



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.

INAUGURAL SESSION

Setting the context for the topics

TECHNICAL PRESENTATION

Detailed lecture by a subject matter expert from ICAR-CMFRI

Q & A SESSION

Interactive Forum for participants queries

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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Breeding and Seed Production of Giant Trevally (*Caranx ignobilis*)

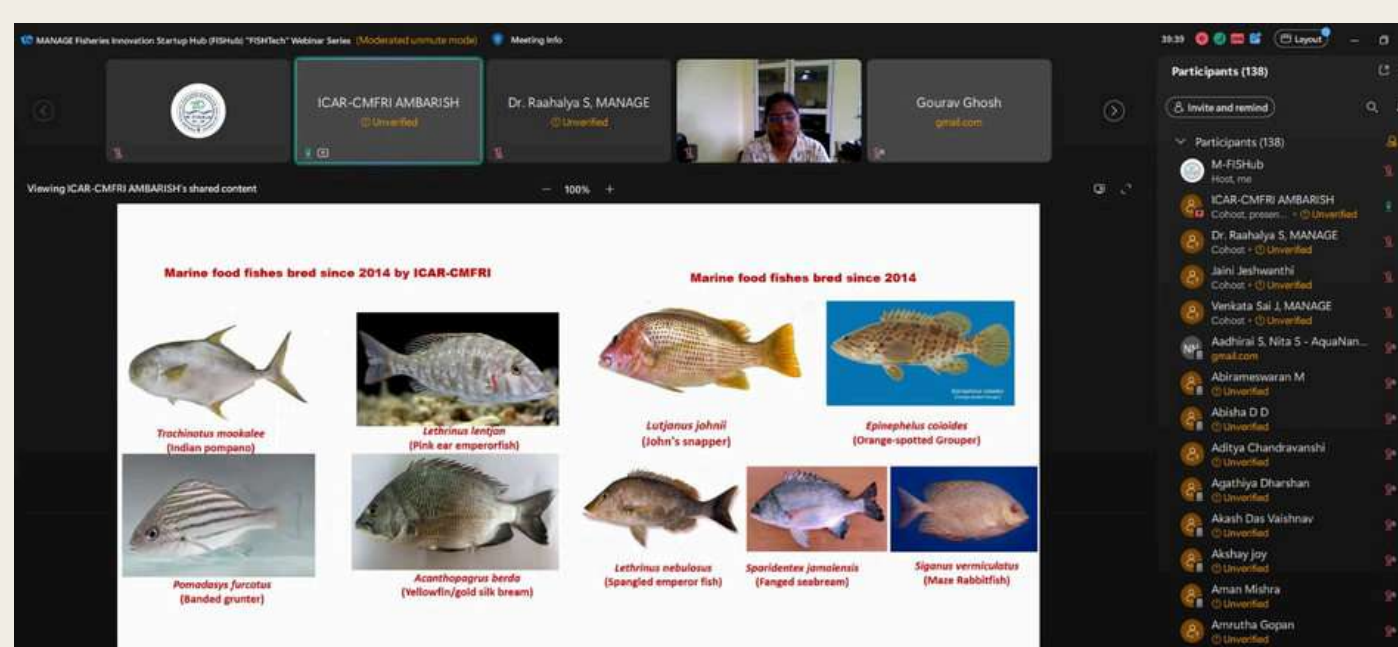
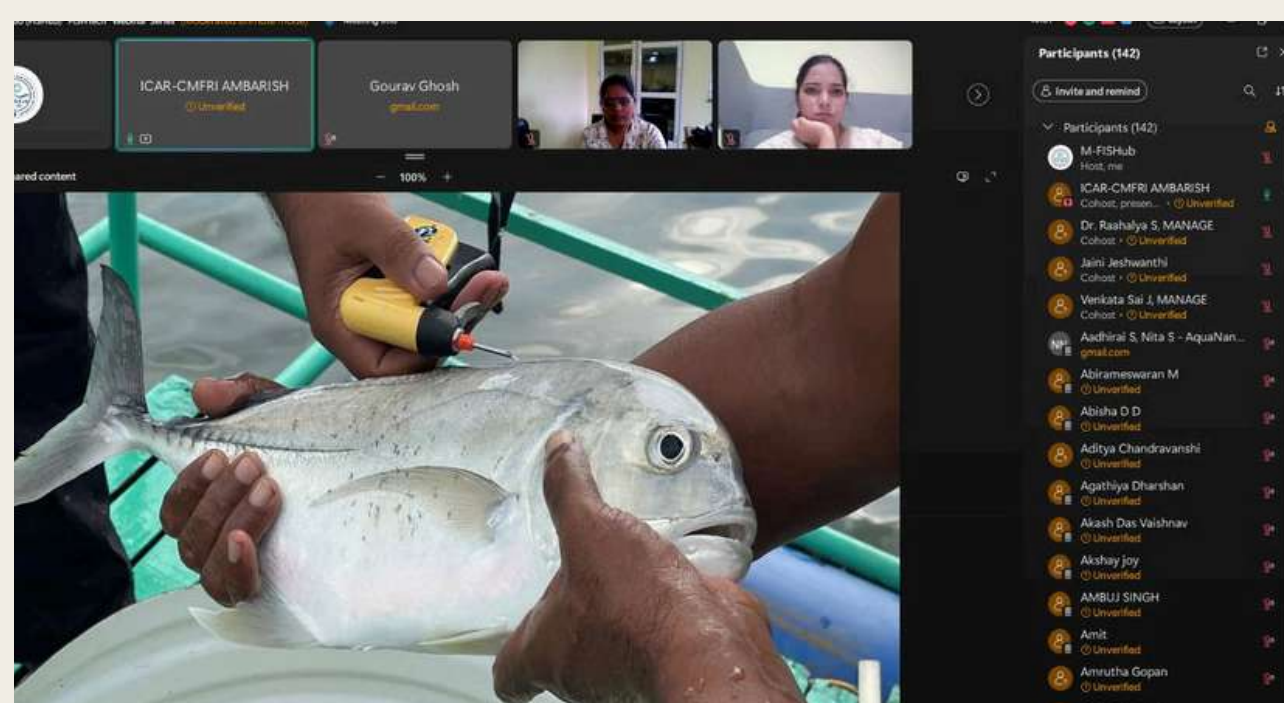


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The speaker highlighted the growing importance of mariculture as a sustainable approach to meeting the increasing demand for fish while reducing pressure on declining wild fish stocks. With capture fisheries reaching their maximum sustainable limits due to over-exploitation, mariculture has emerged as a viable alternative for ensuring future seafood production.

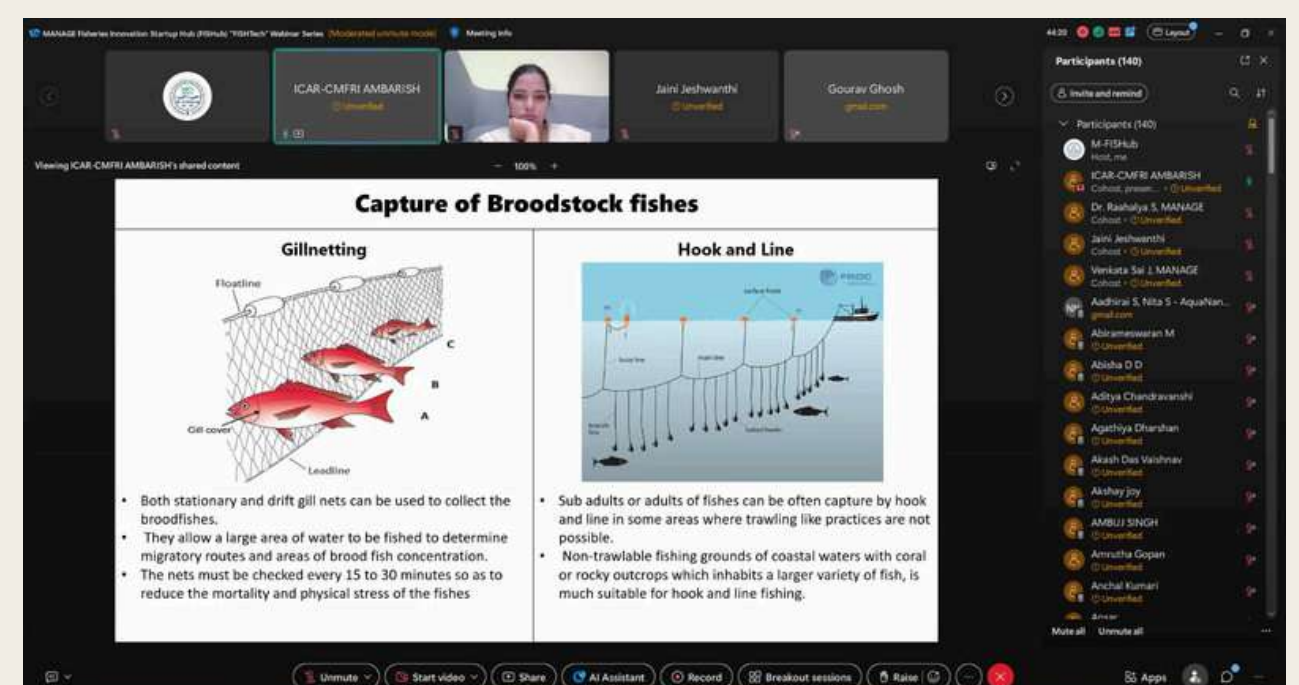
The speaker explained the importance of broodstock management in successful seed production. Healthy broodstock are collected from the wild using soft-mesh dip nets to minimize stress and prevent damage to the protective slime layer. The fish are then subjected to quarantine procedures, including freshwater treatment to eliminate external parasites, before being transferred to broodstock holding tanks. Proper nutrition, water quality management, and minimal handling are essential to maintain broodstock health and reproductive performance.

Since Giant Trevally does not exhibit external sexual dimorphism, the speaker described the use of Passive Integrated Transponder (PIT) tags for individual identification and maintaining breeding records. Broodstock maturity is monitored regularly through cannulation, a non-destructive technique used to collect egg samples and assess gonadal development. Once the egg diameter reaches approximately 350 μm or above, brood fish are considered suitable for hormonal induction using Gonadotropin-Releasing Hormone analogue (GnRHa) to initiate spawning under captive conditions.



Describing the larval rearing protocol, the speaker emphasized that newly hatched larvae initially depend on yolk sac reserves before transitioning to external feeding. Due to their extremely small mouth size, early larvae require live feeds such as copepods (*Parvocalanus*) and rotifers (*Brachionus*), which provide essential nutrients for growth and survival. As the larvae develop, they are gradually weaned onto artificial micro-pellet feeds, followed by transfer to nursery systems where stocking density, feeding management, and water quality are carefully maintained to maximize survival.

In conclusion, the speaker highlighted that ICAR-CMFRI has successfully standardized Giant Trevally seed production and larval rearing technologies, demonstrating their effectiveness in farmer-led marine cage farming systems. The institute is actively transferring these technologies to state fisheries departments, hatcheries, and private entrepreneurs to enhance the availability of quality marine fish seed. The speaker emphasized that the adoption of this technology will promote sustainable mariculture, diversify aquaculture production, strengthen marine fish farming enterprises, and contribute to livelihood generation and seafood security in India.



Q & A Session

Q1. Is complete domestication of Giant Trevally broodstock possible?

Ans: Although complete domestication is technically possible, ICAR-CMFRI currently prefers collecting broodstock from the wild to maintain better genetic quality and avoid deterioration in subsequent generations.

Q2. How long should broodstock be maintained and what evaluations are carried out?

Ans: Broodstock are generally maintained for about two years until they attain reproductive maturity. During this period, regular assessment of reproductive development and breeding performance is conducted to determine their suitability for spawning.

Q3. What are the major challenges during hatchery operations?

Ans: The speaker highlighted that sudden temperature fluctuations, particularly during rainfall, adversely affect egg quality and larval survival. Maintaining stable environmental conditions is therefore essential for successful seed production.

Q4. What is the current status of commercial hatchery development in India?

Ans: The speaker informed that ICAR-CMFRI is actively transferring Giant Trevally breeding technology to private hatcheries and state fisheries departments, with commercial adoption progressing steadily across the country.

Q5. Have any major disease outbreaks been observed during breeding?

Ans: No major disease outbreaks have been reported. As a preventive health management practice, broodstock are given a freshwater dip before stocking to eliminate external parasites and improve overall fish health.

Q6. What are the major challenges in larval feeding and breeding?

Ans: The speaker explained that the major challenge is providing suitable live feed during the early larval stages because Giant Trevally larvae possess a very small mouth opening. A combination of copepods and rotifers is recommended to improve larval survival. For induced breeding, GnRHa/LHRH analogue is successfully used for hormonal induction.

Q7. Is hormonal implantation or hand stripping practiced for breeding?

Ans: The speaker clarified that hormonal implantation is not recommended as it may reduce broodstock lifespan due to repeated spawning. Similarly, hand stripping is avoided because it can cause injury and mortality. Instead, cannulation is employed to monitor gonadal maturity before hormone administration.

Q8. How many breeding cycles can a brood fish undergo?

Ans: According to the speaker, healthy brooders can be used for multiple breeding cycles, and some broodstock maintained at ICAR-CMFRI have remained productive for over eight years under proper management.

Q9. What precautions are taken during broodstock capture and transportation?

Ans: The speaker noted that broodstock experience considerable stress during capture and transport. To minimize stress and mortality, high dissolved oxygen levels are maintained throughout transportation, and fish are handled carefully using soft-mesh nets.

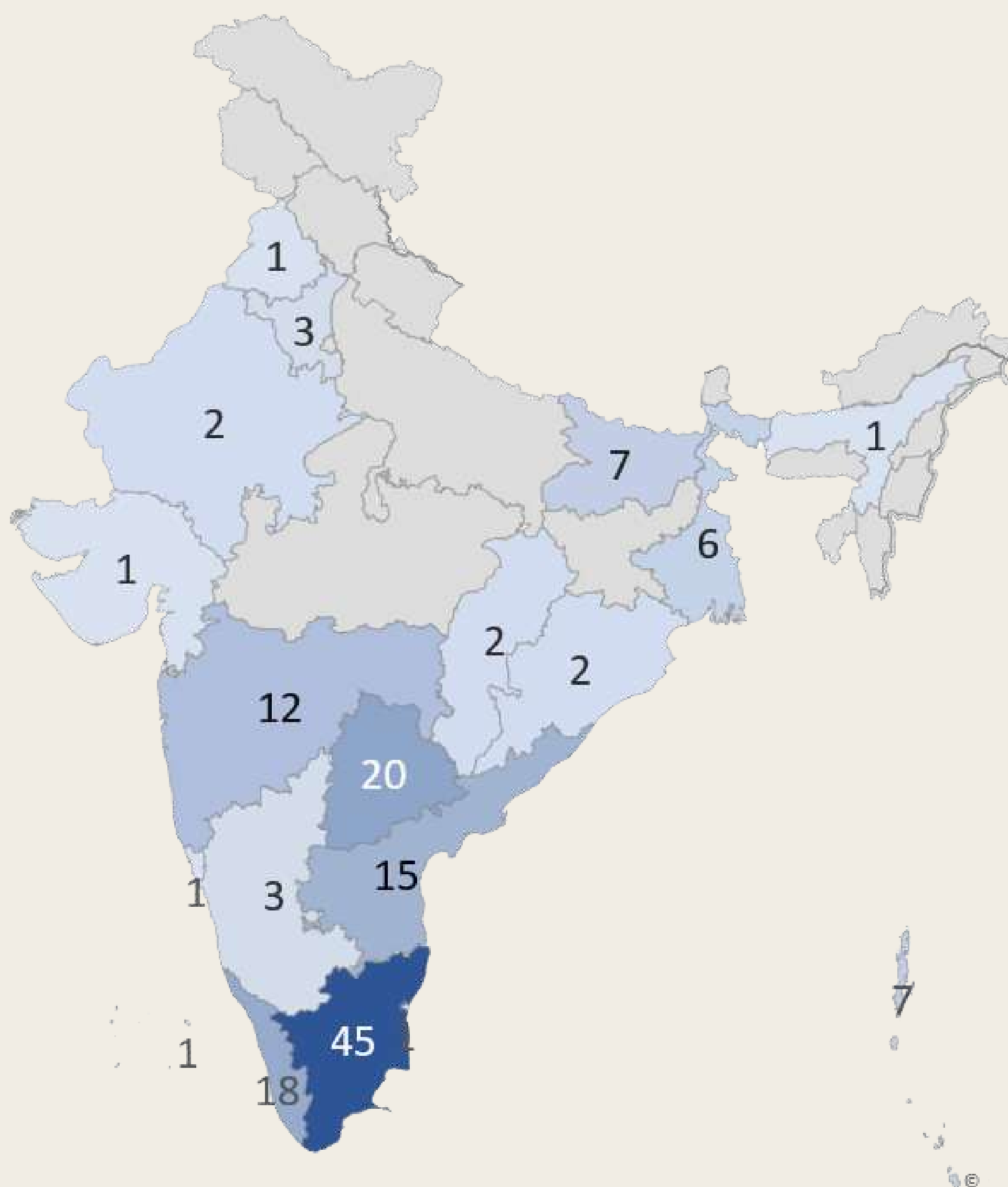
Q10. What are the recommended egg diameter, fecundity, and larval stocking density?

Ans: The speaker stated that brooders are considered ready for hormone induction when the egg diameter reaches 350–400 μm . Giant Trevally produce approximately 80,000 eggs per kilogram of body weight. For larval rearing, a stocking density of 2 larvae per litre is recommended, along with live feed densities of 5–8 rotifers/ml and 5 copepods/ml to achieve better survival.

Q11. What future research areas and production recommendations were suggested?

Ans: The speaker emphasized the need to develop specialized larval feeds, as suitable commercial diets are currently unavailable in India. He also recommended cage culture over pond culture for better growth performance and encouraged researchers and students to focus on improving larval nutrition and seed production technologies to support commercial mariculture.

Participants Overview



Total Registrations - 488
 Attended Participants - 148
 (Male - 83; Female-65)

