

KSCSTE NEWS

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**KERALA STATE COUNCIL FOR
SCIENCE, TECHNOLOGY AND ENVIRONMENT (KSCSTE)**

കേരള ശാസ്ത്ര സാങ്കേതിക പരിസ്ഥിതി കാൺസിൽ

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Cover Photo



KANNADIPPAYA
(കണ്ണാടിപ്പായ)

COVER STORY

KANNADIPPAYA (Bamboo Mirror Mat)

Somewhere on the slopes of the high ranges of the Idukki district on the veranda of her thatched hut in a remote hamlet, 89 years old Ponmala, who hails from the *Oorali* Tribal Community, is deeply engrossed in perfecting the warps and wefts of a special soft, paper-thin bamboo mat she has just finished weaving. It is a gift to her newborn granddaughter. The know-how and skill possessed by Ponmala in preparing the raw material and weaving this mat is remarkable and is perfected over the centuries by innumerable generations. This exquisite piece of artwork with charming patterns and special optical qualities is called *Kannadippaya*. As per the customs of the Thankamma's community, reed and bamboo are intimately associated with every ritual and play a crucial role in their day-to-day life. *Kannadippaya* is an exquisitely crafted traditional bamboo mat, woven by some of the tribal communities of South Kerala with unique design elements called '*kannadi*'. It is a product of pride for the members of these communities. The weaving of *Kannadippaya* is mainly a skill possessed by five ethnic groups viz. *Oorali*, *Mannan*, *Muthuva*, *Malayan* and *Kadar* tribes mainly from the Idukki, Thrissur, Pathanamthitta, Ernakulam and Palakkad districts of Kerala. Other indigenous communities including *Ulladan*, *Malayarayan*, and *Hill Pulaya* are also engaged in its weaving to a lesser extent.

This traditional mat is woven using slivers made out of reed bamboo (thin-walled bamboo), collected from the forests in the Western Ghats. *Njoonjileetta* / *njoorjoora* / *ponneetta* / *meieeta* / *neytheetta* are some of the colloquial names of the reed bamboo [*Teinostachyum wightii* (Munro) Bedd.] used in weaving the mats. *Ochlandra* sp., known as *kareetta*, *pereetta*, *velleeta*, *chitoora*, *kanjoora*, are also used in weaving *kannadippaya*, basket wares and handicraft items with *kannadi* designs. Normally 10 to 15 days are needed to weave a normal-sized mat.

The beauty and benefits of this natural sleeping mat are unparalleled. The mat is famous for its unique design elements, softness, appealing craftsmanship and light refractive properties. The square designs woven uniquely on this mat in different patterns are called '*kannadi*'. Each *kannadi* (square) and its surrounding warps and wefts on the mat impart it a unique appearance and beauty. A well-finished *Kannadippaya* reflects light differently and creates different designs when viewed from different angles. Designs and mirrors become more clear and more visible with a slight change in the plane of view. For most luxury mats along with *kannadi* designs, designs of trees, animals and birds are also made along the corners. Border designs of the mat are also unique, very attractive and reflect light differently according to the slivers used. The mat is said to have health benefits as it has heat insulation properties, thus regular use of this natural bamboo mat is said to help one to keep away ailments such as rheumatism and back pain. *Oorali* community in their ceremonies of newborns has *Kannadippaya* as an object of ritual importance.

The skill of weaving *Kannadippaya* is learned by doing it under the supervision of experienced elders. It is said that the skill is very difficult to acquire and the know-how is preserved through 'learning-by-doing' mode with a lot of pain and sacrifice of comfort. KSCSTE-Kerala Forest Research Institute, Peechi, has initiated programmes involving studies of physical properties of raw materials, community propagation and augmentation of raw materials, empowering the weavers by imparting training in making and marketing the product and introduction of mechanisation in preparation of raw materials for reducing the drudgery of the mat weavers. The modernisation of making *Kannadippaya*-based products is a major objective of a DST-funded action-research programme. KFRI has also facilitated registration for Geographical Indication (GI) of *Kannadippaya* for its better visibility and brand positioning in the global markets.

HIGHLIGHTS OF IMPORTANT PROGRAMMES

KSCSTE HQ

National Green Corps

Haritham 2022

Haritham 2022, the programme initiated by NGC District implementation unit of Trivandrum district which aimed at planting 100,000 lakh saplings in ecoclub schools of the district. The programme was inaugurated by Shri G.R Anil, Hon'ble Minister for Food and Civil supplies, Govt of Kerala. The successful Declaration of Completion of the programme was inaugurated by Shri. M.V Govindan Master, Minister for Local Self Governments and Excise, at Holy Angels Convent, Trivandrum. The Minister said that the message of environmental protection can be reached to the general society through environmental



Shri. M.V Govindan Master, Minister for LS&D and Excise, declaring the completion of Haritham 2022

activities in schools, and teachers have a great role in such activities. More than 100,000 saplings had been planted with the involvement of more than 300 Eco Club schools in the district. Awards for the best performing schools and teacher coordinators were presented by the Minister on the occasion.

Seed pen/bio pens for environment protection by Eco club students of Pulluvila Leo Thirteenth HSS

We throw away thousands of pens every day which are burden on the earth. If the seed pen made of paper is used, even if it is thrown away after use, there is no harm to the environment. When the conditions are favorable, the seed germinates and becomes a plant. Eco Club students of Leo Thirteenth made seed pen/bio pens for creating awareness about the dangers of plastic pens.



Ozone Day Programmes

On the occasion of Ozone Day 2022, the children of Govt Girls Higher Secondary School Cotton Hill arranged a visual feast in Kanakakkunnu palace courtyard. A group consisting of 44 children presented a 20-minute flash mob on the occasion.

NGC schools organised Quiz, Painting/Poster making competitions, Rallies, and Awareness classes in connection with the 35th Ozone Day.



Flash mob presentation of the students during Ozone Day programme

An exhibition of bamboo products was organized.

As part of the International Bamboo Day, an exhibition of bamboo products was organized by NGC members at AMUP School Palachiramad,

Malappuram. The bamboo products, used in the old days and in present age, including Mulayari, Ottal used for catching fish were exhibited.



Indian Navy Quiz -THINQ 22

Christopher Joseph and Navneeth M Kumar of Naipunnaya Public School, Kochi and Anoop Rajesh and Nidhin N of SNMHSS, Purakkad, Alappuzha were selected from Kerala to the semi-final round of THINQ 22, the National level Quiz competition organised by Indian Navy in connection with Azadi Ka Amrut Maholsav for school students from Classes IX to XII. National Green Corps - Kerala extended wide publicity for the programme through the network of National Green Corps (NGC). Students of 550 schools under NGC Kerala registered and participated for the National Quiz during August -September 2022.

SC & ST Cell

The Cell organised discussions with Scheduled Caste (SC) and Scheduled Tribe (ST) Developments offices



from Kasaragod, Wayanad, and Thiruvananthapuram, Pathanamthitta and Idukki districts. Field survey carried out in 9 Scheduled Caste and 41 Scheduled Tribe settlements in Kasaragod, Wayanad, and Thiruvananthapuram districts.

National Children's Science Congress

State level orientation workshop was conducted on 24th September 2022 through Webex platform and YouTube Channel of KSCSTE.

Ecology and Environment Programme

The Programme Advisory Committee of Ecology and Environment recommended twelve research projects for funding with a financial outlay of 91.00 lakh.

Science Research Schemes (SRS)

The Programme Advisory Committee of Science Research Scheme (SRS) recommended sixteen projects for funding.

Engineering & Technology Programme (ETP)

Under the Engineering & Technology Programme (ETP) scheme, 11 Research proposals in the area of Health, Dam Management, Flood Forecasting, Water Transportation, Traffic Management, Waste Treatment and Disposal, Composite Material Processing, Precision Agriculture were recommended for financial assistance.

State Higher Research Centres of Excellence in Science & Technology Applications (SHRESTA)

Under the SHRESTA scheme, sanction has been accorded for the following 2 Centres of Excellence for producing world-class research in the specialised areas of Nanotechnology and Floods & Droughts respectively.

1. The Centre of Excellence in Phytochemical - Nanotechnology at JNTBGRI

A unique centre in India in the specialized area which includes a multidisciplinary approach in the area of Phytochemistry, Nanochemistry, Pharmacology, Biochemistry and Biotechnology. It has collaboration with National and International research and development Institutions in the above fields. The centre will focus on the nano-phytochemical based researches with cutting edge technologies to develop new deliverables, which can augment the socio-economic development of the State/Nation. The centre will serve as a multidimensional phytochemical-nanotechnology research hub and nodal centre to researchers, academicians, industrial and State/Central Government R&D Institutions across the country.

2. The Centre of Excellence for Water related Disaster Management of Kerala at CWRDM

The Centre envisages to perform innovative research on forecasting, monitoring and risk assessment of the two hydro-meteorological extremes – floods and droughts and associated events such as landslides, to provide evidence-based policy advocacy to the Government of Kerala from time to time to support its strategies and actions on flood and drought management and to establish a Technology information system for use of public and other stakeholders

CWRDM

- Continuous Water Quality Monitoring and Assessment under various projects is initiated at CWRDM -Subcentre, Neyyattinkara, which is accredited as C- Grade Commercial Purpose Laboratory by Kerala State Pollution Control Board. The centre aims to address the water quality issues of public and all the realm of society which contribute towards SDG - 3 & 6.



Glimpses of Instrumentation, Wet Chemistry and Microbiology Laboratory at CWRDM Sub-Centre Neyyattinkara

JNTBGRI

- KSCSTE-JNTBGRI joined the Global Genome Initiative in 2020 which is a collaborative endeavour to collect the earth's genomic biodiversity. JNTBGRI is the first and the only organization from India to join this network.
- Initiated a programme, "Conservation of Orchids-Setting up of Orchidarium and Orchid Interpretation Center at Eravikulam National Park" funded by UNDP.
- The Egyptian/Chinese concept based Reflexology foot path, is under construction in the Palmetum.
- The "Green Kerala project of propagation and planting of IUCN Red Listed trees" under KSCSTE support with the UN concept of trillion tree campaign has been initiated.
- Initiated the "Triparty action plan for the reintroduction of Red Data Plants of Kerala" has been approved by the Kerala Forests and Wildlife Department.
- Initiated the Ecotourism project at JNTBGRI and created the Kerala Gramam concept and made the elevated view point as part of the project.

KSCSTE-JNTBGRI has presented a float entitled "Urappode Unarvode Keralam Onnamath", as part of the cultural procession during the finale of the Onam Celebrations - 2022, organized by the Kerala Tourism Department.



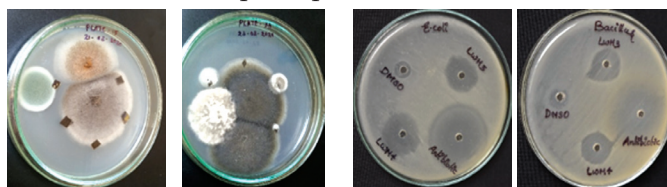
- Biogeography, phylogenetic studies and development of e-monograph for the Arthoniales (lichenized fungi) in India, Department of Science and Technology - INSPIRE Faculty Fellowship Scheme

- Molecular and Phylogenetic Analysis of *Limnophila* R.Br. (Plantaginaceae) in India

- Molecular Systematics of the Genus *Hygrophila* R. Br. (Acanthaceae) In India



- Bio-prospecting of the endophytes from selected medicinal aquatic plants



Isolation plates

Antimicrobial activity

- MGNREGS research study at Kalpetta Block Wayanad: 459 house-holds survey completed and various Focus Group Discussions (FGD) were organized as part of the study.
- 1 lakh kg bio manure prepared and distributed to tribal farmers of Nilambur under Tribal Development Fund (TDF-WADI) project.

- NATPAC staffs were part of Indian Roads Congress (IRC) committees looking into the preparation of guidelines related to Intelligent Transportation Systems (ITS), Multi-Model Transport System-Terminal Interface Planning & Design, etc.
- Expert lecture on 'Various Stages of Road Safety Audit (RSA) with Case' by Dr.S Velmurugan, Chief Scientist, CRRI was organized on 19th July 2022.
- Prof. V K Ramachandran (Vice Chairperson, Kerala State Planning Board), Shri. V Namasivayam (Expert Member, KSPB), Prof. (Dr.) K P Sudheer (Ex-Officio Principal Secretary, S&TD, Executive Vice President, KSCSTE) and other officials from Kerala State Planning Board visited NATPAC on 11th August 2022 and reviewed the activities of the Centre.
- Rtd. Prof. (Dr.) A. Veeraragavan, former Chairman, Research Council of NATPAC, interacted with Scientists on 19th September 2022.



SIGNIFICANT INNOVATION/INVENTION

- Phytochemical analysis of *Humboldtia unijuga* roots and stems resulted in the isolation of twenty-nine secondary metabolites with four new molecules, viz., acetoxy olean-12-en-28-oate 3-O- β -myristate, 3-O-(3'-hydroxyheptadecanoyl) lupeol, oleanol 28-aldehyde 3-O- β -myristate, acetoxy olean-12-en-28-oate 3-O- β -laurate.

- A new seed-feeding beetle is identified from *Hopea erosa* (a threatened plant species) *Hopea erosa* is a critically endangered [criteria C2a (i)] tree species endemic to Western Ghats in Kerala, Tamil Nadu and Karnataka. Only 200-240 mature trees are distributed in these scattered populations. Species of weevil (Coleoptera: Curculionioidea) feed kernel of developing seeds in its larval stage. The environment provides both a good source of nutrition and protection from environmental hazards to develop these pests. This reduces the viability of the seeds and may lead to the major reasons for declined population.



Weevil at its larval stage

- Designed Bamboo Toys and Life style products for K F R I Bamboo enterprises
- Developed draft genome of a climbing palm (*Korthalsia laciniosa* [(Grff.) Mart.]
- Semi-processing machine of Sida and Plumbago - (custom-made)
- Developing Coir Root Trainers (CRT) (in collaboration with KFD)

- Developed of high altitude, low temperature and regional specific consortia for faster bio-composting using indigenous microbes and successful implementation of improvised windrow composting at Munnar was accomplished by Dr. P. N. Damodaran, IRTC in association with UNDP.



High altitude, low temperature windrow composting at Munnar

FACILITIES/INFRASTRUCTURE CREATED

CWRDM

- The existing fish pond which is situated near to CWRDM - Water heritage museum is back to life. It is renovated with proper aeration, debris removal and beautification is under progress.



Renovated pond near CWRDM - Water Resource Heritage Museum

JNTBGRI

- Procured the following equipment
 - HPLC (High Performance Liquid Chromatography)
 - Hot air oven
 - Dry Bath
 - -80 °C Deep-Freezer

KFRI

- OmicsBox (Blast2Go) Computational System (10th Gen or higher. Intel i7,32GB RAM,2TB Storage, Unix OS, (without screen, keyboard, mouse), 1 user, 1 year OmicsBox subscription, 6M CloudBlast units.

MBGIPS

- Establishment of conservatories for Orchids and cacti are progressing
- Renovation of ginger valley with an addition of 1.5 acres and demarcated six plots for the introduction of six families of the order Zingiberales viz. Zingiberaceae, Marantaceae,

Musaceae, Costaceae, Cannaceae and Heliconiaceae.

- Introduced about 150 taxa of gingers from northeast India (Arunachal Pradesh, Assam & North Bengal) mainly the different species of Alpinia, Amomum, Curcuma, Boesenbergia, Globba, Hedychium, Kaempferia, Larsenianthes, Musa, Zingiber, Phrynium, Stachyphrynium ect. Some of them are potential ornamentals from the wild, that can be domesticated and introduced in the garden. Many of them belong to the wild relatives of economically important plants like spices, medicinal and food.

KSOM

- The newly constructed office space for visiting faculties (Visitors Wing) inaugurated by Adv. PTA Rahim MLA., Kunnamangalam on 21 September 2022.

MSSRF

- Community Conservation plots at tribal hamlets for conservation of traditional germplasm of various tubers (14 varieties of 5 crops), leafy greens and legumes. Conservation plot at farmer's field to conserve and demonstrate 10 traditional rice varieties of Wayanad namely Adukkana, Veliyan, Thondi, Chennelu, Chomala, Chenthadi, Jeerakashala, Gandhakashala, Mullankaima, Kalladiyaran.



RESEARCH/ACADEMIC PROGRAMMES

KSCSTE HQ

- PhD Thesis submitted under Research fellowship scheme
- *Development of Neuro-Protective Strategies by Selected Medicinal Plants Against Oxidative Stress-Mediated Alzheimer's Disease* by Dr.Anupama K P, Department of Zoology, School of Biological Sciences, Central University of Kerala.
- *Tailoring Magnetic Nanofluids for Microwave, Magneto-Optical and Sustainable Energy Applications* by Dr.Archana V. N. , Department of Physics, Cochin University of Science and Technology.

Dr. Sibin Simon, Previously, the Post-Doctoral Fellow and PI at CEITEC, Masaryk University, Brno, Czech Republic was selected for the Kerala Biotechnology Re-Entry Fellowship (K-BiREF) 2022. He will pursue the research with the fellowship at School of Environmental Sciences, Mahatma Gandhi University, Kottayam.

CWRDM

- External Funded Projects
 - Water for Change-Integrative and fit for purpose water sensitive design framework for fast growing livable cities funded by DST.
 - Geophysical study of post monsoon pre-monsoon ERTT freshwater lens dynamics of islands of the Lakshadweep archipelago, Southwest India funded by DST
 - Integrated Wetland Inventory, Assessment and

Monitoring System (WIAMS) of three Ramsar sites of Kerala.

- Scoping study to assess the hydrological services provisioned by the forest ecosystems of Kerala funded by Kerala Forest Department.
- **Academics** : MSc Dissertation: 50 completed.

JNTBGRI

- Establishment of a bio-repository of the plants endemic to the Southern Western Ghats of India' funded by BGCI GGI Gardens Award Programme (UK).
- Preparation of Red Data Book and Assessment of Threatened Species of Kerala (Flora including aquatic species), financed by the Kerala State Biodiversity Board.
- Development of controlled release formulations of eco-friendly pesticides in stored pest management (KSCSTE Extra mural project).
- Search for potential biologically active constituents from the Indian pitcher plant, *Nepenthes khasiana* (SERB project).
- Exploring the activity of plant derivatives on hair growth in Alopecia modulating through nuclear and xenobiologic receptors (ICMR project).
- Phytochemical incorporated scaffolds for regeneration in osteoarthritis - an experimental approach (DST Inspire Ph. D. programme).
- Studying the scope of extraction of toddy from

endemic Palm *Arenga wightii*, based on the ethnic traditional knowledge.

National funding:

- Development of controlled release formulations of eco-friendly pesticides in stored pest management - KSCSTE- Ecology Environment Division.
- Effect of selected nanoparticles synthesized from plant secondary metabolites on seizures induced by kainic acid in mice- KSCSTE- KBC, YIPB programme.
- “Micro propagation and cultivation of native orchids and hybrids for on-farm conservation and income generation through cluster formation”, funded by DBT, Govt. India.
- “Species distribution modelling and bio prospecting of wild germplasm of *Salacia* species (high value antidiabetic plants) across the Western Ghats” – Supported by National Medicinal Plant Board (NMPB) Govt. of India (Collaborative program -JNTBGRI & ICAR-IIHR, Bangalore.
- “Habitat distribution modeling and re-inforcement of two threatened trees in the Kerala region of the Western Ghats for the improvement of their conservation status”, supported by MoEF &CC, Govt. of India.
- “Utility of semiochemicals and screening of ethno botanical insect repellent plant species of the Andaman Nicobar Islands in insect management and its popularization as eco-friendly products”.
- Setting up of a butterfly garden in JNTBGRI, financed by KSCSTE has been completed.
- “Population structure and genetic variability analysis of *Cullenia exarillata* populations in Western Ghats”, financed by SERB-DST is ongoing.
- A total of 52 research scholars pursuing their Ph.D. programmes.
- Two students submitted their Ph.D. theses.
- Eighteen MSc/MTech Projects and dissertations completed.

KFRI

- CSIR-NBRI in connection with initiating joint project on Biosystematics, exchange of specimens and conservation of IUCN Red listed species, dated 10 August 2022).

Green Ahalia, Ahalia International Foundation, Kozhipara, Palakkad and KFRI at Green Ahalia campus, dated 30 August 2022

■ Academic

- Ongoing Ph.D. programmes : 46 No's
- Attachments (Internship/Masters/others) : 35 No's

IRTC

■ Academics

- Conducted 3 months Certificate Course in Solid Waste Management.
- Conducted 1 month Certificate Course in Solid Waste Management.

MBGIPS

- Integrated conservation of *Hopea erosa* and *Vateria indica*, two threatened Dipterocarps endemic to the Western Ghats / South and Central Sahyadris, India funded by Botanic Gardens Conservation International, United Kingdom.
- Taxonomic Revision, Molecular Phylogeny and Conservation of the family Marantaceae in India-Emeritus Scientist Scheme funded by Council of Scientific and Industrial Research, Govt. of India.
- Establishment of Model Nursery of Medicinal Plants at MBGIPS funded by State Medicinal Plant Board, Kerala.
- Potential applications of naturally isolated bacterial strains for the production of biodegradable plastics funded by Dept. of Science & Technology Govt. of India, KIRAN.
- **Academics**
 - Ongoing Ph. D. Programmes: 7 no's

KSoM

- The Integrated MSc-PhD program in Mathematics at Kerala School of Mathematics is an advanced training program at the postgraduate level leading to doctoral studies. The coursework is very flexible with a focus on grooming students for a research career in Mathematics. Depending on the choice of the electives, a student also has the option to choose a research career in Physics or Theoretical Computer Science as well.
- Completed the Integrated MSc-PhD admission for the 2022-23 academic year. Five new students joined for Integrated MSc- PhD.
- The first batch of Integrated MSc-PhD completed their course. Seven students are continuing their PhD. Three students are continuing at KSoM. The Other four joined the University of Jyväskylä, Finland; Institute of Mathematical Sciences (IMSc), Chennai; International Center for Theoretical Sciences (ICTS), Bangalore; Indian Institute of Science Education and Research (IISER), Mohali.
- Completed PhD admissions for the 2022-23 academic year.



■ Academics

- Dr. Richa Sharma completed Post-Doctoral Fellowship at KSoM and she has joined IMSc as a PDF.
- Dr. M M Radhika joined KSoM as a Post-Doctoral Fellow.

- Participatory yield enhancement trial in paddy for the second year initiated along with maintenance of traditional rice germplasm conservation plot at farmer's field.



- One field trial to study the effect of biochar on soil health in coffee plantation being continued at the centre.
- Research to study climate resilient practices followed by farmers under way and FGDs and Key Informant Interviews are undergoing.
- Ten interns from various disciplines mainly Microbiology, Biotechnology, Botany Social Work, Agriculture, etc. are continuing their internship at the centre.
- Two SBI fellows are continuing their fellowship at the centre and two new SBI fellows joined.

TRAINING PROGRAMMES/WORKSHOPS/INTERNSHIPS

- The ENVIS Hub organised programme as part of Hariyali Saptah Week 2022 and Reintroduction of Cheetah Awareness programme in 18 schools with participation of 7898 students. The Hub had celebrated international day for the preservation of ozone layer on 16th September 2022. Prof. C.T.Aravindakumar, Pro-Vice Chancellor, Mahatma Gandhi University delivered a talk on focal theme in the webinar. Dr. S. Pradeep kumar, Member Secretary, KSCSTE and Dr. P. Harinarayanan, Principal Scientist also talked in the programme.



- CWRDM organized first state level stakeholders consultation workshop at Kerala Arts and Crafts village, Kovalam, Thiruvananthapuram on 31st August 2022. Hon'ble water resources Minister, Shri. Roshy Augustine, inaugurated the event in presence of Prof. K.P. Sudheer, EVP, KSCSTE and Dr. Manoj P. Samuel, Executive Director, CWRDM. Around 75 Stake holders from various government/associated departments attended the event. Shri. U. Surendran, Shri. Drissia T.K., Shri. Priju. C.P., Shri. Dipu S., Dr. Sruthi. K.V. led the panel discussions in the respective research areas.



Shri. Roshy Augustine, Hon'ble Water Resources Minister inaugurated the program

- The stakeholder workshop - Water Sensitive Cities: Visioning Workshop for Kozhikode city - organized under the project 'Water 4 Change: Integrative and Fit-for Purpose Water Sensitive Design Framework for fast growing livable cities'



Participants of First state level stakeholder's consultation workshop at Kerala Arts and Crafts Village, Kovalam on 31 August 2022.

was organised on 15th July 2022. District Collector inaugurated and the Mayor of Kozhikode, Smt. Beena Philip presided over the program. Stakeholders representing different government departments along with the counterparts from NWO participated in the program. The vision document for Kozhikode city for the year 2060 was co-created by the researchers and stakeholders.

- Conducted a sponsored (SERB/DST, Govt. of India) High-End Workshop on "Hands-on training on QGIS & R Programming: An Integrated approach towards changing dynamics in Water Resources" during 15th -28th September 2022. The programme was inaugurated by Prof. Chandra Babu (Hon'ble Vice Chancellor, Kerala Agriculture University) on September and was presided over by Dr. Manoj P. Samuel (Executive Director, CWRDM); Guest of Honour by Dr. P.M Priyadarshan (Former Deputy Director, Rubber Research Institute of India). Coordinators of the programs were Dr. Chinni. V. Ch Nagakumar and Dr. Naveena K., Scientist, CWRDM. During the valedictory session on 28th September 2022, Dr. Leela Edwin, Director, ICAR-CIFT, Cochin was the chief guest of the session.



Sri. N. Tej Lohit Reddy, Hon'ble District, Collector, Kozhikode inaugurated the stakeholder -workshop



Prof. R. Chandra Babu, Hon'ble Vice Chancellor, Kerala Agriculture University inaugurated the Training Program, and Dr. Leela Edwin, Director, ICAR-CIFT, Cochin during the valedictory session at CWRDM -HQ.

- JNTBGRI has organized a 10 day's training programme on the cultivation and conservation of RET species, with financial support from Kerala State Biodiversity Board. Five hundred Kudumbashree workers of Thiruvananthapuram and Kollam Districts were given training as part of the programme.
- Conducted a two-day orientation programme on 'Chemistry and Biology of Plant Carnivory', organized as a Scientific Social Responsibility Programme (SSRP) under an ongoing project on carnivorous plants funded by SERB (Science and Engineering Research Board), Department of Science and Technology, Government of India.
- Conducted a one-day training programme on mushroom taxonomy, field visit and identification for 27 students and faculty from Kerala State Biodiversity Board on 17th August 2022.
- The Biotechnology - Bioinformatics Division, jointly with PGR Division has organized a 3 day's training programme on medicinal plant cultivation and management sponsored by State Medicinal Plant Board.
- Imparted training for 500 women as part of the programme, "Development of Propagation Techniques and Establishment of Nurseries for Indigenous RET plants and Species Notified under Biological Diversity Act and Promoting Cultivation with the support of Research Organizations, Kudumbashree and MNREGS" with financial support from the Kerala State Biodiversity Board.

- Conducted Road Safety Education, Awareness, Training Programme and Outdoor Campaign on Safe Corridor Demonstration Project (SCDP).
- Government of Kerala accorded sanction to KSCSTE-NATPAC for conducting 'Training Course for Drivers of Vehicles Carrying Dangerous and Hazardous Goods'. A certificate for the same was issued to participants on the completion of the training and this certificate is valid for 3 years. The training intends to ensure employee's safety, reduce incidents and crashes, increase employee's skills, ensure environmental protection, preclude penalties and reduce operating costs. One programme was completed in August 2022.
- Road safety awareness/training programmes are being conducted regularly by NATPAC for user community including school



teachers, ambulance drivers, hazardous drivers, driving school instructors, etc. Competitions are also conducted in this area for students and general public to increase

road safety awareness. Road Safety Training programmes conducted for different groups.

Exhibitions

- Conducted a Road Safety exhibition as part of one day workshop on 'Accident Free Cochin in Kerala', organized by GCDA, NATPAC and NSC - Kerala Chapter at Renai Cochin, Kochi on 9th August 2022.
- Participated in the expo organised in connection with the State S&T Ministers Conclave at Science City, Ahmedabad on 10th and 11th September 2022.



- Organised Medicinal Plants: Cultivation and Harvesting funded by State Medicinal Plants Board (SMPB)
- Organised Conservation and Management of Mangrove funded by Kerala Forest Department.

- Prof. Jean-Marc Deshouillers from the University of Bordeaux, France, visited the Kerala School of Mathematics and delivered a colloquium talk on "Results and Models, an illustration through sums of cubes" on 24th September 2022.



Workshop on Nuclear Magnetic Resonance Spectroscopy was organised during 16-18 September 2022 at Kottayam.

- Nuclear Magnetic Resonance (NMR) spectroscopy has become one of the powerful tools in chemistry and biology. With the development of powerful superconducting magnets, Fast Fourier Transform Technique and Computerization, NMR is now routinely used by chemists as well as biologist to solve the structures of molecules. This workshop focused on the theory, instrumentation and applications of NMR starting from fundamentals to advanced levels like higher dimensional NMR, applications and interpretation of NMR data etc. Experts from NMR led the lectures. Several post-graduate students in chemistry and biology, young faculty members of colleges/university departments and research scholars in chemistry/biology who use NMR in their research and in their course attended the programme. The programme was organised in association with M.G University, Kottayam and Magnetic Resonance Society-Kerala.



IRTC Science Activity camp for school children:

- IRTC has established the science activity centre for school children with the financial support of Rs 10 lakh from the Kerala State Council for Science Technology and Environment (KSCSTE), Govt. of Kerala where they can experience a touch and feel understanding the basics of science and facts. Activities that are aimed to inculcate spirit of enquiry, critical thinking and analytical capacity were also conducted.
- Eight engineers were trained for solid and liquid waste management and they have started a firm.



Science activity camp @ IRTC

MSSRF

- Various field based development activities conducted mainly on distribution of fruit tree saplings, distribution of micronutrient for spice crops, field visit to monitor spice demonstration plots, rain shelters in Noolpuzha. Agricultural training programs and hamlet-level creative workshops were

conducted across different villages of Wayanad including Five plant clinics.

STIC

- Dr. Jagannath Bhat, Director i/c attended 6th Proficiency Testing Provider/ Reference Material Provider Conclave conducted by NABL during 25th and 26th August at Bangaluru.
- STIC conducted a Four-day Training Programme on "Laboratory Quality Management System and Internal Audit as per ISO/IEC 17025: 2017" during 26-29 September 2022. The participants were from industries, labs and other organisations.
- Three Internship programmes conducted on analytical instruments.



Four-day Training Programme on "Laboratory Quality Management System and Internal Audit as per ISO/IEC 17025: 2017" during 26 to 29 September 2022.

CONFERENCES/SYMPOSIA/SEMINARS

KSCSTE HQ

- Conducted 04 IPR awareness Webinars/Talks/ Patent Clinics.



Views of Patent Clinic at Mar Gregorios College of Law, Trivandrum, on July 01, 2022

KFRI

- Consultative workshop on formulation of certificate course on FRA, KILA and APU -17th July 2022

NATPAC

Workshop on Accident-free Cochin

- One-day workshop on 'Accident-free Cochin' for ensuring safe and inclusive mobility towards achieving a sustainable Cochin was organised by NATPAC in association with Greater Cochin Development Authority (GCDA) and National Safety Council - Kerala Chapter, on 9th August 2022 at The Renai Cochin, Ernakulam.



MBGIPS

- Dr. N.S. Pradeep attended the 7th Global Botanic Gardens Congress held at Melbourne, Australia during 25th-29th September 2022; presented paper on "Conservation of *Crinum malabaricum* Lekhak & S.R.Yadav (Amaryllidaceae); a critically endangered aquatic plant of medicinal importance (Authored by N. S. Pradeep, Harshid P., S. Pradeepkumar)

Organized:

- SERB PAC Meeting and Expert committee meeting for the evaluation of projects of special call on "Biology of Plants under extreme environment" at KSCSTE-MBGIPS during 18,19 Sept 2022 under the chairmanship of Prof. Alok K Sinha. 16 experts across India attended the meeting.



IRTC

- International Conference on Water and Environmental Management (WEM 2022) organized by Centre for Water Resources Development and Management (CWRDM), Govt. of Kerala.

MSSRF

- MSSRF CAbC with Wayanad District Tribal Development Action Council (WDTDAC) participated in the 9th Session of the Governing Body of International Treaty on Plant Genetic Resources for Food & Agriculture (ITPGRFA) held at New Delhi from 19th-24th September.

- Attended and helped in organization of 3 days International Conference on Sustainable Development in Hill and Coastal Ecosystems held during 7-9 August 2022 at MSSRF, Chennai.



AWARD

Congratulations to the achievers!

- Dr. Manoj. P. Samuel, Executive Director, CWRDM received the Gold Medal Award from Indian Association of Soil and Water Conservationists (IASWC), ICAR - Indian Institute of Soil and Water Conservation, Uttarakhand for the year 2021.
- Dr. Binuja Thomas, Principal Scientist, KSCSTE awarded the Best Paper Award (Agriculture and Food Science) in 34th Kerala Science Congress.



Dr. Manoj P. Samuel
Executive Director



Dr. Binuja Thomas
Principal Scientist

ADIEU

Wish you a happy and healthy retired life

- Dr. Anil Kumar, Senior Director, MSSRF CAbC retires after a long term dedicated service at the centre.



APPOINTMENTS

Welcome to the KSCSTE family!



Dr. Praveen P. S.
Junior Scientist
NATPAC



Dr. Vasudevan N.
Junior Scientist
NATPAC

FORTHCOMING EVENTS

35th KERALA SCIENCE CONGRESS

The 35th Kerala Science congress, one of the largest assemblage of scientists, academicians, students and researchers in Kerala, is scheduled for 25-29 January 2023 at Mar Baselios Christian College of Engineering and Technology, Kuttikanam, Idukki. The focal theme of 35th KSC is "Nanoscience and nanotechnology for Human welfare". The technical sessions of 35th KSC begins on 27th Jan 2023 which will be inaugurated by Shri Pinarayi Vijayan Hon'ble Chief Minister of Kerala. The three-day event comprises Focal Theme Lectures, Memorial Lectures, Technical sessions on 12 subjects, PG students' interactive session, Children Science Congress and Science Expo.

RIM-2022

Rural Innovators Meet (RIM) is a unique annual event of KSCSTE, for encouraging and promoting the unorganized rural and grass root innovators. During the programme, innovators are given technical inputs on various issues including marketing methods/techniques, IPR matters, micro financing, etc. They are also given opportunity to discuss their problems and challenges with the experts and get their technologies upgraded and perfected. Attractive awards & cash prizes are given to the best innovations contested in RIM. RIM-2022 is jointly organized by KSCSTE and Central Plantation Crops Research Institution (CPCRI) at Kasaragod during the last week of November, 2022.

Children's Science Congress 2022

The District level Children's Science Congress as part of National Children's Science Congress (NCSC) is scheduled during November 2022 in all districts and State level Children Science Congress during December 2022.

TECHFEST-2022

TECHFEST-2022, a mega event for promoting innovations among engineering students is jointly organized by KSCSTE with the Cochin University of Science and Technology (CUSAT) during 26-28, October 2022, at the CUSAT campus. Apart from project contest TECHFEST 2022 also houses a hackathon contest and a science and technology exhibition. Premier R&D organizations such as ISRO, NPOL etc. will be participating in the Science and Technology exhibition. These events are open for the general public and it is expected that they will contribute to improving the scientific outlook of the people.



**KERALA STATE COUNCIL FOR
SCIENCE, TECHNOLOGY AND ENVIRONMENT (KSCSTE)**

കേരള ശാസ്ത്ര സാങ്കേതിക പരിസ്ഥിതി കൗൺസിൽ

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