

FISHERIES SCIENCE DIVISION

Weekly Report on Celebration of Events on Bharat ki Azadi ka Amrut Mahotsav: 75th years of Celebration of Independence

National Campaign Fisheries Sector

Theme: System diversification in aquaculture. Sub theme: System diversification Integrated Farming

National webinar on ‘System Diversification in Aquaculture: Aquafeed from secondary fishery raw materials’

Report on National webinar on ‘System Diversification in Aquaculture: Aquafeed from secondary fishery raw materials’ conducted at ICAR-CIFT Head Quarter on 01st September, 2021.

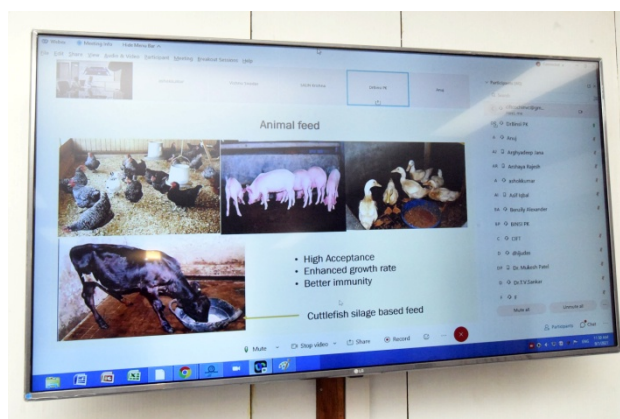
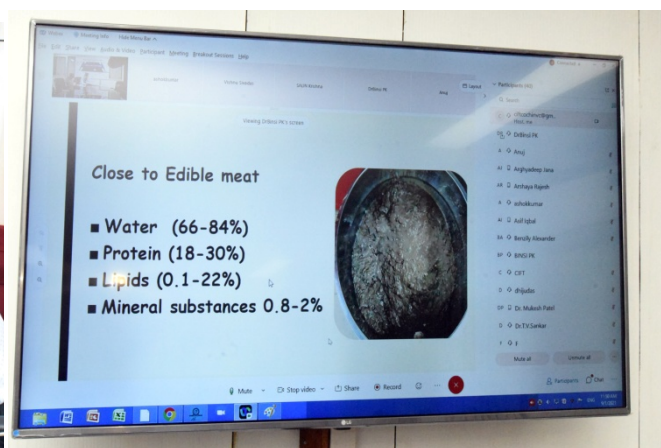
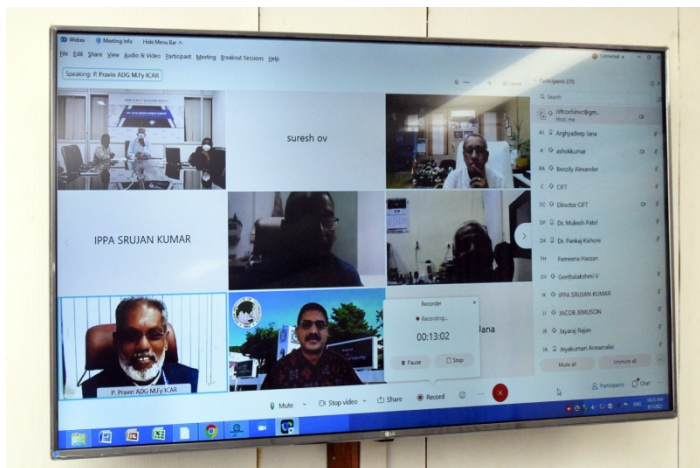
A national Webinar on ‘System Diversification in Aquaculture: Aquafeed from secondary fishery raw materials’ was conducted by ICAR-Central Institute of Fisheries Technology, Cochin on 1st September, 2021 in connection with AZADI KA AMRIT MAHOTSAV. The webinar was started with ICAR Song. Dr. Ashok Kumar K, Head, Fish Processing Division delivered the welcome address. In his welcome address, he emphasized the demand for cheaper protein sources for the development of aqua feed industry in the country. Dr. C.N. Ravishankar, Director, ICAR-CIFT addressed the gathering. In his opening remarks briefed about various products and technology developed by ICAR-CIFT. He also emphasized the need for valorization of secondary raw material for high value products. In this context he highlighted the technological innovation in fish feed production and machinery line developed by ICAR-CIFT. He assured that all the technical support and expertise from ICAR-CIFT will be extended to the farmers, start-up and other entrepreneurs. Dr. Pravin Puthra, ADG (Marine Fisheries), ICAR, New Delhi inaugurated the webinar. During his talk, he highlighted the need of hygienic practices on fish market and waste handling in domestic market. He also narrated the scope for utilization of fish waste as secondary raw material for various high value products. He also emphasized the need for development of species- specific feed from fish waste and stressed to give priority. He also stressed to include development of feed for marine ornamental fishes. He appreciated ICAR-CIFT contribution to the fisheries sector specifically under the Swachhtha Action Plan. He also opined that implementing any technology on fish waste utilization will bring more impact at national level. Dr. Salin K, Associate Professor, Asian Institute of Technology (AIT) Bangkok, Thailand delivered keynote address on “Challenges and Opportunities in Feeding Fish Using Low-Cost Raw Materials”. He appraised the global aquafeed production, elaborated on various alternative feed ingredients such as insect meal, microalgae, seaweed, canola meal, cotton seed meal etc., as a substitute for fish meal. He also pointed out the limitations such as anti-nutritional factors, incomplete nutritional profile (amino acid, fatty acid profiles) and poor digestibility. He expressed his views on promising areas in aquaculture sectors such as holistic nutrition, circular feed, automated feeding technologies and interventions from artificial intelligence and machine learning. He highlighted the significant challenges and opportunities in utilizing the

secondary raw material as feed input for aquaculture industry. During her presentation, Dr. Binsi P K , Scientist, ICAR-CIFT, explained the nutritional significance of secondary raw material and technical issues including handling, transportation of raw materials and safety concern of fish feed developed from secondary raw material. She also proposed various strategies on handling and valorisation of fish waste. Dr. Zynudheen A A, Principal Scientist, ICAR-CIFT detailed the technology for direct conversion of domestic fish market waste into aquafeed. He explained various research outputs of earlier studies conducted by ICAR-CIFT on fish feed developed from various fish market waste (Sardine, Anchovy, Tilapia, and Shrimp waste) for the culture of Tilapia. He narrated the technological aspects of feed production including the machinery development, economics and feasibility. He also stressed for the need of collaboration with various stakeholders in aquaculture and fish processing industries.

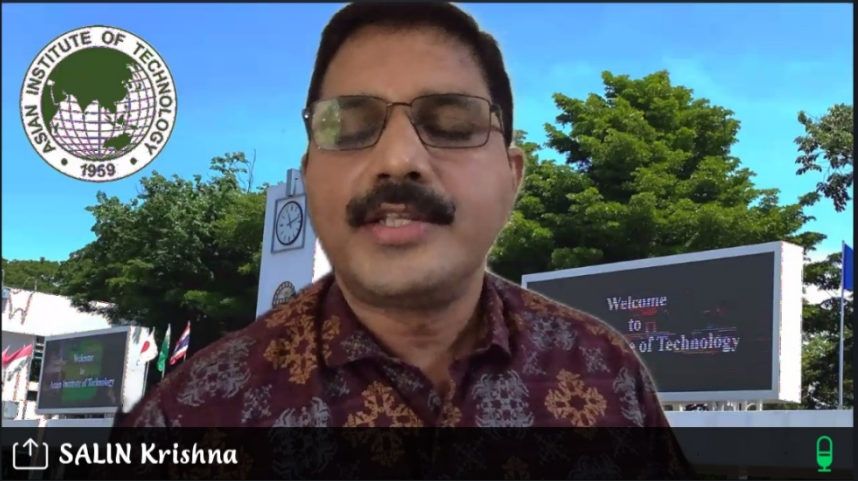
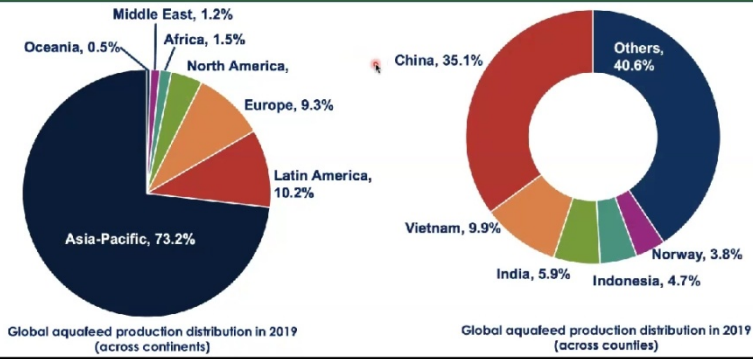
The panel discussion was conducted followed by the talk from invited resource person. The panel members were Mr. Mathew Joseph (COO, FreshTo Home, Bangalore), Dr. Vikas (SMS, KVK, Ernakulam), Mr. Jayaraj Rajan (Project Co-ordinator Matsya Bhavan, Department of Fisheries., Govt. of Kerala), Dr. George Ninan (Principal Scientist, ICAR-CIFT), Dr. Binsi P K (Scientist, ICAR-CIFT). The panel discussion was moderated by Dr. Zynudheen AA (Principal Scientist, ICAR-CIFT). The major recommendations received from panel discussions are as follows.

1. Establishing decentralized processing units for secondary fishery raw material
2. Waste dumping practices should be discouraged by legal means by state/central government authorities. Alternative fish waste utilization ventures should be supported financially and logistically by government bodies.
3. Variation in raw material composition including size, species and nutrition can be overcome through establishing decentralized processing units and pooling the regional waste for production.
4. ICAR-CIFT should conduct species -specific study on using the feed from fish waste for different life stages (fingerling to grow-out stages) to compete with commercially established brands. The need for formulation and optimization for various commercially cultured species was also stressed.
5. ICAR-CIFT has to discuss with national and state government authorities to introduce special schemes specifically for producing feed from fish waste
6. Entrepreneurs are recommended to approach for availing incubation facilities and technical support of ICAR-CIFT

At the end of the programme, Video on feed production technology from secondary fishery raw material was demonstrated. The webinar was attended by 43 participants including farmers, entrepreneurs and scientists. Dr. Geethalakshmi, Principal scientist, ICAR-CIFT proposed formal vote of thanks. Dr. Elavarasan K, Scientist and Co-convenor moderated the programme.



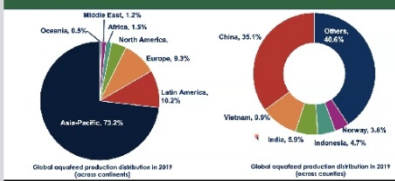
GLOBAL AQUAFEED INDUSTRY



SALIN Krishna



GLOBAL AQUAFEED INDUSTRY



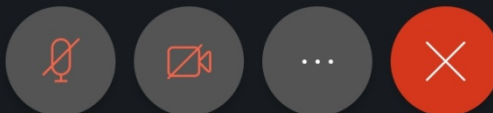
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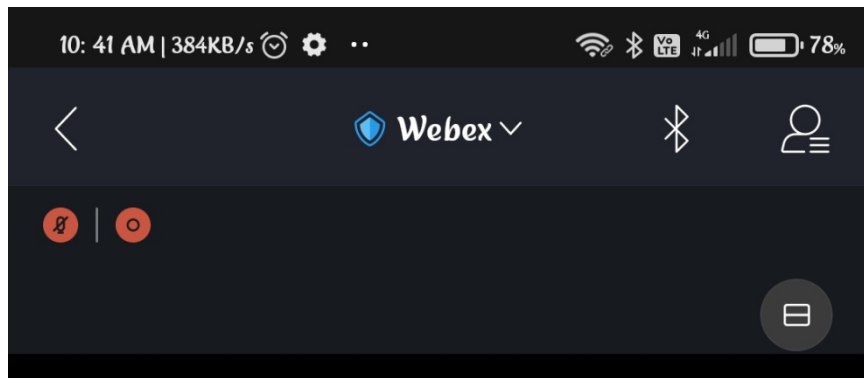


ciftcochinv@gmail.com (host)



prem kumar





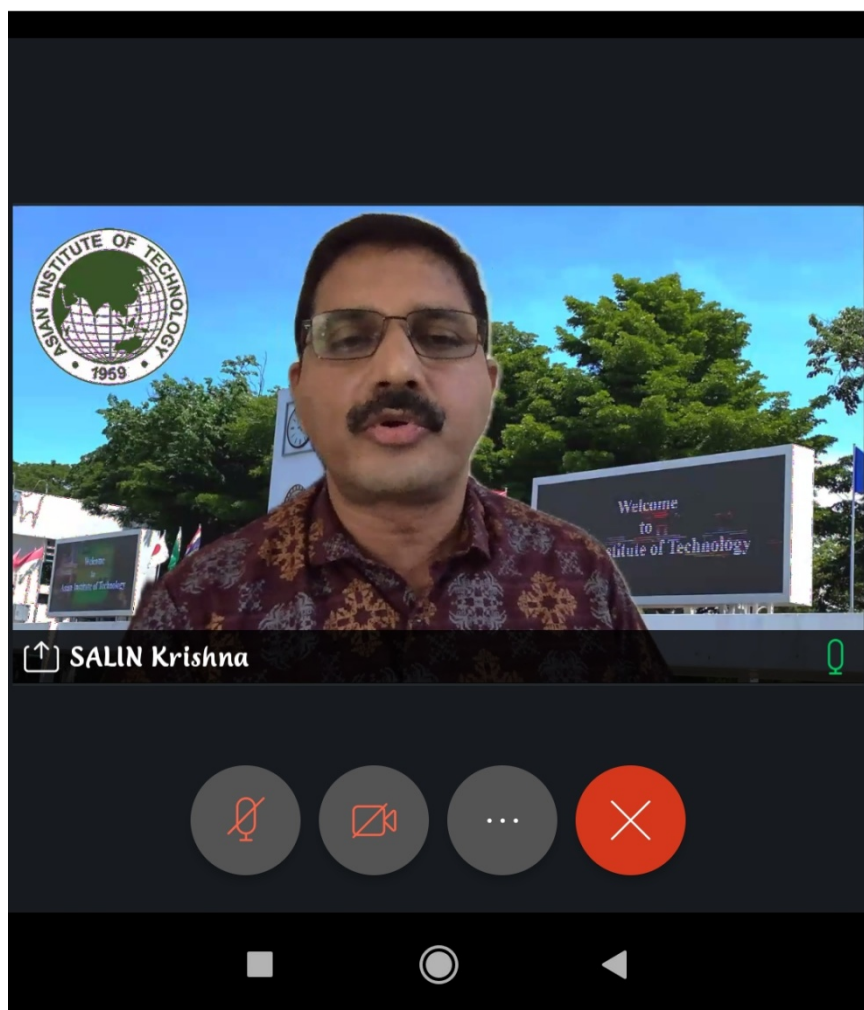
FISHMEAL AS A FEED INGREDIENT

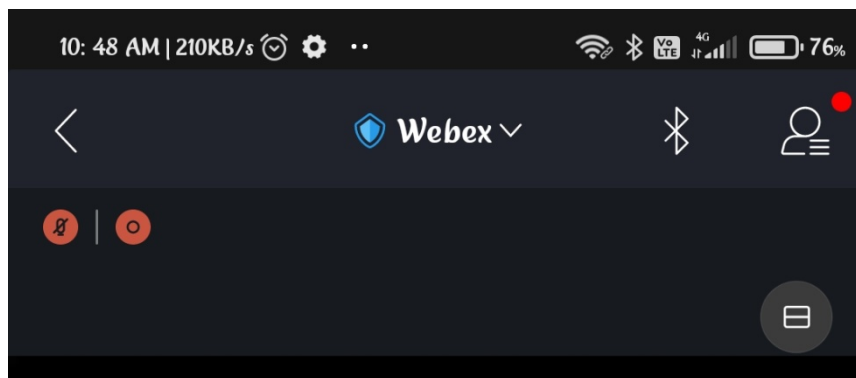


IFFO (2011)

- ↑ Crude protein (60-72%)
- ↑ Palatability and digestibility
- ↑ Amino acids (as Met and Lys)
- ↑ Fatty acids (as EPA and DHA)

* Around 4-5 tons of whole fish are required to produce 1 ton of fish meal





LIMITATIONS OF PLANT-BASED PROTEIN SOURCES

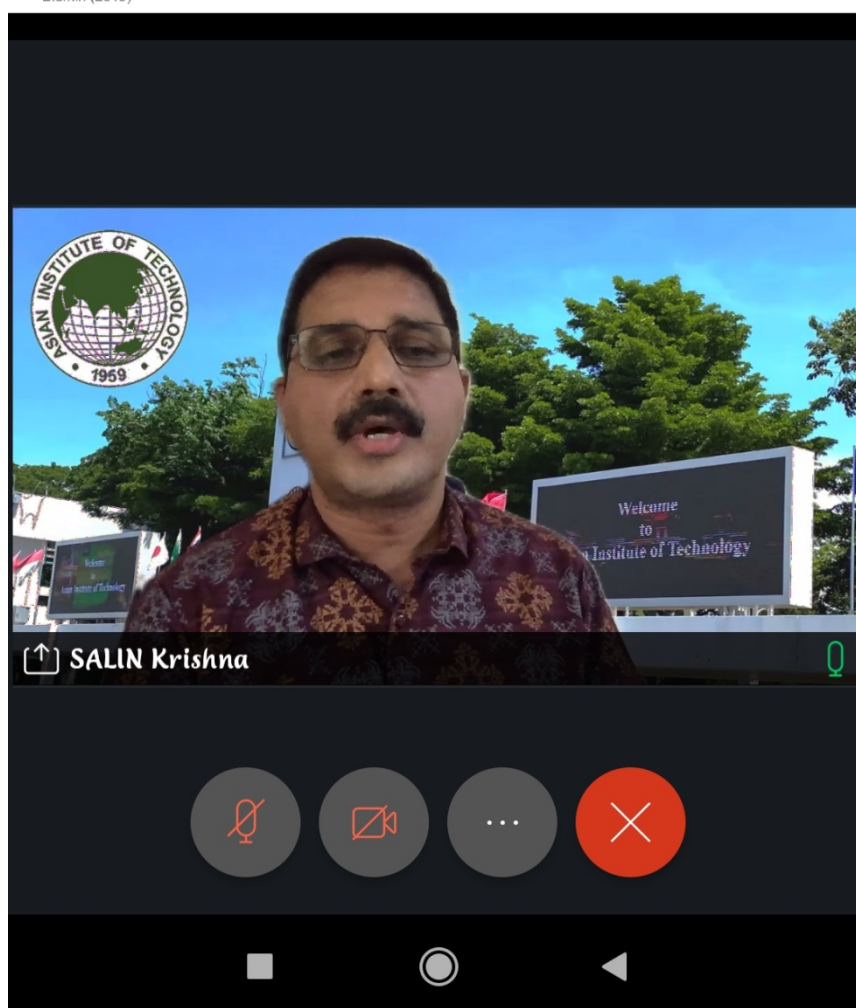
- Anti-nutritional factors (ANFs)
- Amino acid profiles
- Fatty acid profiles
- Mineral profiles
- Palatability
- Mycotoxin contents

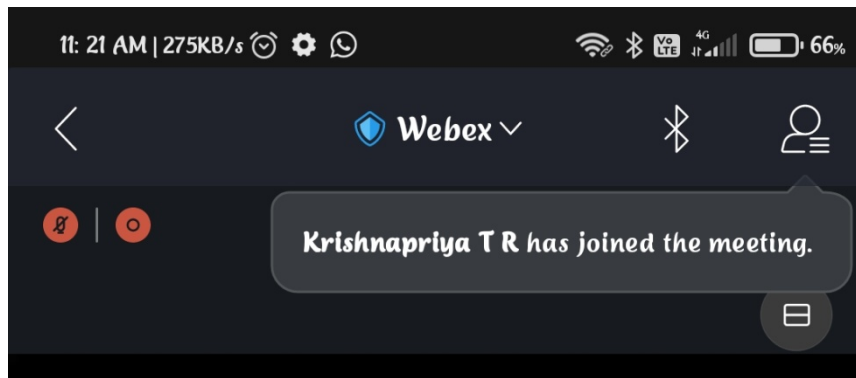


Feed additives may be needed to reduce negative effects of plant-based protein ingredients



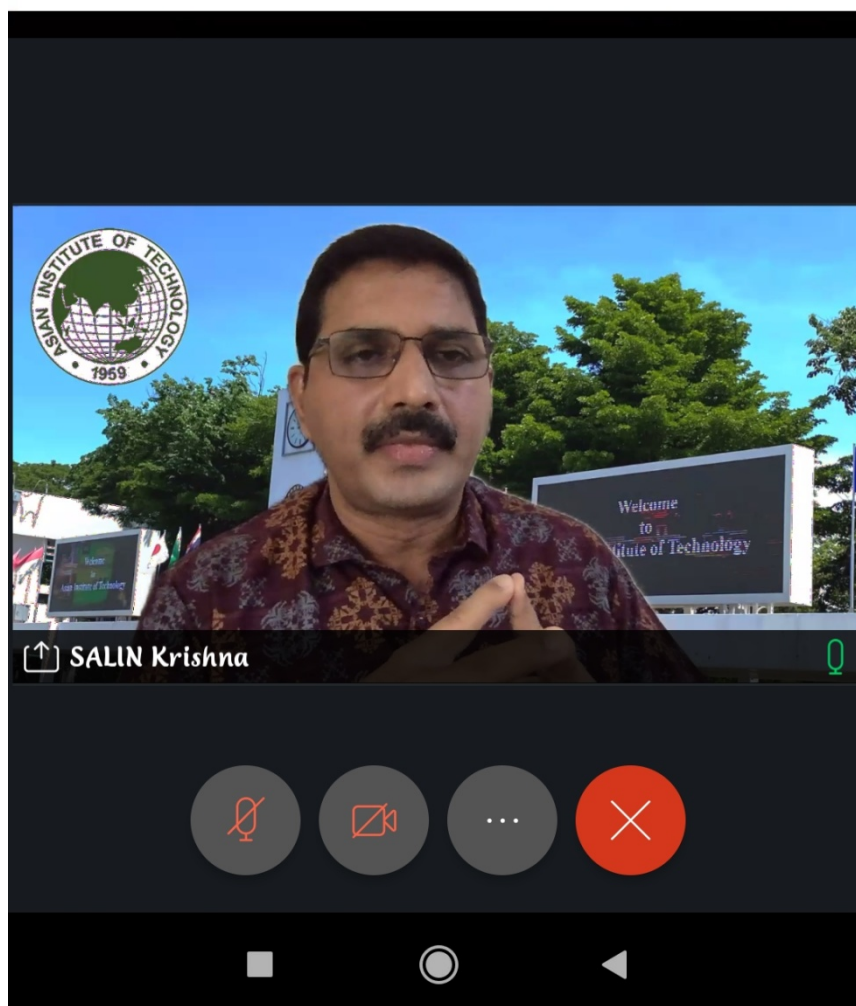
Biomix (2019)





NEW-AGE FEEDS AND FEED MANAGEMENT

- **Small scale systems**
 - Manually controlled
 - Greatly labour-oriented
 - Mash feeds, farm-made feeds, trash fish, and pellets
- **Industrial aquaculture systems**
 - Computed-based decision making tools
 - Less labour
 - Application of growth and energetics models
 - Efficient nutrient management
 - Diet formulation, environment parameters, animal behaviour
 - More sustainable – less effluents, reduced cost





Webex



Vikas P. A



ciftcochinvc@gm... (host)



CIFT



mathew joseph



Speaking: Vikas P. A

