



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

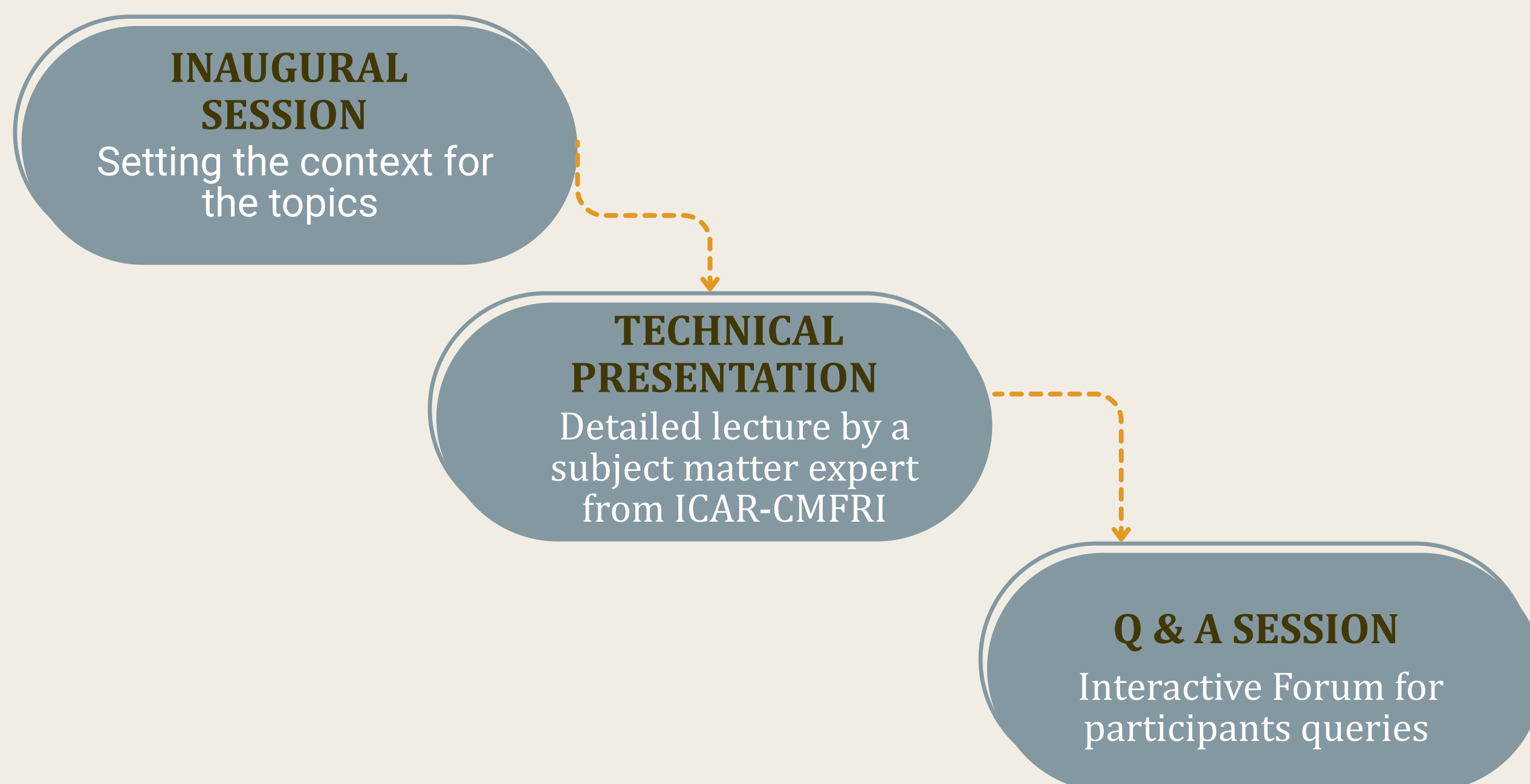
FISHTech Webinar series is a flagship online knowledge-sharing initiative of MANAGE-FISHub, designed to showcase innovative technologies developed by fisheries research institutions, ICAR institutes, State Fisheries Universities, and other academic and R&D organizations across India. The series aims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



Microalgae culture Technology



Dr. Shoji Joseph
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Dr. Shoji Joseph, delivered an informative session provided participants with practical insights into microalgae, particularly phytoplankton, and their significance in aquaculture and other emerging applications.

The speaker began the session by introducing microalgae and phytoplankton, explaining their diversity in terms of shape, size, and structure. She discussed how marine microalgae are predominantly unicellular organisms and serve as primary producers in aquatic ecosystems, forming the base of the marine food chain. She also highlighted their nutritional richness, particularly their protein content and diverse bioactive compounds, which makes them valuable as “single-cell proteins” and as potential sources of various value-added products.

Dr. Shoji Joseph further explained the importance and applications of microalgae in human nutrition, aquaculture, biofuel production, bioremediation, biofertilizers, and other industries. She discussed their ability to utilize carbon dioxide through photosynthesis and highlighted their potential role in carbon capture and environmental management. She also explained that microalgae can be cultivated using wastewaters and can serve as a relatively inexpensive source of protein and other valuable products.

A major part of the session focused on the role of microalgae in aquaculture. The speaker explained that microalgae are widely used as live feeds for bivalve molluscs, gastropods, echinoderms, crustaceans, and finfish larvae. She discussed how microalgae are also used as feed for zooplanktonic live feeds, which subsequently serve as food for fish and shrimp larvae.

The speaker then discussed the selection criteria for suitable microalgae for aquaculture, emphasizing nutritional value, non-toxicity, appropriate cell size, high production rate, reliability, and sustainability. She also discussed the nutritional importance of microalgae as sources of fatty acids, vitamins, minerals, pigments, and other bioactive compounds.

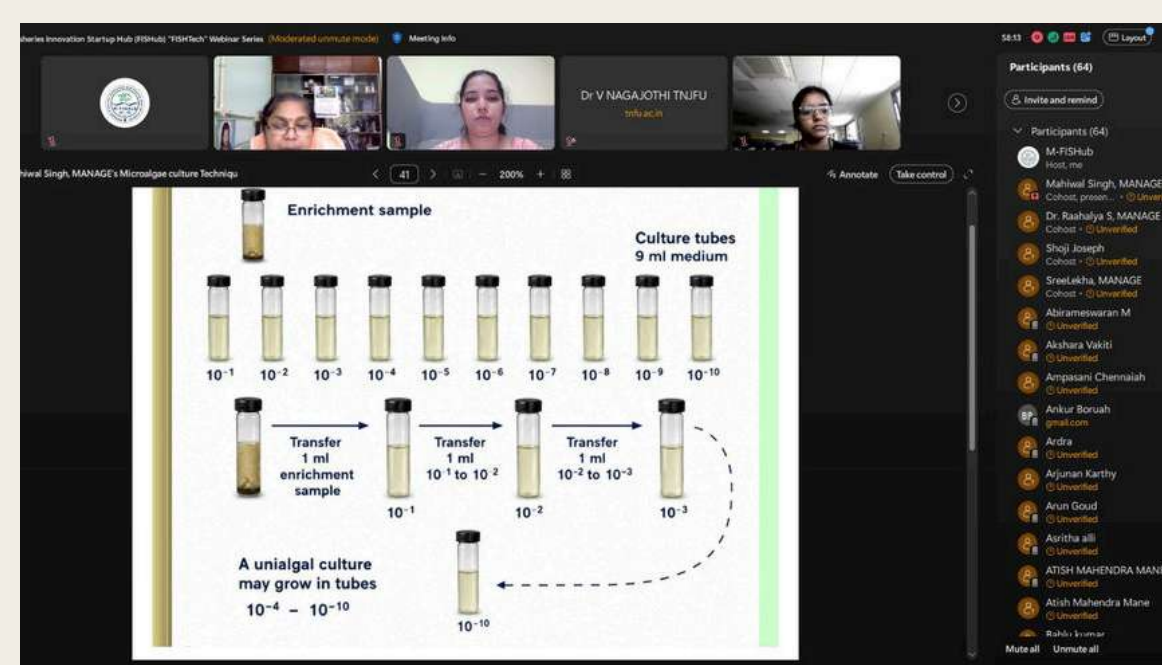
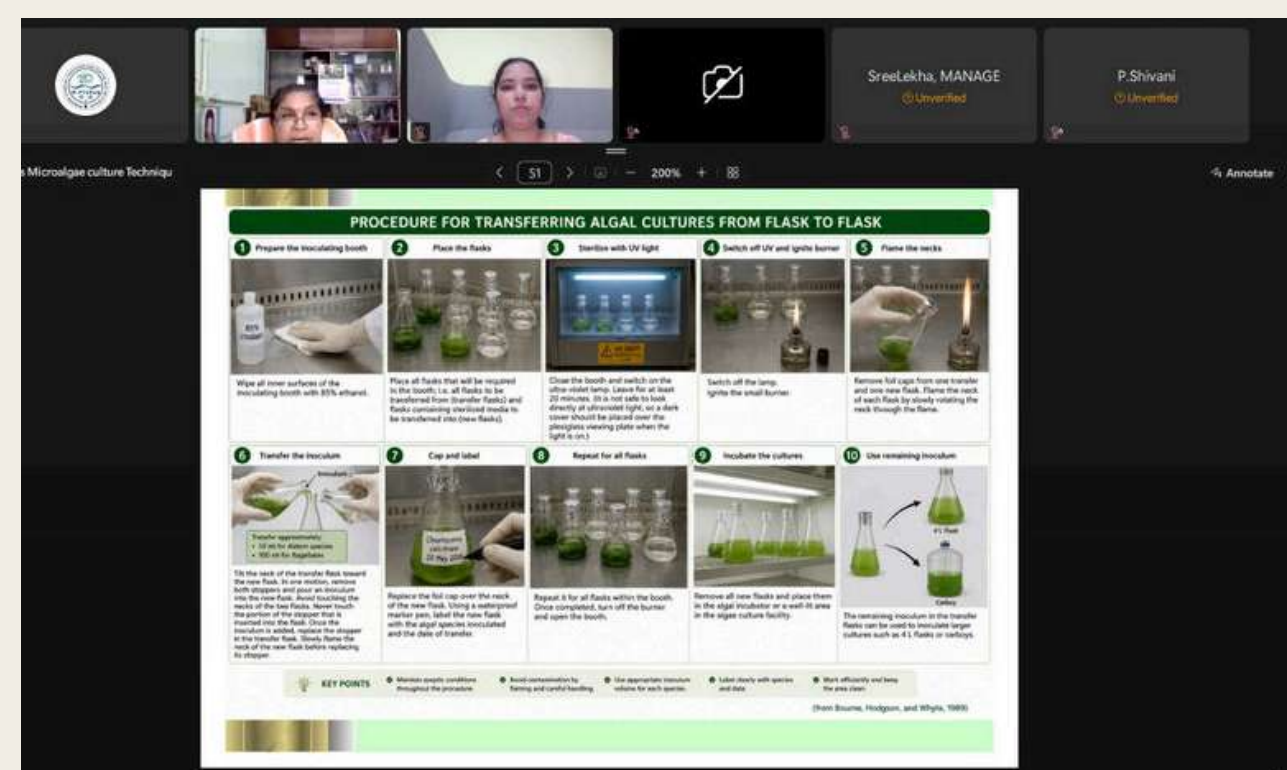
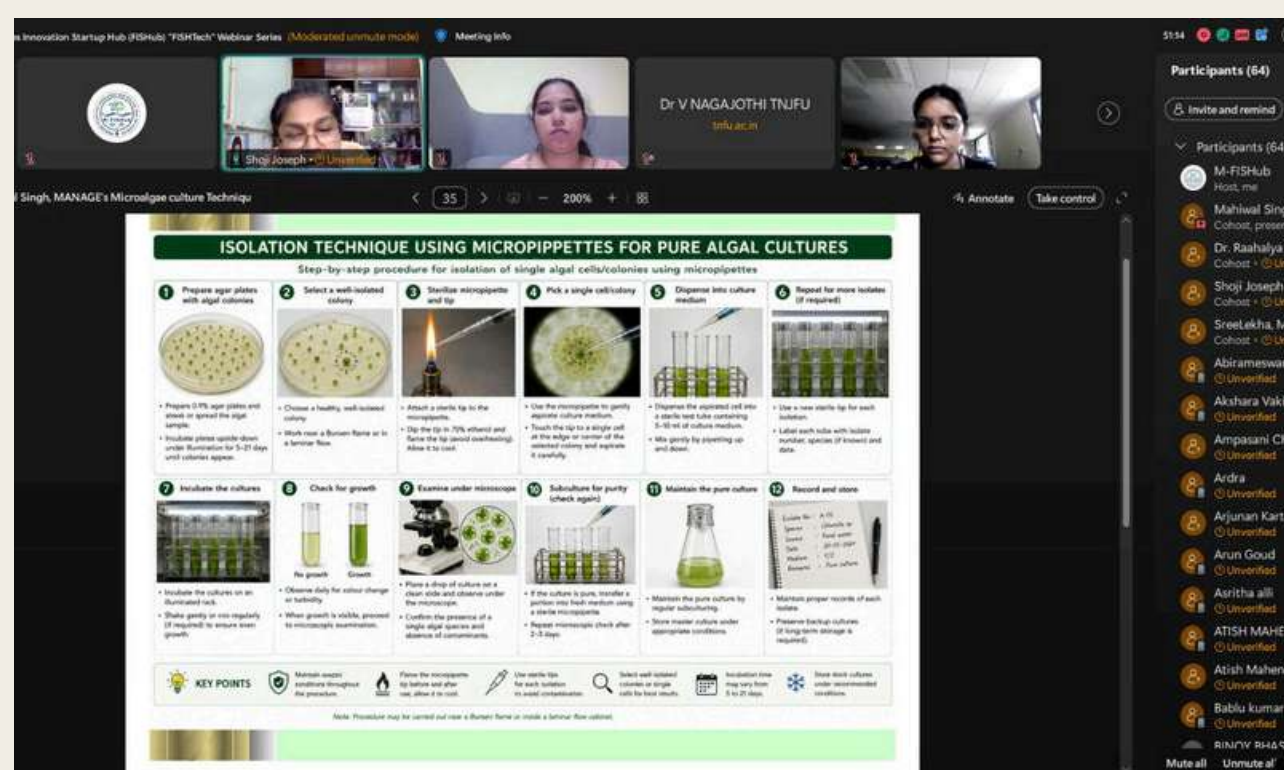


Moving towards the practical aspects, Dr. Shoji Joseph explained various microalgal isolation and purification techniques, including micropipette isolation, centrifugation or washing, phototactic isolation, agar plating, and serial dilution. She emphasized the importance of maintaining strict aseptic conditions throughout the isolation and culture process to prevent contamination.

The speaker also explained the culture conditions required for successful microalgal production, including temperature, salinity, light intensity, photoperiod, pH, and nutrient availability. She discussed the use of enriched culture media, particularly F/2 medium, and explained the importance of maintaining appropriate environmental conditions according to the requirements of individual algal species.

Towards the conclusion, she explained the estimation of algal density using a haemocytometer, emphasizing the importance of determining cell concentration accurately for hatchery feeding and culture management. She also discussed the gradual scale-up of microalgal cultures, from small stock cultures and test tubes to conical flasks, larger vessels, and outdoor mass-culture systems.

The session provided participants with a comprehensive understanding of microalgae culture technology, its practical applications in aquaculture, culture and maintenance techniques, nutritional significance, and opportunities for large-scale production. The practical orientation of the session made it particularly useful for students, researchers, hatchery professionals, entrepreneurs, and other stakeholders interested in aquaculture and microalgal biotechnology.





Q & A Session

Q1. What are the alternative low-cost equipment or methods for farmers who cannot afford equipment such as a laminar flow cabinet, centrifuge, or refrigerator?

Ans: The speaker explained that expensive equipment is not always necessary for microalgal isolation. Farmers and entrepreneurs can use relatively simple methods such as agar plating and serial dilution, which can be carried out in their own laboratories with basic facilities. Agar plates can be prepared locally, and isolation can be performed through serial dilution techniques. The speaker emphasized that the more specialized equipment is required only on rare occasions.

Q2. Could you explain about Spirulina? Are laboratory-prepared Chlorella and Spirulina edible? Where can these cultures be obtained?

Ans: The speaker explained that Spirulina and Chlorella are used for edible purposes. She mentioned that the cultures maintained by CMFRI are available, and the institute maintains 22 species of microalgae. She also stated that the products are available from the institute for relevant purposes.

Q3. What are the major commercial applications of microalgae?

Ans: The speaker explained that one of the major commercial applications of microalgae is their use in aquaculture hatcheries, particularly for feeding shrimp larvae and fish hatchery organisms, as well as for culturing and enriching zooplankton. She further mentioned that microalgae are also produced on a mass scale for applications such as tablets, capsules, biodiesel, and bio-oil production.

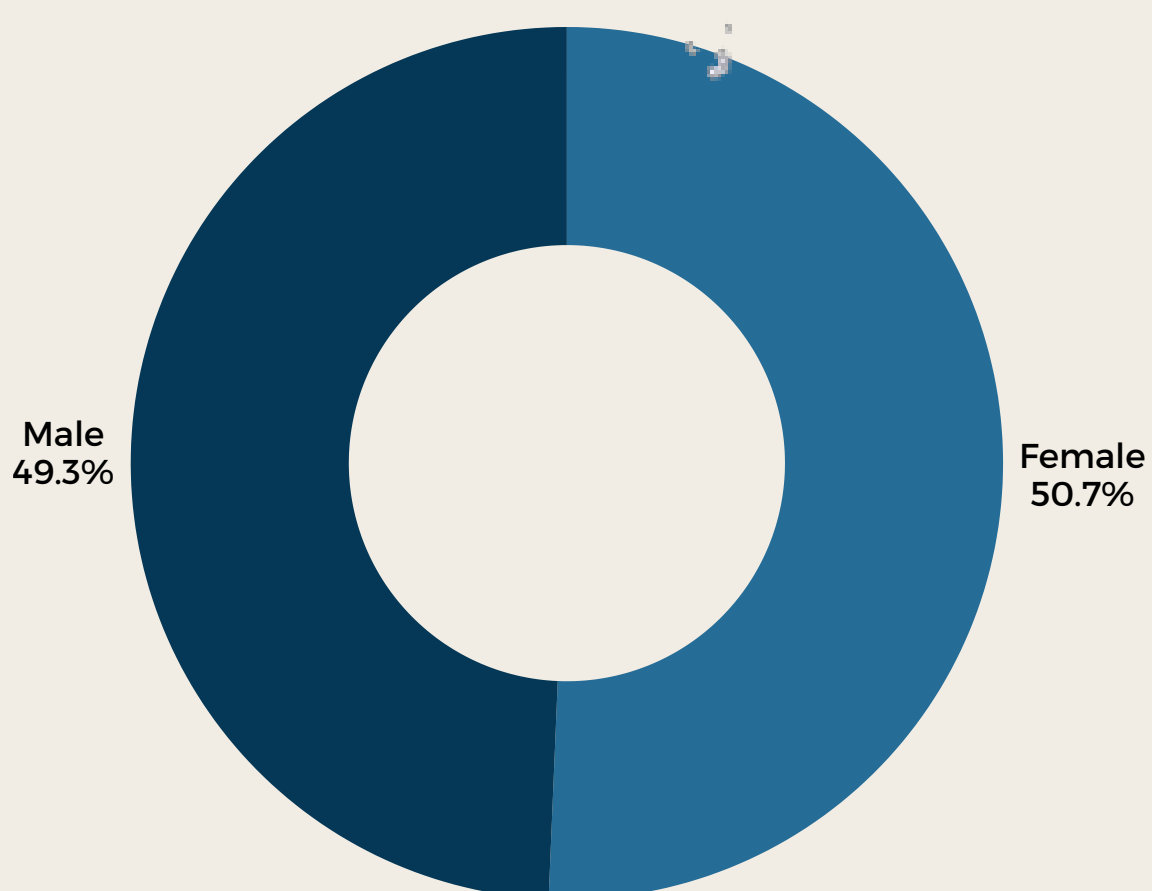
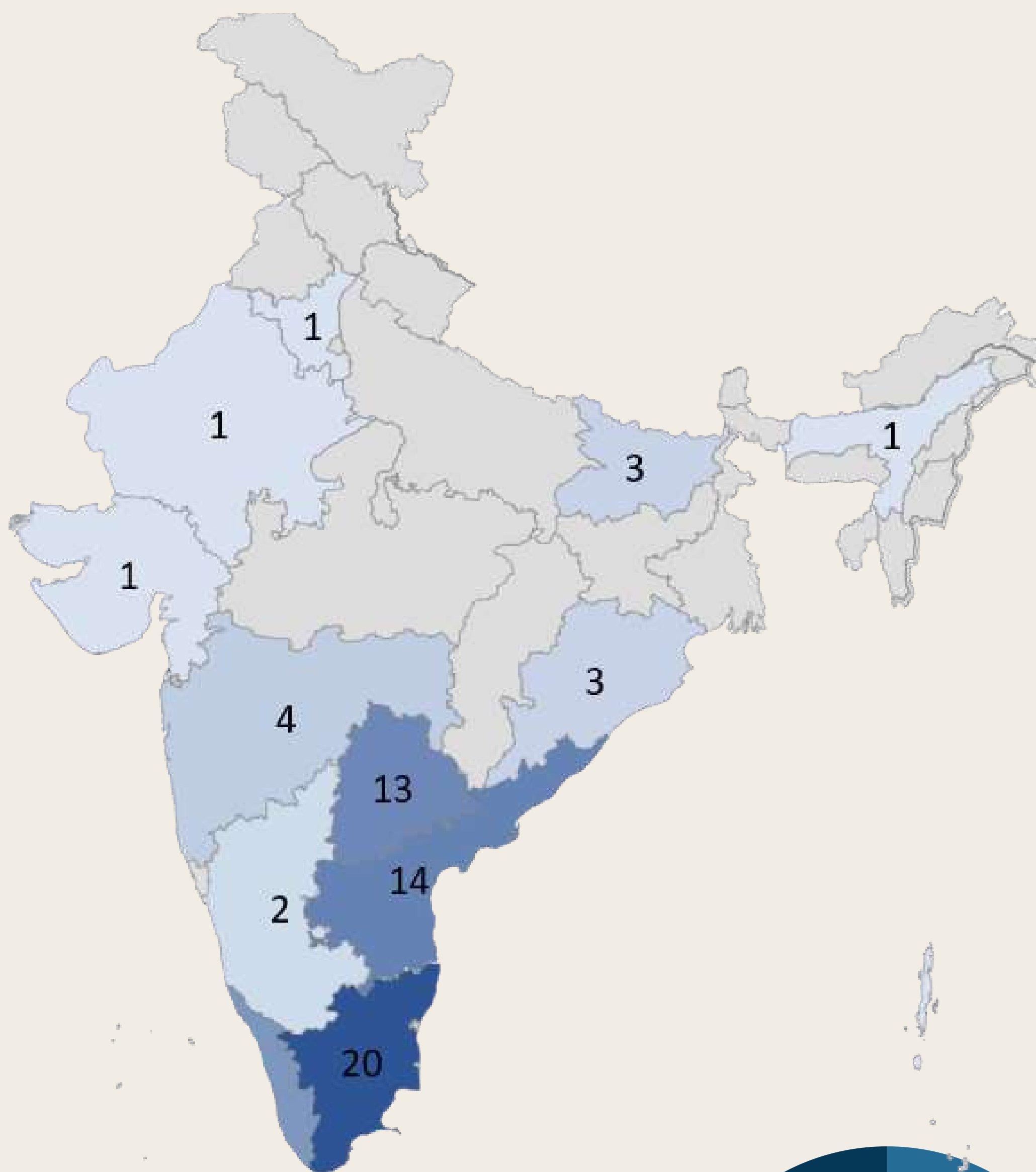
Q4. Where can culture media for microalgae be obtained? Are there any low-cost technologies or complete kits available for entrepreneurs?

Ans: The speaker explained that microalgal culture media are commercially available, although the specialized media used for stock cultures may not be very inexpensive because they require minerals, vitamins, and other nutrients. For mass culture, comparatively simpler and cheaper media can be prepared using agricultural-grade chemicals such as urea and phosphate sources. She mentioned that CMFRI provides training on media preparation and algal culture techniques, although the institute primarily supplies algal cultures rather than ready-made media.

Q5. What is the role and objective of CMFRI in microalgal technology in India?

Ans: The speaker explained that microalgal research at CMFRI is primarily driven by the requirements of fisheries and aquaculture. Microalgae are required as feed for fish, bivalves, shrimp, and zooplankton. Therefore, CMFRI has isolated and maintained different microalgal species as stock cultures and uses them both for research and, importantly, for feeding organisms in hatchery systems.

Participants Overview



Total Registrations-540
 Attended Participants - 75
 (Male -37 ; Female-38)

YouTube Video Link: https://www.youtube.com/watch?v=DTSZ9FFr7Cs&list=PL4G41x3BKM6lUBmHoLiRlGoB_5Efxiaep&index=5&t=171s