



ICAR-CTCRI Newsletter

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FORTHCOMING EVENT

- National Conference on Tropical Tuber Crops for Sustainability, Tradition, Agri-Food systems and Resilience (NCTTC 4 STAR 2023) during 28-29 November 2023 at ICAR-CTCRI, Thiruvananthapuram



Dr. G. Byju
Director

From the Director

With great pleasure and pride, I wish to inform that the ICAR-CTCRI celebrated its 60th Foundation Day (Diamond Jubilee) on 22 July 2023 with the presence of Dr. Himanshu Pathak, Secretary, DARE and DG, ICAR. During the last quarter, CTCRI has made significant achievements viz., certification of eight technologies by ICAR and the technology on e-Crop based smart fertigation system was selected as one of the five best technologies in horticulture sector; development of production, protection, and value addition technologies; FLDs/OFTs on important varieties and technologies across the country; on campus and off campus training programmes for human resource development and exhibitions and field diagnostic visits to major tuber crops growing states of India. The Institute successfully conducted Foundation Day celebrations and National symposium on plant health management in a befitting manner. Seminar on cassava cultivation and its value addition in Kanyakumari, Drone demonstrations in Kanyakumari, Idukki and Erode districts, seven batches of training programmes for Kudumbashree members of Kerala and participation in G20 exhibition in New Delhi were the other important events. The Institute had organized different programmes in connection with Mera Gaon Mera Gaurav, Swachh Bharat Abhiyan, Hindi Pakhwada and IYoM as per the directions of ICAR and GoI. Signing of MoU with IIT, Palakkad and MoA with a-IDEA, Techno Business Incubator, ICAR-NAARM, Hyderabad were notable collaborations during the period. MoUs were also signed for commercializing wax coating technology for fresh cassava tubers and Chinese potato foliar micronutrient formulations which will help in building agribusiness. The Institute is streamlining its research and extension programmes for sustainable development of tuber crops in the country.

निदेशक की कलम से

बहुत खुशी और गर्व के साथ, मैं सूचित करना चाहता हूँ कि आईसीएआर-सीटीसीआरआई ने 22 जुलाई 2023 को डॉ. हिमांशु पाठक, सचिव, डीएआरई एवं महानिदेशक, आईसीएआर की उपस्थिति में अपना 60वां स्थापना दिवस (हीरक जयंती) मनाया। पिछली तिमाही के दौरान, सीटीसीआरआई ने महत्वपूर्ण उपलब्धियाँ हासिल की हैं, जैसे आईसीएआर द्वारा आठ प्रौद्योगिकियों का प्रमाणीकरण और ई-क्रॉप आधारित स्मार्ट फर्टिगेशन सिस्टम पर प्रौद्योगिकी को बागवानी क्षेत्र में पांच सर्वश्रेष्ठ प्रौद्योगिकियों में से एक के रूप में चुना गया था; उत्पादन, सुरक्षा और मूल्य संवर्धन प्रौद्योगिकियों का विकास; देश भर में महत्वपूर्ण किस्मों और प्रौद्योगिकियों पर एफएलडी/ओएफटी; मानव संसाधन विकास के लिए कैम्पस में और कैम्पस के बाहर प्रशिक्षण कार्यक्रम और भारत के प्रमुख कंद उत्पादक राज्यों में प्रदर्शनियाँ और क्षेत्र निदान दौरे। संस्थान ने उचित तरीके से स्थापना दिवस समारोह और पादप स्वास्थ्य प्रबंधन पर राष्ट्रीय संगोष्ठी का सफलतापूर्वक आयोजन किया। कन्याकुमारी में कसावा की खेती और इसके मूल्यवर्धन पर सेमिनार, कन्याकुमारी, इडुक्की और इरोड जिलों में ड्रोन प्रदर्शन, केरल के कुडुम्बश्री सदस्यों के लिए प्रशिक्षण कार्यक्रमों के साथ बैठ और नई दिल्ली में जी20 प्रदर्शनी में भागीदारी अन्य महत्वपूर्ण कार्यक्रम थे। संस्थान ने आईसीएआर और भारत सरकार के निर्देशानुसार मेरा गांव मेरा गौरव, स्वच्छ भारत अभियान, हिंदी पखवाड़ा और आईवाईओएम के संबंध में विभिन्न कार्यक्रम आयोजित किए थे। आईआईटी, पालक्काड़ के साथ समझौता ज्ञापन पर हस्ताक्षर और ए-आइडिया के साथ एमओए, टेक्नो बिजनेस इनक्यूबेटर, आईसीएआर-एनएएआरएम, हैदराबाद इस अवधि के दौरान उल्लेखनीय सहयोग थे। ताजा कसावा कंदों और चीनी आलू पतेदार सूक्ष्म पोषक तत्वों के निर्माण के लिए मोम कोटिंग तकनीक के व्यावसायीकरण के लिए भी समझौता ज्ञापन पर हस्ताक्षर किए गए, जो कृषि व्यवसाय के निर्माण में मदद करेंगे। संस्थान देश में कंद फसलों के सतत विकास के लिए अपने अनुसंधान और विस्तार कार्यक्रमों को सुव्यवस्थित कर रहा है।

G. Byju

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Foundation Day (Diamond Jubilee) Celebrations of ICAR-CTCRI

ICAR-CTCRI celebrated 60th Foundation Day on 22 July 2023 in the Institute. Dr. Himanshu Pathak, Secretary, DARE & Director General, ICAR, New Delhi was the Chief Guest of the function. He inaugurated Farmer Facilitation Centre, Climate controlled plant growth facility, eCrop based smart fertigation system, Agri business Incubation (ABI) Centre, 'Diamond Jubilee Hall' and exhibition stalls. As part of Diamond Jubilee celebration one CMD resistant variety of cassava 'Sree Kaveri' and two high yielding taro varieties 'Sree Hira and Sree Telia' were released. In his inaugural address, Dr. Pathak emphasized the role of ICAR as the base of Indian agriculture and according to him agriculture should not be considered just as an occupation, but also as a means to ensure food and nutritional security of the nation. He informed that ICAR has taken three main initiatives such as certification of technologies, expanding the education in ICAR research institutes and also need of close collaboration with private organizations for technology development and commercialization. Dr. G. Byju, Director, ICAR-CTCRI in his presidential address highlighted research achievements of ICAR CTCRI, such as release of one cassava variety and two high yielding taro varieties, 15

new varieties recommended for 12 agro climatic regions of India, and about the 8 technologies which were approved by ICAR during the year. In the event, Dr. K.B. Hebbar (Director, ICAR-CPCRI, Kasaragod), Dr. R. Dinesh (ICAR-IISR, Kozhikode), Dr. A. Gopalakrishnan (Director, ICAR-CMFRI, Kochi), Dr. George Ninan (Director, ICAR-CIFT, Kochi) and Dr. Jacob John (Director of Extension, Kerala Agricultural University, Thrissur) were present and delivered felicitations. During the event, MoUs were signed between ICAR-CTCRI and Mar Baselios College of Engineering and Technology, Thiruvananthapuram and Rubber Research Institute, Kottayam. Seven progressive tuber crop farmers across India were honoured for their outstanding contributions in tuber crops cultivation. Exhibitions by ICAR/State Institutes were organized for farmers, school children and other stakeholders. In view of Diamond Jubilee celebration, various awards were distributed to ICAR-CTCRI staff and students including best employee awards and best research paper awards. Dr. G. Suja, Principal Scientist & Head, Division of Crop Production, ICAR-CTCRI delivered the welcome address and Dr. T. Makesh Kumar, Principal Scientist & Head, Division of Crop Protection, ICAR-CTCRI proposed the vote of thanks. More than 100 farmers and 500 students had participated in the celebrations.



Hearty welcome to Dr. Himanshu Pathak, Secretary, DARE & DG, ICAR



Ceremonial tree planting



Climate controlled plant growth facility



E-Crop based smart fertigation system



Farmer facilitation centre





Agribusiness Incubator



Exhibition Stalls



Experimental plots on tuber crops



Techno Incubation Centre

Bioformulations production unit





Inauguration of the Foundation Day celebrations



Release of varieties, publications and products



Handing over MoUs/MOAs



Honouring farmer awardees



Media Interface



Vote of thanks

Research Highlights

Genetic variability for processing traits and identification of sweet potato genotypes suitable for processing

Visalakshi Chandra C, Shirly Raichal Anil, E.R. Harish and A.N. Jyothi

Sweet potato, a high-value nutrition-rich tuber crop has tremendous genetic diversity and breeding potential for

processing traits. A study was conducted to assess the genetic and multivariate component analysis of processing traits, yield traits, weevil resistance and other tuber traits in sweet potato. The genotypic variance component made the greatest contribution to the sources of variation among the test genotypes for all the traits studied. The sweet potato genotypes exhibited significant variability for tuber

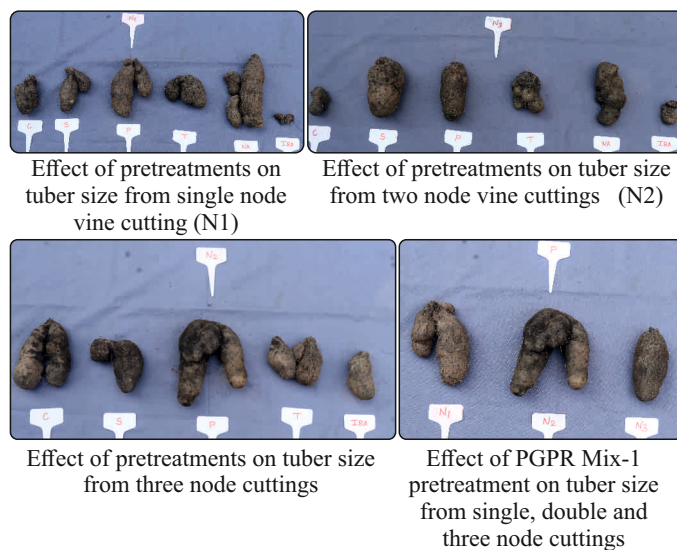
physical traits, processing traits and vine traits. 75% of the genotypes had dry matter content (>30%) and 50% of genotypes had starch content (>20%). None of the sweet potato genotypes studied was resistant to sweet potato weevil (SPW). High genotypic and phenotypic variation, heritability and genetic advance as percent of mean were observed for tuber yield followed by tuber girth, total sugar and tuber weight. Significant correlations were observed between the traits studied facilitating indirect selection. Among the 13 phenotypic traits used in the current study, the PCA identified only 8 phenotypic traits, contributing to 83.67% of variations. The UPGMA clustering yielded two major clusters and five sub clusters. Genotypes such as S-27, Palakkad local, Thiruvananthapuram local, Sree Arun, S-346, S-27, Indra Madhur, EC-321693 and S-444 were found suitable for processing. These potential genotypes can serve as breeding materials for developing high yielding varieties suitable for processing and thereby promote industrial utilization of sweet potato worldwide.

Rapid multiplication of yams through vine cuttings

K. Sunilkumar

The experiment with three sizes of nodes (single, double and three node cuttings) and six pretreatments indicated that there was significant difference with respect to yield parameters. The number of tubers varied from 2.08 in three node cuttings to 2.5 each in single and double node cuttings. The length of tubers varied from 9.9 to 11.58 cm in three node and double node cuttings respectively. The girth of tuber was highest in single node (18.78 cm). The double node produced tubers with length of 17.97 cm, which was on par with that of single node cuttings. Among the different node sizes used, highest tuber yield was obtained with two nodes (505 g), followed by single node (498.33g), which were on par.

Among the pretreatments applied to improve rooting, the number of tubers varied from 2 and 3 in PGPR Mix-1 and NAA 100 ppm respectively. The tuber length and tuber girth were highest with PGPR Mix-1 (13.81 cm & 24.69 cm respectively). The highest tuber yield was obtained with NAA 100 ppm (593.33 g) and PGPR Mix-1 (590.83 g), followed by Saaf (560.83 g), which were on par. Thus, it can be inferred that two node cuttings performed better. Further, the vine cuttings subjected to pretreatments like PGPR Mix-1 and NAA 100 ppm were superior to rest of the treatments in terms of tuber yield and size. Hence, use of vine cuttings is a viable option for yam seed tuber production and rapid multiplication *in vivo*.



NB: C- Control; S-Saaf 1%, P-PGPR Mix-1; T-*Trichoderma*; NA-NAA 100 ppm; IBA-IBA100 ppm

Pearl millet incorporated sweet potato choco-filled cookies

C. Pradeepika

Pearl millet incorporated choco-filled cookies developed by completely replacing the maida with sweet potato flour, pearl millet and wheat flour. The nutritional characteristics of the cookies are as follows: protein content - 2.61 to 4.75 mg100 g⁻¹ dry weight (dw), starch - 39.59 to 45.58 mg100 g⁻¹, fiber - 0.21 to 0.51 mg 100 g⁻¹ dw and ash - 3.52 to 6.48 mg 100 g⁻¹ dw. The micronutrient analysis revealed the presence of good amounts of micronutrients such as calcium (0.99 to 3.40 mg L⁻¹), iron (1.05 to 1.67 mg L⁻¹), magnesium (0.27 to 0.34 mg L⁻¹), zinc (0.16 to 0.27 mg L⁻¹) and copper (0.04 to 0.09 mg L⁻¹). Among the different treatments, the one containing 40% of sweet potato flour, 40% of pearl millet and 20% wheat flour showed superior nutritional and sensory attributes.



Sweet potato pearl millet choco-filled cookies

Extension

FLDs/OFTs

- On-farm trial was conducted for evaluation of biofortified hybrids of sweet potato at Venkadampu, Kulathoor panchayat, Thiruvananthapuram.



OFTs on sweet potato

- On-farm trial was conducted on Evaluation of yam protrait nursery plant in farmer's field at Menamkulam.
- Eleven OFTs on the leaf and pseudostem rot management in elephant foot yam involving the use of Carbendazim 50% WP @1g l⁻¹ was conducted at the Parakkode block, Pathanamthitta, Kerala. Two OFTs on the cassava stem and root rot management involving eight treatments were initiated at Parasuvaikkal, Thiruvananthapuram, Kerala.



OFT on the leaf and pseudostem rot management in elephant foot yam



OFT on the stem and root rot management in cassava

- Two hundred FLDs on greater yam (var. Orissa Elite), elephant foot yam (var. Gajendra), taro (var. Telia), sweet potato (var. Bhu Sona & Bhu Krishna), cassava (var. Sree Jaya) were laid out at farmers' fields in Kulianaand Bangripasi blocks of Mayurbhanj district and Kolnara, Rayagada, Bissamcuttack & Muniguda blocks of Rayagada district under MIDH project covering around 30 acres.
- Ten FLDs on improved variety of sweet potato viz., Bhu Krishna was demonstrated at Pottangi village, Koraput District, Odisha under Tribal Sub Plan.
- Demonstrations on the application of nutrients in cassava and banana using drones were conducted at different panchayats of Kanyakumari district, Tamil Nadu during 26 July-03 August 2023. District level training programme on 'Smart Farming and Drone Application in Agriculture' was organized at Kanyakumari on 26 July 2023 jointly by Department of Horticulture, Govt of Tamil Nadu, KVK Kanyakumari and ICAR-CTCRI. About 100 farmers attended. Dr. G. Byju, Director, ICAR-CTCRI inaugurated the Stakeholders interface and demonstration of drone technology on 02 August 2023 at Kadukarai, Kanyakumari district, Tamil Nadu. Nano urea was used for spraying in rice and *Micronol Tapioca Special* developed by ICAR-CTCRI for cassava. Forty ha of crop area was sprayed using drones. Another 20 demonstrations were organized during 07-08 September 2023 in Kanyakumari district.



Stakeholders interface at Kadukarai



Demonstration of Drone Applications at Kanyakumari district, Tamil Nadu

- Thirty demonstrations on the application of micronutrients in cassava '*Micronol Cassava Special*' using drones were conducted during 21-23 August 2023 at Adimali, Idukki District, Kerala. A meeting was organized at Special School, Adimali to make farmers aware of the benefits of smart farming technology developed by ICAR-CTCRI as well as about the use of drones for spraying nutrients and pesticides. The meeting was attended by Dr. V.S. Santhosh Mithra, Principal Scientist, ICAR-CTCRI, Thiruvananthapuram. Officials of Department of Agriculture, Govt of Kerala such as Assistant Director of Agriculture, Adimali, Agricultural Officer, Adimali as well as President of the block panchayat, Adimali participated. About 100 farmers attended the meeting. The meeting was followed by the demonstration of the application of micronutrient mixture using Drone in the farmers' fields. *Micronol Cassava Special* was used for spraying.
- Forty demonstrations were conducted using *Micronol Tapioca Special* at cassava fields during 25-29 September 2023 in Erode district of Tamil Nadu. A farmers' meeting was organized at SPAC, Poonacchi on 'Smart Farming and Drone Applications', which was attended by about 100 farmers.



Demonstration of Drone Applications at Erode, Tamil Nadu

- Ten On-farm validation of site-specific nutrient management (SSNM) involving customized fertilizers & micronol and organic farming technologies were monitored in 10 coconut gardens of 50 cents each in cassava and elephant foot yam in Pollachi taluk, Coimbatore, Tamil Nadu during 17-18 August 2023.



Onfarm demonstrations on SSNM and organic farming in cassava and elephant foot yam at Pollachi, Coimbatore

Training programmes

On campus programmes

- Internship training on Improved technologies of tuber crops for six 3rd year B.Sc. Hons. (Agriculture) students from VIT, Vellore, Tamil Nadu was organized during 12 June -07 July 2023.



Training for students from VIT, Vellore

- Training programmes on Improved technologies and value addition in tropical tuber crops were organized for five batches of Kudumbashree members viz., 130 participants on 08 August 2023; 110 participants on 14 August 2023; 90 participants on 18 August 2023; 91 participants on 22 August 2023 and 100 participants on 05 September 2023.



Training for Kudumbashree members of Kerala

- Training on Agrotechniques and value addition in tropical tuber crops in collaboration with VFPCCK, Government of Kerala was organized for 28 farmers during 10-11 August 2023.
- Internship training on 'Basic molecular and tissue culture techniques in cassava and sweet potato' was organized for One B.Tech. Biotechnology student from

Amrita Vishwa Vidyapeetham, Kollam during 07 June to 07 July 2023 under the guidance of Dr. Visalakshi Chandra C.

- Hands-on training on 'Value added products for entrepreneurship development in tuber crops' was organized for 26 beneficiaries from ATMA, Cherthala, Alappuzha on 12 July 2023.



- Hands-on training on 'Value added products for entrepreneurship development in tuber crops' was organized for 23 beneficiaries sponsored by KIEDS, Government of Kerala on 31 July 2023.



- Hands-on training on 'Value added products for entrepreneurship development in tuber crops' was organized for 32 beneficiaries from FPO Pala, Kottayam on 16 August 2023.
- Hands-on training on 'Value added products for entrepreneurship development in tuber crops' was organized for 23 beneficiaries from KVK, Kottayam on 13 September 2023.
- Hands-on training on 'Value added products for entrepreneurship development in tuber crops' was organized for 25 beneficiaries from DIC, Kollam and Kottayam on 22 September 2023.

Off campus programmes

- Under SCSP programme of AICRP TC, Thiruvananthapuram centre, training programme, input distribution and field visits were conducted on 12 July 2023 at Nallur, Cuddalore district, Tamil Nadu.



Distribution of farm inputs

- Under SCSP programme, training programme, field demonstrations, agro advisory and critical inputs distribution were done on 13 July 2023 at S. Naraiyur, Mangalur block, Cuddalore district, Tamil Nadu.



Training programme and field visits

- Training on organic farming in coconut was organized on 17 August 2023 at Department of Horticulture, Pollachi, Coimbatore for the benefit of 54 farmers and other stakeholders.



Training programme at Pollachi

- Two farmers' training programmes were organized on 22 August 2023 for the benefit of 40 SC farmers at Somur, Karur district and Manmalai, Salem district of Tamil Nadu.



Training programme at Somur, Karur district and Manmalai, Salem district

- Farmers training on latest varieties and production technologies in cassava and SCSP sensitization meeting was organized on 23 August 2023 at Koraiyaru, Veppanthattai block, Perambalur district of Tamil Nadu.
- Farmers training on elephant foot yam cultivation and field visits were organized on 24 August 2023 at Pallipalayam panchayat, Thanthooni block, Karur district of Tamil Nadu.



Training at Koraiyaru, Veppanthattai block, Perambalur



Training at Pallipalayam, Thanthooni, Karur

- Training programme on arrowroot cultivation and farm advisory visits for 50 arrowroot farmers were organized on 26 September 2023 at Manjaly, Ernakulam by Manjaly Service Co-operative Bank at Manjaly, North Paravur, Ernakulam. Seven arrowroot field visits were conducted and provided agro advisories.



Training at Manjaly, Ernakulam

- Training programme and distribution of agricultural inputs & implements was organized on 19 September 2023 at Pallikkal, Parakkode under SCSP programme.



Distribution of farm inputs

- Awareness programme on Tuber crops varieties and their conservation was organized on 29 September 2023 for 30 farmers of Madavoor Panchayat, Kilimanoor Block, Thiruvananthapuram.



Resource person in off campus training programmes

Sl.No.	Particulars	Resource person
1	Lecture cum discussion on 'Value addition and entrepreneurship development in tuber crops' for 100 participants organized virtually by KABI, KAU, Thrissur. 18 July 2023	Dr. M.S. Sajeew
2	Lecture cum discussion on 'Value addition of tapioca & sweet potato' for capacity building of 15 Agriculture Extension Professionals of ATARI Zone-VI organized by CIPHET, Ludhiana, Punjab. 09-11 August 2023	Dr. M.S. Sajeew

3	Lecture on 'High-tech agriculture' for the induction programme of M.Sc. students at Department of Botany, Kariavattom, Thiruvananthapuram. 16 August 2023	Dr. Shirley Raichal Anil
4	Lecture cum discussion on 'Organic farming in coconut based cropping system involving tuber crops' for 54 farmers organized by Department of Horticulture, Pollachi, Coimbatore. 17 August 2023	Dr. D. Jaganathan
5	Lecture cum discussion on 'Leadership skills for effective business development' in the on-line training programme on 'Leadership skills and management techniques' organized by TNAU and MANAGE. 25 August 2023	Dr. P.S. Sivakumar
6	Lecture cum discussion on 'Overall scenario of tuber crops production, processing & value addition in India' for 100 PMFME beneficiaries organized by NIFTEM, Thanjavur. 08 September 2023	Dr. M.S. Sajeev
7	Lecture cum discussion on 'Tuber crops based value chain and entrepreneurship development' in Food and Entrepreneurship development' for 35 AOs, ADAs and CEOs of FPOs organized by SAMETI, Thiruvananthapuram. 12 September 2023	Dr. M.S. Sajeev
8	Lecture cum discussion on 'Post harvest losses in tuber crops and their management strategy' for 30 AOs, ADAs and CEOs of FPOs organized by State Agricultural Price Board, Thiruvananthapuram. 15 September 2023	Dr. M.S. Sajeev
9	Lecture cum discussion on 'Empowering farmers locally: Research priorities in national agricultural extension' in the online programme on 'Research priorities in agricultural extension organized by MANAGE, Hyderabad. 21 September 2023	Dr. P.S. Sivakumar

ICAR-CTCRI RS, Bhubaneswar

The following trainings were organized at the Regional Station

- Training on Crop diversification with tuber crops on 20 August 2023 at Jhudoambha, Mohana, Gajapati for 58 farmers and other stakeholders.

- Training on Crop diversification with tuber crops on 21 August 2023 at Dalapada, Khajuripada, Kandhamal for 57 farmers and other stakeholders.
- Training on Crop diversification with tuber crops on 28 September 2023 at Badapeta, Lamtaput, Koraput for 50 farmers and other stakeholders.
- Training on Crop diversification with tuber crops on 29 September 2023 at Pukali, Pottangi, Koraput for 77 farmers and other stakeholders.



Training at Jhudoambha, Mohana, Gajapati



Training at Pukali, Pottangi, Koraput

Seminars/Workshops/Interface Meetings/Field Diagnostic Visits Organized

Farmers' seminar on cassava cultivation and its value addition, demonstrations on drone applications in agriculture

District level seminar on 'Cassava cultivation and its value addition & drone demonstration' was organized by ICAR-CTCRI in collaboration with Department of Horticulture, Govt. of Tamil Nadu on 07 September 2023 at Scott's Christian College, Nagercoil, Tamil Nadu. Dr. G. Byju, Director, ICAR-CTCRI inaugurated the event. Smt. Sheela John, Deputy Director of Horticulture, Kanyakumari presided over the function. Lecture cum discussions on various aspects viz., improved varieties, planting material production, organic farming, pest and disease management, mechanization and value addition, economics and marketing, entrepreneurship development etc. were organized for the benefit of 320 participants from Kanyakumari district. Demonstrations on Drone applications in agriculture and exhibition were also organized during the event.



Seminar on 'Cassava cultivation and its value addition'

National Symposium on Plant Health management: Current Trends and Novel Mitigation Strategies

The symposium was jointly organized by Indian Phytopathological Society (Southern Zone) and ICAR-Central Tuber Crops Research Institute during 11-12 September 2023. Dr. Mohanan Kunnummal, Vice Chancellor, Kerala University of Health Sciences and University of Kerala inaugurated the programme. Dr. Bikash Mandal, Assistant Director General, International Relations, ICAR, New Delhi, Dr. S.K. Chakrabarti, Former Vice Chancellor, UBKV, West Bengal, Shri. S. Premkumar, General Manager, Canara Bank, Thiruvananthapuram circle, Dr. G. Byju, Director, ICAR- CTCRI and Dr. Kajal Kumar Biswas, Secretary, Indian Phytopathological Society, New Delhi addressed the gathering. Dr. T. Makeshkumar, Head, Division of Crop Protection and Organizing Secretary delivered the welcome address and Dr. S.S. Veena, Principal Scientist and Co-organizing Secretary proposed the vote of thanks. A total of 130 participants representing various universities, ICAR institutes and central institutes in Kerala, Tamil Nadu, Karnataka and Puducherry had participated.



Inauguration of the National Symposium on Plant Health management

Exhibitions

- *Njattuvela Chantha* Programme during 03-06 July 2023 at Poojappura Mandapam Ground, Thiruvananthapuram.

- ICAR Foundation Day exhibition during 16-17 July 2023 at NASC complex, New Delhi.



- 60th Foundation Day celebrations of ICAR-CTCRI on 22 July 2023 at ICAR-CTCRI, Thiruvananthapuram.
- State level *Karshakadinam* Celebration on 17 August 2023 at Nishagandhi Auditorium, Thiruvananthapuram.

- Seminar cum exhibition on cassava cultivation and value addition on 07 September 2023 at Scott Christian College, Nagercoil, Tamil Nadu.



- G-20 exhibition on 09 September 2023 at NASC Complex, New Delhi



- Global Symposium on Farmer's Rights during 12-14 September 2023 at ICAR Convention Centre, NASC complex, New Delhi.



Dr. Dinesh Kumar Agarwal, Registrar General, PPV&FRA, New Delhi visiting CTCRI stall

- Kisan Mela '*Bharathiya Prakrithik Krishi* Programme' on 21 September 2023 at Kulathoor, Thiruvananthapuram.

Exposure visits to ICAR-CTCRI

- One day exposure visit cum training on 'Improved technologies of tuber crops' was organized for the benefit of 507 farmers, 978 students and 85 officials across the nation at ICAR-CTCRI, Sreekariyam, Thiruvananthapuram.



Mera Gaon Mera Gaurav Programme

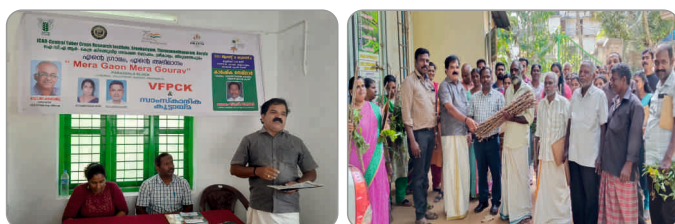
- A Farmers training cum exhibition on Millets was organized on 09 August 2023 at Saigramam, Thonakkal, Thiruvananthapuram. The importance of tuber crops and millets for nutrition and human health was explained to the 30 farmers. Special lecture on

millet and its importance was dealt by Mr. Jagan Prasanth from Jagans millet bank, Thiruvalla.



Training programme at Saigramam, Thonakkal

- Training on Profitable cultivation of tuber crops in coconut gardens was organized on 16 August 2023 at VFPCCK, Chenkal, Thiruvananthapuram for the benefit of 47 farmers and other stakeholders.



Training programme at Chenkal, Thiruvananthapuram

Swachh Bharat Abhiyan

Swachhata Pakhwada was organized at ICAR-CTCRI from 15 September to 02 October 2023. Cleaning of sides of main road outside ICAR-CTCRI, Thiruvananthapuram. Farm (Block I and II), premises of Division of Crop Improvement, old tissue culture lab, skilled supporting

staff room, staff quarters, labs and storage shed of Division of Crop Production were cleared of non-biodegradable plastic waste, cartons, chemical bottles, paper, metallic scrap, old wooden and metallic furniture, weeds etc., as part of the programme. Swachhata Hi Seva cleaning campaign was conducted on 26 September 2023 at Government Ayurveda Dispensary, Ulloor (Cheruvaikkal), Sreekariyam, Thiruvananthapuram. The medical officer, Dr. Bino and the Aakulam ward councilor Sri. Suresh Kumar participated in the programme. Swachhata Pledge was taken by all staff in front of the Institute. Also, on the occasion of World Tourism Day on 27 September 2023, Swachhata Hi Seva cleaning campaign was organized at Veli tourist village, Thiruvananthapuram. On 29 September 2023, on the occasion of World Awareness Day on Food Waste Swachhata Hi Seva awareness campaign was conducted at the staff canteen, ICAR-CTCRI. Cleaning drive was also organized in Anganvadi and nearby residences of Karakulam Panchayat. October 01-02 were celebrated as Swachhata Diwas. On Gandhi Jayanthi on 02 October 2023, after paying floral tributes to Mahatma, a human chain was formed by all staff members in front of the Institute led by Dr. G. Byju, Director. A swachhata shramdan on the main roadside of ICAR-CTCRI was also organized, where non-biodegradable waste materials such as plastic covers, food packets and other degradable wastes were removed.



Swachh Bharat Abhiyan activities

A special cleaning drive was held on 20 September 2023 at Division of Crop Production under the Swachh Bharat Abhiyan.



Swachh Bharat programme at Division of Crop Production

ICAR-CTCRI Regional Station, Bhubaneswar, Odisha organized cleaning drive in connection with Gandhi Jayanthi on 02 October 2023.



IYoM programmes

- Lecture cum discussion on Millets to students of Sisuvihar UPS was organized on 07 July 2023 at ICAR-CTCRI, Thiruvananthapuram.



Activities of Agribusiness Incubator

- A fully renovated ABI was inaugurated on 22 July 2023 by Dr. Himanshu Pathak, Secretary DARE and DG ICAR, New Delhi.
- A sales counter for selling ICAR licensed products managed by Farm and ABI was inaugurated on 22 July 2023 by Dr. Himanshu Pathak, Secretary DARE and DG ICAR, New Delhi.
- New incubate enrollment-M/s Southern Hills Industries Private Limited, Building No 501E, E, Peruvamba, EramamKuttoo, Kannur-670 306.

Technology Commercialization/Linkages/ Collaborations

- ICAR-CTCRI signed MoU with Indian Institute of Technology (IIT), Palakkad, Kerala on 12 July 2023 to promote cost-effective, artificial intelligence based agricultural decision-making tools.



- ICAR-CTCRI signed MoA with M/s Entryway Shipping and Logistics Pvt Ltd., MIV CFS Admin Building, 2nd Floor, Opp. ICTT, Vallarpadam, Cochin, Kerala on 27 July 2023 to transfer the technology of wax coating of cassava tubers to extend shelf life.



- A contract research project on Development of value-added products from Mudali (*Colocasia esculenta*) and Kone (*Dioscorea*) was signed on 22 July 2023 with an NGO, M/s. Spudnik Foods, Bengaluru, Karnataka.
- ICAR-CTCRI signed MoA with a-IDEA, Techno Business Incubator (TBI), ICAR-NAARM, Hyderabad on 23 August 2023. The MoA was signed by Dr. Ch. Srinivasa Rao, Director, ICAR-NAARM, Hyderabad and Dr. G. Byju, Director, ICAR-CTCRI, Thiruvananthapuram.



- The technology for 'Wax Coating for Fresh Cassava Tubers: Improving Preservation and Shelf-Life' was commercialized to M/s Foodco Delicacies India (P) Ltd, Xi/46 R, Thrichattukulam (P.O), Alappuzha, Kerala.
- Established linkages with SAGOSERVE, Salem and the National Institute of Food Technology Entrepreneurship and Management (NIFTEM), Thanjavur for research and extension activities.

- Technology on Chinese potato foliar micronutrients ‘Micronol’ was licensed to M/s Linga Chemicals, Madurai, Tamil Nadu on 04 September 2023.

Technology Certification by ICAR, New Delhi

- A total of eight technologies from ICAR-CTCRI were certified by ICAR, New Delhi during 2023. The technology certificate on ‘e-Crop based smart farming’ was given on 16 July 2023 during ICAR foundation day at New Delhi and other seven technology certificates were given to technology developers by Dr. Himanshu Pathak, Secretary, DARE and DG, ICAR on 22 July 2023 during ICAR-CTCRI foundation day celebrations at Thiruvananthapuram. The list of technologies, technology developers and citation are given below.

1. **e-Crop Based Smart Farming** (Lead Developer: V.S. Santhosh Mithra; Associate Developers: G. Byju, J. Sreekumar and D. Jaganathan)

The technology on ‘e-Crop based smart farming’ was selected as one of the best five technologies from Horticulture Sciences division of ICAR, New Delhi during 2022. The lead developer of the technology, Dr. V.S. Santhosh Mithra, Principal Scientist received the certificate during 95th foundation Day of ICAR and Technology Day on 16 July 2023 at New Delhi.



Dr. V.S. Santhosh Mithra receiving technology certificate

2. **Methodology for measurement of pith density of cassava stem for assessment of drought tolerance** (Lead Developer: A.V.V. Koundinya; Associate Developers: B.R. Ajeesh, N. Sai Lekshmi, Vivek Hegde and M.N. Sheela)
3. **Drought tolerance index scale for cassava** (Lead Developer: A.V.V. Koundinya; Associate Developers: B.R. Ajeesh, N. Sai Lekshmi, Vivek Hegde and M.N. Sheela)
4. **Multi-micronutrient formulation for Chinese potato** (Lead Developer: G. Byju; Associate Developers: D. Jaganathan and R. Muthuraj)

5. **Package of practices for organic production of cassava** (Lead Developer: G. Suja; Associate Developers: A.R. Seena Radhakrishnan, P. Subramanian, R. Surekha, D. Jaganathan and G. Byju)
6. **Wax coating for fresh cassava tubers: Improving preservation and enhanced shelf-life** (Lead Developer: Saravanan Raju)
7. **Power operated size based Chinese potato grader** (Lead Developer: T. Krishnakumar; Associate Developers: M.S. Sajeev, Pradeepika, C., R. Muthuraj and D. Jaganathan)
8. **Methodology on assessing factors influencing adoption** (Lead Developer: P. Prakash; Associate Developers: Pramod Kumar, Amit Kar and Awani Kumar Singh)



Technology certificates received from Dr. Himanshu Pathak, Secretary, DARE & DG, ICAR during foundation day celebrations of ICAR-CTCRI, Thiruvananthapuram

Capacity Building Trainings attended by staff

Sl.No.	Name	Particulars of the training	Period
1	Dr. C. Pradeepika	International training on 'Technology Innovation in Agriculture, Horticulture, Animal Husbandry, Fisheries, Sericulture and Allied Sectors for Sustainable Entrepreneurship' organized by College of Horticulture and Forestry, Central Agricultural University, Pasighat, Arunachal Pradesh.	16 June-06 July 2023 (21 days)
2	Dr. M.S. Sajeev Dr. T. Krishnakumar	Six-week online course on 'Practical animal nutrition for augmenting livestock and poultry productivity' organized by Commonwealth of Learning, Canada and Madras Veterinary College, TANUVAS, Chennai.	11 July-31 August 2023
3	Dr. M.S. Sajeev	Recent advances in millet crop production, processing and value addition and marketing organized by ICAR-IIMR, Hyderabad, Telangana.	16-25 August 2023
4	Dr. G. Byju	Executive Development Programme (EDP) on Leadership Development, ICAR-NAARM, Hyderabad, Telangana.	21-26 August 2023
5	Dr. Sheela Immanuel	Training on e HRMS.	28 August 2023
6	Dr. Senthilkumar K.M.	Online training on Biosecurity and Biosafety: Policies, Diagnostics, Phytosanitary Treatments and Issues.	04-14 September 2023
7	Dr. V. Ramesh	Climate risk management: Policy and governance at LBSNAA, Mussoorie, Uttarakhand.	11-15 September 2023
8	Dr. M. Nedunchezhiyan	SAMAGRA: Enabling the Incubator (A sensitizing workshop of ICAR-ABIs) organized at NASC complex, PUSA, New Delhi.	21-22 September 2023

Staff participation in scientific events/seminars/symposia/conference/workshop/meetings

Sl.No.	Name of the participant	Programme	Particulars of the programme
1	Dr. T. Makeshkumar Dr. S.S. Veena	Brainstorming session on Policy framing and guidelines for registration of bio-stimulants (Online)	Indian Phytopathological Society, New Delhi 04 July 2023
2	All Scientists	Quarterly review meeting of the scientists	ICAR-CTCRI, Thiruvananthapuram 04-05 July 2023
3	Dr. Senthilkumar K.M.	Inaugural function of the <i>Samagra Susthira Vikasana Padhathi</i> programme of Govt. of Kerala	Venganoor, Thiruvananthapuram 12 July 2023
4	Dr. E.R. Harish	5 th International Conference on Innovative and Current Advances in Agriculture and Allied Sciences	CSDAT, Meerut, Uttar Pradesh 10-16 July 2023
5	Dr. H. Kesava Kumar	IPR Seminar on National Intellectual Property Festival	CSIR-National Institute for Interdisciplinary Science and Technology, Thiruvananthapuram 26 July 2023

6	Dr. M.L. Jeeva	Wiley Training Webinar for CeRA consortium	DKMA, ICAR, New Delhi 01 August 2023
7	Dr. S.S. Veena	Stakeholder workshop on TEEB Agrifood initiative in UP(Online)	PC unit, ICAR- Indian Institute of Farming Systems Research, Modipuram, Meerut 01 August 2023
8	Dr. M.L. Jeeva	A virtual meeting on ICAR-CSR Guidelines	DARE –ICAR, New Delhi 03 August 2023
9	Dr. K. Sunil Kumar Dr. V. Ramesh Dr. K. Sujatha T.P	Webinar on Wiley Online Library: How can it help researchers?- Cera Consortium	03 August 2023
10	Dr. Suja G. Dr. Makeshkumar T. Dr. Jyothi A.N. Dr. Krishna Radhika N. Dr. Sujatha T.P. Dr. Senthilkumar K.M.	Online review meeting of the Genome editing project entitled ‘Enabling climate resilience and ensuring food & nutritional security through genome editing in horticultural crops’	ICAR-CTCRI, Thiruvananthapuram 07 August 2023
11	Dr. H. Kesava Kumar	International Conference on Recent innovations & technological advancements in agriculture, horticulture, agricultural engineering, sericulture, food science, biotechnology and rural entrepreneurship (AGRI INNOVA 2023)	The Indian Agriculture College, Radhapuram, Tirunelveli, Tamil Nadu 11-12 August 2023
12	Dr. E.R. Harish	DBT-sponsored Training on Biosecurity and Biosafety: Policies, Diagnostics, Phytosanitary Treatments and Issues	ICAR-NBPGR, New Delhi 04-14 September 2023
13	Dr. G. Byju Dr. Sheela Immanuel Dr. V.S. Santhosh Mithra Dr. R. Muthuraj Dr. D. Jaganathan Dr. H. Kesava Kumar Dr. T. Krishnakumar Dr. S. Shanavas Mr. D. T. Rejin Mr. Aswin Raj P.	Seminar on Cassava cultivation and its value addition	Scott Christian College, Nagercoil, Kanyakumari 07 September 2023
14	Dr. T. Makeshkumar Dr. Sheela M. N. Dr. S.S. Veena Dr. M.L. Jeeva Dr. Mohan C. Dr. J. Sreekumar Dr. E.R. Harish Dr. H. Kesava Kumar Dr. B.G. Sangeetha Dr. Visalakshi Chandra C.	National Symposium on Plant Health management: Current Trends and Novel Mitigation Strategies	Indian Phytopathological Society (Southern Zone) and ICAR-Central Tuber Crops Research Institute 11-12 September 2023

15	Dr. G. Byju Dr. J. Sreekumar Dr. Sheela Immanuel Dr. D. Jaganathan Dr. E.R. Harish	IMPCC meeting	ICAR-CTCRI, Thiruvananthapuram 13 September 2023
16	Dr. P. Murugesan Dr. Kalidas Pati Dr. B.S. Prakash Krishnan	First Global Symposium on Farmer's Rights	ICAR Convention Centre, NASC complex, New Delhi 12-15 September 2023
17	Dr. S.S. Veena	Role of nanotechnology in plant disease management (webinar)	S.V. Agricultural College, Tirupati 21 September 2023
18	Dr. P. Sethuraman Sivakumar	Sensitization of ABI project team from the Institutes on the incubation process organized by IPTM Unit of ICAR	Sensitization workshop of ICAR-Agri-Business Incubation Centres (ABIs) 21-22 September 2023
19	Dr. T. Makeshkumar Dr. S.S. Veena Dr. M.L. Jeeva Dr. E.R. Harish Dr. H. Kesava Kumar Dr. B.G. Sangeetha	Brainstorming session on Prospects of dsRNA based biopesticide for crop protection in Indian agriculture (Online)	National Academy of Agricultural Sciences, New Delhi 26 September 2023
20	Dr. E.R. Harish	National Symposium on Crop Health Management: Safeguarding Crop through Diagnostics and Innovations	ICAR-Vivekananda Parvatiya Krishi Anusandhan Sansthan, Almora, Uttarakhand 29-30 September 2023
21	Dr. A. N. Jyothi Dr. J. Sreekumar Dr. T. Krishnakumar	Joint Monitoring Committee meeting of the Contract Research Project on 'Preparation of HACCP and SOP for tapioca starch and sago production'	SAGOSERVE, Salem, Tamil Nadu 29 September 2023
22	Dr. S. Sunitha Dr. J. Suresh Kumar	6 th CWSS International weed conference on 'Agricultural Innovations for Sustainable Development Goals with Special Focus on Natural Farming (AISDGONF-2023)'	Kalyani, West Bengal 30 September 2023

Publications

Research papers

- Byju, G., Jaganathan, D. and Suja, G. 2023. Customized fertilizers for higher yield and income: Evidences from on-farm validation in coconut-tuber crop intercropping system. *Journal of Plantation Crops*, **51**(1):16-22 (NAAS score: 4.66).
- Chintha, P., Sarkar, D., Pecota, K., Dogramaci, M., Hatterman-Valenti, H. and Shetty, K. 2023. Phenolic bioactive-linked antioxidant, anti-hyperglycemic, and antihypertensive properties of sweet potato cultivars with different flesh color. *Hortic. Environ. Biotechnol.* 1-17. (NAAS score: 8.14).
- Hareesh, P.S., Resmi, T.R., Sheela, M.N. and Makeshkumar, T. 2023. Cassava mosaic disease in South and Southeast Asia: current status and prospects. *Front. Sustain. Food Syst.* **7**:1086660 (NAAS score: 11.1).
- Jena, B., Pati, K., Donde, R., Acharya, V., Dash, G.K., Giri, A.K., Chauhan, V.B.S., and Nedunchezhiyan, M. 2023. Cross-species transferability of soybean SSR markers to yam bean (*Pachyrhizus erosus* L.): an underutilized crop for diversity analysis. *Genet. Resour. Crop Evol.* (NAAS score: 8.0).
- Priya, N., Thangamani, C., Suresh Kumar, J., Suresh Kumar, P., Savitha, B.K., Geetha, P., Amuthaselvi, G.

- and Pugulendhi, L. 2023. Evaluation of different arrowroot (*Maranta arundinacea* L.) accessions for high rhizome yield with root quality and starch content. *International Journal of Environment and Climate Change*. **13** (10): 1677-1686 (NAAS score: 5.13).
6. Raji, P. and Byju, G. 2023. Climate resilience, yield and geographical suitability of sweet potato under the changing climate-a review. *Natural Resources Forum A UN Sustainable Development* (NAAS score: 7.82).
 7. Saravanan, R. and Gutam, S. 2023. Climate change impacts on tuber crops; vulnerabilities and adaptation strategies. *Journal of Horticultural Sciences*, **18**(1):1-18 (NAAS score: 6.1).
 8. Senthilkumar, K.M., Pushpitha, P., Makeshkumar, T. and Sheela, M.N. 2023. Genome-wide identification and expression analysis of Hsp70 family genes in cassava (*Manihot esculenta* Crantz). *3 Biotech*. **13**(10): 341. (NAAS score: 8.8).
 9. Senthilkumar, K.M., Raju, S., Velumani, R. and Gutam, S. 2023. Transcriptome analysis and identification of leaf, tuberous root and fibrous root tissue-specific high temperature stress-responsive genes in sweet potato. *J. Hortic. Sci.* **18**(1): 53-59. (NAAS score: 5.08).
 10. Sivan, S., Arya, K., Sheela, M.N., Revathi, B.S., Krishnan, P. and Senthilkumar, K.M. 2023. Association studies and genetic diversity analysis using morphological and molecular markers in cassava (*Manihot esculenta* Crantz) germplasm. *S. Afr. J. Bot.* **161**: 347-357. (NAAS score: 9.1).
 11. Suja, G., Byju, G., Veena, S.S., Sunitha, S., Ramesh, V., Lintu, M. Cherian and Rakhi K. Raj. 2023. Organic management is a viable alternative for arrowroot (*Maranta arundinacea* L.). *Biological Agriculture & Horticulture*. published online on 05 September 2023, <https://doi.org/10.1080/01448765.2023.2253778> (NAAS score: 7.86).
 12. Suja, G., Jaganathan, D. and Byju, G. 2023. Organic management of tuberous intercrops for resilience, higher yield and profit from coconut plantations: Insights from validation experiments in Kerala, India. *Journal of Plantation Crops*, **51**(1): 1-8 (NAAS score: 4.66).
 13. Visalakshi, C., Sheela, M.N., Ravi, V., Sreekumar, J. and Senthil Alias Sankar. 2023. Varietal screening for identification of postharvest physiological deterioration tolerance in storage roots of cassava. *International Journal of Vegetable Sciences*, **29**(5): 403-414. (NAAS score: 6.35).

Book

1. Veena, S.S., Makeshkumar, T., Pravi Vidyadharan and Jeeva, M.L. 2023. National symposium on plant health management: current trends and novel mitigation strategies, 11-12 September 2023. *Abstract of papers*. ICAR-Central Tuber Crops Research Institute, Sreekariyam, Thiruvananthapuram, Kerala, 180 p.

Book chapter

1. Arutselvan, R. and Laxminarayana, K. 2023. Revolutionizing Tuber Crops Production Through Biotechnological Approaches and Precision Farming. In: *IIP Book Series "IIPV3EBS17_G86 Futuristic Trends in Biotechnology"*, Volume 3, Iterative International publishers.

Technical bulletins

1. Jeeva, M.L., Veena, S.S., Jayanta Tarafdar, Harish, E.R., Kesava Kumar, H. and Makeshkumar, T. 2023. *Compendium of diseases and pests of tropical tuber crops in India*, Technical Bulletin No. **92**, ICAR-Central Tuber Crops Research Institute, Thiruvananthapuram, Kerala, India, 56 p.
2. Suja, G., Jaganathan, D., Sheela, M.N., Sajeev, M.S., Makeshkumar, T. and Harish, E.R. 2023. *Cassava*, Technical Bulletin No. **93**, ICAR-Central Tuber Crops Research Institute, Thiruvananthapuram, Kerala, India, 74 p.
3. Susan John, K., Shirly Raichal Anil, Veena, S.S., Jyothi, A.N., Sivakumar, P.S., and Sangeetha, B.G. 2023. *Sweet Potato*, Technical Bulletin No. **94**, ICAR-Central Tuber Crops Research Institute, Thiruvananthapuram, Kerala, India, 46 p.

Popular articles

1. Krishnakumar, T., Sajeev, M.S., Jyothi, A.N., Pradeepika, C., Prakash, P., Jaganathan, D. and Velmurugan, M. 2023. Cassava leaves as human nutrition: Potential and limitations. *Kerala Karshakan*. **11**(2): 40-42.
2. Visalakshi Chandra, C., Murugesan, P., Pradeepika, C. and Senthil alias Sankar M. 2023. Chinese or Country Potato-The good potato. *Kerala Karshakan*, **11**(2): 35-39.

Conference/Souvenir/Seminar proceedings

1. Amrutha, P.R. 2023. Management of greater yam (*Dioscorea alata* L.) anthracnose caused by *Colletotrichum gloeosporioides* (Penz.) Penz. & Sacc. employing endophytes isolated from medicinal plants. In: *National Symposium on Plant health management*:

- Current trends and novel mitigation strategies* held during 11-12 September 2023, ICAR-Central Tuber Crops Research Institute, Thiruvananthapuram, Kerala.
2. Amrutha, P.R., Jeeva, M.L., Akhil, K.M., Shilpa, S.U. and Tom Cyriac. 2023. Microscopic evidence of antagonism by endophytic isolate *Bacillus licheniformis* CTCRI EB12 against *Colletotrichum gloeosporioides* (Penz.) Penz. & Sacc. causing greater yam (*Dioscorea alata* L.) anthracnose. In: *National Symposium on Plant health management: Current trends and novel mitigation strategies* during 11-12 September 2023, ICAR-Central Tuber Crops Research Institute, Thiruvananthapuram, Kerala.
 3. Arutselvan, R., Jeeva, M.L., Veena, S.S., Makeshkumar, T., Kalidas Pati, Nedunchezhiyan, M., Laxminarayana, K., Kesava Kumar, H. and Harish, E.R. 2023. Enhancing *Trichoderma* mass production through bio-formulation and tuber substrate enrichment. In: *National Symposium on Plant health management: Current trends and novel mitigation strategies* during 11-12 September 2023, ICAR-Central Tuber Crops Research Institute, Thiruvananthapuram, Kerala.
 4. Athulya, V.A., Veena, S.S. and Makeshkumar, T. 2023. Role of microbes in the management of cassava mosaic disease. In: *National Symposium on Plant health management: Current trends and novel mitigation strategies* during 11-12 September 2023, ICAR-Central Tuber Crops Research Institute, Thiruvananthapuram, Kerala.
 5. Hareesh, P.S. and Makeshkumar, T. 2023. Designing of amiRNA candidates targeting silencing suppressors of Sri Lankan Cassava Mosaic virus in cassava for resistance. In: *National Symposium on Plant health management: Current trends and novel mitigation strategies* during 11-12 September 2023, ICAR-Central Tuber Crops Research Institute, Thiruvananthapuram, Kerala.
 6. Harish, E.R. 2023. Identification of bacterial whitefly endosymbionts in cassava using diagnostic PCR and Sanger sequencing. In: *National Symposium on Plant health management: Current trends and novel mitigation strategies* during 11-12 September 2023, ICAR-Central Tuber Crops Research Institute, Thiruvananthapuram, Kerala.
 7. Iype Praveen Thomas and Makeshkumar, T. 2023. Evaluation of transgenic cassava resistance against Sri Lankan cassava mosaic virus. In: *National Symposium on Plant health management: Current trends and novel mitigation strategies* during 11-12 September 2023, ICAR-Central Tuber Crops Research Institute, Thiruvananthapuram, Kerala.
 8. Jeeva, M.L., Sheela, M.N., Veena, S.S., Makeshkumar, T., Karthikeyan, S., Amrutha, P.R., Shilpa, S.U. and Tom Cyriac. 2023. Assessment of resistance in greater yam (*Dioscorea alata* L.) cultivars for anthracnose. In: *National Symposium on Plant health management: Current trends and novel mitigation strategies* during 11-12 September 2023, ICAR-Central Tuber Crops Research Institute, Thiruvananthapuram, Kerala.
 9. Kumar, H.K. 2023. Entomopathogenic nematodes: A farmer friendly solution for pest problems. In: *International Conference on Recent innovations & technological advancements in agriculture, horticulture, agricultural engineering, sericulture, food science, biotechnology and rural entrepreneurship* (AGRI INNOVA 2023), 11-12 August 2023, The Indian Agriculture College, Radhapuram, Tirunelveli, Tamil Nadu.
 10. Malathi, P., Ramesh Sundar, A., Selvakumar, R., Jayakumar, V., Nithya, K., Vennila, A., Ramasubramanian, T., Rajula Shanthi, T., Viswanathan, R., Shweta Singh, Ravindra Naik, Veena, S.S., Jeeva, M.L., Makeshkumar, T., Ravichandran, V., Priti Sonavane, Sriram, S., Thangavelu, R. and Loganathan, M. 2023. Mechanized priming of planting materials in sugarcane and other vegetatively propagated crops: An innovative approach for healthy nursery and disease management. In: *National Symposium on Plant health management: Current trends and novel mitigation strategies* during 11-12 September 2023, ICAR-Central Tuber Crops Research Institute, Thiruvananthapuram, Kerala.
 11. Merlin Graceson Cherian and Makeshkumar, T. 2023. Molecular Cloning and Characterisation of partial RNA dependent RNA polymerase gene and coat protein gene of Dasheen mosaic virus. In: *National Symposium on Plant health management: Current trends and novel mitigation strategies* during 11-12 September 2023, ICAR-Central Tuber Crops Research Institute, Thiruvananthapuram, Kerala.
 12. Mohan, C., Jayalakshmi, S., Sruthi, S.R., Anagha, S., Senthilkumar, K.M., Sheela, M.N., Makeshkumar, T. and Sreekumar, J. 2023. Breeding for resistance to cassava mosaic disease (CMD) and the genetics of CMD. In: *National Symposium on Plant health management: Current trends and novel mitigation strategies* during 11-12 September 2023, ICAR-Central Tuber Crops Research Institute, Thiruvananthapuram, Kerala.

13. Resmi, T.R., Pravi Vidyadharan, Jayakrishnan, J.T., Kamala, S., Arutselvan, R., Jeeva M.L. and Makeshkumar, T. 2023. Molecular diagnosis of viral diseases of tuber crops based on Isothermal nucleic acid amplification techniques. In: *National Symposium on Plant health management: Current trends and novel mitigation strategies* during 11-12 September 2023, ICAR-Central Tuber Crops Research Institute, Thiruvananthapuram, Kerala.
14. Sangeetha, B.G. and Drishya P. 2023. Molecular identification of endosymbiotic bacteria associated with *Ferissia virgata* (Homoptera: Coccoidea: Pseudococcidae) infesting cassava (*Manihot esculenta* Crantz). In: *National Symposium on Plant health management: Current trends and novel mitigation strategies* during 11-12 September 2023, ICAR-Central Tuber Crops Research Institute, Thiruvananthapuram, Kerala.
15. Saravanan Raju, Makeshkumar, T., Aparna Rajan, Senthilkumar, K.M., Resmi T. R. Nair and Velumani, R. 2023. Climate-Driven Threats to Cassava: Uncovering the Physiological Consequences of Cassava Mosaic Disease. In: *National Symposium on Plant health management: Current trends and novel mitigation strategies* during 11-12 September 2023, ICAR-Central Tuber Crops Research Institute, Thiruvananthapuram, Kerala.
16. Sumayya, M. and Makeshkumar, T. 2023. Prediction of Sri Lankan Cassava mosaic virus-derived small RNAs and its targets in cassava. In: *National Symposium on Plant health management: Current trends and novel mitigation strategies* during 11-12 September 2023, ICAR-Central Tuber Crops Research Institute, Thiruvananthapuram, Kerala.
17. Veena, S.S., Jeeva, M.L. and Harish, E.R. 2023. Eco smart solutions for postharvest rot in elephant foot yam. In: *National Symposium on Plant health management: Current trends and novel mitigation strategies* during 11-12 September 2023, ICAR-Central Tuber Crops Research Institute, Thiruvananthapuram, Kerala.
18. Visalakshi Chandra, C., Mohan, C., Sheela, M.N., Makeshkumar, T., Prakash Krishnan B.S. and Senthil alias Sankar 2023. Evaluation of cassava hybrids for host plant resistance to cassava mosaic disease. In: *National Symposium on Plant health management: Current trends and novel mitigation strategies* during 11-12 September 2023, ICAR-Central Tuber Crops Research Institute, Thiruvananthapuram, Kerala.

Technical/Extension folders/Leaflets

1. Jaganathan, D., Muthuraj, R., Sheela Immanuel and Byju, G. 2023. Seed villages for quality planting material production in Chinese potato: A success story. Technical folder. ICAR-Central Tuber Crops Research Institute, Thiruvananthapuram, Kerala.
2. Muthuraj, R., Byju, G., Jaganathan, D. and Suja, G. 2023. Nursery techniques in Chinese potato (Malayalam). Technical leaflet. ICAR-Central Tuber Crops Research Institute, Thiruvananthapuram, Kerala.
3. Muthuraj, R., Jaganathan, D., Prakash, P. and Byju, G. 2023. Seed villages for quality planting material production in cassava: A success story. Technical folder. ICAR-Central Tuber Crops Research Institute, Thiruvananthapuram, Kerala.
4. Pradeepika, C., Krishnakumar, T., Sajeev, M.S., Visalakshi Chandra, C. and Sangeetha B.G. 2023. Vacuum Fried Chips from Biofortified Sweet Potatoes. Technical Folder (English). ICAR-Central Tuber Crops Research Institute, Thiruvananthapuram, Kerala.
5. Pradeepika, C., Suresh Kumar, J., Sajeev, M.S. and Krishnakumar, T. 2023. Vacuum Fried Chips from Biofortified Sweet Potatoes. Technical Folder (Telugu). ICAR-Central Tuber Crops Research Institute, Thiruvananthapuram, Kerala.
6. Pradeepika, C., Sangeetha, B.G., Krishnakumar, T. and Sajeev, M.S. 2023. Vacuum Fried Chips from Biofortified Sweet Potatoes. Technical Folder (Malayalam). ICAR-Central Tuber Crops Research Institute, Thiruvananthapuram, Kerala.
7. Sivakumar, P.S., Nedunchezhiyan, M., Pradeepika, C. and Athira Krishnan, L.R., 2023. Healthy Food from Tubers and Millets. Extension Leaflet. ICAR-Central Tuber Crops Research Institute, Thiruvananthapuram, Kerala.
8. Sivakumar, P.S., Nedunchezhiyan, M., Sheela, M.N., Pratima Rana and Moovenhan, P. 2023. Growing Orange-Fleshed Sweet Potato-A Field Guide (Hindi). ICAR-Central Tuber Crops Research Institute, Thiruvananthapuram, Kerala.
9. Sujatha, T.P., Senthilkumar, K.M., Krishna Radhika, N. and Sangeetha, B.G. 2023. *Strategies and policies for biotechnology research in tropical root and tuber crops*. Policy Brief, ICAR-Central Tuber Crops Research Institute, Thiruvananthapuram, Kerala. 8 p.

TV Programme

1. Jaganathan, D. 2023. Drone applications in agriculture in Kanyakumari district on 06 August 2023 in News 18 Tamil Channel, Tamil Nadu.

Radio talk

1. Dr. K. Susan John delivered a radio talk on 'Soils of Kerala and their nutrient requirement' Radio Programme: Broadcasted the radio talk on INM in tropical tuber crops in All India Radio on 07 July 2023.

Institute Publications

1. ICAR-AICRP TC. 2023. Technical Report. 23rd Annual Group Meeting, 10-12 May 2023, ICAR-Central Tuber Crops Research Institute, Thiruvananthapuram, Kerala, 207 p.
2. ICAR-AICRPTC. 2023. 23rd Annual group Meeting: Proceedings. ICAR-Central Tuber Crops Research Institute, Thiruvananthapuram, Kerala, 57 p.
3. Jyothi, A.N., Jaganathan, D., Kalidas Pati, Kesava Kumar, H., Senthilkumar, K.M., Suresh Kumar, J. and Pradeepika, C. 2023. ICAR-CTCRI Newsletter (Quarterly), Vol. 40, Issue No.2, ICAR-Central Tuber Crops Research Institute, Thiruvananthapuram, Kerala, 20 p.
4. Sheela Immanuel, Prakash, P. and Jaganathan, D. 2023. Training Calendar 2023-2024, ICAR-Central Tuber Crops Research Institute, Thiruvananthapuram, Kerala, 8 p.

Major Institute Events

- Quarterly review meeting of scientists were conducted during 04-05 July 2023 under the Chairmanship of Dr. G. Byju, Director, to review the progress achieved during the first quarter (April-June 2023) and to prioritize the targets for scientists of Crop Improvement, Crop Production, Crop Protection, Crop Utilization and Extension & Social Sciences.



Quarterly review meeting of scientists

- Interaction meeting was organized with officials of KAU reforms commission on 20 July 2023 at ICAR-CTCRI, Thiruvananthapuram. Prof. Dr. E. Balagurusamy, Formerly Member UPSC, Chairman, Tamil Nadu Planning Commission and Vice-Chancellor, Anna University; Prof. Dr. P. Rajendran, Formerly Vice-Chancellor, Kerala Agricultural

University; Prof. P. V. Balachandran, Formerly Director (Extension), Kerala Agricultural University; Dr. K. Aravindakshan, Formerly Registrar, Kerala Agricultural University; Dr. K. Ramasamy, Formerly Vice-Chancellor, Tamil Nadu Agricultural University, Vice Chancellor of Karpagam Academy of Higher Education, Coimbatore, Chancellor of Karpagam Academy of Higher Education and Dr. S. Gopakumar, Nodal Officer to the Commission & Director of Education, KAU interacted with Director and Scientists of ICAR-CTCRI.



Interaction meeting with officials of KAU reforms commission

- Shri. Lalitaditya Neelam I.A.S., Administrator, SAGOSERVE, Salem, Tamil Nadu visited the Institute on 08 September 2023 along with Smt. P. Arulmozhi, Manager (Trade) and Shri. V. Senthil Kumaran, Senior Chemist of Sagoserve. A meeting of the officials was organized with all HoDs/SICs and scientists of the Section of Crop Utilization. Dr. G. Byju, Director, provided an overview of the Institute and ongoing research and development activities. Shri. Lalitaditya Neelam I.A.S. explained the activities of SAGOSERVE and the current problems and issues in the sago industry and shared his insights and expectations for possible collaboration with ICAR-CTCRI. HoDs/SICs presented the major activities and achievements of their respective divisions/sections. They have also visited the techno incubation center, biopesticide laboratory, e-Crop and other laboratory/equipment facilities at ICAR-CTCRI. Decisions were taken on exploring the possible collaborations between the two organizations.



Meeting with Administrator and Officials of Sagoserve, Salem

Hindi corner

Meeting of the Official Language Implementation Committee (OLIC) of ICAR-CTCRI was held on 26

September 2023 under the Chairmanship of Dr. G. Byju, Director and Chairperson (OLIC) to review the progress of OL activities at the Institute. In the meeting it was decided to conduct the Hindi Fortnight Valedictory Function 2023 and a Hindi workshop for this quarter. A new post for Official Language Assistant was filled. Dr. S. Shanavas, Technical Officer was nominated as the new Member Secretary (OL).

Hindi Pakhwada Celebrations 2023

The Hindi Pakhwada celebrations 2023 was conducted during 14-28 September and was inaugurated by Dr. G. Suja, Director (i/c) on 18 September 2023. Ten competitions were conducted for four categories of staff and students of the Institute. Four competitions for children were also conducted. The competitions were concluded on 27 September 2023. Around 40 participants had enthusiastically participated in various competitions.

Hindi Workshop

Hindi workshop was organized by the OLIC, ICAR-CTCRI on 18 September 2023 on the topic, 'Hands-on training in translation using Google Translate' for the staff. The workshop was inaugurated by Dr. G. Suja, Director (i/c). Dr. Asha Devi A., Principal Scientist and Liaison Officer (OL) conducted the class where 33 participants comprising 14 officers and 19 staff attended.



Inauguration of the Hindi Fortnight Celebrations 2023



Class on Google Translation



Competition for children

9th International Yoga Day 2023

The international yoga day was celebrated on 21 June 2023 by the scientists, staff members and students. Dr. G. Byju, Director inaugurated the event and Mr. Baskaran Nair, Senior Art of Living yoga teacher, Thiruvananthapuram Centre was the Chief Guest. During the yoga practice demonstrations on yoga and pranayama positions were organized.



International yoga day celebrations



Independence Day Celebrations

The 77th Independence Day celebrations of India was organized on 15 August 2023 at ICAR-CTCRI, Thiruvananthapuram. Dr. G. Byju, Director delivered Independence Day speech after hoisting the national flag. All staff members including contract staff and students had participated in the celebrations.



Independence day celebrations at ICAR-CTCRI



IMPCC Meeting

Intermedia publicity coordination committee for the month of September was organized on 13 September 2023 at ICAR-CTCRI, Thiruvananthapuram. Dr. G. Byju, Director, ICAR-CTCRI, Shri. V. Palaniswamy IIS, Additional Director General, PIB, Thiruvananthapuram and Media representatives from different organizations participated and presented their progress and action plan.

Other Important Events

Director's Visits

- Director attended the 95th ICAR Foundation and Technology Day Programme at Bharat Ratna C. Subramaniam Auditorium, NASC Complex, Pusa, New Delhi during 16-18 July 2023.



School students at ICAR-CTCRI exhibition stall in New Delhi



- Dr. G. Byju, Director inaugurated the IPR seminar organized by CSIR-NIIST, Thiruvananthapuram on 26 July 2023 in its campus in connection with National Intellectual Property Festival, an 'IP Campaign' to

create IP awareness among the Scientists, Students, researchers and other stakeholders.



IPR seminar at CSIR-NIIST

- Director, ICAR-CTCRI and Project Coordinator, AICRP TC, Dr. G. Byju inaugurated one day training programme of SCSP farmers entitled Pest management in sweet potato through integrated approach held at AICRP (TC), Regional Horticultural Research and Extension Center, Dharwad on 10 August 2023. Critical inputs were distributed to the farmers and there were release of publications. This was followed by the field visits to the experimental plots and tuber park.



Release of publications



Visit to tuber park

- Director visited University of Agricultural Sciences, Bengaluru on 11 August 2023 and had discussion with Dr. S.V. Suresh, Vice Chancellor, UAS, Bengaluru regarding the phenomics facilities for collaborative research. Dr. S. Sheshshayee, Professor of Crop Physiology, UAS, Bengaluru and Dr. T.M. Shivilingswamy, Principal Scientist, ICAR-NBAIR, Bengaluru had also participated in the discussions.



Meeting of Director with Vice Chancellor, UAS, Bengaluru



Director visiting phenomics facility at UAS, Bengaluru

- Director reviewed the work progress of AICRP TC Centre, SKLTHU, Rajendranagar, Telangana on 24 August 2023. Dr. Sudhakar Pandey, ADG (FVS & MP), Dr. Vijay Mahajan, Director, Directorate of Onion and Garlic (DOGR), Pune and Dr. A. Bhagwan, SKLTHU were also present during the occasion.



Visit to experimental plots

- Director visited the factory construction site of XOBU Foods and Beverages, Bandathimmapur Food Park, Hyderabad on 30 August 2023 and discussed about the possible areas of research and development for addressing the issues in production and value addition



- Dr. G. Byju, Director, ICAR-CTCRI and Project Coordinator, AICRP TC monitored and reviewed the project activities at AICRP TC Centre, Research Sub-Station, Berthin, Bilaspur, CSKHPKV, Palampur, Himachal Pradesh on 19 September 2023. Experimental plots of elephant foot yam, taro and greater yam were monitored and visited progressive farmers' fields of elephant foot yam and taro. Training programme on Integrated crop management of tuber crops was also inaugurated by the Director.



Distribution of critical inputs



Visit to Germplasm field of taro

- Dr. G. Byju, Director, ICAR-CTCRI and Project Coordinator, AICRP TC addressed the SCSP farmers in the training programme on 'Advanced production technologies of tuber crops' at AICRP TC Centre, NAU, Navsari, Gujarat on 21 September 2023. Twenty-five SC farmers were imparted training by the state officials. He also monitored and reviewed the project activities and made visits to the progressive farmers' fields.



Distribution of kits to the SCSP beneficiaries



Field visit to greater yam farmer's plot

Science Forum

- Dr. J. Suresh Kumar, Scientist delivered a talk on 'Hydroponics-An advanced agricultural production system for cultivation of vegetables and short duration high value crops' in the Science Forum meeting on 31 July 2023.

Infrastructure/Facilities Created

Climate Controlled Plant Growth Facility: The Climate controlled plant growth facility (controlled environment green house) was established to conduct research on clean seed production of tropical tuber crops. The facility was constructed as part of the RKVY-RAFTAAR project entitled 'Popularization of climate resilient improved varieties of tuber crops for food, nutrition and doubling income with emphasis on wellness of tribal and marginal farmers in Kerala' funded by Govt. of Kerala. The facility consists of two chambers, a 100 sq. ft chamber with complete controlled environment, where specific nutrient, moisture, light, temperature and humidity requirements are provided and another 100 sq ft mist chamber cum-net house, provided with micro sprinkler and fogging system meant for achieving better sprouting of minisetts and vine cuttings in vegetatively propagated crops as well as improving germination of seed propagated crops. It has a sand bed for facilitating rooting of different types of cuttings. In addition to conducting various experiments on rapid multiplication of quality planting materials, the facility would be useful for imparting training on protected cultivation of vegetable crops, especially tropical tuber crops. Dr. Himanshu Pathak, Secretary, DARE and DG, ICAR, inaugurated the facility on 22 July 2023 during the occasion of Diamond Jubilee Celebrations of ICAR-CTCRI.

Distinguished Visitors

Headquarters, Thiruvananthapuram, Kerala

- Dr. Himanshu Pathak, Secretary, DARE & DG, ICAR, New Delhi.
- Prof. Dr. E. Balagurusamy, Formerly Member UPSC, Chairman, Tamil Nadu Planning Commission and Vice-Chancellor, Anna University.
- Prof. Dr. P. Rajendran, Formerly Vice-Chancellor, Kerala Agricultural University.
- Dr. Mohanan Kunnummal, Vice Chancellor, Kerala University of Health Sciences and University of Kerala.
- Prof. P.V. Balachandran, Formerly Director (Extension), Kerala Agricultural University.
- Dr. K. Aravindakshan, Formerly Registrar, Kerala Agricultural University.

- Dr. K. Ramasamy, Formerly Vice-Chancellor, Tamil Nadu Agricultural University, Vice Chancellor of Karpagam Academy of Higher Education, Coimbatore, Chancellor of Karpagam Academy of Higher Education.
- Dr. S. Gopakumar, Nodal Officer to the Commission & Director of Education, KAU.
- Dr. S.K. Chakrabarti, Former Director, ICAR-CTCRI, Thiruvananthapuram.
- Dr. V. Ravi, Former Director (A), ICAR-CTCRI, Thiruvananthapuram.
- Dr. K.B. Hebbar, Director, ICAR-CPCRI, Kasaragod
- Dr. R. Dinesh, ICAR-IISR, Kozhikode.
- Dr. A. Gopalakrishnan, Director, ICAR-CMFRI, Kochi
- Dr. George Ninan, Director, ICAR-CIFT, Kochi.
- Dr. Bikash Mandal, Assistant Director General, International Relations, ICAR, New Delhi
- Dr. Jacob John, Director of Extension, Kerala Agricultural University, Thrissur.
- Shri. V. Palaniswamy IIS, Additional Director General, PIB, Thiruvananthapuram.

Honours, Awards and Recognitions

- Best Employees Awards for the year 2022 were given to staff members during 60th Foundation Day celebrations of ICAR-CTCRI on 22 July 2023. Shri. J. Unni, Assistant and Shri. O.C. Ayyappan, Assistant in Administrative category, Shri. Pramod Kumar Mati, Technical Officer in Technical category and Shri. K. Sivadas in SSS category.



Staff members receiving Best employee awards from Dr. Himanshu Pathak, Secretary, DARE & DG, ICAR

- Pradeepika, C., Giri, N., Krishnakumar T., Sajeev, M.S. and Safiya, S. received the Best Research Paper Award 2022 for the research paper titled 'Development of low-fat and anthocyanin rich purple sweet potato vacuum fried chips' during 60th Foundation Day celebrations of ICAR-CTCRI on 22 July 2023.



Best research paper award for scientist and student category for the year 2022

- Mrs. Varsha Acharya received the Best Research Paper Award for Student (2022) as first author for the research paper titled 'Structural insights into the RNA interaction with Yam bean mosaic virus (coat protein) from *Pachyrhizus erosus* using bioinformatics approach'. *PloS One* (NAAS: 9.24), during ICAR-CTCRI foundation day celebrations on 22 July 2023.
- Dr. P.S. Sivakumar delivered an invited talk on 'IP development and commercialization-Case studies' in the 'IPR Seminar: National Intellectual Property Festival' on 26 July 2023 at CSIR-NIIST Campus, Thiruvananthapuram.
- Dr. K. Laxminarayana, SIC, RS, ICAR-CTCRI visited the East Burdwan district, West Bengal on 02 August 2023 and verified the certified potato seed stock as per the request of Directorate of Horticulture, Government of Odisha.
- Dr. H. Kesava Kumar delivered a lead talk on Entomopathogenic nematodes: A farmer friendly solution for pest problems and Co-chaired the session on Crop Protection in the International Conference on Recent innovations & technological advancements in agriculture, horticulture, agricultural engineering, sericulture, food science, biotechnology and rural entrepreneurship' (AGRI INNOVA 2023) on 11 August 2023 at The Indian Agriculture College, Radhapuram, Tirunelveli, Tamil Nadu.
- Dr. P.S. Sivakumar delivered a lead lecture on 'Making KVKs efforts count: Capturing the impacts with innovative methodologies' at the Annual Zonal Workshop of KVKs of Zone X, Hyderabad held during 17-19 August 2023 at TNAU, Coimbatore.
- Dr. Saravanan Raju bagged the Best research paper award (Oral) for the research paper titled 'Climate-driven threats to cassava: Uncovering the physiological consequences of cassava mosaic disease' (Authors: Saravanan Raju, Makeshkumar, T., Aparna Rajan, Senthilkumar, K.M., Resmi T.R. Nair and Velumani, R.) in the National symposium on Plant health management: Current trends and novel mitigation strategies held during 11-12 September 2023, ICAR-Central Tuber Crops Research Institute, Thiruvananthapuram, Kerala.
- Best research paper poster awards (3 nos.) in the National Symposium on 'Plant health management: Current trends and novel mitigation strategies' during 11-12 September 2023, ICAR-Central Tuber Crops Research Institute, Thiruvananthapuram, Kerala.
 - i. Ms. V.A. Athulya received the award for the research paper on 'Role of microbes in the management of cassava mosaic disease' (Authors: V.A. Athulya, S.S. Veena and T. Makeshkumar).
 - ii. Ms. Merlin Graceson Cherian received the award for the research paper on 'Molecular cloning and characterisation of partial RNA dependent RNA polymerase gene and coat protein gene of Dasheen mosaic virus' (Authors: Merlin Graceson Cherian and T. Makeshkumar).
 - iii. Ms. M. Sumayya received the award for the research paper on 'Prediction of Sri Lankan Cassava mosaic virus-derived small RNAs and its targets in cassava' (Authors: M. Sumayya and T. Makeshkumar).
- Ms. Amrutha, P.R. got selected for contesting in National level MJ Narasimhan Award presentation being the runner-up in the South Zone Chapter Contest for the paper titled 'Management of greater yam (*Dioscorea alata* L.) anthracnose caused by *Colletotrichum gloeosporioides*' (Penz.) Penz. & Sacc. employing endophytes isolated from medicinal plants. In: National Symposium on Plant health management: Current trends and novel mitigation strategies held during 11-12 September 2023, ICAR-Central Tuber Crops Research Institute, Thiruvananthapuram, Kerala.
- Dr. D. Jaganathan acted as an External Expert for the Defense seminar on Performance effectiveness of biodiversity management at Gramapanchayats in Kerala of Ms. Reshma A Victor, Ph.D., Scholar of College of Agriculture, Vellayani, Thiruvananthapuram on 25 September 2023.
- Dr. P.S. Sivakumar delivered a lead lecture on 'The new generation extension research-A pathway focused approach' at the National Conference on NexGen Extension for Evolving Resilient Agri-Ecosystems during 25-27 September 2023.
- Dr. J. Suresh Kumar received the Fellow of Crop and Weed Science Society (CWSS), Kalyani, West Bengal during 6th International conference of CWSS held during 30 September 2023 to 02 October 2023.



Dr. J. Sureh Kumar receiving Fellow of CWSS

- Dr. T. Makeshkumar was nominated as DBT Nominee for Institute Bio Safety Committee of ICAR-NRCB, Trichy for the period of three years.
- Dr. E.R. Harish was inducted as a member in the State Agricultural Award Committee 2023 by Government of Kerala.
- Dr. E.R. Harish was inducted as a member in the Expert committee to formulate guidelines for identifying endosulfan victims in the state of Kerala by Government of Kerala.
- Dr. M.L. Jeeva acted as an External examiner of one Ph.D. Scholar, one M.Sc.,(Ag.), and evaluated one M.Sc. (Ag.) thesis from Kerala Agricultural University.
- Dr. S.S. Veena acted as an External examiner for one Ph.D. Scholar, M.G. University and one M.Sc. (Ag.) student, Kerala Agricultural University.
- Dr. T. Makeshkumar was nominated as an External member for Institute Bio Safety Committee of College of Agriculture, Vellayani, KAU, Thiruvananthapuram.
- Dr. P. Murugesan acted as an External examiner for evaluation of one M.Sc. and one Ph.D. thesis, Tamil Nadu Agricultural University, Agricultural College and Research Institute, Madurai.
- Dr. Asha K.I. acted as an External examiner for Ms. Anupama Padmakumar, B.Sc.-M.Sc. (Integrated Biotechnology) for the thesis titled 'Expression profiling of nitrogen responsive genes in rice varieties', College of Agriculture, Vellayani, KAU, Thiruvananthapuram.
- Dr. K. Laxminarayana evaluated M.Sc. (Ag.) thesis on 'Soil fertility capability classification and nutrient mapping of Bandarupalli RBK of Yerpedu Mandal using Geographic Information System' from Department of Soil Science & Agricultural Chemistry, RARS, Tirupati, ANGRAU, Andhra Pradesh.
- M.S. Sajeev served as an Advisory Committee member for the Ph.D. programme of Ms. Midhila, M., Dept of Community Science, KAU, Vellayani for the project on 'In-depth analysis of the selected millet and clinical efficacy of the developed smart food'.
- Dr. Mohan C. acted as an External examiner for evaluation of one M.Sc. Genetics and Plant Breeding thesis, Tamil Nadu Agricultural University, Agricultural College and Research Institute, Killikulam.
- Dr. Senthilkumar K.M. acted as an External examiner for evaluation of one B.Sc.-M.Sc. (Integrated) Biotechnology thesis, College of Agriculture, Vellayani, KAU, Thiruvananthapuram.
- Dr. R. Muthuraj was inducted as a member in State Agricultural Award Committee 2023 by Government of Kerala and visited Thiruvananthapuram, Kollam, Pathanamthitta, Thrissur, Malappuram, Palakkad, Kozhikode, Kannur and Kasaragod districts of Kerala during July and August 2023 for selection of awardees.
- Dr. K. Susan John as an expert in Technical Committee attended the meeting on 20 July 2023 at Central soil Analytical Laboratory, Thiruvananthapuram.
- Dr. K. Susan John as a member in School Management Committee (SMC) attended the meeting on 23 September 2023 at Bharatiya Vidhya Bhavan Senior Secondary School, Sreekariyam, Thiruvananthapuram.
- Dr. G. Suja was an Expert as DG's nominee in the CAS assessment committee for promotion of scientists on 07 September 2023 at ICAR-CPCRI, Kasaragod.
- Dr. J. Sreekumar was an External examiner for evaluation of MSc., (Ag.) thesis titled 'Study of time series models for nonlinear intervention effects' of Division of Agricultural Statistics, IARI, Pusa, New Delhi.
- Dr. P.S. Sivakumar was an External examiner for evaluation of MSc., (Ag.) and Ph.D. theses of Department of Agricultural Extension, College of Agriculture, Vellayani, Thiruvananthapuram and Vellanikkara, Thrissur of Kerala Agricultural University.
- Reviewer for reputed Journals: Dr. Sheela Immanuel reviewed the articles for Indian Journal of Fisheries and Journal of Marine Biological Association; Dr. K. Laxminarayana reviewed two manuscripts for the Journals 'Communications in Soil Science and Plant Analysis'; Dr. S.S. Veena acted as reviewer of Indian Phytopathology and Journal of Root Crops; Dr. Shirley Raichal Anil reviewed two papers for Current Science Journal; Dr. Kalidas Pati reviewed a manuscript for the Journal of Horticultural Sciences; Dr. Senthilkumar K.M. reviewed three research articles from Frontiers in Plant Science, Journal of Sugarcane Research and Plos One Journals; Dr. P. Prakash reviewed research paper from Frontiers in Plant Science.

Media Coverage

Sl.No.	Date	News Title	Name of the Newspaper
1	13.07.2023	<i>Ctcriyum IITiyum dhaaranapathram oppittu</i>	Deshabhimani Daily Palakkad Edition
2	13.07.2023	ICAR-CTCRI, IIT Palakkad <i>dhaaranaapathram oppuvachu</i>	Malayala Manorama Daily Palakkad Edition
3	13.07.2023	CTCRI and Palakkad IIT ink MOU for collaboration	The Hindu Daily Palakkadu Edition
4	14.07.2023	Training of farmers on cultivation of new varieties of cassava	Dinakaran Daily
5	17.07.2023	Smart farming technology of CTCRI lauded at national event	The Hindu Daily
6	18.07.2023	<i>Mathiya kilangu payirgal vingnanigal thottakalaithuraiyin arudan kala aiyvu</i>	Dinakaran Tamil Daily
7	20.07.2023	<i>Maravalli payirai mathiya vingnanigal kuluvinar aiyvu</i>	Dinathanthi
8	20.07.2023	<i>Maravalli sagupadi athigarikka vingnanigal kulu aiyvu</i>	Dinamalar
9	21.07.2023	<i>Kendra Kizhanguvila gaveshana kendram Jubilee Niravil</i>	Malayala Manorama Daily
10	21.07.2023	<i>Vajra jubilee niravil; kendra kizhanguvila gaveshana sthaapanam</i>	Kerala Kaumudi Daily
11	22.07.2023	Central Tuber Crops Research Institute to release 3 crop varieties	The Hindu Daily
12	22.07.2023	<i>Kendra kizhanguvila gaveshana kendram: vajra jubilee aagosham</i>	Mathrubhumi Daily
13	23.07.2023	<i>Kendra kizhanguvila gaveshana kendram vajrajubilee aagoshangalk aagoshangalkku thudakkam</i>	Mathrubhumi Daily
14	23.07.2023	<i>Verurappichittu arupathandu: jubilee niravil kizanguvila gaveshana kendram</i>	Malayala Manorama Daily
15	23.07.2023	<i>Chakkayude therileri 'Fruit n Root' at the top of the Jackfruit</i>	Mathrubhumi, Alappuzha
16	23.07.2023	ICAR-CTCRI to focus on developing climate-resilient crop varieties	The Hindu Daily
17	25.07.2023	Seminar on IPR to be held at NIIST on July 26	The Hindu Daily
18	03.08.2023	Demonstration of nano urea spraying by 'drone' to farmers	Dinakaran
19	03.08.2023	Drone use: Demonstration training for farmers	Dinathanthi
20	05.08.2023	Training farmers on drone use in cassava cultivation	Dinathanthi
21	05.08.2023	Fertilizer spraying by drone to improve cassava cultivation	The Hindu, Tamil
22	06.08.2023	Drones in agriculture: Demonstration held	The New Indian Express Kanyakumari
23	11.08.2023	<i>Puraskarathil manamniranju chaavara training centarile kuttikal</i>	Mathrubhumi daily
24	11.08.2023	<i>Naadan krishiyude kaavalaal: vinodinu kendra angeekaaram</i>	Malayala Manorama
25	23.08.2023	SCSP programme conducted at Salem district in Tamil Nadu	Dinamalar
26	28.08.2023	SCSP programme at Karur district in Tamil Nadu	Dinakaran
27	29.08.2023	Training conducted at Karur district, Visvanathapuri village under SCSP	Kalai Kathir
28	08.09.2023	District level Seminar on Cassava Cultivation and Drone demonstration in Kanyakumari	Dinathanthi
29	08.09.2023	Seminar on Cassava cultivation and value addition at Nagercoil	Dinamani
30	09.09.2023	Training farmers on drone use	Dinathanthi
31	09.09.2023	<i>Kendra kizhanguvila gaveshana sthaapanathil dvidinadesheeya symposium</i>	Janayugam
32	10.09.2023	<i>Dvidinadesheeya symposium</i>	Kerala Kaumudi
33	11.09.2023	<i>Kizhanguvila gaveshana kendrathil desheeya seminaar</i>	Malayala Manorama
34	12.09.2023	Symposium on plant health management	The Hindu
35	12.09.2023	<i>Kendra kizhanguvila gaveshana kendrathil desheeya seminar</i>	Malayala Manorama

36	12.09.2023	<i>Sasya aarogya paripaalanam; symposium nadathi</i>	Desabhimani
37	12.09.2023	<i>Kendra kizhanguvila gaveshana kendram desheeya shilpashaala</i>	Mathrubhumi
38	19.09.2023	Input distribution at Pallikkal under SCSP programme	The Mathrubhumi daily
39	22.09.2023	<i>Bhaaratham kaarshika vikasanathinte suvar nabhoomiyaayi</i>	Janmabhumi
40	22.09.2023	<i>Parasaala blocku panchaayathinte nethruthwathil uchakkadayil nadanna kisan mela</i>	Desabhimani e-paper
41	25.09.2023	Training on modern cultivation of tuber crops in Navsari	Divya Basker, Gujarathi
42	27.09.2023	Agro-advisory cum field visit at Manjaly, Ernakulam by field diagnostic team from ICAR-CTCRI on 26 September 2023	The Mathrubhumi Kerala Kaumudi Mangalam daily



ICAR-CTCRI in Media

Personalia Superannuation/Retirement

Sl.No.	Name	Position Held	Date of Superannuation
1	Shri. Lawrence T	Skilled Support Staff	31.07.2023

Promotions/Positions

Sl.No.	Name	As	Date	O.O.No & Date
1	Dr. G. Suja	Head, Division of Crop Production	10.07.2023	F.No.28(3)/2021-Per-III dated 10.07.2023
2	Dr. T. Makesh Kumar	Head, Division of Crop Protection	10.07.2023	F.No.28(2)/2021-Per-III dated 10.07.2023
3	Dr. Manas R Sahoo	Head, Division of Crop Improvement	13.07.2023	F.No.28(1)/2021-Per-III dated 10.07.2023

Transfers

Sl.No.	Name	From	To
1	Dr. Manas R. Sahoo	ICAR-CHES, Bhubaneswar	ICAR-CTCRI, Thiruvananthapuram



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