



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



Dr. B. Santhosh
Principal Scientist & Head
ICAR-CMFRI
Regional Centre, Vizhinjam



Dr. M. K. Anil
Principal Scientist
ICAR-CMFRI
Regional Centre, Vizhinjam



Dr. Ritesh Ranjan
Principal Scientist
ICAR-CMFRI
Regional Centre, Visakhapatnam



Dr. Shoji Joseph
Principal Scientist
ICAR-CMFRI
Kochi, Kerala



Dr. Suresh Babu P. P.
Principal Scientist
ICAR-CMFRI
Kochi, Kerala



Dr. Sekar Megarajan
Senior Scientist
ICAR-CMFRI
Regional Centre, Visakhapatnam



Dr. Anikuttan K. K.
Senior Scientist
ICAR-CMFRI
Regional Centre, Mandapam



Dr. Johnson B.
Senior Scientist
ICAR-CMFRI
Regional Centre, Mandapam



Dr. Anuraj A.
Senior Scientist
ICAR-CMFRI
Kochi, Kerala



Dr. Sanal Ebenezeer
Senior Scientist
ICAR-CMFRI
Kochi, Kerala



Mr. Ambarish P. Gop
Scientist
ICAR-CMFRI
Regional Centre, Vizhinjam

REGISTER NOW

20 July-7 August 2026

11:00 am to 12:00 nn IST

Platform: WebEx

MANAGE-FISHTech Webinar

Join the Webinar on
Mass Production of Marine Copepods
"To Explore Technologies in Fisheries and Aquaculture Sector"

22 July 2026
11:00 AM to 12:00 NN IST
Platform: WebEx

Speaker



Dr. B. Santhosh
Principal Scientist & Head
ICAR-CMFRI
Regional Centre, Vizhinjam

MANAGE-FISHTech Webinar

Join the Webinar on
Hatchery Production of Cultchless Spat of Crassostrea madrasensis through Hormone-induced Settlement
"To Explore Technologies in Fisheries and Aquaculture Sector"

24 July 2026
11:00 AM to 12:00 NN IST
Platform: WebEx

Speaker



Dr. M. K. Anil
Principal Scientist
ICAR-CMFRI
Regional Centre, Vizhinjam

MANAGE-FISHTech Webinar

Join the Webinar on
Biovalorisation of Organic Wastes into High-value Aquafeed Ingredients and Organic Compost using Black Soldier Fly Larvae (Hermetia illucens)
"To Explore Technologies in Fisheries and Aquaculture Sector"

20 July 2026
11:00 AM to 12:00 NN IST
Platform: WebEx

Speaker



Dr. Sanal Ebenezeer
Senior Scientist
ICAR-CMFRI
Kochi, Kerala

MANAGE-FISHTech Webinar

Join the Webinar on
Coastal Pond & Sea Cage Farming of Indian Pompano
"To Explore Technologies in Fisheries and Aquaculture Sector"

27 July 2026
11:00 AM to 12:00 NN IST
Platform: WebEx

Speaker



Dr. Sekar Megarajan
Senior Scientist
ICAR-CMFRI
Regional Centre, Visakhapatnam

MANAGE-FISHTech Webinar

Join the Webinar on
Technology for Seed Production of Vermiculated Spinefoot (Siganus vermiculatus)
"To Explore Technologies in Fisheries and Aquaculture Sector"

31 July 2026
11:00 AM to 12:00 NN IST
Platform: WebEx

Speaker



Dr. Anuraj A.
Senior Scientist
ICAR-CMFRI
Kochi, Kerala

MANAGE-FISHTech Webinar

Join the Webinar on
Microalgae culture Technology
"To Explore Technologies in Fisheries and Aquaculture Sector"

03 August 2026
11:00 AM to 12:00 NN IST
Platform: WebEx

Speaker



Dr. Shoji Joseph
Principal Scientist
ICAR-CMFRI
Kochi, Kerala

MANAGE-FISHTech Webinar

Join the Webinar on
Breeding and Seed Production of Giant Trevally (Caranx ignobilis)
"To Explore Technologies in Fisheries and Aquaculture Sector"

21 July 2026
11:00 AM to 12:00 NN IST
Platform: WebEx

Speaker



Mr. Ambarish P. Gop
Scientist
ICAR-CMFRI
Regional Centre, Vizhinjam

MANAGE-FISHTech Webinar

Join the Webinar on
Production of Designer Clownfishes through Captive Breeding
"To Explore Technologies in Fisheries and Aquaculture Sector"

23 July 2026
11:00 AM to 12:00 NN IST
Platform: WebEx

Speaker



Dr. Anikuttan K. K.
Senior Scientist
ICAR-CMFRI
Regional Centre, Mandapam

MANAGE-FISHTech Webinar

Join the Webinar on
Standardized Protocol for Breeding and Seed Production of Black Seabream (Acanthopagrus berda)
"To Explore Technologies in Fisheries and Aquaculture Sector"

28 July 2026
11:00 AM to 12:00 NN IST
Platform: WebEx

Speaker



Dr. Suresh Babu P. P.
Principal Scientist
ICAR-CMFRI
Kochi, Kerala

MANAGE-FISHTech Webinar

Join the Webinar on
Nursery Rearing of Indian Pompano (Trachinotus mookalee) in Recirculating Aquaculture System (RAS)
"To Explore Technologies in Fisheries and Aquaculture Sector"

04 August 2026
11:00 AM to 12:00 NN IST
Platform: WebEx

Speaker



Dr. Ritesh Ranjan
Principal Scientist
ICAR-CMFRI
Regional Centre, Visakhapatnam

Day - 1



20-07-2026

Biovalorisation of Organic Wastes into High-value Aquafeed Ingredients and Organic Compost using Black Soldier Fly Larvae (*Hermetia illucens*)



Dr. Sanal Ebeneezar
Senior Scientist
ICAR-CMFRI
Kochi, Kerala
sanalebeneezar@gmail.com

Dr. Sanal Ebeneezar delivered a comprehensive and insightful presentation on Black Soldier Fly Larvae, highlighting its significance as a sustainable solution for aquaculture feed production and organic waste management.

Modern aquaculture faces a significant challenge in balancing sustainable growth with the rising costs and environmental impact of conventional fish meal. An innovative circular-economy approach was developed by ICAR-CMFRI that uses Black Soldier Fly (*Hermetia illucens*) larvae to transform organic waste into high-value aquafeed ingredients and nutrient-rich organic compost. This technology not only addresses waste management concerns but also provides a nutritious, cost-effective and sustainable protein source for the aquaculture industry.

Need for Black Soldier Fly Larvae Technology

The speaker explained that fish meal has long been regarded as the benchmark protein source for aquaculture feeds due to its excellent nutritional quality. However, increasing prices, limited availability, and dependence on wild fish stocks have made it necessary to identify sustainable alternatives. Black Soldier Fly Larvae provide a promising solution by efficiently converting biodegradable organic waste into protein-rich biomass suitable for aquaculture and livestock feeds.

The speaker explained the biology and production process of the Black Soldier Fly (*Hermetia illucens*), highlighting its rapid growth, efficient waste conversion capacity and safe, non-pest nature. Successful production requires controlled environmental conditions, including optimum temperature, humidity, adequate light and proper ventilation.

The harvested larvae are processed into dried larvae, protein meal, and oil suitable for aquaculture, poultry, livestock and pet feed industries, while the residual frass serves as an organic fertilizer. The speaker also emphasized the environmental benefits of reducing landfill waste, lowering greenhouse gas emissions, and decreasing dependence on fish meal derived from wild marine fisheries.

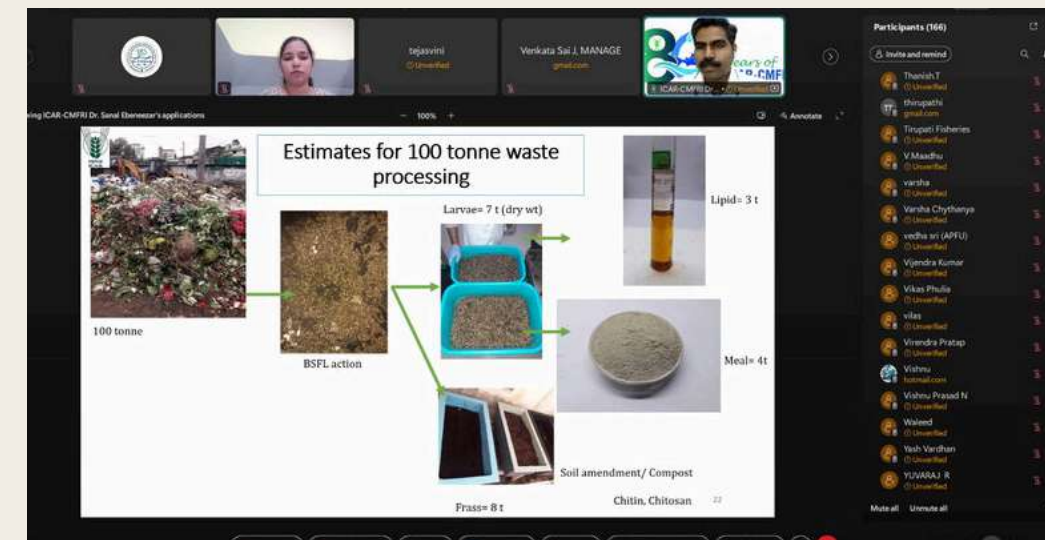
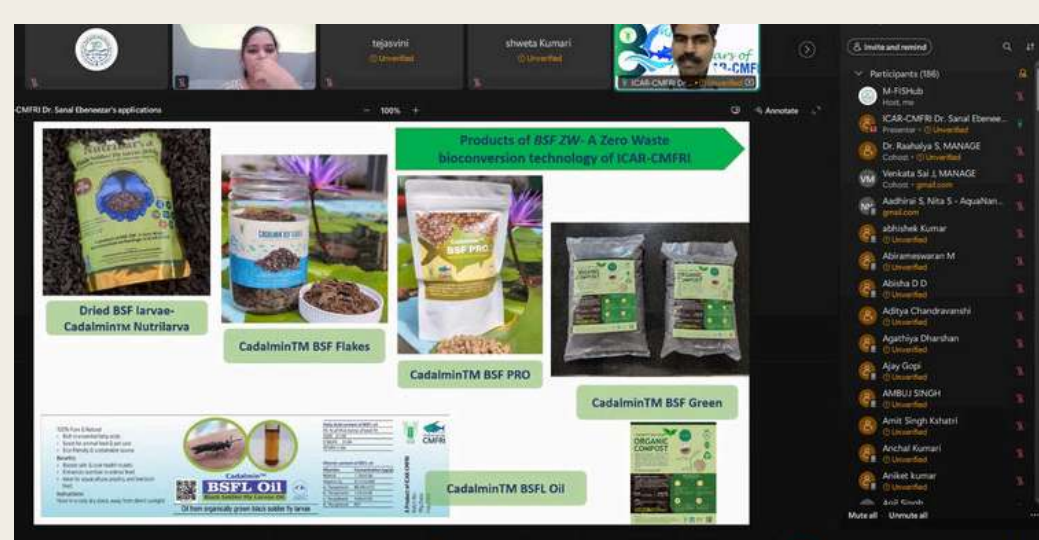


Production Technology

He elaborated on the complete BSFL production technology, beginning with the collection and pre-processing of organic waste, followed by larval rearing under controlled environmental conditions of 28–30°C temperature, 60–80% relative humidity, adequate ventilation and sufficient light for successful breeding. The harvested larvae are subsequently processed into dried larvae, protein-rich insect meal, and BSFL oil, while the residual by-product (frass) is converted into a high-quality organic compost. He emphasized that the protein meal possesses excellent nutritional value and can be effectively utilized in aquaculture, poultry, livestock, ornamental fish and pet feed industries.

Dr. Ebeneezar further highlighted the environmental and economic benefits of the technology, explaining that it significantly reduces landfill waste, lowers greenhouse gas emissions and minimizes dependence on fish meal derived from wild fisheries. He noted that BSFL production offers multiple revenue streams with an estimated return on investment of 2–2.5 years and that ICAR-CMFRI supports commercialization through technology licensing and startup assistance. Concluding his presentation, he emphasized the need for continued research on substrate standardization, automation and AI-based monitoring systems to enhance large-scale production and establish BSFL technology as a cornerstone of sustainable aquaculture and waste valorization.

In conclusion, Dr. Sanal Ebeneezar emphasized that Black Soldier Fly Larvae (BSFL) technology offers a sustainable and economically viable solution for converting organic waste into high-value aquafeed ingredients and organic compost. By transforming biodegradable waste into nutrient-rich protein, oil, and organic fertilizer, the technology addresses critical challenges related to feed security, waste management, and environmental sustainability while promoting a circular bioeconomy. He concluded that with scientific production practices, technology transfer and wider commercialization through ICAR-CMFRI, BSFL technology has immense potential to support sustainable aquaculture, create entrepreneurial opportunities and contribute to climate-resilient and resource-efficient food production systems.





Q & A Session

Q1. What is the procedure for transitioning fish from conventional feed to BSFL-based feed?

Ans: The acceptance of BSFL-based feed varies among fish species. Species such as tilapia, channa, and several ornamental fishes readily accept Black Soldier Fly larvae, whereas others, including Asian sea bass, may require gradual adaptation. He recommended introducing BSFL-based feed from the fingerling stage to ensure successful feed transition and better acceptance.

Q2. Is there a risk of contaminants being transferred through BSFL?

Ans: The speaker emphasized that the safety of BSFL products largely depends on the quality of the organic substrate used. If the waste contains heavy metals, antibiotic residues, pesticides, or other contaminants, these may accumulate in the larvae and subsequently enter the food chain. Therefore, only clean and safe organic waste should be used for BSFL production.

Q3. How safe is BSFL technology with respect to pathogen transmission?

Ans: Dr. Ebeneezar explained that Black Soldier Fly larvae possess a strong innate immune system and exhibit natural antimicrobial activity. Studies have demonstrated that the larvae significantly reduce the pathogenic load in organic waste during bioconversion, making the technology environmentally safe and suitable for producing high-quality feed ingredients.

Q4. How economically viable is BSFL technology, and what is the licensing cost?

Ans: The speaker noted that although initial investment is required for establishing breeding and rearing facilities, the technology is economically attractive due to reduced feed costs and multiple value-added products. He informed participants that ICAR-CMFRI licenses the technology to Indian startups for ₹1 lakh plus 18% GST, covering production units with a waste processing capacity of up to 20 tonnes per day, with an applicable royalty on commercial production. The expected return on investment is approximately 2–2.5 years.

Q5. What quality parameters should be evaluated while purchasing BSFL products?

Ans: Dr. Ebeneezar advised that buyers should assess the protein, lipid, amino acid profile, microbiological quality, heavy metal content, and chitin level of BSFL products before procurement. Ensuring consistent nutritional quality and low contamination levels is essential for producing safe and effective aquafeeds.

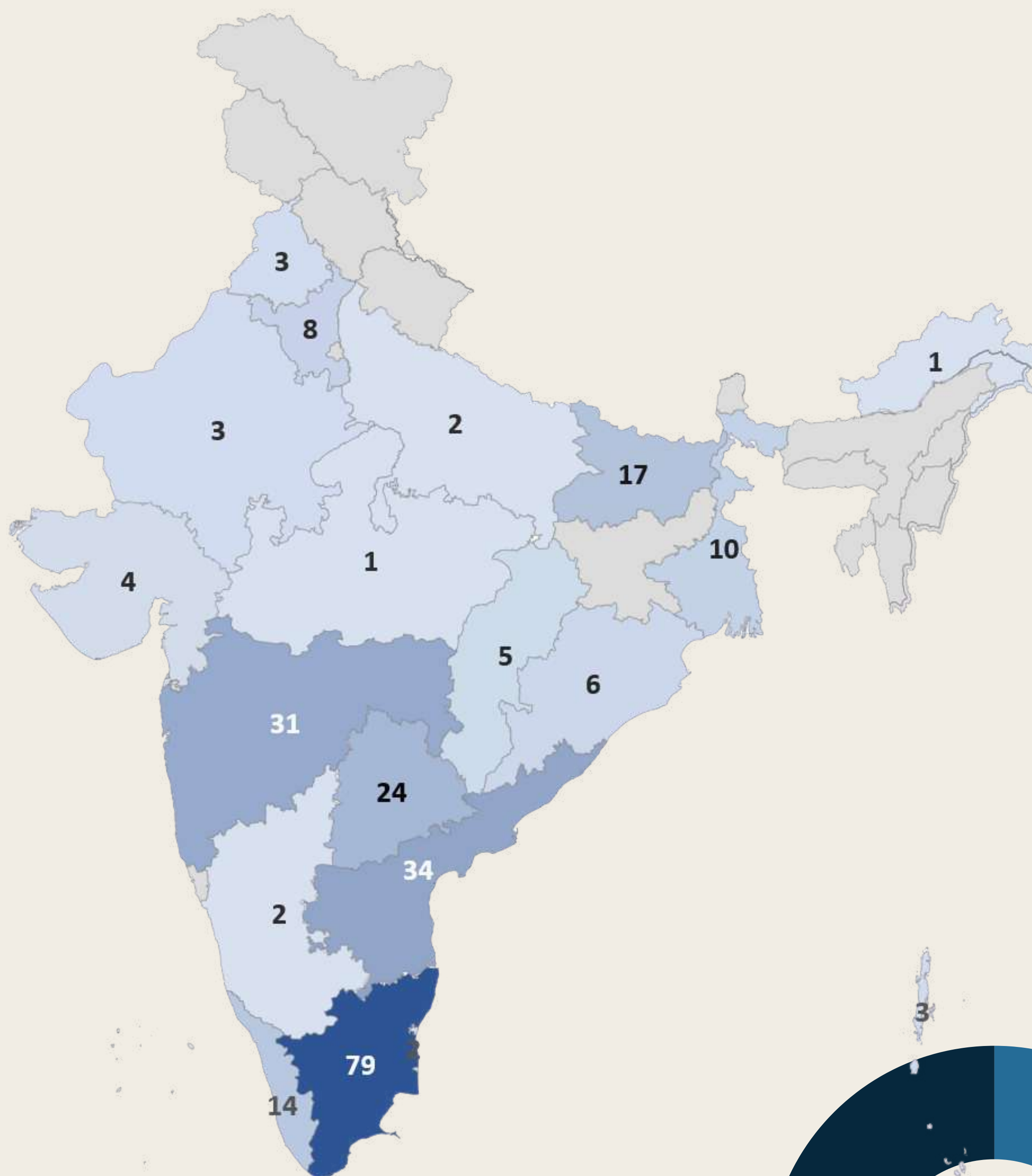
Q6. How can the high lipid and chitin content of BSFL be managed?

Ans: The speaker explained that the high oil content can be reduced through mechanical defatting using a screw press, resulting in a protein-rich meal with approximately 10–15% lipid content. To improve digestibility, particularly in herbivorous fish, he suggested harvesting larvae before the prepupal stage when chitin levels are lower or supplementing feeds with chitinase enzymes to enhance chitin digestion.

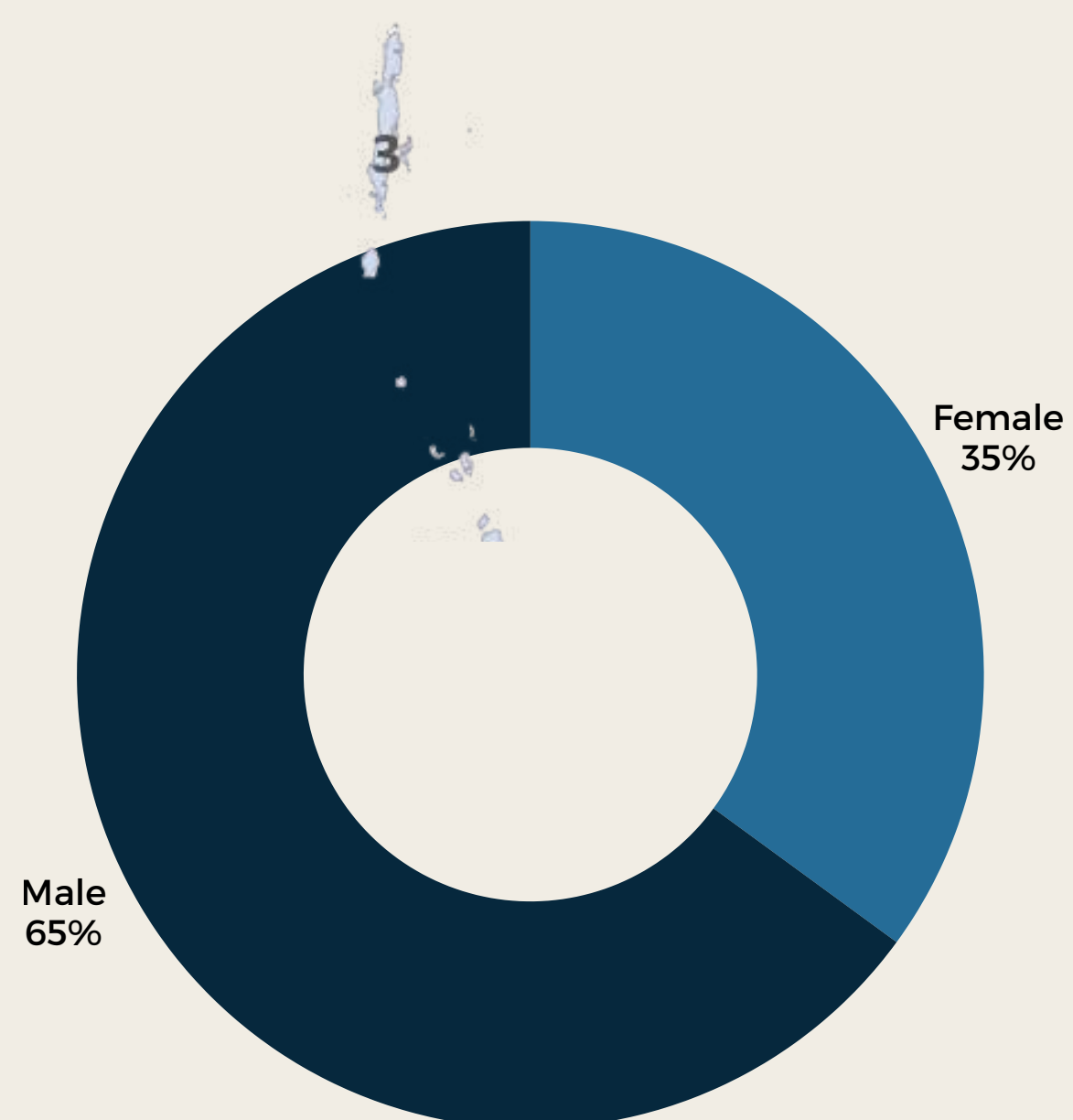
Q7. Does BSFL-based feed affect fish flesh quality?

Ans: Dr. Ebeneezar reported that feeding trials conducted by ICAR-CMFRI on species such as silver pompano and catfish showed no significant differences in flesh quality, texture, or taste compared to fish fed conventional fish meal-based diets, confirming the suitability of BSFL meal as an alternative protein source.

Participants Overview



Total Registrations: 502
 Attended Participants - 254
 (Male - 165; Female-89)



YouTube Video Link: https://www.youtube.com/live/hcYK0c-V76U?si=xte_CG9TjQ5xcAXf