



ICAR-CTCRI Newsletter



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FORTHCOMING EVENTS

- 23rd Annual group meeting of AICRP TC during 10-12 May 2023 at BCKV, Kalyani, West Bengal
- Brainstorming Meeting on Management of Mealybugs in Cassava: Present Status and Future Strategies on 23 May 2023
- Shri. H.H. Visakhram Thirunal Endowment Lecture on 05 June 2023
- Technology Day on 08 June 2023

From the Director



Dr. G. Byju
Director

The ICAR-Central Tuber Crops Research Institute at its 60th year of inception has made significant contributions in research and development of tuber crops for the benefit of farmers and other stakeholders. During the period, CTCRI has made significant achievements viz., two taro varieties for the state of Odisha, 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 & farm advisory visits to major tuber crops growing states of India. The Institute celebrates International Year of Millets by organizing various programmes for creating awareness among farmers and other clients. The MoUs signed with Digital University and MG University in Kerala have strengthened the collaboration for research and education on tuber crops. Pre-Institute Research Council (IRC) meetings were conducted for streamlining the research programmes. For Diamond Jubilee celebrations, the Institute has planned a series of events across the country in collaboration with research, extension and developmental organizations for addressing the challenges in tuber crops sector and also to fulfill the needs of farmers and other stakeholders.

निदेशक की कलम से

भा.कृ.अनु.प. - केन्द्रीय कन्द फसल अनुसंधान संस्थान अपनी स्थापना के 60 वें वर्ष में हैं और इस संस्थान ने अब तक किसानों और अन्य हितधारकों के लाभ के लिए कंद फसलों के अनुसंधान और विकास में महत्वपूर्ण योगदान दिया है। इस अवधि के दौरान, कें.कं.फ.अनु.सं. ने कई महत्वपूर्ण उपलब्धियां हासिल की हैं, जैसे ओडिशा राज्य के लिए अरबी की दो किस्में; उत्पादन, संरक्षण और मूल्यवर्धन प्रौद्योगिकियां; देश भर में महत्वपूर्ण किस्मों और प्रौद्योगिकियों पर अग्रिम पंक्ति प्रदर्शन/प्रक्षेत्र परीक्षण; मानव संसाधन विकास के लिए संस्थान के परिसर में और परिसर के बाहर प्रशिक्षण कार्यक्रम; देश में कंद फसल उगाने वाले प्रमुख राज्यों में प्रदर्शनियाँ और कृषि सलाहकार यात्राएँ आदि। संस्थान ने किसानों और अन्य ग्राहकों के बीच जागरूकता पैदा करने के लिए विभिन्न कार्यक्रमों का आयोजन करके अंतर्राष्ट्रीय पोषक अनाज वर्ष मनाया। केरल के डिजिटल विश्वविद्यालय और महात्मा गाँधी विश्वविद्यालय के साथ हुए समझौता ज्ञापनों ने कंद फसलों पर अनुसंधान और शिक्षा के लिए सहयोग को मजबूत किया है। अनुसंधान कार्यक्रमों को कारगर बनाने के लिए पूर्व-संस्थान अनुसंधान परिषद की बैठकें आयोजित की गईं। हीरक जयंती समारोह के लिए, संस्थान ने कंद फसलों के क्षेत्र की चुनौतियों का समाधान करने और किसानों एवं अन्य हितधारकों की जरूरतों को पूरा करने के लिए अनुसंधान, विस्तार और विकास संगठनों के सहयोग से देश भर में विभिन्न कार्यक्रम आयोजित करने की योजना बनाई है।

G. Byju
Director

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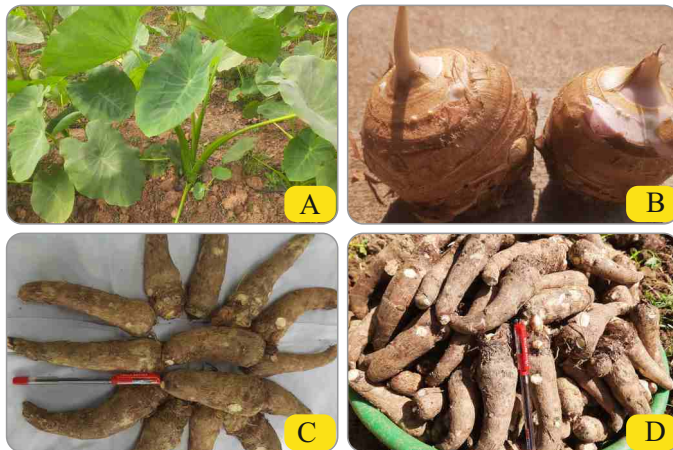
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Research Highlights

Sree Hira: A new elite variety of taro for Odisha

M. Nedunchezhiyan, Kalidas Pati, V.B.S. Chauhan, K. Laxminarayana and M.N. Sheela

Sree Hira, a new elite taro (*Colocasia esculenta* (L.) Schott.) variety suitable for rainfed upland and irrigated medium and lowland conditions of Odisha is developed from the Regional Station of ICAR-CTCRI, Bhubaneswar. The variety is a clonal selection, the plants are semi-erect, medium plant type with green petiole and leaf blade. It is tolerant to taro leaf blight disease. It bears 12-16 cormels per plant which are long elliptical with brown skin and white flesh colour with good palatability, mealiness and aroma. The average weight of each cormel is 60-100 g. The cormel yield is 16-20 t ha⁻¹, maturity at 180 days after planting. The cormels have a starch content of 17.4% and sugar content of 1.2% on fresh weight basis. It is a low acid (calcium oxalate 9.2 mg 100 g⁻¹) variety. The farmers can get a net returns of ₹ 2.5-2.7 lakhs ha⁻¹ by cultivating Sree Hira.



Sree Hira

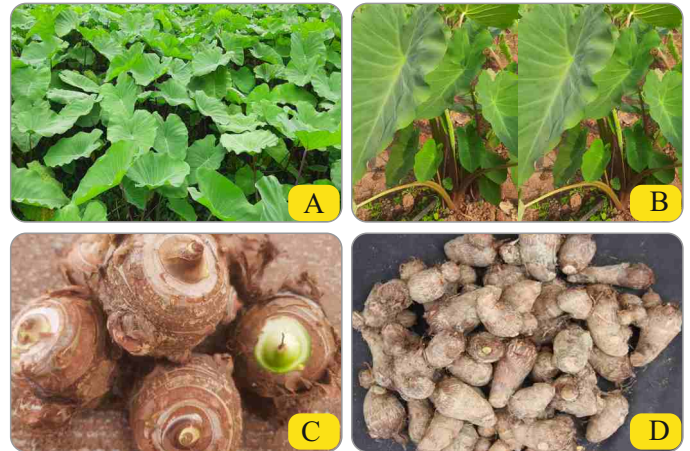
A. Plant B. Mother corms
C. Cormels clump with corm D. Harvested cormels

Sree Telia: A new short duration variety of taro for Odisha

M. Nedunchezhiyan, Kalidas Pati, V.B.S. Chauhan, K. Laxminarayana, R.S. Misra and M.N. Sheela

Sree Telia is a clonal selection developed from the Regional Station of ICAR-CTCRI, Bhubaneswar. It is a short duration variety (120 days) and the plants are semi-erect, medium plant type with purple petiole and green leaf blade. It bears 7-9 cormels per plant which are elliptical with brown skin and white flesh colour. The average weight of each cormel is 30-50 g and the cormel yield is 10-12 t ha⁻¹ at 120 days after planting. The starch and sugar contents are 16.4% and 1.2%, respectively on fresh weight basis. The cormels have good palatability, mealiness and aroma which are liked by the consumers. It is also a low

acid variety with a calcium oxalate content of 12.6 mg 100 g⁻¹. The farmers can get net returns of ₹ 1.3-1.5 lakhs ha⁻¹ by cultivating Sree Telia.



Sree Telia

A. Field view B. Plant
C. Mother corms D. Cormels

Water saving technique in cassava

S. Sunitha

Porous ground cover mulching along with drip irrigation @ 50% cumulative pan evaporation proved to be an effective water saving technology for cassava. The technology resulted in tuber yield increase of 48.7% and 50% saving in irrigation water compared to drip irrigation at 100% CPE.



Porous ground cover
mulching + drip irrigation in cassava

Protocol for production of protray plants of greater yams

K. Sunilkumar

Protocol for production of protray plants of greater yam has been standardized as given below.

- Minisets of 20 g (5 cm thickness) treated with 1% Saaf for 10 minutes to prevent rotting and planted in protrays with 20 cavity of size 7.5 cm and 5 cm at top and bottom of cell. Potting mixture of cocopeat: soil: FYM in 1:1:1 ratio and sprouting by 45-60 days.
- Multiplication ratio is 1:40 as against 1:6 in conventional method.
- Mean size of harvested tubers range from 500 g to 1 kg.



Protray plants of greater yam Main field view of greater yam

Hot water treatment of cassava minisetts for managing cassava mosaic disease

M.L. Jeeva, T. Makesh Kumar and S.S. Veena

In an inter-institutional research programme with ICAR-Sugarcane Breeding Institute (ICAR-SBI), Coimbatore, mechanized hot water treatment of minisetts of cassava has been standardized to manage the cassava mosaic disease. The method involves treatment of minisetts at 56°C and 200 mm Hg vacuum pressure for 15 minutes using the sugarcane sett treatment device (STD) developed by ICAR-SBI. The treatment could reduce 95% of the incidence of cassava mosaic disease at 50 days after planting of the minisetts compared to the control.



Mobile sugarcane sett treatment device

Cassava setts inside the device for treatment

Standardization of cassava-wheat-whey protein concentrate based rusk

C. Pradeepika

Protein fortified rusk was prepared with different proportions of cassava flour, wheat flour and whey protein concentrate (WPC). Significantly higher ($p < 0.0001$) nutritional attributes such as fiber (4.00%) and protein (8.30%) were obtained for the treatment: cassava flour- 40 g, wheat flour- 55 g, and WPC- 7.5g. Sensory analysis with three different age groups (25-35, 36-45 and >45 years) also revealed preference towards the above optimized formulation for appearance, crispiness, colour and overall acceptability.



Cassava and wheat flour-WPC based rusk

Packaging techniques for long term storage of cassava flour

T. Krishnakumar

Physico-chemical and functional properties such as moisture, starch, pH, water activity and final viscosity of cassava flour were significantly ($p < 0.05$) affected by the

packaging materials during the long-term storage period of 12 months. The quality of the cassava flour was found to be the best in aluminium foil bag with lowest moisture content (5.52%) and water activity (0.52), but highest starch content (79.25%) and whiteness index (87.08) after 12 months of storage. This was followed by polypropylene (PP), low density polyethylene (LDPE), PET (control) and ethylene-vinyl alcohol copolymer (EVOH) bags. So, aluminium foil bags/PP bags/aluminum foil lined PP laminated bags are recommended for long-term storage of cassava flour to maintain quality and efficient marketing and distribution.



a) Aluminium foil bag b) EVOH bag c) LPE bag d) PP bag e) PET jar
Fresh cassava flour stored in different packaging materials

Impact assessment of improved varieties of cassava

P. Prakash

Impact assessment of improved varieties of cassava released by ICAR-CTCRI was conducted in Salem, Namakkal, Dharmapuri, Cuddalore, Pudukkottai and Tiruchirappalli districts of Tamil Nadu with a sample of 300 farmers. The varieties H-165, H-226, Sree Jaya, Sree Athulya, Sree Reksha and 8S-501 were adopted by 39% of the respondents and farmers could get an additional yield and income of 13% and 17%, respectively.

Validation of e-Crop based smart farming

V.S. Santhosh Mithra

An experiment on e-Crop based smart farming (EBSF) was conducted at thirty selected farmers' fields of Anad, Aruvikkara, Vembayam, Karakulam and Panavoor panchayats of Nedumangadu block, Thiruvananthapuram with the funding support of State Horticulture Mission-Kerala (SHM-K). The farm yields were increased 2 times at reduced input application in smart farming. The yield obtained was 218%, 187%, 218% and 163% of traditional farming practices for sweet potato, cassava, elephant foot yam and banana, respectively.



Farmer of Aruvikkara panchayat with harvested tubers of cassava



Farmer of Panavoor panchayat with harvested bunches of banana

Extension

FLDs/OFTs

- Ten OFTs on site specific nutrient management (SSNM) in Chinese potato were conducted in Tirunelveli and Tenkasi districts of Tamil Nadu. Results in Tenkasi district revealed that the yield of SSNM treated plot of Sree Dhara (19.75 t ha^{-1}) was 12.15% higher than the yield obtained from farmer's practice (17.61 t ha^{-1}). The net income realized from SSNM treated plot of Sree Dhara was ₹2,47,950 ha^{-1} (B:C ratio: 2.95) when compared to farmer's practice, which was ₹2,12,440 ha^{-1} (B:C ratio: 2.74). In Tirunelveli district, the yield of SSNM treated plot of Sree Dhara (20.99 t ha^{-1}) was 9.78% higher than the yield obtained from farmer's practice (19.12 t ha^{-1}). The net income realized from SSNM treated plot of Sree Dhara was ₹2,33,078 ha^{-1} (B:C ratio: 2.81) when compared to farmer's practice, which was ₹2,08,540 ha^{-1} (B:C ratio: 2.68).



OFTs on SSNM in Chinese potato

- Fifty FLDs on high yielding and cassava mosaic disease resistant (CMD) variety of cassava var. Sree Reksha were established (10 FLDs at Malayankeezh, Thiruvananthapuram and 40 FLDs at Agatti, Kavaratti and Kadamath Islands of Lakshadweep) in collaboration with KVK, Thiruvananthapuram and ICAR-CMFRI, KVK, Kavaratti, Lakshadweep, respectively. Farmers were supplied with elite and quality planting materials of improved variety of cassava 'Sree Reksha' and the micronutrient formulation 'micronol' for demonstrations in coconut gardens.



FLDs on Sree Reksha in Thiruvananthapuram



FLDs on Sree Reksha in Kavaratti Islands

- Seventy FLDs on elephant foot yam var. Gajendra were conducted at Erathu, Ezhamkulam and Kodumon panchayats of Pathanamthitta district of Kerala.
- Deemonstrations on use of drones for the spray of micronol in cassava were conducted on 23 January 2023 at Mettupatti in Namakkal and on 24 January

2023 at Manmalai in Salem as part of demonstrations on SSNM in cassava.



Demonstration of drone for micronol application in farmer's field of cassava

Demonstrations on the Chinese potato grader developed by ICAR-CTCRI were organized to farmers at Kuthapanjan, Tenkasi and at Pallakal Podhukudi, Tirunelveli on 10 February 2023. More than 200 farmers and other stakeholders participated and benefitted.



Demonstrations on Chinese potato grader

- Twenty homestead based FLDs (Greater yam var. Orissa Elite-10 and Elephant foot yam var. Gajendra-10) were conducted in Sepahijala district of Tripura and the results revealed that yield of greater yam variety Orissa Elite (3.3 t ha^{-1}) was higher than local variety (2.2 t ha^{-1}) and net income from Orissa Elite was ₹1,34,569 ha^{-1} which is 72% higher than that of the local variety. The elephant foot yam var. Gajendra yielded 1.05 t ha^{-1} which was higher than local check (0.72 t ha^{-1}) and provided a net income of ₹29,636 ha^{-1} which was 37.21% higher than local check.
- FLDs on biofortified tuber crops (cassava, sweet potato, yam bean and yam) were conducted in 200 farmers' fields under Mission for Integrated Development of Horticulture (MIDH) project in Mayurbhanj and Rayagada districts of Odisha.

Training Programmes

On campus programmes

- Training on production technologies of tuber crops was imparted to the trainees of startups/entrepreneurs on 31 January 2023 and on 01 February 2023.



Training on protrait nursery and minisetts



Training on wax coating of cassava

- Training on tuber crops cultivation, processing and value addition was imparted to 40 farmers each from Pandalam, Pathanamthitta and Manathavady, Wayanad district of Kerala on 27 February 2023.

- Training on tuber crops cultivation was organized for 40 farmers from Adoor, Pathanamthitta, Kerala on 15 March 2023.
- An In-house training on ‘Statistics for data analysis using R’ was organized for the technical staff of the Institute during 20-24 March 2023. One technical staff from each Division/Section attended the training.



Training on R Package for Technical Personnel of ICAR-CTCRI



- Training cum project work on ‘Molecular characterization of cassava (*Manihot esculenta* Crantz) using Inter Simple Sequence Repeats (ISSR) markers was conducted to three B.Sc. Biotechnology students from HHSPB N.S.S. College, Konni, Pathanamthitta, Kerala during 26 December 2022 to 26 January 2023 under the guidance of Dr. Sujatha T.P.
- Shri. Ajith V.R., BBA student from Malankara Catholic college, Kaliyakavilai, Tamil Nadu completed his internship on the topic ‘Business aspirations of youth involved in tuber crops’ during 01-28 March 2023 under the guidance of Dr. Sheela Immanuel.

Off campus programmes

Training on ‘Arrowroot cultivation practices’ was conducted by Dr. G. Suja on 18 January 2023. The programme was organized by Manjaly Service Co-operative Bank at Manjaly, North Paravur, Ernakulam, Kerala and about 200 farmers participated under the programmes ‘Rajakoova Padhathi’ and ‘Krishikkoppam Kalamassery’.



Training on arrowroot cultivation at Manjaly

- An awareness programme was conducted on soil health issues such as organic carbon and micronutrient content in the soils of Mangalur block and distributed micronol to cassava farmers on 08 February 2023 at Ma. Podaiyur, Cuddalore district, Tamil Nadu under SCSP programme.
- Training programmes and demonstrations on improved varieties and technologies of cassava were organized on 21 February 2023 at Agatti Islands, Lakshadweep for 50 farmers and on 23 February 2023 at ICAR-CMFRI KVK, Kavaratti Islands, Lakshadweep for 43 farmers for improving the knowledge and skill of the farmers.



Training on Cassava cultivation at Agatti Islands



Training on Cassava cultivation at Kavaratti Islands

A training on scientific cultivation of tuber crops and planting material distribution to SC farmers was organized on 23 March 2023 at Pallikkal panchayat, Thiruvananthapuram, Kerala under SCSP programme of AICRPTC.



Distribution of planting materials at Pallikkal, Thiruvananthapuram

Resource person in off-campus training programmes

Sl.No.	Particulars	Resource person
1	Training on ‘Advances in food process engineering and preservation’ for the SCSP students, organized by ICAR-Central Institute of Fisheries Technology, Kochi, Kerala 16-20 January 2023	Dr. T. Krishnakumar
2	KTU sponsored FDP on ‘Emerging trends and advances in food processing technology’ Department of Food Technology, Amal Jyothi College of Engineering, Kanjirappali, Kottayam, Kerala 24 January 2023	Dr. M.S. Sajeev
3	Training on ‘Pests and diseases of tropical tuber crops’ for 30 farmers at RAATC, Kazhakootam, Thiruvananthapuram, Kerala 24 January 2023	Dr. M.L. Jeeva

4	Technology Machinery Demonstration cum Kisan Mela 'FARMMECH 2023', KCAET, Tavanur, Malappuram, Kerala 14 February 2023	Dr. M.S. Sajeev
5	Training on 'Diseases of tuber crops and their management' to PG students of TNAU, Coimbatore, Tamil Nadu 17 March 2023	Dr. S.S. Veena
6	Entrepreneurship Development Programme on Food processing technologies, NRRI-ABI, Cuttack, Odisha 24 February 2023	Dr. M.S. Sajeev
7	'VAIGA 2023', Thiruvananthapuram, organized by Department of Agriculture, Government of Kerala 01 March 2023	Dr. M.S. Sajeev

Regional Station

- Training on 'Production and post-harvest technology in horticultural and tuber crops' was organized during 16-20 January 2023 in collaboration with ICAR-IIHR-CHES, Bhubaneswar for 15 farmers each from Koraput and Nabarangpur districts of Odisha.
- Training programmes on 'Production and value addition in tropical tuber crops' was organized under MIDH project titled 'Adoption of bio-fortified varieties of tuber crops and promoting entrepreneurship development for livelihood and nutritional security of tribal farmers' at Kanchhinda village of Sorisapal Gram Panchayat, Bangriposi block on 01 February 2023; Baguasole village, Saragchhida G.P., Kuliana block of Mayurbhanj district on 02 February 2023; Khedapada village, Kolnara block, Rayagada district on 06 February 2023 and Hatamuniguda Gram Panchayat of Muniguda block, Rayagada district on 07 February 2023.
- Training on 'Production and value addition of biofortified tuber crops' was organized on 20 February 2023 at Nabarangpur and on 21 February 2023 at Borigumma, Koraput for the benefit of 100 farmers and other stakeholders.
- Training on 'Scientific methods of cultivation, nutrient management and value addition in tuber crops' was conducted on 09 March 2023 for 24 farmers from Erasama and Balikuda villages, Jagatsinghpur district of Odisha and on 10 March 2023 to another group of 12 farmers from Biridi block, Jagatsinghpur district of Odisha under MIDH Programme.
- Training programmes on 'Agro-techniques and production of quality planting materials of tuber crops' were organized during 14-15 March 2023 at Kandhamal, Odisha (Tikabali and Raikia) for 228 farmers and other stakeholders.



Training on Agrotechniques in tuber crops at Kandhamal

- Under AICRP TC-SCSP, two training programmes on 'Value addition in tuber crops' were organized on 19 and 22 March 2023 at Khukia, Jajpur district for 100 farmers and other stakeholders.
- Training on 'Production and post-harvest technology in horticultural and tuber crops' was organized during 20-24 March 2023 for 15 farmers from Koraput and 15 farmers from Nabarangpur, Odisha.

Seminars/Conferences/Workshops Organized

- A webinar on 'Innovations in agricultural marketing- Experiences of NIAM and strategies for tuber crops' was organized on 09 February 2023 in collaboration with Chaudhary Charan Singh National Institute of Agricultural Marketing, Rajasthan, to understand the roles and functions of NIAM and to discuss the scope for collaboration between NIAM and ICAR-CTCRI for strengthening tuber crops marketing sector. Dr. G. Byju, Director, ICAR-CTCRI, delivered the presidential address and highlighted that tuber crops are mostly grown by small and marginal farmers and disadvantaged population. He also emphasized that the major tuber crops like cassava and sweet potato have short and medium shelf life and price fluctuation occurs based on demand and supply which need to be addressed through technological and policy interventions. Dr. Shuchi Mathur, Assistant Director, CCS NIAM, Rajasthan delivered an expert lecture on

the topic. Detailed discussions on scope and possibilities for collaborations in the areas of training, education, research and startups were discussed. Scientists, technical and project staff of ICAR-CTCRI participated in the webinar.

- A Farmer Innovator Meet was organized at ICAR-CTCRI Tamil Nadu Veterinary and Animal Sciences University (TANUVAS) Satellite Incubation Centre on 24 February 2023. During the meeting, two farmers innovations i.e., traditional food products from cassava and a modified rat trap were assessed for scaling up. Ten farmers and five scientists participated in the meet.

Field Days

- Field day was conducted in connection with success of seed village demonstrations for quality planting material production (involving 15 farmers in 10 acres) of cassava var. Sree Athulya on 23 January 2023 at Mettupatti village, Namakkal district. More than 120 farmers and other stakeholders along with officials from KVK and Department of Horticulture, farmers organizations and M/s Linga Chemicals participated.
- Field day was conducted in connection with success of seed village demonstrations for quality planting materials production (involving 15 farmers in 10 acres) of cassava var. Sree Athulya on 24 January 2023 at Manmalai village, Salem district. Sixty five farmers and other stakeholders participated.



Field day at Namakkal



Distribution of inputs during field day at Salem

Exhibitions

ICAR-CTCRI has participated in five different exhibitions:

- Krishidarshan exhibition during 24-28 January 2023 at Nedumangad, Thiruvananthapuram, Kerala.
- Technology and machinery demonstration cum Kisan mela-FARMMECH 2023 during 12-15 February 2023 at Kelappaji College of Agricultural Engineering and Technology, Tavanur, Malappuram, Kerala.
- Krushi Odisha 2023 exhibition during 16-18 February 2023 jointly organized by Agriculture and farmers' empowerment department and Federation of India Chamber of Commerce and Industry (FICCI), Bhubaneswar, Odisha.
- OUAT Farmers Fair-2023 during 27-28 February 2023 organized by Odisha University of Agriculture & Technology, Bhubaneswar, Odisha.

- VAIGA exhibition during 25 February to 02 March 2023 at Putharikandam Maidanam, Thiruvananthapuram, Kerala.



VAIGA exhibition in Thiruvananthapuram

Exposure Visits

- ICAR-CTCRI in collaboration with Kerala Startup Mission organized the Technology Exposure visit to Startups/Entrepreneurs on 31 January 2023. During the visit, 75 startups and other entrepreneurs were exposed to various ICAR-CTCRI technologies.
- One day exposure visit cum training on 'Improved technologies of tuber crops' was organized for the benefit of 290 farmers, 1525 students and 111 officials across the nation at ICAR-CTCRI, Sreekariyam, Thiruvananthapuram.

Swachh Bharat Abhiyan

- Two cleaning drives were organized on 23 February 2023 and March 2023 and about 2000 sq. ft area was cleared of weeds, discarded items, plastic and paper trash, polyhouse net and metal scrap. About 93 people participated in the drive.



Swachh Bharat Abhiyan at Headquarters



International Year of Millets (IYoM) Programmes

- A live web telecast of the inauguration of International Millet Conference by Hon'ble Prime Minister and Stakeholders interface on millets for food and nutrition was organized at ICAR-CTCRI on 18 March 2023. Dr. Suma Divakar, Professor, Department of Community Science, College of Agriculture, Vellayani, Thiruvananthapuram delivered a lecture cum discussion on 'Value addition of millets for health and food security' during the interface. More than 100 farmers, students and staff of ICAR-CTCRI, Thiruvananthapuram and other stakeholders attended the programme. Sixty farmers from Balasore district of Odisha, 20 staff and students from regional station of ICAR-CTCRI, Bhubaneswar attended the programme.



Stakeholders interface on millets for food and nutrition

- ICAR-CTCRI, Thiruvananthapuram along with NEHU Incubator, NEHU, Tura, Meghalaya organized a ‘Biofortified sweet potato and Millet food festival’ on the theme ‘Converging the goodness of millets with healthy sweet potato’ on 23 March 2023 at Tura under the ‘Indradhanush Aahaar Abhiyaan’ (Rainbow Diet Campaign) programme as a part of the International Year of Millets campaign to encourage the students to develop and promote innovative recipes by integrating millets and bio-fortified sweet potato. The programme was inaugurated by Prof. Sujata Gurudev, Pro-Vice Chancellor of NEHU. Fifty stakeholders including government officials, private companies, NEHU faculties and students. Twenty recipes by integrating purple fleshed sweet potato var. Bhu Krishna and millets viz., muffins, cakes, pakkodas, paratta, kheer, baked chips and halwa were prepared and showcased.



Purple fleshed sweet potato and millet based recipes



Participants with the Chief Guest

Agribusiness incubator and Techno-incubation centre

- Twenty-seven agripreneurs and five farmer innovators were newly enrolled under Agribusiness incubator. Incubation support for value added products was provided to one entrepreneur at the Techno incubation centre.
- Ten training programmes on ‘Value addition and entrepreneurship development in tuber crops’ for 275 participants covering 110 male and 165 female trainees from ATMA, FPOs, Kerala Startup Mission and KIEDS were organized by the Techno incubation centre.
- Training on ‘Value addition and entrepreneurship development in tuber crops’ was conducted during 03-09 January 2023 for the aspiring entrepreneurs from Kerala.

- Residential training programme on ‘Value added products from tuber crops’ was conducted during 03-11 January 2023 for the assessment phase training of Kerala Institute for Entrepreneurship Development (KIED), Thiruvananthapuram.



Training on Value addition in tuber crops

Technology Commercialization/Linkages/ Collaborations

- MoU was signed with the Uzhavoor Mythri Farmer Producer Company Limited, Pullickal Kavala, Vazhoor on 01 March 2023 to transfer the technology for commercial production of fried snack food from cassava.



MoU with Uzhavoor Mythri Farmer Producer Company Ltd.

- MoU was signed with Digital University of Kerala (DUK). Dr. Saji Gopinath, Vice Chancellor, DUK and Dr. G. Byju, Director, CTCRI signed the MoU on 02 March 2023 in the presence of Deans and higher officials of the University. Ph.D. Scholars from the University will be allotted to ICAR-CTCRI and National & International collaborative research programmes of common interest will be developed in future.
- MoU was signed with MG University, Kottayam for collaboration in various fields of biosciences including biotechnology, biochemistry, microbiology, climate change, nanotechnology, smart farming as well as processing & value addition. Prof. Sabu Thomas, Vice Chancellor, MG University and Dr. G. Byju, Director, CTCRI signed the MoU on 27 March 2023. This bilateral relation between a university and a national research Institute will help transforming agricultural sector by solving many issues of the society at large.



MoU with Digital University Thiruvananthapuram



MoU with MG University Kottayam

- The Regional Station of ICAR-CTCRI, Bhubaneswar signed Umbrella MoU on 27 February 2023 with

Odisha University of Agriculture and Technology (OUAT) and eleven ICAR Institutes located in Odisha for exchange of students, faculty, collaborative research proposals, R&D projects, upscaling of

technologies, sharing of laboratory and other infrastructural facilities, publications, joint organization of conferences/ workshops/seminars and UG/PG academic activities on mutual understanding.

Capacity Building

Training programmes attended by staff

Sl.No.	Name	Particulars of the training	Period
1	Dr. Krishna Radhika N.	ICAR sponsored winter school on 'Development, evaluation, and biosafety assessment of genome edited crops: Hands-on training', ICAR-Indian Institute of Rice Research (IIRR), Hyderabad, Telangana	20 January-09 February 2023
2	Dr. Sujatha T.P.	NABL Assessors' training course on ISO/IEC 17025:2017, ICAR-National Institute of Veterinary Epidemiology and Disease Informatics (NIVEDI), Bengaluru, Karnataka	06-10 February 2023
3	Dr. Harish E.R.	Winter school on Emerging problems and recent advances in agriculture and allied sciences: Basic to molecular approaches (EPRAAS-2023), Astha Foundation, Meerut, Uttar Pradesh	26 February - 18 March 2023
4	Dr. Visalakshi Chandra C. Dr. R. Arutselvan Dr. Sujatha T.P.	Data visualization using R (Online mode), ICAR-National Academy of Agricultural Research Management (NAARM), Hyderabad, Telangana	01-08 March 2023
5	Dr. Senthilkumar K.M.	International workshop on 'Phenotyping for drought tolerance', jointly organized by the Alliance Biodiversity International & CIAT, Colombia and ICAR-National Research Centre for Banana (NRCB), Trichy, Tamil Nadu	07-11 March 2023
6	Dr. R. Arutselvan	National training workshop on 'Big data analytics in agriculture' (online)	09-10 March 2023
7	Dr. K. Sunilkumar	Training on Approaches for doubling farmers income through secondary and smart agriculture: A way forward, ICAR-Indian Agricultural Research Institute (IARI), Pusa, New Delhi	10-30 March 2023
8	Dr. B.S. Prakash Krishnan Dr. S. Karthikeyan Smt. Rini Alocious Smt. R. Nijamol Smt. S.S. Sneha	In-house training on Statistics for data analysis using R, ICAR-CTCRI, Thiruvananthapuram, Kerala	20-24 March 2023
9	Dr. Harish E.R.	Training programme on 'Multivariate data analysis' (Online mode), ICAR-National Academy of Agricultural Research Management (NAARM), Hyderabad, Telangana	20-27 March 2023
10	All Scientists	Online course by Karmayogi Bharat 'Introduction to emerging technologies'	March 2023

Staff participation in national seminars/symposia/conferences/workshops/meetings

Sl.No.	Name of the participant	Programme	Particulars of the programme
1	Dr. M.S. Sajeev	29 th Indian convention of food scientist and technologists-ICFoSt	Organized by Association of Food Scientists and Technologists, Thiruvananthapuram, Kerala 07 January 2023
2	Dr. V. Ramesh	Delivered a talk on Fertilizers and soil nutrition to 30 participants under DAESI (Diploma programme for Agricultural Input Dealers)	Krishi Vigyan Kendra, Kottayam, Kerala 10 January 2023
3	Dr. G. Byju	Poopoli: International flower show	Seminar in connection with international flower show and delivered talk on 'Tuber crops and food security', KAU, College of Agriculture, Ambalavayal, Wayanad, Kerala 14 January 2023
4	Dr. Harish E.R.	International conference on Recent advances in biological sciences 2023	Inter University Centre for Evolutionary and Integrative Biology, Thiruvananthapuram, Kerala 17-19 January 2023
5	Dr. G. Byju	Directors' meeting on ICAR-IARI Mega University	Directors' meeting to discuss formation of ICAR-IARI Mega University with all willing Institutes as equal to Agriculture Colleges 19 January 2023
6	Dr. Senthilkumar K.M.	Attended and delivered invited lecture on 'Genomics and breeding revolutions in Indian agriculture' in International Conference on Recent Advances in Biological Science 2023	Inter University Centre for Evolutionary and Integrative Biology, Thiruvananthapuram, Kerala 19 January 2023
7	Dr. Asha Devi A. Mr. Padmakumar M.	Joint Regional Official Language Conference (South and South-West regions)	TOLIC, Thiruvananthapuram 27 January 2023
8	Dr. G. Suja	National Conference on Agro-ecology based agri-food transformation systems	Presented a lead paper titled Evaluation of organic, inorganic & integrated management practices in cropping systems involving tuber crops in the National Conference on Agro-ecology based agri-food transformation systems (Online) 27 January 2023
9	All Scientists	Webinar on Innovations in agricultural marketing - Experiences of NIAM and strategies for tuber crops	ICAR-CTCRI, Thiruvananthapuram 09 February 2023
10	Dr. Kalidas Pati	2 nd Indian Rice Congress- 'Transforming Rice Research: Recent Scientific Developments and Global Food Crisis'	ICAR-National Rice Research Institute (NRFI), Cuttack, Odisha 11-14 February 2023

11	Dr. Sujatha T.P.	Official language workshop	Organized for officers/officials of member offices in connection with the observance of Rajbhasha Parv 2022-23, TOLIC (Office-1), Thiruvananthapuram Circle 21 February 2023
12	Dr. Kalidas Pati	State Varietal Screening Committee meeting	Krushi Bhawan, Bhubaneswar, Odisha 24 February 2023
13	Dr. Sheela Immanuel Dr. J. Sreekumar	Scientific Advisory Committee meeting	Krishi Vigyan Kendra, Kollam 25 February 2023
14	Dr. K. Laxminarayana	National Symposium on 'Fostering Resilient Coastal Agro-Ecosystems'	Regional Agricultural Research Station, ANGR Agricultural University, Tirupati, Andhra Pradesh 22-25 February 2023
15	Dr. G. Suja	Scientific Advisory Committee meeting	Krishi Vigyan Kendra, Kumarakom, Kottayam 24 January 2023 Krishi Vigyan Kendra, Mitraniketan, Thiruvananthapuram 28 February 2023
16	All Scientists	Roving Seminar on Patent Cooperation Treaty (PCT)	Jointly organized by WIPO, IPO and ICAR-CTCRI ICAR-Central Tuber Crops Research Institute, Thiruvananthapuram 03 March 2023
17	Dr. G. Byju	Annual Conference of Vice Chancellors & Directors of ICAR Institutes and ICAR-Industry Stakeholders Consultation Meet	NASC Complex, New Delhi 04-06 March 2023
18	Dr. J. Sreekumar	Scientific Seminar on Kerala Genome Data Centre	Launching of the Kerala Genome Data Centre (KGDC) and Microbiome Centre of Excellence Innovation Day 2023 on 13 March 2023 and a Scientific seminar on 14 March 2023 organized by the Kerala Development and Innovation Strategic Council (K-DISC), Thiruvananthapuram
19	Dr. M.S. Sajeev Dr. A.N. Jyothi Dr. C. Pradeepika	'Conclave on Millets, Agro & Food Processing Exports and Prospects of Industrial Biotechnology'	One Week-One Lab (OWOL) programme of CSIR-National Institute for Interdisciplinary Sciences (NIIST), Thiruvananthapuram 17 March 2023
20	Dr. H. Kesava Kumar	Webinar on IPR Awareness under National Intellectual Property Awareness Mission (NIPAM 2.0)	Organized by the Intellectual Property Office, India 17 March 2023
21	Dr. G. Byju	International Conference on 'Enhancing Productivity and Value Addition in Millets'	ICAR-Indian Agricultural Research Institute, New Delhi 18 March 2023

22	All Scientists and staff members	Live web telecast of the inauguration of International Millet Conference and Stakeholders interface on Millets for food and nutrition	ICAR-CTCRI, Thiruvananthapuram 18 March 2023
23	Dr. Asha Devi A. Dr. Shirly Raichal Anil Dr. Visalakshi Chandra C.	International Seminar on New Horizons in Plant Sciences- NHPS 2023	Department of Botany, University of Kerala, Thiruvananthapuram 21-23 March 2023
24	Dr. M.N. Sheela	Attended as Chief Guest in the International Seminar on New Horizons in Plant Sciences- NHPS 2023	Department of Botany, University of Kerala, Thiruvananthapuram 23 March 2023
25	Dr. M. Nedunchezhiyan Dr. Kalidas Pati	State seed sub-committee meeting for release of horticulture crops varieties	Krusha Bhawan, Bhubaneswar, Odisha 28 March 2023

Publications

Research papers

- Arutselvan, R., Prasad, R., Devi, G.U. and Sarada, C. 2023. Management of gray mold disease of castor using fungicides. *Indian Phytopathology*, 76: 159-164 (NAAS score: 5.95).
- Asha, K.I., Aswani, S.A., Krishna Radhika, N. and Prakash Krishnan, B.S. 2023. Genetic variability and diversity analysis of Chinese potato (*Solenostemon rotundifolius* (poir.) J.K. Morton) germplasm using morphological and molecular markers. *S. Afr. J. Bot.*, 155: 171-177 (NAAS score: 9.11).
- Nedunchezhiyan, M., Pati, K., Chauhan, V.B.S. and Arutselvan, R. 2023. Analysis of benefit: cost ratio in drip irrigation and fertigation in greater yam (*Dioscorea alata*) + maize (*Zea mays*) intercropping system. *Current Horticulture*, 11(1): 57-60 (NAAS score: 4.53).
- Shirly Raichal Anil, Sheela, M.N., Visalakshi Chandra, C., Krishna Radhika, N. and Asha, K.I. 2023. Status of biofortification in tropical root and tuber crops. *Current Sci.*, 124(2): 169-175. (NAAS score: 7.17).
- Tiwari, S., Senthilkumar, K.M., Roy, P. and Dalal, M., 2023. Genome wide analysis of *BREVIS RADIX* gene family from wheat (*Triticum aestivum*): A conserved gene family differentially regulated by hormones and abiotic stresses. *Int. J. Biol. Macromol.*, 232: 123081 (NAAS score: 14.00).
- Vishnu, V.R., Jyothi, A.N., Sheela, M.N. and Sreekumar, J. 2023. Identification of anthocyanins in a purple yam (*Dioscorea alata*) accession and their *in vitro* antiproliferative activity. *Journal of Plant Biochemistry and Biotechnology*. <https://doi.org/10.1007/s13562-023-00828-2>. (NAAS score: 7.53).
- Sanket J. More, Ravi, V., Sreekumar, J., Suresh Kumar, J. and Saravanan, R. 2023. Exogenous application of calcium chloride, 6-Benzyladenin and salicylic acid modulates morpho-physiological and tuber yield responses of sweet potato exposed to heat stress. *South African Journal of Botany* 155: 60-78 (NAAS score: 8.32).
- Suresh Kumar, J., Riswana, R., Akash, A.U. and Sunitha, S. 2023. Influence of nitrogen application rates on yield and yield attributes of long-duration varieties of cassava (*Manihot esculenta* Crantz). *International Journal of Bio-resource and Stress Management* 14(1): 68-74. doi.org/10.23910/1.2023.3314a (NAAS score: 5.11).
- Sunitha, S., Akash, A.U., Sheela, M.N. and Suresh Kumar, J. 2023. The water footprint of root and tuber crops. *Environment, Development and Sustainability*. <https://doi.org/10.1007/s10668-023-02955-1> (NAAS score: 10.5).
- Suresh Kumar, J., Niwas, N., Jose, S. and Sunitha, S. 2023. Study on effect of various levels of nitrogen on growth, yield and quality of sweet potato varieties [*Ipomoea batatas* (L) Lam.]. *Journal of Crop and Weed*, 19(1): 01-07 (NAAS score: 5.46).
- Pavithra, P., Thangamani, C., Pugulendhi, L. and Suresh Kumar, J. 2023. Assessment of sweet potato (*Ipomoea batatas*) accessions for growth, yield and quality traits. *Indian Journal of Agricultural Sciences* 93(3): 332-335. <https://doi.org/10.56093/ijas.v93i3.132490>. (NAAS score: 6.37).

Coffee table book

1. Jaganathan, D. and Suja, G. 2023. The 3 A's of ICAR CTCRI...Achievements, Aspirations and Action Plan. ICAR-Central Tuber Crops Research Institute, Sreekariyam, Thiruvananthapuram, Kerala, 32 p.

Book chapters

1. Arutselvan, R., Raja, K., Pati, K., Chauhan, V.B.S. and Nedunchezhiyan, M. 2023. Tuber crops and their potential in food and nutritional security. In: *Pandemics and Innovative Food System*. Anial Kumar Anal (Ed.), CRC Press, Boca Raton, Florida, United States.
2. Nedunchezhiyan, M., Pati, K., Chauhan, V.B.S., Arutselvan, R. and Raja, K. 2023. Leveraging agriculture for nutritional security in Eastern India. In: *Agriculture Policy and Development in Eastern India*. Suresh Chandra Patnaik (Ed.), Nipa Genx electronic resources and solution PVT. Ltd., New Delhi, India, pp.71-97.
3. Visalakshi Chandra, C., Sheela, M.N., Suresh Kumar, J., Namrata, A. Giri and Senthil alias Sankar. 2023. Cassava. In: *Production Technology of Underutilized Vegetable Crops*. Rakesh K. Dubey, Jagdish Singh (Eds.), Kalyani Publishers, New Delhi, India, pp.531-552.
4. Suresh Kumar, J., Visalakshi Chandra, C. and Senthil Alias Sankar. 2023. Agathi. In: *Production Technology of Underexploited Vegetable Crops*. Rakesh K., Dubey Jagdish Singh. (Eds.). Kalyani Publishers, New Delhi, India, pp.312-325.

Popular articles

1. Akash, A.U., Sunitha, S. and Suresh Kumar, J. 2023. Carbon neutrality in farms - Needs and ways. *Kerala Karshakan* (English) *e journal*, 10(9): 40-43.
2. Akash, A.U., Sunitha, S. and Suresh Kumar, J. 2023. Cultivation of cassava with less water. *Krishi Jagran e magazine*, January 2023. pp. 1-4.
3. Byju, G. 2023. Bottle gourd. Home Nutrition Garden Series 20. *Mahilarathnam*, January 2023. pp. 63.
4. Byju, G. 2023. Change agriculture policy, overcome challenges. *Yoganadam*, 16-31 January 2023. pp. 48-51.
5. Byju, G. 2023. One kilo soil carbon costs Rs. fifteen. *Kerala Karshakan*, January 2023.
6. Byju, G., Jaganathan, D., Prakash, P. and Sheela, M.N. 2023. Yams in coconut garden for higher income. *Karshakan*, January 2023 pp. 34-37.
7. Krishna Radhika, N., Sheela, M.N., Asha, K.I., Shirly Raichal Anil, Asha Devi, A., Senthilkumar, K.M. and Sangeetha, B.G. 2023. *Jaiva shasthra sangethika vidya kizhanguvarga inangalude vikasanathimu*. *Kerala Karshakan* (Malayalam) 68(3): 57-60.

8. Padmakshi Thakur., Sunitha, S., Suresh Kumar, J. and Upendra Kumar, N. 2023. Profitable cultivation of elephant foot yam (*Jimikhand ki laabhdaayak kheti*). *Phal Phool Hindi e magazine*, 43(4): 6-8.
9. Sajeev, M.S., Krishnakumar, T. and Pradeepika, C. 2023. *Maracheeniyl ninnu moolyavardhitha ulpannangal*, *Kerala Karshakan* (Malayalam) 68(3):18-21.

Conference/Souvenir/Seminar proceedings

1. Laxminarayana, K., Suja, G., Pati, K. and Nedunchezhiyan, M. 2023. Organic and inorganic fertilization on yield performance of biofortified sweet potato in Alfisols of coastal Odisha. In: *National Symposium on 'Fostering Resilient Coastal Agro-Ecosystems* held during 22-25 February 2023 at Regional Agricultural Research Station, ANGR Agricultural University, Tirupati, Andhra Pradesh.
2. Shilpa, S.U., Jeeva, M.L., Veena, S.S., Amrutha, P.R. and Tom Cyriac. 2023. Potential use of an endophytic bacterium *Bacillus safensis* CTCRI-PA3 to combat taro leaf blight. In: *International Seminar on 'New Horizons in Plant Sciences-NHPS 2023'* held during 21-23 March 2023, Department of Botany, University of Kerala, Thiruvananthapuram, Kerala.

Abstracts

1. Asha Devi, A., Gopika, M. and Krishna Radhika, N. 2023. Genetic diversity assessment in *Xanthosoma sagittifolium* (L.) Schott accessions with ISSR markers. In: *Abstracts NHPS 2023. International Seminar on New Horizons in Plant Sciences-NHPS 2023. Emergent and Innovative technologies in Plant Sciences* held during 21-23 March 2023 by Department of Botany, University of Kerala, Thiruvananthapuram. pp. 20.
2. Shirly Raichal Anil, Sheela, M.N., Mohan, C., Visalakshi Chandra, C. and Sreekumar, J. 2023. Assessment of sweet potato germplasm for selection of climate-smart genotypes for broader adaptability. In: *Abstracts NHPS 2023. International Seminar on New Horizons in Plant Sciences-NHPS 2023. Emergent and Innovative technologies in Plant Sciences* held during 21-23 March 2023 by Department of Botany, University of Kerala, Thiruvananthapuram. pp. 78.
3. Visalakshi Chandra, C., Shirly Raichal Anil, Pradeepika Chintha, Shanavas, S., Harish, E.R., Jyothi, A.N. and Sreekumar, J. 2023. Valorization of sweet potato genotypes for processing and yield traits for varied end uses. In: *Abstracts NHPS 2023. International Seminar on New Horizons in Plant Sciences-NHPS 2023. Emergent and Innovative technologies in Plant Sciences* held during 21-23 March 2023 by Department of Botany, University of Kerala, Thiruvananthapuram, Kerala, pp. 44.

- Reshma Maria Joseph, Shirly Raichal Anil, Krishna Radhika, N., Senthilkumar, K.M. and Sreekumar, J. 2023. Effect of season, source of explant, media concentration and sterilants on *in vitro* establishment of sweet potato cultures. In: *Abstracts NHPS 2023. International Seminar on New Horizons in Plant Sciences-NHPS 2023. Emergent and Innovative technologies in Plant Sciences* held during 21-23 March 2023 by Department of Botany, University of Kerala, Thiruvananthapuram, Kerala, pp. 29.

Chapters in training manuals

- Krishnakumar, T., Sajeev, M.S. and Pradeepika, C. 2023. Value addition and entrepreneurship development in tuber crops. In: *Training Compendium on 'Advances in food process engineering and preservation* (Eds. Neethu, K.C., Aniesrani Delfiya and Murali, S.), 16-20 January 2023, ICAR-Central Institute of Fisheries Technology, Kochi, India, pp.158-168.
- Sajeev, M.S., Krishnakumar, T. and Pradeepika, C. 2023. Value addition of tuber crops for entrepreneurship development. In: *Training manual on Entrepreneurship development programme on food processing technologies*, 24 February 2023, ICAR-NRRI-ABI, Cuttack, Odisha.

Technical/Extension folders

- Nedunchezhiyan, M., Laxminarayana, K., Pati, K., Chauhan, V.B.S., Gowda, H., Jata, S.K. and Dixit, J. 2023. *Biofortified sweet potato cultivation*. ICAR-CTCRI, Sreekariyam, Thiruvananthapuram, Kerala.

Radio/TV/Video programmes

- Dr. S.S. Veena delivered a radio talk on 'Precautions to be taken while storing tuber crops' on 05 January 2023 in All India Radio, Thiruvananthapuram.
- Muthuraj, R. and Jaganathan, D. 2023. Field day cum harvest festival on improved varieties of cassava for higher yield and profitable income in Namakkal district of Tamil Nadu. *DD Podhigai* (Tamil), 24 January 2023.
- Dr. V.S. Santhosh Mithra delivered a talk on 'Technology and new challenges in agriculture' on 11 March 2023 in All India Radio, Thiruvananthapuram.
- Dr. Harish E.R. attended a live Interactive session in Doordarshan's Krishidarshan programme on Pest management of tuber crops (Malayalam) on 24 March 2023.
- Dr. M.S. Sajeev produced three short videos in Malayalam viz., '*Karumure kazhikam cassava chips*', '*Marcaheeni mavil ninnum bakery ulpannangal*' and '*Kappayil ninnu pasta and noodles*' for Farm Information Bureau, Thiruvananthapuram, Kerala.

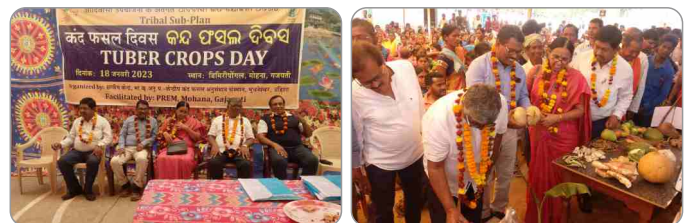
Major Institute Events

Hindi workshop

ICAR-CTCRI organized a Workshop on Official Language - Act and Rules for the staff of ICAR-CTCRI, Sreekariyam, Thiruvananthapuram on 18 January 2023.

Tuber crops day

The Regional Station of ICAR-CTCRI, Bhubaneswar along with PREM (NGO) organized 'Tuber crops day' on 18 January 2023 at Dimiripongala village, Mohana block, Gajapati district. Dr. N.K. Krishna Kumar, former DDG (Hort), ICAR was the Chief Guest and Dr. M.N. Sheela, Director (A), ICAR-CTCRI was the President of the function. Dr. N.K. Krishna Kumar inaugurated the exhibition wherein tribal farmers exhibited various products of tuber crops, millets, cereals, pulses, vegetables, honey etc. and models of nutria-gardens (circular model, rectangular model and model for landless farmers). Mr. Siva Prasad Acharya, Project Manager, PREM (NGO); Mr. Jacob Thundyil, President, PREM (NGO); Mr. Rajendra Dora, PREM, Project Coordinator; Dr. K. Laxminarayana and Dr. M. Nedunchezhiyan attended the programme.



Tuber crops day and Exhibition at Dimiripongala village, Mohana block, Gajapati

National Science Day: Global Science for Global wellbeing

The National Science Day was celebrated on 28 February 2023 at ICAR-CTCRI, Thiruvananthapuram. A science exhibition on the theme 'Bioenergy' was inaugurated by Dr. G. Byju, Director, in which students from various schools and colleges participated and exhibited various models and posters on bioenergy. National Science Day was declared 'Open Day' at ICAR-CTCRI, where the museum and laboratories of the Institute were open to the public. A talk on 'Global science for global wellbeing', the theme of National Science Day 2023 was delivered by the Chief Guest Dr. Achuth Sankar S. Nair, Professor & Head, Department of Computational Biology and Bioinformatics, University of Kerala, Thiruvananthapuram. Prizes for the winners of the science exhibition were distributed by the Chief Guest.



National science day celebrations at ICAR-CTCRI

International Seminar on Patent Cooperation Treaty (PCT)

Indian Patent Office (IPO) in collaboration with the World Intellectual Property Organization (WIPO) conducted an International Seminar on Patent Cooperation Treaty (PCT) at ICAR-CTCRI on 03 March 2023 to promote the awareness in respect of protecting the intellectual property and innovations globally through PCT. Dr. G. Byju, Director, ICAR-CTCRI in his presidential address emphasized the importance of intellectual property rights for innovations. Ms. Lisa Jorgenson, Deputy Director General, Patents and Technology Sector, WIPO, Geneva in her video address stated the increasing trend of patent filing in Asian countries with a world share of 66% filing during 2022. At present the e-filing system is cost effective and WIPO is committed to innovators for providing help in filing and protecting their rights globally. Ms. Christine Bonvallet, Director, PCT International, Cooperation Division, Patents and Technology Sector, WIPO, in her special address highlighted the steady growth of PCT filing in India in recent years and the growth of 60% in last decade and the role of WIPO in achieving this. Mr. P.H. Kurian, Chairman K-RERA and Ex CGPDEM, IPO delivered the inaugural speech in which he emphasized the need of increase in patent filing in tune with the economic growth of India. In last year, Indian share is only 2000 out of 2.78 lakhs globally. More innovation needs to come from R&D institutions and a share of the income from commercialization should pump back to help patent filing. The seven technical sessions were handled by experts from WIPO & IP offices and about 270 participants attended the seminar.



Inauguration of International Seminar on PCT

International Women's Day 2023

International Women's Day 2023 was celebrated at ICAR-CTCRI on 08 March 2023 to create awareness on the social, economic, cultural and political upliftment of women. According to the United Nations, the theme for this year was 'DigitALL: Innovation and technology for gender equality' and it aims to emphasize the importance of technology in bringing gender issues to light. Smt. Silpa V. Kumar IFS, Conservator of Forest, Government of Kerala was the Chief Guest of the programme and she emphasized the importance of reducing the digital divide of about 38 per cent of the marginalized women in our society. In connection with the event, logo making, essay writing and painting competitions were conducted for the women at ICAR-CTCRI. The Chief Guest honoured the women achievers of ICAR-CTCRI for the year 2022.



Address by the Chief Guest

Pre-Institute Research Council (IRC) meetings

Pre-Institute Research Council (IRC) meetings were conducted during 20-24 March 2023 under the Chairmanship of Dr. G. Byju, Director, to discuss the achievements and to prioritize the targets for different Institute projects on Crop Improvement, Crop Production, Crop Protection, Crop Utilization and Extension & Social Sciences.

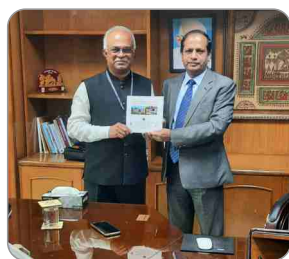


Glimpse of pre-IRC meeting

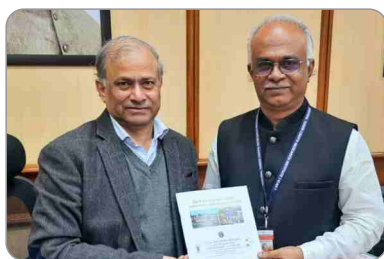
Other Important Events

Director's Visits

The Director made official meetings with the Secretary, DARE & DG, DDG (HS) and AS&FA at ICAR, New Delhi on 31 January 2023 and discussed the Institute achievements and action plans.



Dr. G. Byju, Director with
Dr. Himanshu Pathak,
Secretary, DARE &
DG, ICAR



Dr. G. Byju, Director with
Dr. A.K. Singh,
DDG (Hort.Sci.), ICAR

Director had discussion with the Vice Chancellor, Maharana Pratap University of Agriculture & Technology (MPUAT), Udaipur, Rajasthan on 29 January 2023 and Vice Chancellor, Birsa Agricultural University (BAU), Ranchi, Jharkhand on 01 February 2023 regarding collaborative research programmes. The Director also visited AICRP TC Centers at MPUAT, Udaipur and BAU, Ranchi and reviewed the progress of the ongoing research programmes.



Director's meeting at MPUAT, Udaipur



The Director visited the Regional Station of ICAR-CTCRI, Bhubaneswar during 02-04 February 2023 and interacted with all the staff members. He visited fields and reviewed the progress of the research programmes including the activities of AICRP TC Centre.



Dr. G. Byju, Director visiting the Regional Station,
Bhubaneswar



Hindi Fortnight Celebrations

The valedictory function of the Hindi Fortnight Celebrations 2022 was organized on 18 January 2023. Smt. K.R. Ranjini, Assistant Director (OL) and Member Secretary, TOLIC-I was the Chief Guest of the function. Dr. Asha Devi A., Principal Scientist and Liaison Officer proposed the welcome address and Dr. Sheela Immanuel, Director (i/c) presided over the function. Prizes were distributed to the winners of various competitions held in connection with the Hindi Fortnight celebrations in the four categories. Sh. Padmakumar, M., Private Secretary

bagged the first prize in the Hindi Incentive Scheme programme for doing maximum original work in Hindi from ICAR-CTCRI.



Hindi fortnight celebrations

Infrastructure/Facilities

The instruments procured at the HQ and Regional Station during the period were, Tissue lyser, Stability Chamber, Centrifuge, Water bath, Deep Freezer, Colourimeter, Seva making machine, Hot plate and Hydraulic press plate making machine. Under MIDH project Hot air oven, Digital pH meter, Digital conductivity meter, Refrigerator, Air conditioner, Analytical balance, Flame photometer, Laptop, Digital camera, Revolving chair and Printer were procured at the Soil Science laboratory of Regional Station.

New Project Sanctioned

Collection and database creation of important named landraces of tuber crops from southern districts of Kerala (PI: Dr. Asha K.I. Co-PIs: Dr. M.N. Sheela, Dr. Asha Devi A., Dr. Shirly Raichal Anil and Dr. Krishna Radhika N.; Kerala State Biodiversity Board; ₹ 8.00 lakhs).

Distinguished Visitors

Headquarters, Thiruvananthapuram, Kerala

1. Smt. K.R. Ranjini, Assistant Director (OL) and Member Secretary, TOLIC-I on 18 January 2023 for the valedictory function of Hindi fortnight celebrations.
2. Dr. Achuth Shankar S. Nair on 28 February 2023 for participation in the National Science Day celebrations and delivered the theme lecture.
3. Mr. P.H. Kurian, Chairman K-RERA and Ex CGPDEM, IPO on 03 March 2023 for inaugurating the International Seminar on Patent Cooperation Treaty (PCT).
4. Ms. Christine Bonvallet, Director, PCT International, Cooperation Division, Patents and Technology Sector, WIPO on 03 March 2023 for delivering a special address in the International Seminar on Patent Cooperation Treaty (PCT).
5. Dr. Suma Divakar, Professor, Department of Community Science, College of Agriculture, Vellayani, Thiruvananthapuram on 18 March 2023 as the Chief

Guest on the occasion of Stakeholders interface on millets for food and nutrition as a part of the International year of millets celebrations.

6. Smt. Silpa V. Kumar IFS, Conservator of Forest, Government of Kerala on 08 March 2023 as the Chief Guest of International Women's Day (IWD) 2023 celebrations.

Regional Station, Bhubaneswar, Odisha

1. Dr. N.K. Krishna Kumar, Former DDG (Hort.) & Chairman, RAC
2. Dr. Archana Mukherjee, Former Director, ICAR-CTCRI

Honours, Awards and Recognitions

1. Dr. H. Kesava Kumar was elected as South Zone Councilor of the Nematological Society of India for the year 2023-25.
2. Dr. D. Jaganathan acted as resource person for PGDAEM-MANAGE correspondence course and delivered lectures of the course titled Extension for Sustainable Agricultural Development on 03 January 2023 at SAMETI, Anayara, Thiruvananthapuram, Kerala.
3. Dr. Sheela Immanuel handled the PGDAEM course and delivered lectures on Rural Sociology on 05 January 2023 at SAMETI, Anayara, Thiruvananthapuram, Kerala.
4. Dr. M.S. Sajeev acted as the Chairman for the session on Food waste/circular economy linked food chain with sustainable upstream and downstream process, 29th ICFoSt: Indian Convention of Food Scientist and Technologists, 07 January 2023, Association of Food Scientist and Technologist, Thiruvananthapuram, Kerala.
5. Dr. D. Jaganathan, Nodal Officer for National survey on resources devoted to S&T activities 2021-22 of ICAR-CTCRI, Thiruvananthapuram and submitted report in January 2023.
6. Dr. M.S. Sajeev acted as a member in the Ph.D. Advisory committee meeting on 10 February 2023 at CSIR-NIIST, Thiruvananthapuram, Kerala.
7. Dr. G. Byju delivered an invited talk on 'Tuber crops and food security under changing climate' on 24 February 2023 at Agricultural College and Research Institute, Tamil Nadu Agricultural University, Madurai, Tamil Nadu.
8. Dr. K. Laxminarayana acted as member in the committee for the evaluation of Collaborative Research Project proposals during 01-02 March 2023 for the Science and Technology Department, Government of Odisha.

9. Dr. P. Prakash delivered an invited talk on Agricultural marketing in India in the training and capacity building workshop for nurturing and strengthening of FPOs on 09 March 2023 organized by NABARD at ICAR-Central Tuber Crops Research Institute, Sreekariyam, Thiruvananthapuram, Kerala.
10. Dr. T. Krishnakumar acted as External Examiner for evaluating the thesis of M.Tech. students of Food and Dairy Technology, Tamil Nadu Veterinary and Animal Sciences University, Chennai, Tamil Nadu.
11. Dr. A. Asha Devi and Dr. Shirly Raichal Anil were judges for the oral/poster presentations under the theme-Biotechnology and sustainability in the International seminar on New horizons in plant sciences 2023 (NHPS 2023) on 21 March 2023 organized by Department of Botany, University of Kerala, Thiruvananthapuram, Kerala.
12. Dr. C. Mohan acted as External Examiner for conducting Ph.D., preliminary qualifying examination and viva-voce of a Ph.D. Scholar in Botany on 24 March 2023 at ICAR-IISR under the University of Calicut, Calicut, Kerala.
13. Dr. P. Sethuraman Sivakumar delivered an invited talk on IPR Management in Agricultural Research: An ICAR-CTCRI Perspective at the WIPO Roving Seminar on the Patent Cooperation Treaty (PCT) on 03 March 2023 organized by ICAR-CTCRI, Thiruvananthapuram, Kerala.
14. Dr. P. Sethuraman Sivakumar delivered an invited talk at the National online conference on Intellectual Property Rights (IPRs) on 21 March 2023 organized by the TM NSS College, Dhanuvachapuram, Thiruvananthapuram, Kerala.
15. Dr. D. Jaganathan acted as External Examiner for evaluation of 2 M.Sc. (Ag.) theses of Department of Agricultural Extension, Kerala Agricultural University, College of Agriculture, Vellayani, Thiruvananthapuram, Kerala.
16. Dr. Sheela Immanuel, Dr. P. Sethuraman Sivakumar and Dr. D. Jaganathan acted as External Examiners for evaluation of final examination of PGDAEM-MANAGE correspondence courses in March 2023.

Media Coverage

Sl.No.	Date	News Title	Name of the Newspaper
1	01 January 2023	Field day cum Harvest festival of cassava var. Sree Athulya at Karur	Dinakaran Tamil Daily
2	18 January 2023	News about the Seminar- cum-training on Arrowroot cultivation at Manjaly, Ernakulam	Kerala Kaumudi Daily
3	19 January 2023	<i>Maracheeniylayilninnu prakrithivathakam</i>	The Mathrubhumi Daily
4	24 January 2023	Dr. G. Byju, CTCRI Director	Malayala Manorama Daily
5	24 January 2023	G. Byju appointed as CTCRI Director	The Hindu Daily
6	04 February 2023	<i>Kizhangu vila gaveshana kendram vividha krishiyidangal sandarshichu</i> CTCRI team field visit at Russelpuram, Neyyattinkara	Malayala Manorama Daily
7	04 February 2023	CTCRI team field visit at Russelpuram, Neyyattinkara	Kerala Kaumudi Daily
8	10 February 2023	<i>Kaachil, verum 250 kilo</i> Yams 250kg news	Malayala Manorama Daily
9	19 February 2023	Harvest festival of rice variety at ICAR-CTCRI	The Hindu Daily
10	28 February 2023	<i>Vaividhyam vilambi vaiga kaarshika pradarshanamela</i> News about VAIGA Exhibition	Malayala Manorama Daily
11	02 March 2023	Global meet on Patent Cooperation Treaty at CTCRI	The Hindu Daily
12	04 March 2023	MoU inked for agri-tech research	The Hindu Daily
13	05 March 2023	Agri-tech Research: Tuber Crops Institute and DUK cooperate	Malayala Manorama Daily
14	28 March 2023	CTCRI, MG University sign MoU on collaboration	The Hindu Daily
15	30 March 2023	<i>Smaarttu krishi, iratti vilavu</i> News on smart farming	Malayala Manorama Daily



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Harvest festival of rice variety at ICAR-CTCRI
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Global meet on Patent Cooperation Treaty at CTCRI
Global meet on Patent Cooperation Treaty at CTCRI



MoU inked for agri-tech research
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Superannuation/Retirement

Name	Position Held	Date of Retirement
Shri. P.K. Acharya	Principal Private Secretary	31.01.2023
Shri. K. Unnikrisnan Nair	Assistant	01.03.2023 (on VRS)

Selection/Promotions

Name	From	To	Date
Dr. G. Byju	Head (A), Division of Crop Production	Director, ICAR-CTCRI	23.01.2023
Dr. G. Suja	Principal Scientist	Head (A), Division of Crop Production	15.03.2023
Dr. P. Murugesan	Principal Scientist	Head (A), Division of Crop Improvement	24.03.2023
Dr. J. Sreekumar	Principal Scientist	Scientist in Charge, Section of Extension & Social Sciences	02.01.2023
Dr. A.N. Jyothe	Principal Scientist	Scientist in Charge, Section of Crop Utilization	02.01.2023
Shri. A. Lakshmana Rao	Assistant	Assistant Administrative Officer	05.01.2023
Shri. G. Shajikumar	Senior Technical Assistant	Technical Officer	20.03.2022
Shri. A. Madhu	Assistant Chief Technical Officer	Chief Technical Officer	20.03.2022
Shri. M. Kuriakose	Assistant Chief Technical Officer	Chief Technical Officer	26.07.2022
Shri. V.S. Sreekumar	Senior Technical Officer	Assistant Chief Technical Officer	24.07.2022

Transfers

Name	From	To
Smt. Jessymol Antony, FAO	ICAR-CPCRI, Kasaragod Relieving Date: 17 February 2023	ICAR-CTCRI, Thiruvananthapuram Joining Date: 20 February 2023
Shri. T.D.S. Prakash, SFAO	ICAR-CTCRI, Thiruvananthapuram Relieving Date: 21 February 2023	ICAR-IIRR, Hyderabad Joining Date: 22 February 2023
Shri. Bhadra Kumar S., SAO i/c	ICAR-CMFRI, Kochi Relieving Date: 07 March 2023	ICAR-CTCRI, Thiruvananthapuram Joining Date: 08 March 2023



*Tuber Crops for
Food, Health, Wealth and Prosperity*

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