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Newsletter of ICAR-Central Marine Fisheries Research Institute

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News Highlights

Biofloc fish farmers reap benefits with support from ICAR-CMFRI

A self-help group belonging to the scheduled caste community in Cheranalloor village in Kerala got a bumper harvest from biofloc fish farming. The harvest mela was inaugurated on 2nd December 2022 by T. J. Vinod, MLA. The Sreelekshmi self-help group used Genetically Improved Farmed Tilapia (GIFT) in 5-diameter biofloc tanks set up adjacent to their households. Aiming to transform the lives of the SC community by helping them become small-scale entrepreneurs in fish farming, the ICAR-Central Marine Fisheries Research Institute (CMFRI) introduced this venture to the families in the locality by extending to them all the support to undertake the biofloc farming. Each harvested fish weighed around 500 g on average, and the fish harvest was done according to the market demand. The farming was started in November last year by stocking 1800 tilapia seedswith all the assistance, including a biofloc tank, fish seeds, feeds and technical guidance under the central government sponsored Scheduled Caste Sub Plan (SCSP) programme operated in the institute. This innovative fish farming is also underway in Palakkad, Thrissur, Idukki and Kottayam districts under ICAR-CMFRI's guidance ◆

Marine fish landings data collection in Andaman and Nicobar islands goes digital

Andaman and Nicobar administration in collaboration with ICAR- CMFRI has launched its first online data collection of marine fish landings from landing centres in the archipelago. As an outcome of a MoU between the ICAR-CMFRI and the Department of the Fisheries, Andaman and Nicobar, for the first time the marine fish catch data is being collected with statistically supported software, from the archipelago. ICAR-CMFRI introduced its sampling methodology for the estimation and analysis of the catch data through Fish Catch Survey and Analysis (FCSA) software by using electronic tablets. It also trained the enumerators, deployed by the Andaman administration, to collect the marine fish landings data. ICAR-CMFRI has already signed similar MoUs with State Fisheries Departments of Maharashtra, Goa, Karnataka, and Tamil Nadu for similar fish landings data collection ◆

Director Speaks

ICAR-CMFRI established in year 1947, is over 75 years old and has emerged as a leading tropical marine fisheries research institute in the world. Its focus on marine fisheries biology over the years has created a unique historical database of over 9 million catch and effort data records from all maritime states of India. It is also a source of information on the bio-economic characteristics of exploited marine finfish and shellfish stocks in the Indian EEZ. During the 70s, mariculture research needs were also addressed. This has helped the institute to perform well as a reliable knowledge partner to address the needs of various stakeholders. Development of specific fisheries management plans, studies related to climate change effects on marine habitats as well as marine fishers' livelihoods along with support for sea-farming and sustainable mariculture is reflected in the various activities that the institute took up during the quarter.

With best wishes

A. Gopalakrishnan

Director, ICAR-CMFRI

Research Highlights

First marine cage culture farm under mariculture policy becomes operational

Seeing the huge potential in mariculture, Government of Goa became the first state in India to notify the mariculture policy for open sea cage farming in territorial waters. The cage culture farm at Candolim, North Goa was inaugurated by Dr. Sharmila Monteiro, Director, Department of Fisheries, Govt. of Goa on 28-10-2022. Dr. Suresh Babu P. P., Scientist in Charge and Dr. Anuraj A., Scientist of Karwar Regional Station of ICAR- CMFRI, were present during the function. Mr Sheldon Fernandes belongs to fishermen community, and is also the first entrepreneur to start an open sea cage farm under mariculture policy in India. With 5 cages sanctioned under centrally sponsored scheme of Department of Fisheries, Govt. of Goa and two cages provided under All India Network Project on Mariculture of ICAR- CMFRI, Karwar for demonstration of Integrated Multitrophic Aquaculture, it is expected that mariculture activities will pick up in the region. Hatchery produced seeds of Asian seabass, *Lates calcarifer* and silver pompano (*Trachinotus blochii*) were stocked in these cages and technical guidance for the entire period of cage culture will be extended by ICAR-CMFRI, Karwar ◆

Natural spawning of vermiculated spinefoot *Siganus vermiculatus*

Natural spawning without inducement of hormones was observed in *Siganus vermiculatus* during third quarter of full moon on 17 November 2022 at marine hatchery complex of Karwar regional station of ICAR-CMFRI. Eggs were found dispersed in water column inside a mini-RAS tank of 10-ton capacity, in which adult fishes of *S. vermiculatus* were maintained for broodstock development. Fishes were fed on a pellet feed (consisting of 40% protein, 10% fat, 3.5% fibre) enriched with vitamin E, vitamin C, cod liver oil and soy lecithin, at the rate of their 2% body weight twice daily. Diet was supplemented with squid meat and seaweed occasionally. Approximately 50,000 eggs in blastula stage were collected from the tank and eggs hatched between 19 to 20 h after collection. Induced spawning of *S. vermiculatus* has been reported during the first quarter and full moon phase of lunar cycle in the marine hatchery complex earlier.

Reported by A. Anuraj, P. P. Suresh Babu, Mahendra Pal and P. Anjulekshmi, Karwar Regional Station ◆

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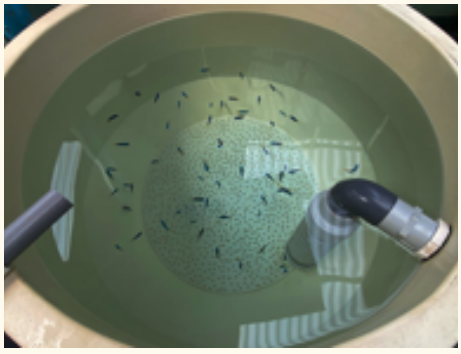
Closed recirculatory aquaculture system for fish seed production

CRAS for seed production

Cylindro-conical tanks for bivalves

Central filtration system

Oyster larval-rearing



Blue damsel juveniles produced in the CRAS

A Closed RecirculatoryAquaculture System (CRAS) developed for shellfish and finfish seed production was tested successfully for oysters and ornamental fishes. Seed production is one of the crucial aspects of any aquaculture activity. The prevalence of disease and mortalities in the hatchery and subsequent grow-out losses from disease-carrying seedlings is a major concern in aquaculture. The chances of larvae and seeds getting infected with pathogens are relatively high in larval-rearing systems with flow-through or daily water exchange. However, a CRAS provides better biosecurity and stable rearing conditions. The new system also reduces labour and avoids the need to reduce the stocking density as the rearing progresses, by shifting them to larger tanks or more number of tanks. Stocking density could be considerably enhanced by increasing the turnover rate of the RAS. The system consists of 4 cylindroconical tanks that can be used for bivalve and finfish larval rearing, and three 3 ton tanks for finfish larval rearing and juvenile production, a central filtration unit and a precision filtration module connected to one 3-ton tank. The central filtration unit comprises a settling cum balancing tank, a physical filtration unit packed with a sponge filter and coral sand, a biological filtration chamber with MBBR media, a form fractionator, a cartridge filter and a UV filter. The precision filtration module connected to the 3rd 3-ton tank has a separate biofilter working on airlift, a protein skimmer and a separate UV unit. Edible oyster larvae (*Crassostrea madrasesnsis*) and two species of damsels (*Pomacentrus caeruleus* and *Dascyllus aruvanus*) were successfully tested in the system.Hatching of the fish egg can also be done in the system itself, and rearing progresses from a near static system to RAS, gradually increasing the turnover rate. The drain filter is progressively changed from 40 microns to 150 and 200 microns in the case of bivalve larvae. In fish larval rearing, it can subsequently be increased to 500-1000 microns when they reach the juvenile stage.

Reported by M. K. Anil, P. Gomathi, G. Rathi Bhuvaneswari, B. Raju and V. Anand, Vizhinjam Regional Centre of ICAR-CMFRI ◆

Knowledge partner MoU signed with the Government of Andhra Pradesh

ICAR-Central Marine Fisheries Research Institute signed a memorandum of understanding with the Government of Andhra Pradesh as knowledge partner for providing technical services in marine fisheries and mariculture on 21st November, 2022 in the presence of the Honourable Chief Minister of Andhra Pradesh, Shri Y. S. Jagan Mohan Reddy. As part of the agreement, the institute would provide technical backstopping on various aspects of seaweed farming to identified fisherfolk and entrepreneurs as an alternate enterprise. The technical assistance would encompass all aspects of training, setting up of seed production/nursery facilities and devising appropriate location-specific farming methods. Other dignitaries present included Smt. Poonam Malakondaiah, IAS, Chief Secretary, Agriculture and Cooperation Department and Shri K. Kannababu, IAS, Commissioner of Fisheries ◆

Heavy landings of pharaoh cuttlefish in West Bengal coast

Among the cuttlefish species landed in West Bengal, pharaoh cuttlefish *Sepia pharaonis* usually constitute a minor fishery. However, unusual, heavy landings were observed during the field survey at Digha Mohana Landing Centre, West Bengal on 25th November 2022. The fishes were caught in a mechanized multiday trawler operating off the Digha coast, nearly 80 km away from the coast line at the water depth of 35-45 m. Nearly one ton of *S. pharaonis* in the size range of 20.2-29.3 (24.4) cm dorsal mantle length (DML) and 625-1775 (1025) g total body weight (TW) were auctioned at the landing centre with a price of ₹220-300 per kg. ◆

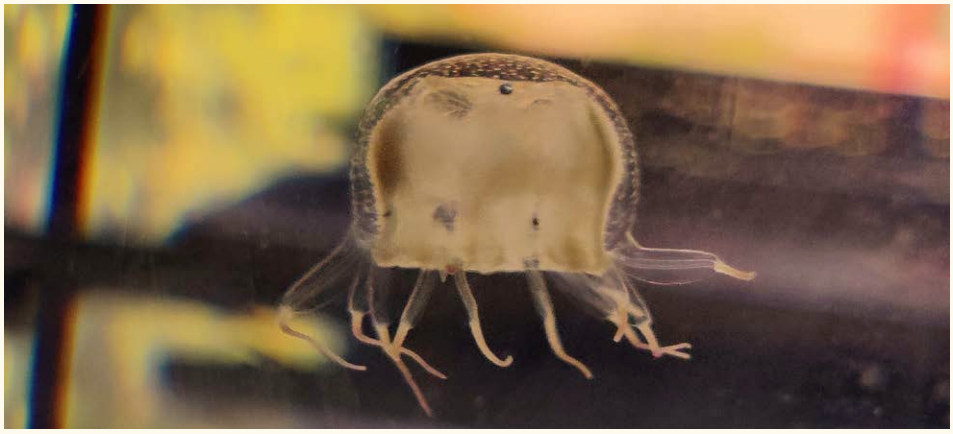
Seaweed cultivation potential in the Gulf of Mannar to be assessed

The inter-institutional project funded by Department of Fisheries, GoI under centre sector scheme of PMMSY was sanctioned to NCSCM, ICAR-CMFRI and CSIR-CSMCRI, where NCSCM is the nodal agency. The Mandapam Regional Centre of ICAR-CMFRI and Tuticorin Regional Station of ICAR-CMFRI have initiated seaweed farming trial in a participatory mode by involving local fishers from two identified sites (Nochiurani & Seeniappadharga) in Ramanathapuram district and one site (Vellapatti) in Tuticorin district to study the impacts on corals / seaweed beds.

Reported by B. Johnson & G. Tamilmani, Mandapam Regional Centre ◆

News Bytes

Unusual occurrence of jellyfish blooms worry for aquaculture farms



Tripedalia cystophora, a box Jellyfish collected from the infested ponds

In November 2022, Unusual jellyfish blooms were reported in November 2022 near large aquaculture units in Palghar District, Maharashtra and worried fish farmers withheld prawn stockings. The jellyfish species recorded were two hydrozoans, *Blackfordia* sp. and *Turritopsis* sp., and a smaller cubozoan, *Tripedalia cystophora*, which survived in these extensive aquaculture farms with salinities ranging from 10.8 ppt to 29.6 ppt. The blooms were observed following the Southwest monsoon season and source of the infestation was discovered to be the intake of water from Vaitarna Creek.

Reported by S. Ramkumar, Raju Saravanan, A. K. Punam, D. M. Vaibhav, L. Ranjith, Deepak, Vaibhav Tawde, Umesh Rane and K. S. Sobhana ◆

Large sized *Siganus javus* landed by single day trawlers at Pamban

Streaked spinefoot, *Siganus javus* (Linnaeus, 1766) is a reef associated perch frequently caught in gillnets and traps operating at Gulf of Mannar and Palk Bay. *S. javus* is not often recorded in trawl landings. However, six baskets full of *S. javus* landed at Pamban Therkuvadi FLC on 26.10.2022 by a single trawl unit. Each basket consisted of 16-20 fishes with in a size range of 37.5-46.5 cm total length weighing from 750 g to 1kg per fish which was sold at a rate of ₹160/kg to the dry fish unit at Pamban Lighthouse.

Reported by L. Remya, M. Midhun, R. Rajkumar, R. Vinothkumar and M. Prakash, Mandapam Regional Centre ◆

Farmers' Day celebrated

On Kisan Diwas Calicut Regional Station, four prominent cage culture farmers were honoured, and a farmer-student-scientist interaction was arranged with the students of St. Joseph's College, Devagiri ◆

Outreach

Open sea cage farming initiatives of *Sidi* adavasi community

Open sea cage culture under Tribal Sub-Plan (TSP) programme of ICAR-CMFRI was launched with four open sea cages off Prabhas Patan coast, Veraval by the selected individuals from the *Sidi* tribal community on 22 December 2022. Income generation through open sea cage culture activity is a substantial livelihood support to the local *Sidi* tribal community which has successfully been carried for the last 10 years. Newly interested youth stakeholders from award winning '*Bharat Adim Juth Matsyadhyog Sahkari Mandali*', Talala society of Sidi community actively participated in open sea cages launching and installation along with their master trainers emerged from the earlier programmes. The society is also actively spreading their experience and knowledge on open sea cage culture to other interested stakeholders of different communities by training and group interaction activities ◆

Sale of farmed oyster meat by SCSP beneficiaries

ICAR-CMFRI extended support for oyster farming to ten families in Kodungallur Municipality, Thrissur under the Central government's Scheduled Caste Sub Plan (SCSP) Programme aimed to uplift the living standards of the scheduled caste community. The farmed oysters were harvested and depurated to make them safe for consumption. The depurated oyster meat was sold through the Agriculture Technology Information Centre (ATIC) of ICAR-CMFRI and the proceeds of ₹19,000 was handed over to the SCSP beneficiaries, in a function held at ICAR-CMFRI, Kochi, on 26th December 2022 by Dr. P. Laxmilatha, Head, Shellfish Fisheries Division.

Reported by: R. Vidya, P. Laxmilatha, P. S. Alloycious and K. M. Jestin Joy ◆

Outreach

Empowering women in marine fisheries under NICRA

Under the NICRA-SCSP component, a Stakeholders Meeting for Empowering Women in Fisheries in Thonirevu village, Thiruvallur District, Tamil Nadu was held on 28 December 2022. It extended material support such as steel basins and custom-made fish cutting knives, to 41 women beneficiaries who are involved in fish marketing in a meeting chaired by Dr. R. Narayanakumar, Scientist-in-Charge,Madras Regional Station of ICAR-CMFRI and Thonirevu Panchayat President, Thiru Sampath and Vice-President Thiru Selvam as special invitees. Dr. Shoba Joe Kizhakudan, Centre Coordinator, NICRA, and Dr. Joe K Kizhakudan, Co-PI, NICRA oversaw the distribution and had discussions with the beneficiaries regarding further support in their activities ◆

Training programme for Kerala State Fisheries Department

A training programme on "Hatchery production and farming of finfishes" for officials of Kerala State Fisheries Department was conducted during the period from 10.10.2022 to 13.10.2022. A total of 10 officers were trained in this training programme ◆

Indian pompano seeds supplied for coastal pond farming

The marine finfish hatchery of Vishakpatnam Regional Centre, ICAR-CMFRI is supplying fish seed of Indian pompano for coastal pond farming. 70,000 advanced fry stage Indian pompano was recently supplied to four progressive farmers in Andhra Pradesh for farming in coastal ponds ◆

Vigilance Awareness Campaign 2022

Various programs were conducted in the Veraval Regional Station of ICAR-CMFRI in connection with Vigilance Awareness Campaign 2022. A drawing competition on "Corruption-free India for future generations" was conducted for school children on 05.11.2022 at Shishu Mandir International School, Veraval, Gujarat.

Jointly with Indian Coast Guard, Veraval Station a seminar on "Honesty – a model lifestyle for corruption-free India" was held on 04.11.2022 and Shri. Deepchand Matpal, Commandant Officer, Indian Coast Guard, delivered a lecture and an interactive discussion ◆

Updates on sea ranching of the green tiger shrimp

ICAR- Central Marine Fisheries Research Institute (CMFRI), Mandapam Regional Centre is regularly carrying out sea ranching of hatchery produced green tiger shrimp, *Penaeus semisulcatus* seeds in Gulf of Mannar and Palk Bay to replenish the natural stock and to enhance the shrimp productivity. A project with the funding support of Department of Fisheries, Ministry of Fisheries, Animal Husbandry and Dairying, Govt. of India under the Central Sector Scheme component of the PMMSY it envisages a total of 200 million Green tiger shrimp Post Larvae released in a period of four years (2022-2026) in Palk Bay and Gulf of Mannar region of Tamil Nadu.On 11th October, 2022, 1.2 million green tiger shrimp seeds (PL 22) were sea ranched at Maraikayarpattinam, Gulf of Mannar.

A total of 3.2 million green tiger shrimp seeds of PL 20 were sea ranched at Manora, Thanjavur District (Palk Bay) on 27th October, 2022. The shrimp seeds were released by Shri. M. K. Muthumanickam, Panchayat Union Chairman, Sethubavachatram, Shri. Akhil Thampi, IFS, DFO, Thanjavur District, Shri. M. Sivakumar, Assistant Director of Fisheries and Fisherman Welfare, Thanjavur District, Dr. V. Balaji, OMCAR Foundation, Thanjavur District, in the presence of Dr. G. Tamilmani, Head-in-Charge & Principal Investigator of the project, Mechanized & Country Craft Associations representatives, Village Panchayat President, Sarabendrapattinam, the Officials of Department of Fisheries & Fishermen Welfare, Scientists and staff of Mandapam Regional Centre of ICAR-CMFRI.

A total of 3.9 million green tiger shrimp seeds (PL-20) were sea ranched at Mandapam (Gulf of Mannar) on 01st December, 2022. A total of 29.64 million green tiger shrimp seeds were sea ranched in Palk Bay and Gulf of Mannar since the inception of the Project in February, 2022 ◆

Awareness programmes on sustainable and responsible fishing

The scientists of Calicut Regional station of ICAR-CMFRI were invited as key speakers for the session of Awareness programmes on sustainable and responsible fishing to fishers at various locations in Kozhikode and Kannur in the month of November-December 2022 as per the request of Govt. of Kerala. Almost 500 stakeholders participated and benefitted from the programme ◆

Training Programme on Recirculating Aquaculture System (RAS) for nursery rearing of Indian Pompano

Hands on training programmes on Recirculating Aquaculture System (RAS) for nursery rearing of Indian pompano under a National Fisheries Development Board (NFDB) funded project was organised by Visakhapatnam Regional Centre of ICAR – CMFRI from 28th November 2022 to 23rd February, 2023. The training programmes were conducted. The training programme was aimed to develop skilled manpower for nursery rearing of marine finfishes in RAS and further uptake of the technology. Six batches with 25 participants in each batch with diverse backgrounds including scientific, extension, development, self-employed and farming communities participated in the training programmes. Representing different states of India they were given hands on training in design, construction and operation of RAS, nursery rearing protocols for Indian pompano, feeding, water quality and disease management in RAS. The economic aspects of nursery rearing of Indian pompano in RAS was also given. The training programme was co-ordinated by Dr. Ritesh Ranjan with support of Drs. Sekar Megarajan, Biji Xavier and Shubhadeep Ghosh ◆

Training on live feed culture

Under the All India Network Project on Mariculture a training programme on "Live Feed Culture" was conducted during 14-16th December 2022 at the Marine Hatchery Complex, Karwar Regional Station of ICAR-CMFRI. 35 post-graduate students from Karnataka University and Govt. Arts and Science College participated in the three-day training programme ◆

Outreach

TSP training programmes conducted at Chennai

Madras Regional Station of ICAR-CMFRI conducted training programmes under the Tribal sub-plan (TSP) programme at Kovalam Field Laboratory (KFL), Kovalam, on the topic, "Hands on Training for Mariculture Practices in Coastal Waters of Tamil Nadu" from 10 to 12 October, 2022 and 13 to 15 December, 2022. The programme was co-ordinated by Dr. Joe K. Kizhakudan, Principal Scientist. A reference manual with information covering cage design (square and circular) as well as construction details (pipe framing, net mending, ropes fixing and barrels filling), cage anchoring methods, culture methods, fish health, fish harvesting, contact details for hatcheries, nurseries, fish feeds, buyers, cage raw materials & equipment and the details of government subsidies to the fishermen & tribals with necessary contact details were distributed to the participants. Visit to ICAR-CIBA Muttukadu Experimental Stations was also arranged where they were given the exposure towards finfish and shellfish hatchery, nursery and farming methods, grading and shrimp farming through biofloc technology. In the afternoon session, Dr. A. K. Abdul Nazar delivered a talk on "Cage farming of Cobia and Pompano "Mariculture Prospects and Potentials in Pulicat" by Dr. Joe K. Kizhakudan followed by distribution of certificates to the participants by Dr. R. Narayanakumar ◆

Awareness cum training programme on mussel culture

An awareness cum training programme on "Mussel Culture" was conducted under the National Surveillance programme on Aquatic animal diseases organised by ICAR-Central Marine Fisheries Research Institute and Dept. of Fisheries Govt. Of India on 29th December 2022 at Karwar Regional Station. A total of 32 fish farmers from Uttara Kannada & Udupi District of Karnataka and Goa State actively participated in the training programme. Dr. N. K. Sanil, Prinicipal Scientist, ICAR-CMFRI, Cochin and Dr. P. K. Asokan, retd. Prinicipal and Scientis presided over the function ◆

Outreach

Marine ornamental fish culture training

A hands-on training program in Marine Ornamental Fish Culture was organised by Tuticorin Regional Station under the Scheduled Caste Sub-plan (SCSP) program from 19th to 21st December 2022. Dr. P. S. Asha, Centre co-ordinator of SCSP explained the role of ICAR-CMFRI in the welfare and upliftment of Scheduled Caste (SC) fishers' livelihoods through extending training. Shri T. Vijaya Raghavan, Assistant Director of Fisheries, Tamil Nadu Fisheries & Fisherman Welfare Department, informed the trainees about various schemes offered by state and central fisheries departments and urged beneficiaries to capitalise on such schemes for economic upliftment and entrepreneurship opportunities. The theory and hands-on practical sessions at Tuticorin Regional Station of ICAR-CMFRI, Tuticorin were delivered by Dr. R. Vinoth Kumar, Dr. C. Kalidas, Dr. L. Ranjith, Smt. M. Kavitha, Scientist, delivered a lecture on "Hatchery production and larval rearing of selected marine ornamental shellfish". Dr. L. Ranjith, Senior Scientist demonstrated hands-on experience in the RAS unit fabrication and setting up filter accessories. On the third day (21st December 2022), Dr. C. Kalidas, Senior Scientist, presented a lecture on "Techniques in suitable live feed culture for marine ornamental fish larval rearing". The second session was handled by Shri. D. Linga Prabu, Scientist, on the title "Marine ornamental fish feed preparation and feed management" and elaborated on the methods and procedures of feed preparation. A field visit was conducted to a private marine ornamental fish hatchery, Mottagopuram, where the farmer showed different marine ornamental fish species and their maintenance, live packing and transportation techniques. At the end of the program, the Scientist-in-charge, Tuticorin Regional Station of ICAR-CMFRI, distributed the participation certificates to the trainees. Altogether 12 selected trainees of the Scheduled Caste (SC) fishers belonging to Devi, Udhya and Marutham Self Help Group participated in the Scheduled Caste Sub Plan Program ◆

Brainstorming session on Seaweed farming and utilization

The National Academy of Agricultural Sciences (NAAS) organized a Brainstorming Session on "Seaweed Farming and Utilization" on 16th November 2022. In his opening address, Dr. Trilochan Mohapatra, President emphasized the need for introduction of alternate seaweed species, especially high-yielding indigenous ones in the farming practices, and round the year-round availability of quality planting material. He also stressed on the importance of novel compounds, nutraceuticals, and plant growth-promoting substances derived from seaweeds; and developing guidelines for promotion of seaweed-based biostimulants. Dr.J. K. Jena, Deputy Director General (Fisheries), ICAR, introduced the topic emphasizing the need to promote an interface between research and seaweed industry; and the guidelines for introduction and evaluation of exotic aquatic plants. Pointing out the importance of seaweed farming in PMMSY, Dr. J. Balaji,Joint secretaty, department of fisheries Government of India stressed on the need for an alternative to *Kappaphycus* species for diversification in seaweed farming. Pilot-scale seaweed farming may be initiated in coastal areas identified by ICAR-CMFRI in consultaion with state administration. Dr.A.Gopalakrishnan, Director, ICAR-CMFRI was co-convener of the programme organised to evaluate the potential of seaweed farming and associated product development in India. ◆

Outreach

Training-cum-Workshop on Shellfish Stock Assessment

The Shellfish Fisheries Division organized a Training-cum-Workshop on 'Stock Assessment of Shellfish Species' from 9th to 17th November 2022 at ICAR-CMFRI-Kochi. The Scientists of the division and the Research Scholars participated. The program was inaugurated by Dr. A. Gopalakrishnan, Director, ICAR-CMFRI. The faculty were scientists from the Fishery Resources Assessment, Economics and Extension Division (FRAEED) and Shellfish Fisheries Division (SFD). The contents covered were FAO FiSAT fishery statistical tool and several data-limited stock assessment methods in the R environment viz., TropFishR, Length based Bayesian Biomass estimation (LBB), Length based Spawning Potential Ratio (LBSPR), Monte Carlo methods CMSY, CMSY++ and Bayesian state-space implementation of the Schaefer production model (BSM) etc. Other statistical packages covered were–CatDyn – stock assessment based on fishery catch dynamics, GMACS or General Model for Assessing Crustacean Stocks, and JABBA. The participants were introduced to the FESTa package in R for standardising fishing efforts in a multi-gear, multi-species fishery. The training concluded with a valedictory function on 17.11.2022 ◆

Awareness cum outreach activity on seaweed farming

The Mandapam Regional Centre of the ICAR-Central Marine Fisheries Research Institute (CMFRI) organized Awareness cum outreach activity on the *Pradhan Mantri Matsya Sampada Yojana* (PMMSY). This is a flagship scheme of the Central Government of India, introduced in the Union Budget 2019-20 with an outlay of ₹20500 crore and to be implemented over a period of five years from FY 2020-21 to 2024-25. The Department of Fisheries, Govt. of India is promoting seaweed cultivation in a mission mode approach under the PMMSY and extending funding assistance to several R & D institutions including ICAR-CMFRI for training and demonstration programmes in seaweed farming. A total of 694 fishers from Ramanathapuram District participated in the programme conducted at Mandapam. Three skill development training programmes were also conducted for the benefit of 518 fishers/entrepreneurs/officials on seaweed farming and a total of 307 rafts were installed. In the recent years, the country is accelerating its efforts towards a vibrant Blue Economy and poised to take full advantage of the new possibilities that are emerging in the cultivation of seaweed.

Reported by B. Johnson & G. Tamilmani, Mandapam Regional Centre ◆

Skill development for Biofloc fish farming

Awareness programme on "Biofloc fish farming: Onsite exposure cum hands on skill development for farmers" was held at Cheranalloor biofloc fish farming site of ICAR-CMFRI on 17.10.2022 to disseminate knowledge on various aspects of biofloc fish farming. Around 150 persons including farmers, public representatives and scientist from ICAR-CMFRI participated the programme.

Biofloc technology is an innovative and scientific method for high-density fish farming in a controlled environment in which beneficial bacteria are multiplied in the system as floc that serves as food as well as helps to convert fish wastages into useful nutrients. This type culture has many advantages such as: the biofloc unit can be established near to their house premises, management of system is easy as work load is less compared to other fish farming methods and the age old people, women, handicapped persons and transgenders can easy undertake this farming methods as a livelihood option and income generation. The farmers who do not have access to open water system can also adopt this technology. Apart from these, it will also help in the live fish market so that the general public gets fresh live fish (non iced /non freezed fish) for consumption. With this aim ICAR-CMFRI has established biofloc farming system in the farmer's field at Ernakulam, Idukki, Kottayam, Trissur districts of Kerala under SCSP and TSP programme. As more and more farmers are interested in this innovative fish farming, an awareness programme was conducted at the biofloc site of ICAR-CMFRI at Cheranalloor so that the farmers can witness the farming methods. Dr. K. Madhu Principal Scientist, Chairman TSP & SCSP and programme Co-ordinator took classes on basic requirements for biofloc farming, biofloc unit setting, water volume of different biofloc system, culture methods, seed stocking density, feed and feeding schedule, aeration system, Solar panel setting, water exchange, regular monitoring of water parameters. Farmers got an opportunity to witness the ready to harvest fishes in the biofloc system operated by Sreelakshmi SHG Cheranalloor done under SCSP programme of ICAR-CMFRI. Dr. Rema Madhu, Principal Scientist, Dr. Rajesh N., Dr. Sanal Ebenezar, Dr. Sumithra T. G. Scientists of ICAR-CMFRI interacted with farmers for clearing their doubts on biofloc fish farming and farmers interested to undergo further training registered their names. A progressive biofloc fish farmer of ICAR-CMFRI Shri. Kumaran, Perumbavoor shared his experience in biofloc farming and successful harvest of his farmed fishes during 2020 lockdown period, income generation and the ongoing farming details. The programme was graced with presence of 10 public representatives from the Cheranalloor panchayat and media representatives. During this programme, the gathering also got an opportunity to participate virtually in the inaugural functional of the grand PM Kisan Samman Sammelan 2022 and witness the address by Honourable Prime minister, Shri Narendra Modi on the occasion ◆

Visitors

Union minister of state for Agriculture & Farmers' welfare visits KVK-Lakshadweep of ICAR-CMFRI

Hon'ble Union Minister of State for Agriculture and Farmers' Welfare, Government of India Shobha Karandlaje, visited KVK-Lakshadweep of ICAR-CMFRI, on 2nd December, 2022. She also interacted with the farmer / entrepreneur beneficiaries of the KVK attended by Shri. Amit Satija, Secretary (Finance), Shri. Shashank Mani Tripathi, Secretary (Agriculture), Shri. Rakesh Kumar, Director (Agriculture) and other officials of the UT administration of Lakshadweep. Dr. V. Venkatasubramanian, Director, ICAR-ATARI informed the works carried out by the KVK in the islands and stressed for the convergence in development activities. The Minister also released the KVK times complied by KVK-Lakshadweep of ICAR-CMFRI. The visit of the Minister, exhibition and the farmers meet were coordinated by Dr. P. N. Ananth, Senior Scientist and Head, KVK-Lakshadweep ICAR-CMFRI KVK Lakshadweep and Dr. K. Mohammed Koya, Senior Scientist, ICAR-CMFRI. ◆

CEO, Kumta Taluk Panchayat visits Karwar Regional Station

Shri Jubin Mohapatra, IAS (P), Chief Executive Officer, Kumta Taluk Panchayat visited Karwar Regional Station on 16.11.2022 for discussion on undertaking a joint collaborative work on Assessment of Socio-Economic Status of Fishermen ◆

Special assignments

Dr.Joe K Kizhakudan, Principal scientist delivered a talk entitled 'Crucial aspects and strategies for implementing the deployment of artificial reefs" as a subject matter expert, for the benefit of Directors and Commissioners of fisheries of various maritime states. The same was organised by Department of Fisheries, Govt. of India on 24 November, 2022.

Dr.Shoba Joe Kizhakudan, Principal Scientist participated in the Workshop on' Identifying, Assessing and Reporting of Other Effective Area-Based Conservation Measures (OECMs) in the Marine Fisheries Sector' which was held in Rome ,Italy from 18 to 19 October 2022 ◆

Swachh Bharat activities to foster Clean India

Swachh Bharat Abhiyan Special Campaign 2.0 was held at headquarters and all regional centres and research stations of ICAR-CMFRI from 16- 31 October, 2022. The initiative included activities such as physical and electronic file weeding drive, cleaning of workplace premises, awareness campaigns and beach clean-up drives.

Calicut Regional Station held a beach cleaning activity, a marine pollution awareness programme for school students, and a painting competition for school children on the topic "Coastal and Marine Pollution." Vizhinjam Regional Centre organised a beach walkathon to raise awareness about the use of plastics and its impact on the environment.

Madras Regional Station held an awareness campaign in MRC Nagar, displaying charts made by schoolchildren to the public for an hour. The beach area of Pattinapakkam village was also cleaned and items such as soap and masks were distributed among the local coastal residents

Reported by : Dr. N. Aswathy, Nodal Officer, Swachh Bharat Abhiyan Committee of ICAR-CMFRI) ◆

A Workshop on solid waste management using Smart Biobins was also organised at the institute headquarters.

Retirements on Superannuation

Dr. P. K. Asokan
Principal Scientist & Scientist in Charge
Calicut Regional Station
31.10.2022

Shri N. Nagamuthu
Skilled Support Staff
30.11.2022

Smt. T. R. Kumari
Skilled Support Staff
31.12.2022

Appointment

Name	Name of the Post	Place of Duty	Date of Joining
Smt. Jincy Cherian	Technician	Visakhapatnam Regional Centre	4.10.2022 (FN)

Promotion of Senior scientists

Name & Designation	w.e.f
Dr. C. Kalidas	07.01.2021
Dr. Biji Xavier	11.02.2021
Dr. P. Ramesh Kumar	26.02.2021
Dr. Johnson B.	04.11.2021
Dr. Pradeeep M. A.	04.11.2021
Dr. Divu D.	04.11.2021
Dr. G. B. Purushottama	15.12.2021
Dr. Eldho Varghese	04.05.2022

Promotion transfer

Name & Designation	Promoted Designation	From	To	Date of relieving
Smt. N. K. Anupama, Assistant Finance & Accounts Officer	Finance & Accounts Officer	ICAR-CMFRI, Kochi	ICAR-CCARI, Goa	06.12.2022 (AN)
Smt. Sreedevi M. R., Assistant Finance & Accounts Officer	Finance & Accounts Officer	ICAR-CMFRI, Kochi	ICAR-CIFT, Kochi	30.12.2022 (FN)

Inter – Institutional transfer

Name & Designation	From	To	w.e.f.
Dr. Krishna Sukumaran, Senior Scientist	ICAR-CIBA, Chennai	Vizhinjam Regional Centre of ICAR-CMFRI	04.10.2022 (FN)
Shri Tanveer Hussain, Scientist	Navsari Regional Station of ICAR-CIBA	Vizhinjam Regional Centre of ICAR-CMFRI	17.10.2022 (FN)

Promotion of scientist to senior scientist

Name	w.e.f
Dr. Ramkumar S.	15.09.2021
Dr. Pralaya Ranjan Behera	15.09.2021
Dr. L. Ranjith	15.09.2021
Dr. Swati Priyanka Sen Dash	15.09.2021
Dr. Sekar Megarajan	01.01.2022

Intra Institutional Transfer

Name & Designation	From	To	w.e.f.
Dr. Anulekshmi Chellappan, Senior Scientist	Mumbai Regional Station	Calicut Regional Station	03.10.2022
Dr. Akhilesh K. V., Scientist	Mumbai Regional Station	Calicut Regional Station	03.10.2022
Shri Vinothkumar R., Scientist	Mandapam Regional Centre	Tuticorin Regional Station	29.09.2022
Dr. Sunil Kumar S. Ail, Scientist	Madras Regional Station	Mumbai Regional Station	10.10.2022
Dr. S. Chandrasekar, Scientist	Mandapam Regional Centre	Headquarters, Kochi	29.09.2022
Dr. G. B. Purushottama, Senior Scientist	Mangalore Regional Centre	Karwar Regional Station	14.10.2022
Dr. V. Mahesh, Scientist	Calicut Regional Station	Karwar Regional Station	20.10.2022

ICAR-CMFRI

The Central Marine Fisheries Research Institute is a premier research institute under the Indian Council of Agricultural Research and focusses on research and training in marine fisheries and mariculture.
Cadalmin is the quarterly newsletter of ICAR-CMFRI. This publication gives an insight into the major events of the institute, besides highlighting the salient research findings for the benefit of various stakeholders in the marine fisheries sector.

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