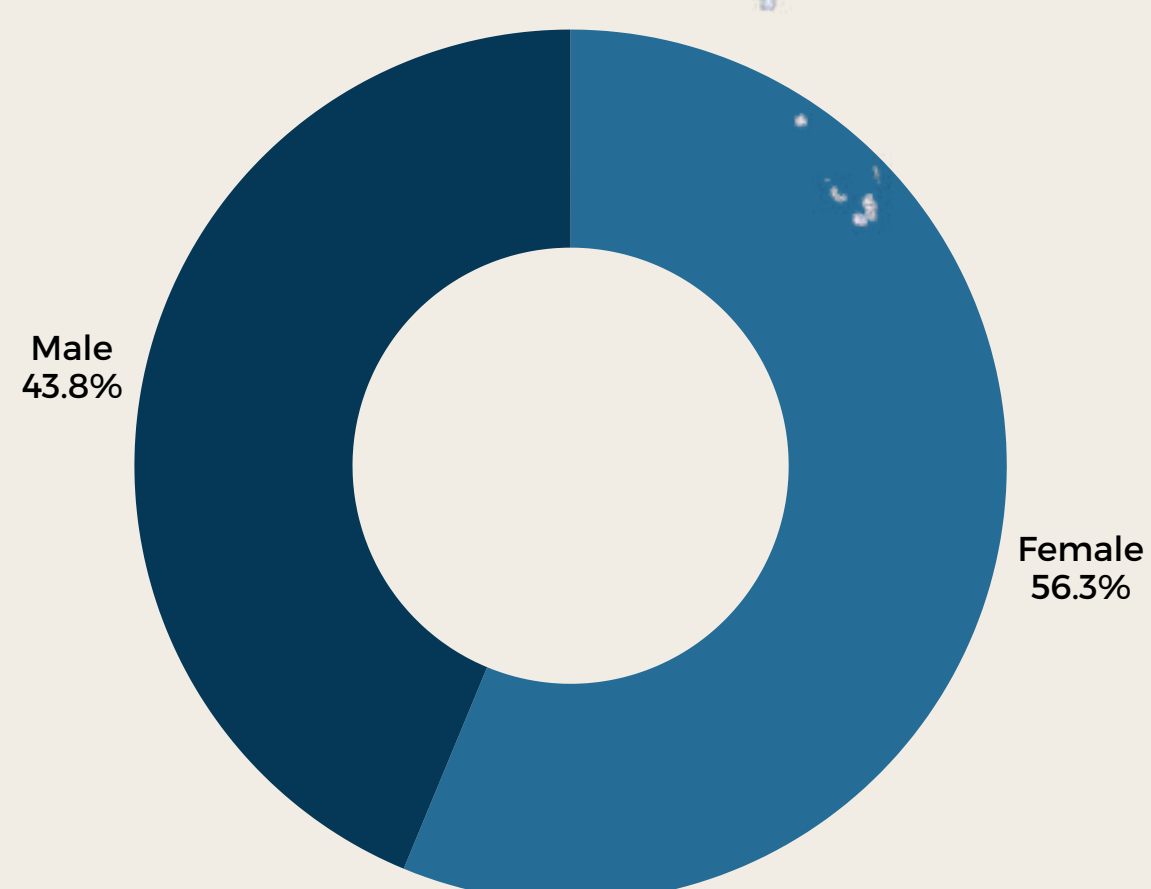
Ans: The speaker suggested combinations such as silver pompano, Indian pompano or grouper with seaweed. *Kappaphycus* can be considered under suitable salinity conditions, while *Gracilaria* can be used in brackish-water areas. Mussels can also be integrated where suitable.

Q5. Why has seaweed farming not expanded as expected among coastal farmers?

Ans: The major challenge is the availability and demarcation of suitable coastal areas, as the sea is a common property resource. Farmer motivation and access to farming space are also important. Seed availability is comparatively less of a constraint, with institutions maintaining seed banks and provisions for regulated import of seed material.

Q6. Are there regulations for IMTA?

Ans: The speaker explained that different countries have their own regulatory frameworks for IMTA. In India, appropriate regulations regarding site allocation, cage density, licensing and coastal resource use need to be further developed as IMTA expands.



Total Registrations-555
 Attended Participants -112
 (Male - 49; Female-63)

YouTube Video Link: https://www.youtube.com/watch?v=lmI2Ugaa4dM&list=PL4G41x3BKm6lUBmHoLiRlGoB_5Efxiaep&index=2&t=2068s