



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

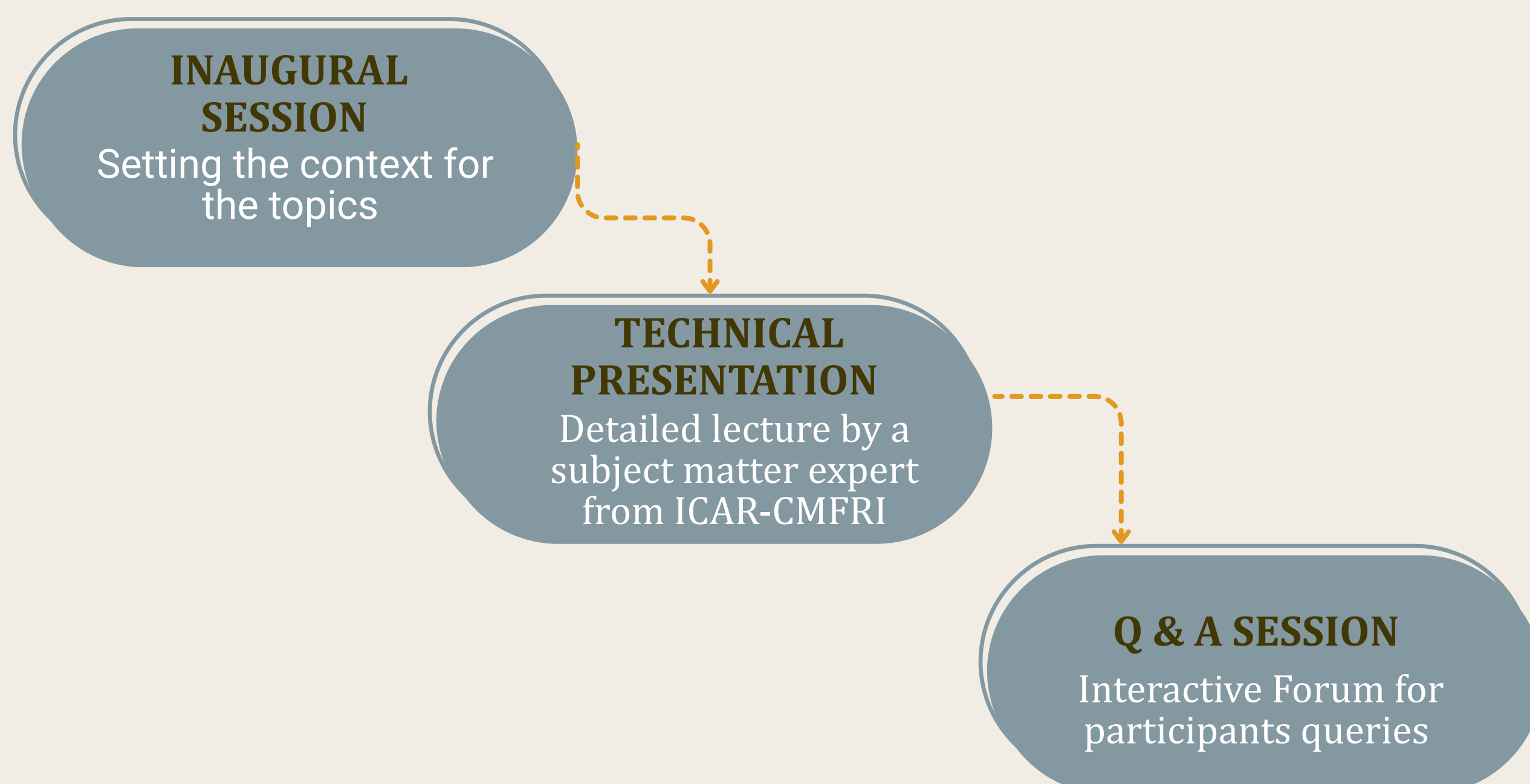
FISHTech Webinar series is a flagship online knowledge-sharing initiative of MANAGE–FISHub, designed to showcase innovative technologies developed by fisheries research institutions, ICAR institutes, State Fisheries Universities, and other academic and R&D organizations across India. The series aims 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



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Day - 4

JUL

23-07-2026

Production of Designer Clownfishes through Captive Breeding

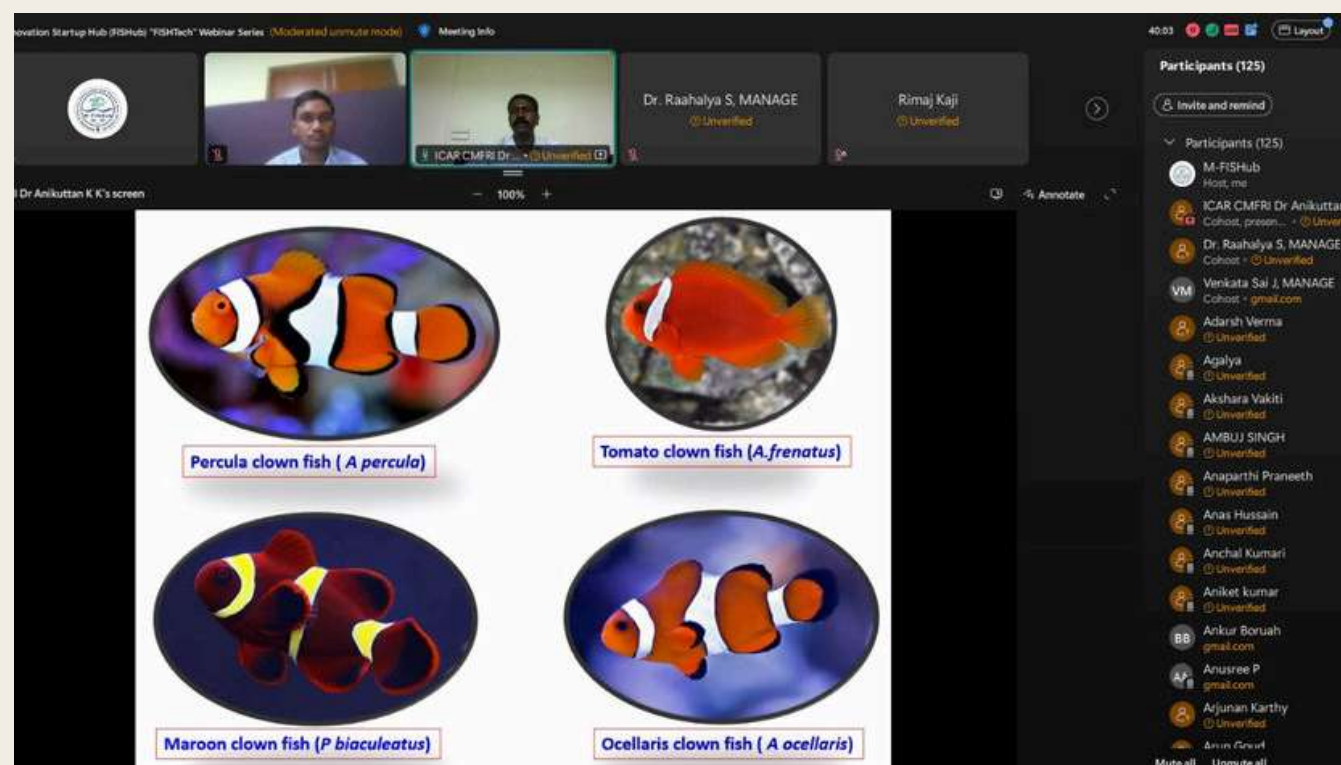


Dr. Anikuttan K. K.
Senior Scientist
ICAR-CMFRI
Regional Centre, Mandapam
dranikuttan@gmail.com

Dr. Anikuttan highlighted the potential of captive breeding for producing designer Clownfishes, focusing on selective breeding, quality seed production, colour and pattern development, and sustainable ornamental fish culture to meet growing market demand.

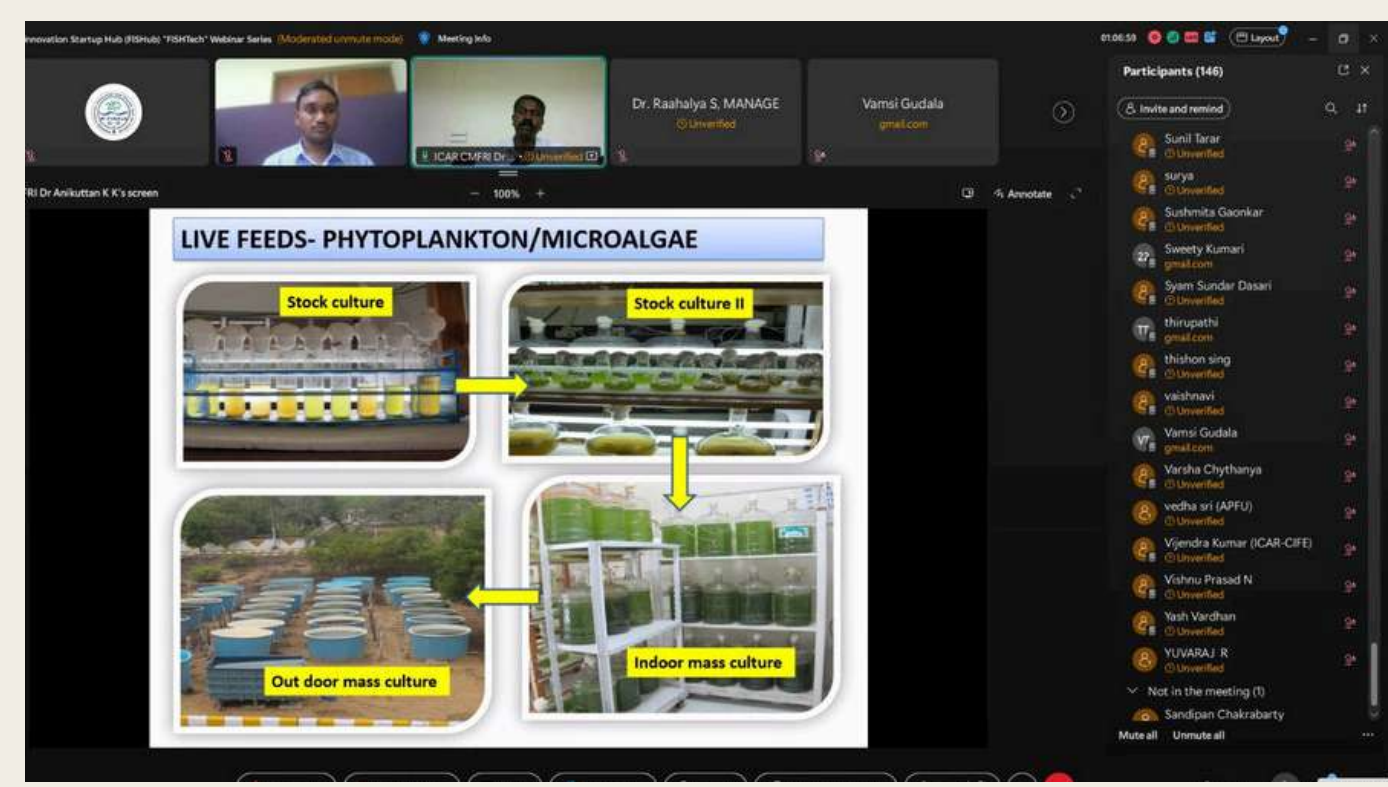
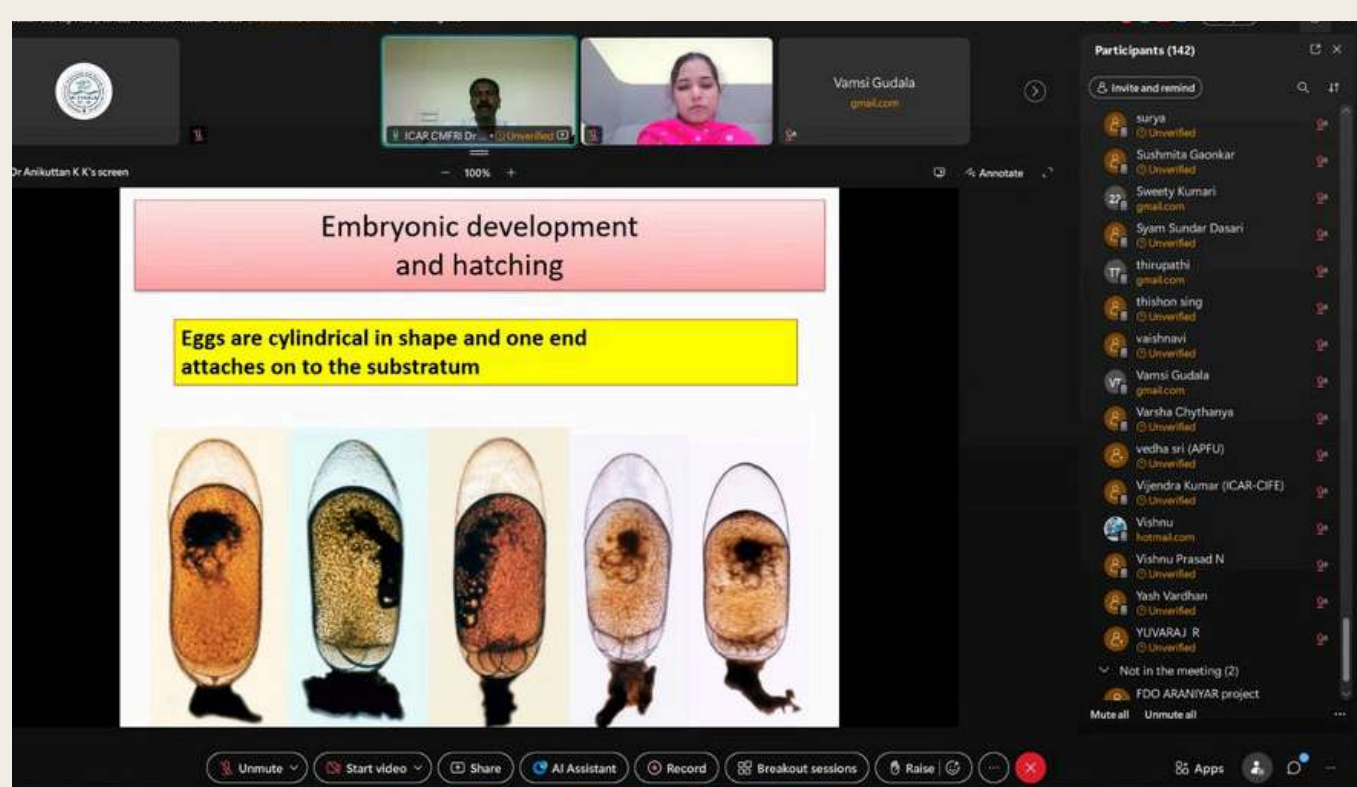
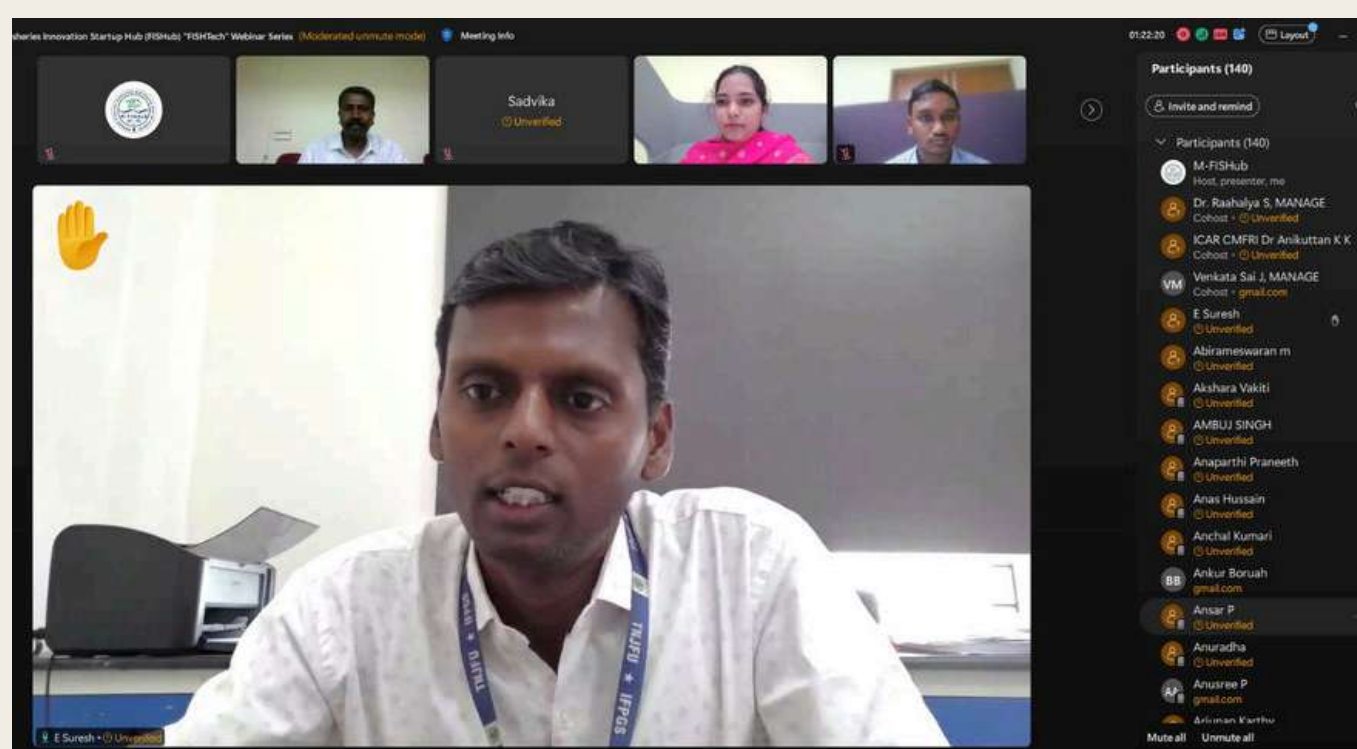
Dr. Anikuttan provided an overview of the marine ornamental fish trade, highlighting its status as a low-volume, high-value sector with major markets in Europe, the USA and Japan. He explained that the trade continues to depend predominantly on wild-caught fishes, particularly from coral reef ecosystems, which raises concerns regarding habitat damage and long-term sustainability. He emphasized captive breeding as a sustainable alternative to reduce pressure on wild populations and highlighted the need for a gradual transition from capture to culture. Hatchery-produced ornamental fishes, being acclimatized to captive conditions, are also more suitable for home aquariums.

Focusing on designer clownfishes, the speaker discussed their increasing popularity due to their distinctive colour and pattern variations and their high market value. He explained that varieties such as Picasso and Platinum are marketed under different trade names based on their unique colour patterns. He also highlighted the scientific efforts undertaken at CMFRI to establish the taxonomic identity of designer clownfishes using morphometric, meristic and molecular approaches. The studies indicated their close similarity to *Amphiprion percula*, contributing to better scientific understanding of these commercially important varieties.



The speaker explained the major stages involved in captive production, including broodstock development, compatible pair formation, spawning, egg incubation, hatching and larval rearing. He emphasized that successful breeding depends on healthy broodstock, appropriate nutrition, good water quality, natural day–night light conditions and suitable temperature management. Clownfishes exhibit protandrous hermaphroditism, with the larger individual developing as the female. Establishing compatible pairs can be challenging and may require considerable time. During spawning, eggs are deposited on an artificial substrate such as ceramic tiles and are subsequently fertilized by the male. The eggs generally hatch after about 7–8 days, with parental care, particularly egg-fanning and cleaning, playing an important role in successful development.

Considerable emphasis was placed on larval rearing and live-feed management, which are critical for hatchery success. Newly hatched larvae require appropriately sized live feeds, beginning with rotifers and subsequently progressing to Artemia, along with microalgae. The speaker stressed that feed size, nutritional value, mass-production feasibility and suitability to local conditions are important criteria when selecting live feeds. He also explained the importance of maintaining dedicated live-feed culture facilities for continuous hatchery production. A distinctive feature of designer clownfish production highlighted during the session was the variation in progeny colour and pattern. Unlike conventional clownfish varieties, breeding designer clownfishes can produce offspring with different morphotypes, which become distinguishable only after several months of rearing.



Dr. Anikuttan concluded by emphasizing that the development of captive-breeding technologies for high-value ornamental fishes such as designer clownfishes can support sustainable marine ornamental aquaculture, reduce dependence on wild collection, and create opportunities for value addition and entrepreneurship.



Q & A Session

Q1. What startup opportunities and government support are available for BBA/MBA Fisheries Enterprises Management students interested in establishing fisheries enterprises?

Ans: Dr. Anikuttan explained that ICAR-CMFRI and other ICAR institutes generally serve as technology partners, while developmental and financial assistance schemes are mainly implemented through the National Fisheries Development Board (NFDB), Hyderabad. He highlighted that students interested in establishing fisheries enterprises can approach ICAR-CMFRI for technical guidance and support, while financial assistance can be explored through the relevant government development schemes.

Q2. Is technical assistance available for BBA/MBA students interested in starting fisheries enterprises?

Ans: The speaker assured that students from Fisheries Enterprises Management programmes can approach the institute for technical assistance and guidance related to establishing fisheries enterprises. He stated that the institute is willing to extend necessary technical support to interested students and entrepreneurs.

Q3. What type of pellet feed is recommended for ornamental fish, and does it contain colour enhancers?

Ans: Dr. Anikuttan explained that CMFRI has developed a patented formulated pellet feed called WA for marine ornamental fishes. The feed contains colour-enhancing components as part of its formulated ingredients and is commercially available through CMFRI.

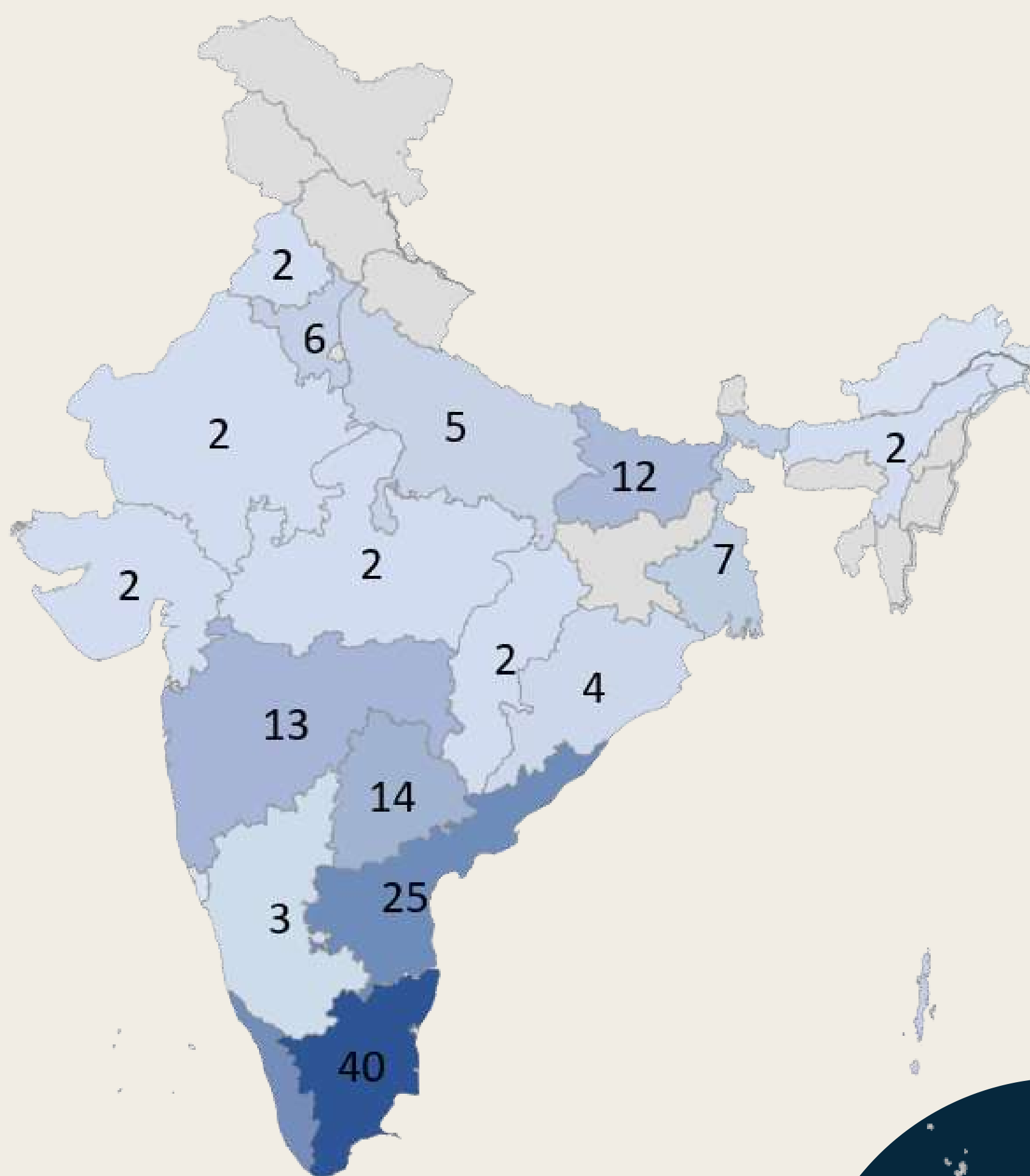
Q4. Which microalgae are recommended for feeding larvae?

Ans: The speaker recommended microalgae such as *Nannochloropsis oculata*, *Nannochloropsis salina* and *Isochrysis galbana* for larval rearing. He highlighted their importance as sources of essential fatty acids such as EPA and DHA, which support larval development. The microalgae are also consumed by rotifers and subsequently transferred to the fish larvae through the live-feed chain.

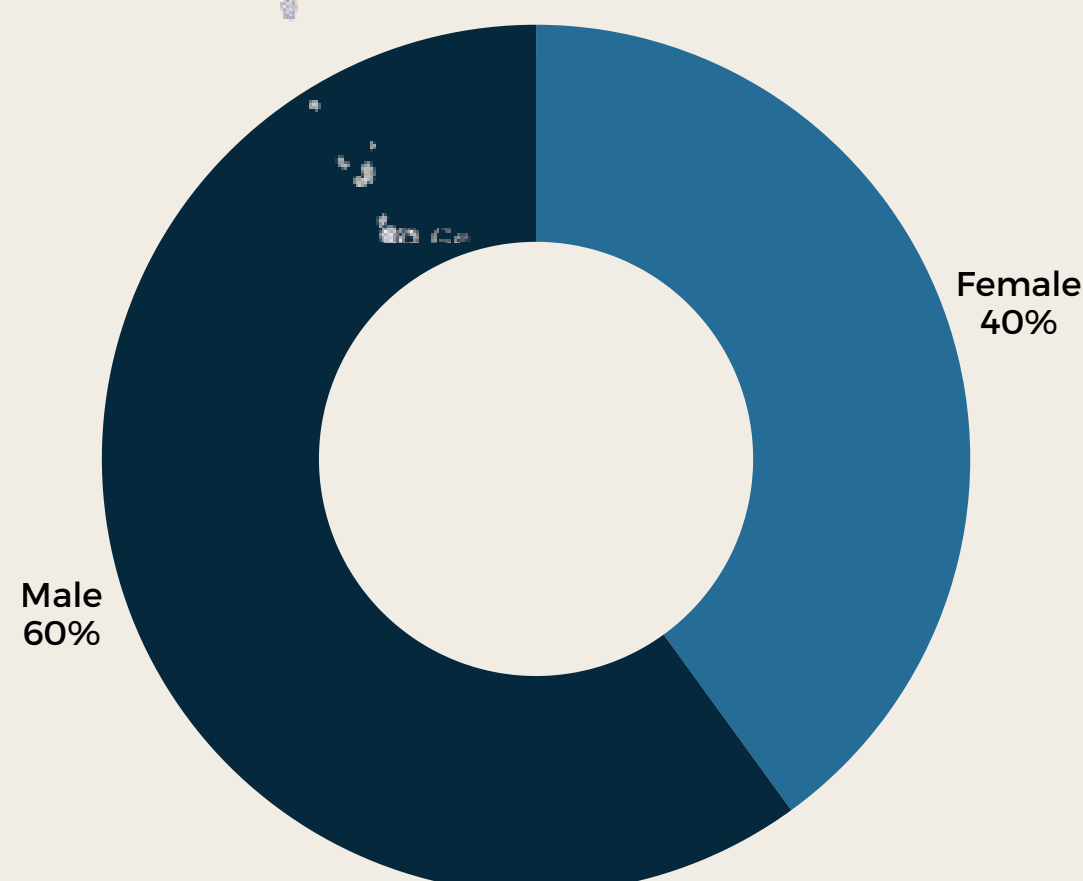
Q5. How is artificial seawater prepared for ornamental fish culture?

Ans: The speaker explained that commercially available artificial sea salt can be used instead of ordinary salt because artificial sea salt contains the required components of seawater. The required quantity varies according to the product, and the manufacturer's instructions specify the amount to be dissolved per litre of water. He noted that the target salinity for the system is around 30 ppt and that artificial sea salt is commercially available from suppliers.

Participants Overview



Total Registrations-496
 Attended Participants - 175
 (Male - 105; Female-70)



YouTube Video Link: https://www.youtube.com/watch?v=IE_d3MKoDcg&list=PL4G41x3BKM6lUBmHoLiRlGoB_5Efxiaep&index=12&t=3s