



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



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



John's Snapper (*Lutjanus johnii*) Seed Production Technology



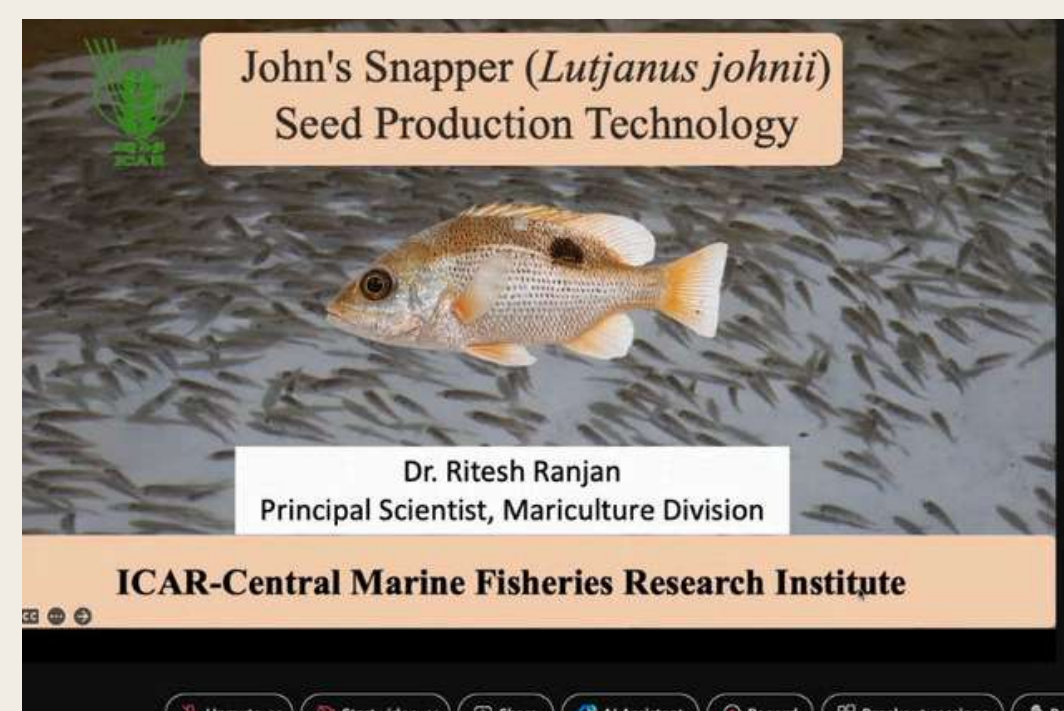
Dr. Ritesh Ranjan
Principal Scientist
ICAR-CMFRI
Regional Centre, Visakhapatnam
rranjanfishco@gmail.com

Dr. Ritesh Ranjan presented the standardized technology for hatchery-based seed production of John's Snapper (*Lutjanus johnii*), highlighting its potential as a high-value species for aquaculture and mariculture.

The speaker emphasized the species' desirable characteristics, including good flesh quality, delicate flavour, rapid growth and strong domestic as well as export market potential. With declining wild catches of this demersal reef-associated species, the development of captive breeding and reliable seed production technology is important for supporting its sustainable culture. He explained the broodstock development and management protocol, beginning with the collection of healthy brooders from the wild. Since the species is demersal, wild-caught brooders can experience barotrauma during rapid movement from deeper water to the surface. Proper handling and transportation are therefore essential. After collection, brooders are quarantined and treated to control external parasites before being transferred to the broodstock system. Dr. Ranjan emphasized the importance of identifying the sex and monitoring gonadal development, with PIT tagging used for individual identification and tracking of broodstock development.

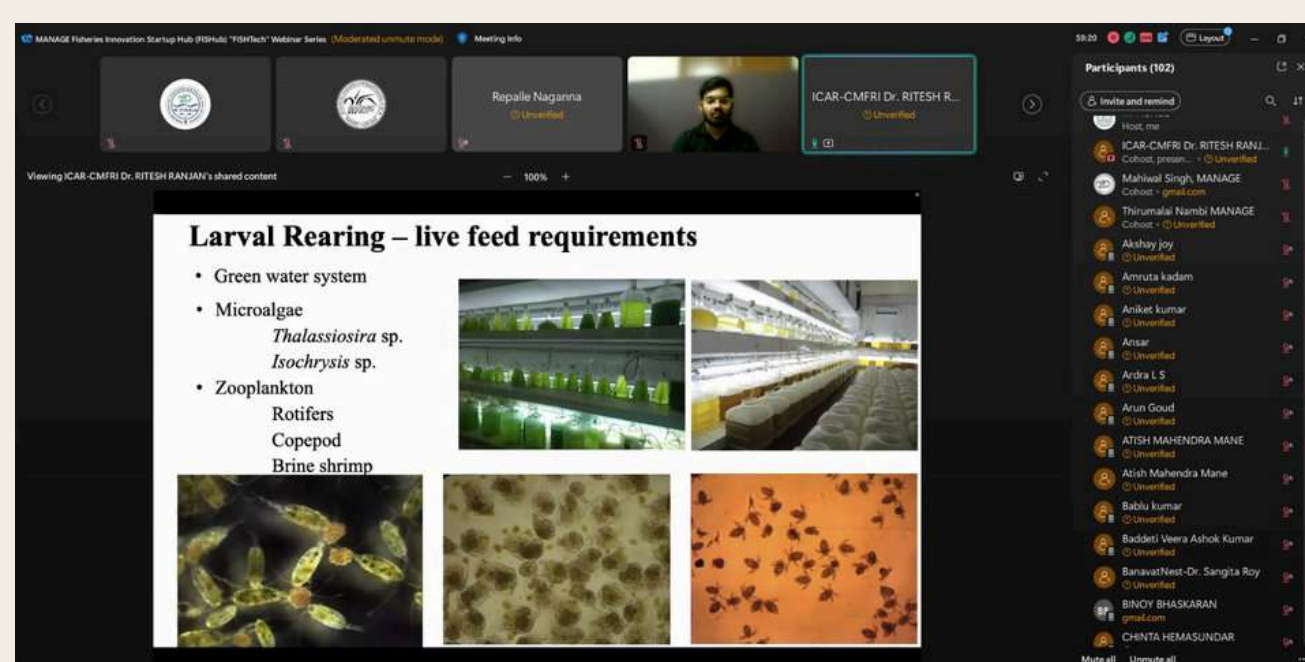
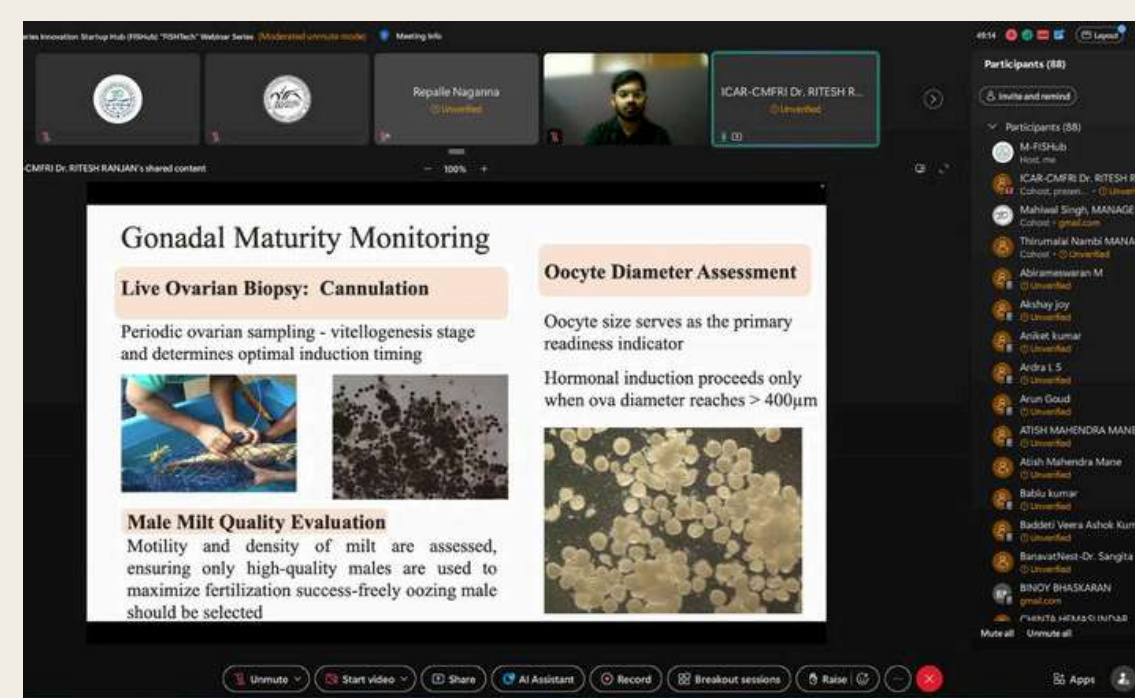
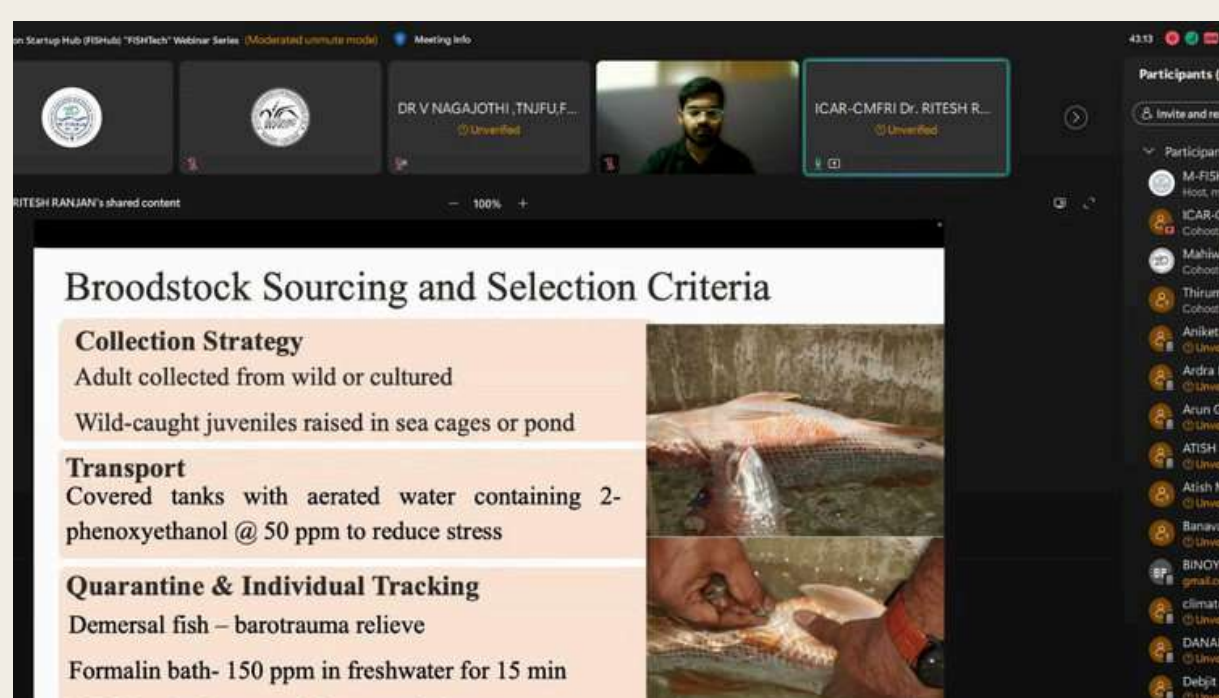
For broodstock maturation, the speaker highlighted the advantages of a Recirculating Aquaculture System (RAS) over conventional flow-through or cage-based systems, particularly for maintaining stable water quality and protecting broodstock during rough weather. Large tanks of more than 100 tonnes, with high water recirculation, were found suitable for broodstock conditioning and spawning. The system incorporates filtration components such as slow sand filters, protein skimmers and biological filters, along with an egg-collection chamber designed to collect the naturally buoyant pelagic eggs.

The speaker further explained the egg incubation and larval rearing protocol. Collected eggs are disinfected using iodophor and only batches showing good fertilization are selected for larval rearing. Fertilization rates of around 85–90% and hatching rates above 90% were reported.



Dr. Ranjan emphasized that water-quality management is equally critical during larval rearing. Initial culture is maintained with minimal disturbance, followed by gradual siphoning and water exchange as the larvae develop. Temperature, dissolved oxygen, salinity and other water-quality parameters must be carefully monitored. The speaker also highlighted the importance of maintaining good hatchery hygiene, disinfecting tanks and equipment, quarantining broodstock and using properly filtered and disinfected water. Probiotics may also be incorporated as part of the larval and nursery management strategy.

The nursery phase requires particular attention because John's Snapper is highly cannibalistic and differences in size can result in significant mortality. Regular grading, preferably at approximately 15-day intervals during the initial nursery period, helps maintain uniform size and reduces cannibalism. Lower salinity of around 8–10 ppt was recommended for nursery rearing to reduce the risk of Amyloodinium infection. Feed protein levels can initially be around 52% and gradually reduced to approximately 45% as the juveniles grow. The speaker concluded by highlighting the major challenges in seed production, including stunted growth, deformities, poor weaning, oxygen depletion, Amyloodinium infection and cannibalism. Stunted growth may be associated with inadequate nutrition, particularly insufficient lipid and DHA/EPA levels, while excessive temperature or sudden salinity changes can increase deformities. Proper feeding frequency, grading, aeration and water-quality management are therefore essential. Overall, the standardized seed-production protocol provides a strong foundation for the commercial hatchery production and future expansion of John's Snapper aquaculture, while continued refinement of nursery and grow-out practices can further improve its commercial viability.





Q & A Session

Q1. Which stage has a higher risk of disease and nutrient deficiency during larval rearing?

Ans: Dr. Ritesh Ranjan explained that nutrient deficiency is particularly critical during 5–20 days post-hatch (DPH), making this an important phase for larval management. Disease-related risks become more important when larvae are shifted from treated water to normal untreated water during nursery rearing, around 30–35 days, and appropriate salinity management is required to minimize Amyloodinium problems.

Q2. What is the optimal stocking density for John's Snapper larvae and broodstock?

Ans: The speaker recommended a stocking density of approximately 10 larvae per litre during larval rearing and around 1 kg of broodstock per cubic metre for broodstock management.

Q3. Can John's Snapper be domesticated for the development of SPF generations?

Ans: Dr. Ranjan explained that SPF generation development is currently being pursued at CMFRI for Indian pompano, rather than John's Snapper. However, future selective breeding and domestication programmes for John's Snapper are being considered. He noted that CMFRI already has second-generation captive broodstock of John's Snapper, although expansion of such programmes would require adequate tank and infrastructure facilities.

Q4. Has the seed production technology been transferred to farmers or private hatcheries?

Ans: The speaker clarified that the technology for John's Snapper has not yet been transferred to farmers or commercial hatcheries. However, CMFRI has already transferred technologies for Indian pompano to several hatcheries, while discussions are also underway for other species. He stated that CMFRI is willing to share John's Snapper technology with entrepreneurs and hatcheries interested in adopting it.

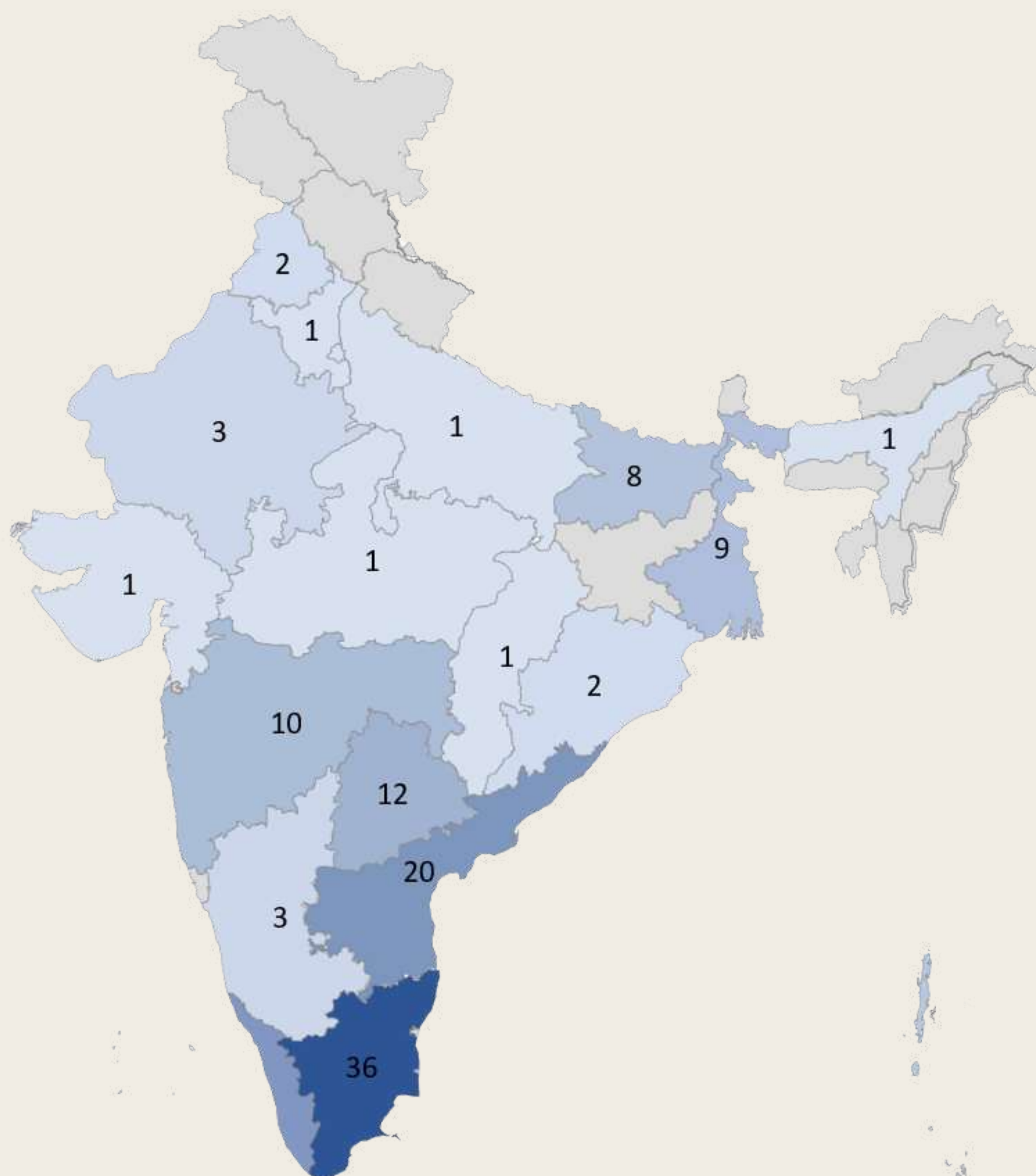
Q5. What is the survival rate from hatching to the larval stage, and can live feed be completely replaced with nutrient-rich nano feeds?

Ans: Dr. Ranjan reported a survival rate of approximately 16–18% from hatching through larval rearing. He emphasized that live feed cannot be completely replaced during the initial stages because the larvae have a very small mouth and initially exhibit sucking-type feeding behaviour. Live feed is therefore essential during the early larval phase. As larvae grow, microencapsulated feeds of around 100–200 µm and other advanced feeds can gradually be incorporated.

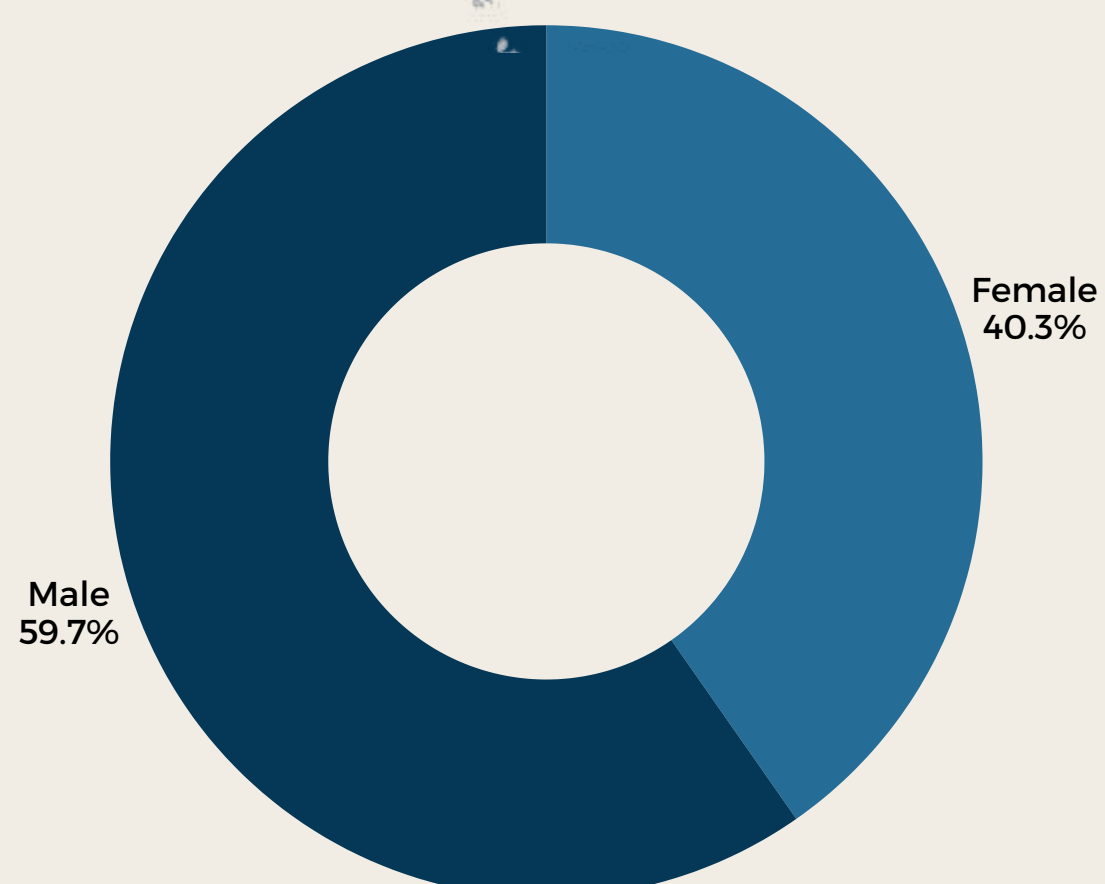
Q6. Why is resistance less likely to develop against LHRHa compared with hCG?

Ans: The speaker explained that LHRHa is a smaller peptide and does not readily stimulate the immune system to produce antibodies against it. In contrast, hCG is a larger peptide that can activate an immune response and lead to antibody production, potentially reducing its effectiveness after repeated use.

Participants Overview



Total Registrations-504
 Attended Participants -139
 (Male - 83; Female-56)



YouTube Video Link: https://www.youtube.com/watch?v=JeXNToxVEls&list=PL4G41x3BKm6lUBmHoLiRlGoB_5Efxiaep&index=8&t=527s