

KSCSTE NEWS

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

കേരള ശാസ്ത്ര സാങ്കേതിക പരിസ്ഥിതി കാൺസിൽ

An Autonomous Institution of Science &
Technology Department, Government of Kerala
Sasthra Bhavan, Pattom, Thiruvananthapuram,
Kerala 695004 + 91-471-2548200 email: kscste@kerala.gov.in

Editor in Chief

Prof K P Sudheer
Executive Vice President, KSCSTE

Editor

Dr S Pradeep Kumar
Member Secretary, KSCSTE

Editorial Board

Dr Ajit Prabhu V
Chief Scientist, KSCSTE

Dr Anilkumar C
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Dr Rajendraprasad M
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Dr Raghu A V
Principal Scientist, KFRI

Er Subin B
Senior Scientist, NATPAC

Dr Sruthi K V
Junior Scientist, CWRDM

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Cover Photo



Hon. Chief Minister inaugurating the
35th Kerala Science Congress

COVER STORY

KERALA SCIENCE CONGRESS

The Science Congress is an esteemed event that aims to cultivate scientific curiosity in the youth of Kerala and foster a dynamic platform for discourse, debate, and propagation of scientific ideas. Its ultimate objective is to promote and advance Science and Technology for the betterment of the State. From its humble beginnings, the Kerala Science Congress (KSC) has evolved into a significant congregation of the scientific community, drawing budding researchers, erudite academicians, visionary policymakers, and all who share an ardent passion for science from the State and beyond. This prestigious event serves as an ideal forum for exchanging knowledge and sharing the latest advancements in scientific research, thus stimulating scientific inquisitiveness and driving innovation for the greater good.

The first KSC was held in Kochi, in 1989, and since then, it has been held every year in different parts of the state representing each district. Over the years, the Congress has become a significant platform for scientific discourse and has helped to promote scientific research and innovation in the state.

The KSC provides a platform for researchers and scientists to share their research findings and interact with peers from various fields. The Congress covers a wide range of topics, including basic sciences, environmental science, biotechnology, emerging areas of science and sustainable development. The event features technical sessions, plenary talks, workshops, and panel discussions that provide a platform for participants to engage in meaningful discussions and exchange ideas.

The KSC has also played a vital role in promoting scientific research and innovation in the state. The 35th Kerala Science Congress which was held in Idukki provided a platform for start-ups and entrepreneurs to showcase their innovative products and technologies. The event has helped to promote the growth of the start-up ecosystem in the state and has provided a platform for start-ups to interact with investors, mentors, and other entrepreneurs.

The Kerala Science Congress has played a crucial role in fostering scientific research and innovation in the state by offering funding and assistance to researchers and scientists. Moreover, the congress venue has provided a platform for child scientists to showcase their research work and engage with renowned scientists. One of the notable features of the Science Congress is the opportunity it offers for postgraduate students to interact with experts in the field. In the 35th Kerala Science Congress, two new initiatives were introduced, namely, SciSol and Walk with Scientists. SciSol is a program aimed at enabling young science enthusiasts to identify and propose science and technology-based solutions for local societal issues in the district where Science Congress is conducted. The Walk with Scientists program is a unique initiative that involves school children walking and discussing science-related topics with scientists. This program helps students develop the valuable skill of asking questions.

HIGHLIGHTS OF IMPORTANT PROGRAMMES

35th Kerala Science Congress

The 35th edition of the Kerala Science Congress was organised at Mar Baselios Christian College of Engineering and Technology, Kuttikkanam, Idukki in the midst of the breath-taking sights of coffee, tea, pepper and cardamom plantations, waterfalls etc. during 10-14 February 2023. The event was formally inaugurated on 12th February 2023 by the Honorable Chief Minister, Shri. Pinarayi Vijayan. The Congress kicked off on 10th February 2023 with the National Science Expo, which was inaugurated by Peermade MLA, Shri. Vazhoor Soman. The Science Exhibition of this year featured start-ups and incubators in addition to the exhibition stalls from KSCSTE R&D centres and national institutions, marking a significant improvement over the previous year.

At the inauguration ceremony, Dr. S. Pradeep Kumar, Member Secretary and 35th KSC General Convenor extended a warm welcome to the gathering, while Prof. K.P. Sudheer, Executive Vice President, and President, 35th KSC presided over the event. The Chief Minister of Kerala released the Climate Statement for 2023 and presented several awards, including the Chief Minister's Young Scientist Gold Medal Awards, Dr. S. Vasudev Award, Science Literature Awards, and Best Scientist Award. The Minister for Water Resources, Shri. Roshi Augustine, released the abstract and compendium of the 35th KSC, and the vote of thanks was delivered by Dr. Syam Viswanathan, Director of KFRI.

The focal theme for this year was "Nanoscience and Nanotechnology for Human Welfare," and notable scientists such as Dr. B.L.V. Prasad, the Director of the Centre for Nano and Soft Matter Sciences in Bengaluru, and Prof. Deepthy Menon, from the Amrita School of Nanoscience & Molecular Medicine in Kochi, delivered lectures on the theme. In addition, four memorial lectures were conducted by experts at the KSC venue, while three Memorial Lectures were held as a prelude to the 35th Kerala Science Congress at different centres.

On February 13th, a series of 12 technical paper presentations covering various subjects were conducted simultaneously. These presentations included 419 papers presented through both oral presentations and posters. Prior to the delegates' technical paper presentations, distinguished speakers delivered keynote lectures.

In addition, there were dedicated sessions for postgraduate (PG) students to engage with leading figures in the fields of science and technology. During these sessions, students had the opportunity to discuss potential career paths with experts and



engage in general scientific discourse. Moreover, a notable feature of the Kerala Science Congress was the presentation of research papers by child scientists who had been selected for the National Children's Science Congress. Child scientists from Scientia, Different Art Centre, Magic Planet, Trivandrum also presented their papers in this session.

Two new programs were launched during the 35th Kerala Science Congress. The first is 'SciSol', which aims to encourage the submission of scientific solutions to issues in the district where the Congress is held. The second program



Shri. Vazhoor Soman Peermade MLA. inaugurates the Science Expo

is called "Walk with Scientists," which provides school children with the opportunity to interact with scientists as they stroll through leisurely walks. Among the 34 proposals received for SciSol, only four were shortlisted and invited to deliver their final presentations. The proposal with the highest score was awarded the Union Bank Cash Prize of Rs. 50,000/-. The "Walk with Scientists" program aims to foster the development of children's questioning skills and motivate them to pursue careers in science.





Prof. Sabu Thomas, Chairman, presenting the report of 35th KSC



Prof. Saji Gopinath, Vice Chancellor, Digital University delivering the valedictory talk.

On 14th February 2023, the concluding speech of the event was delivered by Prof. Saji Gopinath, Vice Chancellor, Digital University. He presented the awards for the best paper and best expo stall. Prof. Sabu Thomas, Chairman, 35th Kerala Science Congress presented the report on the 35th KSC.

The cultural spectacle, crafted by the brilliant students and faculty of Mar Baselios College in conjunction with the accomplished team from Mahatma Gandhi University, enthralled the delegates. This mesmerizing showcase, which took place in the evenings of February 12th and 13th, provided a delightful and indelible experience.



Musical concert by MGU team



Cultural Evening by students of MBC



KSCSTE Best Scientist Award (2022)

Honorable Chief Minister presented the newly instituted KSCSTE Best Scientist Award for the year 2022 to Dr. B. Sabulal, Senior Principal Scientist and Head, Phytochemistry & Phytopharmacology Division, KSCSTE- JNTBGRI in appreciation of his outstanding scientific contributions, research excellence, leadership and mentoring among the whole Scientists of KSCSTE system.

35th Kerala Science Congress- Focal theme session

The focal theme session on *Nanoscience and Nanotechnology for Human Welfare* was organized on 12th February 2023 during the 35th Kerala Science Congress. Dr. Sabu Thomas, Vice Chancellor, MG University chaired the session.

Dr. Bhagavatula L. V Prasad, Director, Centre for Nano and Soft Matter Sciences (CeNS), Bangalore delivered the lecture on the topic 'A Chemist's Perspective on Nano-material Synthesis: How to Bridge the Gap Between Laboratory and Market?'

Prof. Deepthy Menon, Amrita School of Nanosciences & Molecular Medicine, AIMS-Kochi, Kerala lead the lecture on the topic 'Nanoengineered materials: Potential applications in modern medicine'

Memorial Lectures

As prelude to the 35th KSC three lectures were conducted at different centres prior to 35th KSC; and four lectures were conducted at Science Congress venue. The details

of the lectures were as follows.

P.T. Bhaskara Panicker Memorial Lecture by Prof. C.P. Aravindakshan, former Principal, Govt. College for Women, Trivandrum on "Sastravabodham" on 17 January 2023.

Dr. E.K. Janaki Ammal Memorial Lecture by Dr. A. William Jebadhas, former Principal Scientist, ICAR-Sugarcane Breeding Institute, Coimbatore on "Life and scientific contributions of Padmashri Dr. Edavalath Kakkat Janaki Ammal" on 03 February 2023.

Dr. P.K. Gopalakrishnan Memorial Lecture by Prof. Jiju P. Alex, Member, Kerala State Panning Board, Thiruvananthapuram on the "Public sector R and D institutions and development: Prioritizing research, fostering innovation, and engaging the society" on 07 February 2023.

Prof. G.N. Ramachandran Memorial Lecture by Prof. Deepak T. Nair, Regional Centre for Biotechnology, Haridwar on "Structure, mechanism and function of polymerases" on 12 February 2023.

Prof. Thanu Padmanabhan Memorial Lecture by Prof. L. Sriramkumar, IIT Madras on “*Probing the physics of early universe*” on 12 February 2023.

Dr. P.R. Pisharoty Memorial Lecture by Dr. A.M. Ramiya, Associate Professor, IIST, Thiruvananthapuram on “*Geospatial intelligence: Harnessing the power of geospatial technology for location intelligence*” on 13 February 2023.

Dr. P.K. Iyengar Memorial Lecture by Prof. Vivek Datar, former Senior Professor, TIFR, Mumbai on “*The atomic nucleus – understanding the heart of matter*” on 14 February 2023.

Exhibition Stall on IPR as part of 35th Science Congress

In connection with the National Science Expo held as part of 35th Kerala Science Congress, IPRIC-K arranged an exhibition stall for providing IPR related information and services to the visitors. Around 800 visitors including Researchers, Scientists, Academicians, Grass root innovators and general public visited the stall.

Science Literature Awards (2021)

Science Literature Awards (2021) were distributed by the Hon. Chief Minister Sri. Pinarayi Vijayan during the inaugural function of 35th Kerala Science Congress. Each category Award comprises of a cash prize of Rs. 50,000/- along with a plaque and certificate. The awards are as detailed below.



Award Category	Name of the Author and title of the Book
Science Book (Popular science)	Award shared by Dr. M.S Valiathan and Sri.V.D. Selvaraj for “മയൂരശില ജീവിതം അനുഭവം അറിവ്” Dr. V. Ramankutty for his book “എപ്പിഡെമിയോളജി : രോഗവ്യാപനത്തിന്റെ ശാസ്ത്രം” (fig. a & b)
Science Book (Children's Literature)	Dr. Muhammed Jaffer Palot and Sri. Jenu for “കൊറോണക്കാരന്ത് ഒരു വസ്ത്രം” published by Kerala Sasthra Sahithya Parishath. (fig. c & d)
Science Journalism	Sri.M. Jayathilakan for his article in Mangalam Daily entitled “ജലാശയങ്ങൾ വിഴുങ്ങുന്ന ദുർഭൂതം”. (fig. e)
Science Book (In-depth Science)	Dr. Sudhikumar for “കേരളത്തിലെ ചിലന്തികൾ” (fig. f)

Sustainable Life Style Workshop for National Green Corps Ecoclub Teachers

Kerala State Council for Science, Technology and Environment, under Environment Education Programme (EEP Kerala), the revamped programme of National Green Corps funded by MoEF & CC organised “Sustainable life style workshop for teachers-in-charge of Ecoclubs” in the State. Oneday training programmes on Mission LiFE was organised in educational district wise in all districts. Fortyone training programmes



were organised during 13th February 20th March 2023 in various educational districts. 2600 teachers in charge of Ecoclubs were benefited by this programme. Technical sessions on various LiFE topics were handled by the eminent resource persons in the field. Topics such as water conservation, energy conservation, sustainable life style and healthy food habits, Ecoclubs in schools and environmental activities, concept of Reduce, Recycle and Reuse, plastic pollution were covered in the workshop. Awareness programme on Millet Revolution, wild life protection, conservation of sea turtles etc were some of the highlights. Certificates were given to the teachers who had successfully attended the training workshop.

National Nature Camping Programme

‘Nurture the nature for our future’ with this motto, the selected students of National Green Corps Ecoclubs were given a chance to visit different protected areas/national parks/wild life sanctuaries of Kerala for 3 days under KSCSTE-EEP programme with the financial support of Ministry of Environment, Forests and Climate Change. It help them to create awareness in preserving nature and conserving natural resources. The programme was organised by the District Implementation Committee of NGC in association with the Forest Department. As part of this programme 13 nature camps were organised and about 670 students participated in the programme.

Thematic Campaigns and Competitions

As part of Environment Education, KSCSTE with the financial support of Ministry of Environment Forest and Climate Change, organised cleaning activities at different coastal areas, rivers and ponds during February - March 2023 with the participation of National Green Corps Ecoclub students.



Also organised river cleaning programmes at 16 river sites including Pamba river Mithrapuramkadavu, Chaliyar river, Barathapuzha, Kadalundipuzha etc.

Competitions such as quiz, painting, debate, essay writing, poster making and street plays were also organised for ecoclub school students of various districts.

Beach/River Cleaning





Competitions

National Green Corps Trivandrum in association with STEYP organised School Scientist programme for school



students in connection with National Science Day 2023. Organised Science Quiz with the participation thousands of children in the district. The winners were felicitated on the National Science Day programme organised at Priyadarsini Planetarium Trivandrum. Midhun D.P, New Higher Secondary School, Nellimoodu won the title of School Scientist.

World Wetland Day 2023: On 3rd February 2023, World Wetland Day 2023 was organised in collaboration with Department of Environmental Sciences, University of Kerala. The event took place in the Seminar Hall of the Department of Environment Sciences, University of Kerala.

World Water Day 2023:

World Water day 2023 was celebrated jointly by



EIACP Kerala and CWRDM. Dr. Beena Philip, Mayor of Kozhikode inaugurated the programme in a function presided over by Prof. K.P. Sudheer Executive Vice President KSCSTE. Prof. (Dr.) Rajendra Singh, (Agricultural and Food Engineering, IIT Kharagpur) and Mr. Renjit C.S., World Bank Consultant delivered lead talks during the programme. Dr. Manoj P. Samuel, Executive Director, CWRDM, Shri Manjo M.K., Suptd. Engineer, Irrigation Department, Prof. Xavier Jacob and Dr. P. Harinarayanan, Principal Scientist, KSCSTE spoke during the programme.

obtained through sixty scientific models was effective in raising scientific curiosity in among students.

Science on Wheels

KSCSTE with the support from the Dept. of Science and Technology (DST), Govt. of India coordinated the activities of the National Science Day (NSD) celebrations in the State. In connection with the NSD celebrations, a mobile science exhibition, 'Science on Wheels', visited one high school in each district of Kerala. This science popularization programme was organized in collaboration with the Department of General Education, Govt. of Kerala with the aim of inculcating scientific temper in school children of Kerala through various science experiments and exhibitions. The 'Science-on wheels' stayed at each school for a period of two days. On the first day, a selected group of students were trained on the experiments/kits and on the second day the trained students explained the scientific concepts to other students, thereby promoting peer-to-peer learning and interaction. The students of the hosting school in each district, as well as nearby school students, teachers and parents got the opportunity to visit the fair. The science-on-wheels programme inaugurated by Smt. Bhandari Swagat Ranveerchand IAS, District Collector, Kasaragod at GHSS Balanthode on 23rd January travelled through 14 districts of Kerala and ended at GHSS Thonnakkal, Thiruvananthapuram. The programme was beneficial to more than 33,000 students. Through this science exhibition, which lasted for more than a month, the knowledge



CWRDM

Projects Initiated

- 'Environmental isotope studies for understanding frequent occurrence of convective rainfall events and their impact on stream flow generation processes in the Chaliyar River Basin, Southern India', sanctioned by the International Atomic Energy Agency (IAEA) Vienna, with the aim to find out the catchment's response to convective heavy rainfall events.
- 'An Inventory of Green House Gases Emission from Coastal Wetlands of Kerala and their Impact on Regional Climate Change' sanctioned by DST-SERB-CRG scheme.
- Water conservation measures to mitigate drought effects in Athikadavu Paniya Colony at Sulthan Bathery Taluk of Wayanad District. The project funded by Cochin Shipyard under their CSR imitative and is aimed at addressing drought issues in the tribal colony of Athikadavu by installing roof water harvesting structures and demonstrating wick irrigation practices in the colony.

- CWRDM along with the consortium partners organized a side event at UN World Water Conference in DST -NOW funded project on 18th March, 2023.
- MoU has been signed between CWRDM and Irrigation Department, Govt. of Kerala for conducting a rapid EIA study for WRD-Vellayani Kayal restoration scheme.
- MoU has been signed between CWRDM and IDRBI, Irrigation department for a mega study on *Post-facto* analysis of major Irrigation projects in Kerala.

ICCS Projects Initiated

- SWAT model has been set-up for the Bharathapuzha river basin
- A python based automated tool have been developed for extracting region specific data from gridded datasets
- SARIMA model has been employed to forecast the future aerosols trends over Kerala.
- Annual Climate statement of Kerala for 2022 prepared by ICCS was released by honorable



Hon'ble Chief Minister releases the Annual Climate statement of Kerala for 2022 during the opening ceremony 35th Kerala Science Congress.

Chief Minister of Kerala on 12th February, 2023 during the opening ceremony of the 35th Kerala Science Congress.

KFRI Projects Initiated

- Transcriptome, methylome and small RNA analysis to identify chronological age of flowering in bamboos
- Screening and evaluation of potential microbes from different ecosystems of Kerala for the

- management of major soil borne forest pathogens
- Demand & Supply of Teak Resources in Kerala
- Identification and database development of dye-yielding plants in Kerala with emphasis on natural food colourants

SIGNIFICANT INNOVATION/INVENTION

CWRDM

- **HYDRAH** (Hydrological Rainfall Analysis for Humid Tropics) dashboard, a powerful tool for interactive data visualization and analysis of rainfall patterns in the humid tropics was developed using the advanced Shiny package in R. This dashboard enables users to easily explore rainfall data, uncover meaningful insights, and identify trends and patterns.

- CWRDM has been selected as a signatory of the United Nations Framework Convention on Climate Change (UNFCCC) on soil health. CWRDM is the only institution from India among the signatories of the Document.
- A DSS on Soil Erosion Risk Assessment is developed and hosted in CWRDM website for public use.

JNTBRI

- *Etlingera fenzlii*, an endemic plant found in the Andaman Nicobar Islands, possesses insecticidal properties that are coincides with traditional knowledge from the Shompen tribe. Phytoconstituents identified from GC/MS analysis of the plant's leaves and flowers were combined into a cocktail of semiochemicals that exhibited significant repellency against

mosquitoes. These findings led to the development of a repellent gel containing essential oil extracted from the plant as the active ingredient, along with several excipients such as Carbopol 940 NF, sodium propyl paraben, sodium methyl paraben, triethanolamine, and glycerol. This plant has the potential to be a highly effective mosquito repellent, capable of repelling a broad spectrum of these pests.

KFRI

- Diagnostic SNP markers for seedling sexing of dioecious *Coscinium fenestratum*
- Artificial Intelligence (AI) based Machine Learning Algorithm (Mycorrhiza)(MLA) for forensic applications

IRTC

- A convertible fish culture unit either Biofloc or RAS-MBBR, 50 thousand capacity designed IRTC, which is fabricated in Nadupathy Panchayat, Muthalamada.

FACILITIES/INFRASTRUCTURE CREATED

CWRDM

- Little Drops:- On March 23rd, 2023, CWRDM in association with the Kerala State Council for Child Welfare under the National Crèche scheme, initiated the 'Crèche Facility' at the CWRDM campus. This facility provides child care services to working parents.

JNTBRI

- SHRESTA Lab facility created at Puthenthoppe Centre (KSCSTE funded project).
- Established concrete path and a mist chamber facility in the Bamboo Nursery (Funded by Kerala State Bamboo Mission).
- Created a carpet bed of 11x15 m² behind the Nehru statue in front garden. The Gandhiji outline done as border contains in his famous conservation quote "EARTH HAS ENOUGH FOR MAN'S NEEDS BUT NOT FOR HIS GREED" with Alternanthera cvs. Rubble paving forms the background.
- The 5 m diameter 'Spider web model done of Nylon cord in Palmetum is another landscape attraction made.
- As a part of the KSCSTE funded programme in support to UNO initiated endemic tree planting programme, nearly 8,000 number of seeds of 13 IUCN Red listed species were collected from the natural habitats, sown in nursery beds, germinated and make ready for the 5 year targeted ecosystem restoration programme (Green Initiative, KSCSTE).

ICCS

- Rainfall, temperature, and wind observing instruments have been set-up at ICCS in collaboration with IMD.



MSSRF

- Development of a Smart classroom for the community to generate interest in STEM and biodiversity education and two rain shelters established for community groups.
- RET Conservatory and crop germplasm (cowpea, tubers, wild edibles, etc.) maintained at the centre. Harvesting completed in crop germplasm and planting will initiate from April onwards.

IRTC

- Microbiology Lab is facilitated with Anaerobic work station for anaerobic microbial studies

KFRI

- Automated Mist Facility -KFRI Kuzhur Sub Centre
- Horizontal Steam Steriliser (Autoclave) -KFRI Kuzhur Sub Centre
- Blue light Transilluminator (Biotechnology Department)
- Gel Electrophoresis Unit (Biotechnology Department)

MBGIPS

- Video Conference Facility installed in the seminar hall of MBGIPS.



STIC

New Equipment:

Acquired a new HPLC system, the Shimadzu Advanced i-Series Model LC 2050C 3D, for its food and water testing laboratory. The instrument was purchased under a special program of the KSCSTE.



Solar PV System

Testing Facility:

STIC has established the STIC-ANERT Facility for Solar Inverter Testing, a laboratory for testing solar photo-voltaic (PV) inverters in collaboration with the Govt. of Kerala's ANERT. The lab can test inverters up to 30kW, providing a testing facility for inverters before



Solar Testing Facility at STIC

they are installed in solar power plants. It can be utilized by manufacturers looking to develop or modify solar inverters. The facility can also test ordinary inverters, UPS, voltage stabilizers, and more.

TECHNOLOGIES ESTABLISHED/DEMONSTRATED

- | | | | |
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| KFRI
CWRDM | <ul style="list-style-type: none"> ■ Wick irrigation demonstration for the trainees of Advanced Irrigation Techniques and Precision farming for improving Water Use Efficiency with the sponsorship of National Water Mission, Ministry of Jalshakthi, GoI | MSSRF | <ul style="list-style-type: none"> ■ The community conservation plots at tribal hamlets have been harvested, with the aim of conserving traditional germplasm of various tubers (14 varieties of 5 crops), leafy greens, and other vegetables. As part of this initiative, livelihood support has been provided to the tribal community through the sale of the harvested tubers. Additionally, 10 traditional rice varieties from Wayanad, including Adukkann, Veliyan, Thondi, Chennelu, Chomala, Chenthadi, Jeerakashala, Gandhakashala, Mullankaima, and Kalladiyaran, have been conserved and demonstrated at a farmer's field. |
|-----------------------------|---|--------------|---|

TRAINING PROGRAMMES/WORKSHOPS/INTERNSHIPS

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|------------------|--|
| KSCSTE HQ | <p>Sastraposhini Teachers Training Programme 2022-23</p> <p>Three days sastraposhini Teachers Training Programme was conducted for the selected 8 Govt. High schools from 27-02-2023 to 01-03-2023 at C-SiS, CUSAT. 26 teachers were attended the training.</p> |
|------------------|--|

Skill-Based Training For SC & ST Community

- The Scheduled Caste (SC) and Scheduled Tribe (ST) cell at KSCSTE in association with KSCSTE Research & Development centres and grant-in-aid institution organised four skill-based trainings for Scheduled Caste (SC) and Scheduled Tribe (ST) communities for their capacity building and livelihood enhancement.
- Training for Agriculture Machine Operator/ Mechanic by M. S. Swaminathan Research Foundation Community Agrobiodiversity Centre, Wayanad
- Training on bamboo processing, product development and entrepreneurship skill development for SC/ST population by KSCSTE-Kerala Forest Research Institute
- Training on Advanced Irrigation Techniques by



KSCSTE-Centre for Water Resources Development and Management

- Training on Garden and Plant Nursery Management by KSCSTE - Malabar Botanical Garden and Institute for Plant Sciences



- | | |
|---------------|---|
| JNTBRI | <ul style="list-style-type: none"> ■ Training given on special techniques of fruit plant propagation to 30 farmers (Arranged by Dept. of Agri. Development and Farmer's Welfare). ■ Organized Hands-on Training Programme on Basic Molecular Biology Techniques, 15 to 18 March 2023. |
|---------------|---|

- | | |
|-------------|---|
| KFRI | <ul style="list-style-type: none"> ■ One -Week Orientation Training Programme for newly recruited managers in Kerala Forest Development Corporation, 16-20, January 2023. ■ Training Course on Bamboo Processing, Product Development and Entrepreneurship Skill Development for SCST Population, 24 January -8 February 2023, KSCSTE. ■ Five-Day Training cum Exposure visit on Conservation, Cultivation, Utilization and Value Addition of Medicinal Plants for State Medicinal Plants Board officials and Farmers, Odisha; 22-26, February 2023. |
|-------------|---|

- Two-day Training Workshop on 'Taxonomy and Acoustics of Bats of Peninsular India'; 27-28 February 2023.

- | | |
|--------------|--|
| CWRDM | <ul style="list-style-type: none"> ■ Organized Training programme under Water Resource Management Training Program, <ul style="list-style-type: none"> ■ "Protected Cultivation-The Future Scenario in Agriculture" on February 01-02, 2023 (virtual). ■ 'Environmental Impact Assessment' from 13th to 15th February 2023. ■ 'Wetland Conservation & Management' on 23rd February 2023 ■ "Introduction to Carbon neutral Assessment" during January 09 - 10, 2023,. ■ "Remote Sensing and GIS application in Water Resources Management" on January 10-12, 2023. ■ 'Irrigation Water Management - Micro Irrigation and Advanced Irrigation |
|--------------|--|

Techniques' during January 04-06, 2023

- Homestead Water Management and Organic Spices Cultivation on 3-4 Mar 2023 sponsored by DASD, GoI
- Advanced Irrigation Techniques from 06-17 March 2023 funded by KSCSTE, to SC/ST youth.
- Capacity Building and Strengthening of Water User Associations and Precision farming for improving Water use efficiency during 16-18 Mar 2023 and 20-22 Mar 2023 respectively, sponsored by National Water Mission, Ministry of Water Resources, GoI.
- Coordinated a one-week training program entitled "Statistical Analysis of Agricultural Data Using R" in collaboration with the Indian Institute of Rice Research (IRRR) and the University of Agricultural Sciences, Bagalkot. The program was held from January 30th to February 4th, 2023, with the support of NAHEP-IDP.
- Regional Workshop on Wetland Restoration for Southern States, at Kochi during 25-26 March 2023. Higher officials from Wetland Division, MoEF& CC, Member secretaries of State/UT Wetland Authorities as well as Wetland Managers attended the meeting.



Shri. IB Sathesh, MLA inaugurating the training programme on carbon neutral assessment at CWRDM SC Neyyattinkara

- CWRDM along with the consortium partners organized international symposium on "Integrated



Workshop under Water4Change project supported by NWO, The Netherlands

water management and workshop on pathways and experiments towards sensitivity" in DST -NWO funded project on 21st and 22nd of February at IHC, New Delhi

- CWRDM organized city level workshop at Kozhikode on Pathways and experiments towards water sensitivity Kozhikode on 5th March -2023
- In association with the Cochin Shipyard Ltd., CWRDM



Tribal community leader speaking on the occasion at Meenangadi

has initiated a project to mitigate drought effects in Athikkadavu Paniya Colony in Wayanad District. The launching workshop of the project was held on March 27th, 2023 and Shri K.E. Vinayan, President of Menangadi Gram Panchayat, inaugurated the program.

- Organized a two-day state level workshop during 14-15 March, 2023, with financial support from the Ministry of Jal Shakti, Govt. of India. The workshop was inaugurated by Ms. Madhavikutty M.S. IAS, District Development Commissioner.
- One-day workshop on Water Budgeting to the technical members from 6 Block Panchayat in northern Kerala on 17th February 2023 under Nava Keralam Karma Padhathi.

NATPAC KSCSTE-NATPAC observed 'Road Safety Week - 2023' by organizing a series of activities from 11th January 2023 to 17th January 2023. As part of this, various road safety awareness activities like Road Safety Awareness Campaign via Digital Display Van, Road Safety Training programme for ambulance drivers and Eye Check-up camp for drivers and NATPAC staff were organized by the Centre.

- Road Safety Awareness Campaign via Digital Display Van was conducted at Kanakakkunnu, Shangumukham, and East Fort, Thiruvananthapuram on 14th - 15th January 2023. The campaign featured road safety films with duration of 1-3 minutes.



Road Safety Awareness Campaign via Digital Display Van

- One-day road safety training program for Ambulance drivers in the Thiruvananthapuram district in association with Motor Vehicle Department at NATPAC Campus on 16th January 2023.
- Organised one-day road safety awareness training for selected students from the upper primary to the higher secondary classes in association with Kerala Road Safety Authority (KRSA).

The valedictory of the SRS programme was conducted on 17th February 2023 upon the completion of 100th school at GVHSS Vattenad, Palakkad. The valedictory function was inaugurated by Shri. M.B.Rajesh, Hon'ble Minister for Local Self Government and Excise, Kerala. Shri.S.Sreejith IPS, Road Safety Commissioner delivered the Keynote address.



Inauguration of the valedictory function of SRS by Shri.M B Rajesh, Hon'ble Minister for Local Self Government and Excise, Kerala

- The three-day training programme for Motor Vehicles Department officials titled as "Propagating Engineering Aspects for Coherent Enforcement" (PEACE) aims to disseminate practical knowledge about road engineering to enforcement officials thereby combining the engineering and enforcement in a scientific way to empower road safety practices. The training programme will be conducted across Kerala by NATPAC in association with Motor Vehicles Department (MVD) in five phases.
- On March 22nd, 2023, a Road Safety Training Program was organized by R.T.O Enforcement, Pathanamthitta and Kerala Road Safety Authority at Poozhikkad Govt. UP School for students and teachers. The one-day training program benefited 90 teaching professionals from various schools in Pathanamthitta District, as well as 40 non-teaching staff.



Participants with NATPAC Officials at KSCSTE-CWRDM, Kozhikode



Conducted Road Safety exhibition as part of State Kalolsavam, Kozhikode, 3-7 January 2023.

- Conducted Road Safety exhibition in connection with 35th Kerala Science Congress.
- Conducted Road Safety Exhibition as part of valedictory function of Safe Road to School Programme at GVHSS, Vattenad, Palakkad on 17th February 2023.
- KSCSTE-NATPAC has initiated a technical talk series entitled "TransTech Talk Series" focussing on various aspects of Transportation sector. The inaugural talk of the series was conducted on 10th February 2023 through online platform, which was attended by more than 200 participants from

eminent institutions, departments etc. The talk series was inaugurated by Prof. (Dr.) Tom V. Mathew, Chairman, Research Council, KSCSTE-NATPAC and Professor, IIT Bombay. The first talk in the series was delivered by Dr. Srinivas S. Pulugurtha, P.E., F.ASCE, Professor & Research Director, Department of Civil & Environmental Engineering at The University of North Carolina at Charlotte (UNC Charlotte) on the topic "Advancing Crash Frequency Prediction Modelling Using GIS".

The second talk in the series was delivered by Dr. Rajib B. Mallick, Ph.D., P.E., FASCE, Visiting Professor, Dept. of Civil Engineering, University of Texas at El Paso, United States of America on the topic "Challenges and Solutions in Cold Asphalt Pavement Recycling" on 10th March 2023.



MBGIPS

- A three-week skill training programme on Garden and Plant Nursery Management for SC/ST Community was started on 22nd March 2023 for 19 participants, with the funding aid from SC/ST Cell-KSCSTE. The theoretical and practical sessions included studies of the soils, nursery management, plant propagation, irrigation management, weed, pest and disease management, practice in trimming, pruning and thinning, seed production and landscape gardening.
- International Seminar on Gingers was held at MBGIPS during 01st - 03rd March 2023. The seminar was Inaugurated by Dr. Piyakaset Suksathan, former Dep. Director, Queen Sirikit Botanical Garden, Thailand. 95 Participants from 5 countries and 10 States in India, representing over 30 Institutions were attended. There were 34 oral presentations and 13 poster presentations.



- The Malabar Botanical Garden has been declared home to India's largest collection of gingers and bananas, located in the scenic "Valley of Gingers and Bananas" having over 1500 accessions and around 300 taxa.

- A nine-day workshop in Analytic Number Theory which was organized at Kerala School of Mathematics during 16-24, January 2023. This workshop was intended as a meeting ground for researchers, from within India, in Analytic Number Theory and related areas. Prof. Olivier Ramare, Directeur de Recherche (DR), CNRS, France, Shantha Laishram, Indian Statistical Institute, Delhi, Satadal Ganguly, Indian Statistical Institute, Kolkata, Ramdin Mawia, Indian Statistical Institute, Bangalore, G. K. Viswanadham, IISER Berhampur were the resource persons for this program.



Workshop on Analytic Number Theory

- Organised 3-day workshop for primary school teachers and school students with the support of SCERT.

- Conducted a four-day training program on "Laboratory Quality Management System and Internal Audit as per ISO/IEC 10725:2017." The program was aimed at helping laboratory personnel understand and work with the revised ISO/IEC 17025 Standard, which became mandatory for laboratories accredited by NABL in 2020. Dr. N. Anandavally, an eminent expert in this field, was the resource person for the program. The programme took place during 9-12 January 2023.

- STIC hosted a national workshop on diffraction techniques: X-ray and Electron Diffraction (ADD-23), sponsored by KSCSTE during 8-10 February



Training session on LQMS and IA

2023. The event attracted 48 participants from various states and was led by esteemed experts in the field. The workshop covered a range of topics, including Rietveld Analysis, Single Crystal X-Ray Diffraction, and Good Analysis practices, and provided hands-on laboratory sessions for participants to gain experience with equipment and software tools. Prof (Dr.) K.N Madhusoodanan Vice-Chancellor, Cochin University of Science and Technology, inaugurated the workshop, and the Director of STIC, Dr. M Gopalakrishna Pillai, presided over the function.

- One-week Biodiversity Short Course conducted for graduate students across Kerala
- 21-days skill training programme for SC/ST community members organized to impart skill on agricultural machinery and equipments
- One-day training on bee-keeping organized for farm men and women

- Conducted a training programme to 130 fish farmers as a part of FSPF at IRTC campus. Conducted a training to 15 farmers on BIOFLOC FISH CULTIVATION as part of PMKSY.
- Conducted training on BIOFLOC FISH FARMING to 10 participants From Agricultural Technology Management Agency (ATMA), Puthupariyaram
- Off campus training conducted at Thenkurissi to 39 fish farmers. Also supported practical session to the scope of value addition of fish products, to resolve current Biofloc fish harvesting marketing problems
- Five days applications of Geospatial Tools in panchayat level planning/GIS for Local Government Management" with support from KILA. The participants were government officials like Planning officers, development officers, Block level officers, the Directorate of the panchayat, rural development officers, and local self-government representatives during Jan-March and over 40 govt officials received training.
- Conducted awareness and extension programme for 500 students and 50 teachers had participated in this program funded by Kerala State Biodiversity Board (KSBB). Biodiversity education supporting tools via IoT platforms, familiarizing tools and apps like google lens for students. Observing, documenting and identifying living microorganisms was the motto.



Observing and documenting foldscope specimen attaching mobile phone

- A workshop was conducted at IRTC campus for 50 students of NSS College of engineering Palakkad, as a part of a project on solar fencing funded by HAC- IEEE.



In the workshop, we could provide lectures on engineering skills, solar fencing and PV installation by Dr. Sreejith M.S. (Senior Scientist), Mr. Shobhan & Mr. Arun (experts on solar fencing, PV installation and other engineering skills). Dr. Haneesh, Dr Veena and Mr. Chitrajith shared their academic experience on environment relevance and impacts of solar fencing.

- Flood Resilient Toilet : Appropriate septic tank design for high water table areas was presented at the inauguration of the Living Lab for Kuttanad, which was held on March 9, 2023 at Alappuzha.

CONFERENCES /SYMPOSIA

KSCSTE HQ

- Seminar on LiFE: EIACP Kerala and Dept of Geography, Kannur University conducted one-day seminar on the topic Lifestyle for Environment on 14th March 2023 at Kannur University Campus. Prof Gopinath Ravindran, Vice Chancellor, Kannur University inaugurated the programme in a function presided over by Prof. A Sabu , Pro-Vice Chancellor, Kannur University.



CWRDM

- **World Wetland Day- 2nd February 2023**
Observance of 'World Wetland Day' was organized at CWRDM on 2nd February 2023. Dr. G.V.M. Gupta, Director, Centre for Marine Living Resources and Ecology, (CMLRE, Cochin), delivered keynote address on 'Estuarine and coastal ecosystems and their living resources'. The inventory on wetlands of Kozhikode, a Citizen Science initiative was released and photo exhibition/documentary on Wetlands Eco services by Mr. Krishnadas Paleri was conducted. CWRDM Neyyattinkara Sub-Centre also conducted "Observance of World Wetlands Day", which was inaugurated by Shri Rajamohanakumar, Municipal Chairman, Nayyattinkara Municipality on 2nd February 2023.

and two websites for public awareness prepared by CWRDM were released during the event. CWRDM -Subcenter, Neyyattinkara, Thiruvananthapuram also observed the World Wetland Day by conducting a workshop to Kudumbashree workers and Health Inspectors on water card and water conservation.

National Science Day-2023

National Science Day-2023 was observed at CWRDM on 28th February 2023. Dr. Ravishankar C.N (Director & Vice Chancellor, ICAR-CIFE, Mumbai) was the chief guest (joined online) of the programme. Dr. Vinod K (Principal Scientist & SIC, Calicut Regional Station, ICAR-CMFRI) delivered the lead talk. A book exhibition was arranged in the CWRDM-library. Science quiz and vlogging competitions were conducted as part of the celebration.

- **World Water Day- 22 March 2023**
CWRDM organised State Level Observation of World Water Day in collaboration with the EIACP-Hub of KSCSTE on 22nd March 2023 at Hotel KPM Tripenta, Kozhikode. The Mayor of Kozhikode, Dr. Beena Philip inaugurated the function, which was presided by Prof. K P Sudheer. Four manuals

MSSRF

- Two days Community Seed Fest & Seminar 2023 was organized focused on Tribal, Health & nutrition focused on millets & underutilized crops.

AWARDS/HONOURS/RECOGNITIONS

Kerala State Young Scientist Awardees (KSYSYA)- 2022



Dr. Achu Chandran
Senior Scientist
Materials Science & Technology Division
CSIR - NIIST,
Thiruvananthapuram



Dr. Ambili K. M
Scientist SD
Space Physics Laboratory
Vikram Sarabhai Space
Centre,
Thiruvananthapuram



Dr. Anjineyulu Kothakota
Scientist
Agro-Processing & Technology Division,
CSIR - NIIST,
Thiruvananthapuram



Dr. Aravind Madhavan
Research Scientist
School of Biotechnology
Amrita Vishwa
Vidhyapeetham,
Amritapuri, Kollam



Dr. Dhanya R
ICMR- DHR Young
Scientist
Rajiv Gandhi Centre
for Biotechnology,
Thiruvananthapuram



Dr. Noel Jacob
Kaleekkal
Assistant Professor
Dept. of Chemical
Engineering
National Institute of
Technology, Calicut

Dr. S. Vasudev Award- 2022 was presented by the Hon'ble Chief Minister during the inaugural session of Kerala Science Congress to Dr. Dr. E. A. Siril, Professor, Dept. of Botany, University of Kerala and Prof. A. Gangaprasad, Dept. of Botany, University of Kerala for project titled "Collection, characterization and propagation of *Garcinia gummi-gutta* (L.) Robs."



■ New Project Sanctioned

Vigyan Prasar, Autonomous Institution under Department of Science and Technology Government of India has Sanctioned a new project to Dr. P. Harinarayanan titled 'Science and Technology Popularization among Tribal Areas in Kerala State' with a budget support of Rs. 1,06,05,000/- for 3 years.

- Dr. J. Beslin Joshi received Young Scientist Award 2022 from the Institute of Researchers in recognition of her outstanding professional and research achievements in the field of Biotechnology.
- A manual on 'Keep it safe to drink - Treating well water' was prepared and released during the 'Observance of World Water Day' on 22nd March, at Hotel Tripenta, Kozhikode.
- An Urban Pond Atlas for the City of Kozhikode is brought out under Indo- Dutch Program from DST.

REMARKABLE/OUTSTANDING ACHIEVEMENTS

- Abhilaksh Likhi (Additional Secretary, Ministry of Agriculture and Farmers Welfare) launched the Exclusive website of KFRI - Bamboo Technical Support Group (BTSG) on 11 March 2023. www.bambooinfo.in

Species new to Science

- *Endohyalina parmotrematis* R. Ngangom, Shweta Sharma, S. Joseph & Nayaka
A lichenicolous species distinguished from other species of *Endohyalina* in having immersed to sessile apothecia, large *Mischoblastia*-type ascospores, and *Parmotrema* sp. as host.
- 46 accessions of 43 spp. of medicinal plants, of which 13 are new introductions to the garden.

- Seven numbers of IUCN Red listed species and another seven *Nymphaea* cvs were added as new accessions through field exploration and purchase.
- A twenty-day field exploration was conducted by a three member team from PGR Division to Assam, Arunachal Pradesh, Meghalaya and Sikkim and introduced about 75 accessions including orchids and medicinal plants

- Dr. M.Gopalakrishna Pillai assumed the charge of Director of STIC on February 1st, 2023. Dr. Pillai brings with him 34 years of experience, including 29 years in Aerospace manufacturing, where he has specialized in realizing mechanical systems for Satellite Launch Vehicles and Missiles.



Establishing Science Parks in Kerala

Government of Kerala envision to establish four Science Parks in the State and an amount of INR 1000 crores was allocated over a period of 3-4 years, as per the budget speech for 2022-23. The Science Park is envisaged to foster innovation, research and development and commercialisation of technology wherein Governments, Universities and Industries can collaborate for effectively contributing to the knowledge economy of Kerala. Science Parks will also facilitate high end research on cutting edge technologies and translational research between academia and industry. Moreover, a mechanism to bring the best brains or researchers from world over to work in tandem with future technologies for the benefit of the industries and societies will be evolved.

As per the GO. MS/ 03/ 2023/S&TD, dt: 25-03-2023, administrative sanction was accorded to establish three Science Parks at Kannur, Ernakulam and Thiruvananthapuram with Kannur University, Cochin University of Science and Technology and University of Kerala as the corresponding Principal Associating Universities of respective Science Park. Each Science Park will consist of two blocks spanning an area of 10 Lakhs sq.ft. and will be established with the funding from the Kerala Infrastructure Investment Fund Board (KIIFB). The Kerala State Information Technology Infrastructure Limited (KSITL) is entrusted with the task

of identifying the availability of land in each location and to facilitate the process for acquiring it to establish the Science Parks. The ideal location for establishing the Science Parks were finalised considering the critical factors such as proximity to academic and research Institutions, availability of industrial and business establishments, air and other transport facilities, availability of land and power and other strategic factors.

KSCSTE is designated as the Special Purpose Vehicle for executing the project. A consultative group comprising of international experts is constituted for the establishment of Science Parks and a Project Advisory Committee is formulated to review and monitor the execution of the various activities of the project. The thematic domains suggested for the Science Parks, based on the discussion meet with eminent experts are as follows:

- New Materials (Bio-materials, Nano materials) Development
- Structural Biology
- Medical/ Healthcare Technologies/ Genomic research
- Construction Technology (3D Printing, Smart Concrete, Prefab technologies)
- Green Mobility Initiatives (Advanced transportation systems, Fuel Cells, Battery Technologies, Energy transition technologies)



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

കേരള ശാസ്ത്ര സാങ്കേതിക പരിസ്ഥിതി കൗൺസിൽ

An Autonomous Institution of Science &
Technology Department, Government of Kerala
Sasthra Bhavan, Pattom, Thiruvananthapuram,
Kerala 695004 + 91-471-2548200 email: kscste@kerala.gov.in

www.kscste.kerala.gov.in

<https://www.youtube.com/c/KSCSTEofficial>

Your valuable impressions and comments may be forwarded to :
sasthranews2022@gmail.com

