

Spice News

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ICAR-IISR inks MoU with Russian firm for commercialization of microbial encapsulation Technology

Agrinnovate (AgIn), the commercial arm of ICAR has granted non-exclusive license of the microbial encapsulation technology of ICAR-IISR, Kozhikode to M/S Lysterra LLC, Moscow, Russia. Dr T. Mohapatra, Director General, ICAR, presided over the virtual meet that witnessed the inking of the international MoU

The patented technology developed by ICAR-IISR, Kozhikode, Kerala is a novel method for storing and delivering agriculturally important microorganisms through encapsulation. Commonly called 'Biocapsules', it is the first of its kind in the world biofertilizer industry and has been successfully commercialized to several firms through non-exclusive licensing both by ICAR-IISR, Kozhikode and ICAR-AgIn. At the national level, non-exclusive licenses have also been issued to M/s Krishna Agro Bio Products, Hyderabad, Telangana and M/s Organic Earth Energy Pvt. Ltd, Ahmedabad, Gujarat.



Hon'ble DG-ICAR presided over the virtual meet for signing of international MoU with Lysterra LLC, Russia on 30th June 2022

Research updates

Establishment of Gingerarium at Experimental farm, IISR, Kozhikode

As a part of commitment to genetic resources conservation, "Gingerarium" is an initiative from ICAR-Indian Institute of Spices Research, Kozhikode, Kerala with an objective of conserving ginger (*Zingiber officinale* Roac.) accessions and related species collected from different parts of the nation. The garden was planned to be a knowledge centre on Zingiber for the researchers, academicians and students. Besides germplasm accessions, the released varieties and farmer's varieties of ginger are also being conserved. The 'Gingerarium' was conceptualized in 2019 and officially inaugurated by Dr J Rema, Director (i/c), ICAR-IISR on 21 May 2022. The facility showcases over 600 accessions, varieties and horticultural cultivars of the plants. Besides conservation, these species also serve as the important secondary gene pool for studies on secondary metabolites and disease resistance to cultivated ginger. The initiative was funded by Department of Biotechnology, Govt. of India, New Delhi and Indian Council of Agricultural Research, New Delhi.

**Identifying promising genotypes for quality white pepper (*Piper nigrum* L.) production**

Eighteen black pepper genotypes comprising of released varieties and landraces/farmers selection were evaluated for their white pepper production potential and quality using seed size, pericarp to seed ratio and quality as determining traits. The results indicated significant variation among genotypes for the traits studied. Seed size ranged from 3.58 to 5.13 mm. Whereas, pericarp to seed ratio varied from 23.77 in 'Agali pepper' to 47.94 % in 'ISR-Girisunda'. Piperine and oleoresin ranged from 3.90 to 7.67 % and 6.57 to 11.55 %, respectively. Seed size was independent of the quality traits indicating the need for judicious selection of genotypes with desired corn size and quality. Overall 'Agali pepper' and 'ISR-Girisunda' were found best genotypes for white pepper production as these genotypes have superior seed size, low pericarp to seed ratio and pungency (mild or hot). However, 'ISR-Girisunda' stands better in quality over 'Agali'.

Evaluation of unique black pepper germplasm line collected from Karnataka

A plant exploration was carried out to Shivamogga and Sirsi area of Karnataka and about 27 unique accessions viz., Doddaga, K. K. King, Nucchumenu, Kodanmane special, Basarballi, Uddageri, Keregaddanigeresara, Yellagudda mane, Malligesara, Adimane, Huchumenu, Master kere, Kudurebala, Thattiga, Thirupageri, SV 2, Votaku, V 1, V 2, V 3, V 4, Jeeratamunda, Kuduregudda, Madanara gold, Arotulamunda, Neelamundi and Cholanundi were collected and characterized for quantitative traits. Among all genotypes Masterkere recorded the highest spike length and KK king recorded the boldest berries.

Research updates

Genplasm Exploration activities conducted by ICAR-IISR at North-eastern hilly regions of India

A collaborative genplasm exploration was done by Dr. Muhammed Nisar V A and Dr. Shivakumar M S along with ICAR-NBPCR, New Delhi was conducted from 6-17 June 2022 in three districts of Assam. Various locations in Dibrugarh, Tinsukia and North Lakhimpur districts were surveyed during the exploration and collected 25 accessions of zingiberaceous spices, five of cinnamon, 26 of garcinia and one accession of *Syzygium*.

Soil test-based fertilizer recommendation for targeted yield of spices (IISR-eSOFT) - DSS launched

This software is for getting fertilizer recommendations for the targeted yield based on the factors like initial soil fertility, nutrient required per unit yield (NR), contribution of nutrient from soil (CS) and contribution from fertilizer (CF) that were standardized, validated and recommended for major spice crops viz., black pepper, ginger, turmeric and cardamom. Through this targeted nutrient supply we can avoid imbalance of nutrients in soil, improve fertilizer use-efficiency and increase yield as compared to the blanket recommendation. A decision support system: IISR eSOFT was launched for getting the fertilizer recommendations during the RAC meeting held in July 2022.

IISR-eSOFT

Soil test based Fertilizer recommendation for Targeted yield

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Farmer Information

Name:

State:

District:

Block:

Village:

Targeted yield: kg/ha

Available Nitrogen: ppm

Available Phosphorus: ppm

Available Potassium: ppm

Enter Soil Test values

Available Nitrogen:

ppm

Available Phosphorus:

ppm

Available Potassium:

ppm

OK

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IISR-eSOFT

Soil test based Fertilizer recommendation for Targeted yield

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28 Jul 2022

Farmer Information:

Name:

State:

District:

Block:

Village:

Targeted yield: kg/ha

Input/Parameter	Required	Available Quantity (kg)	No. of Bags
Nitrogen	50	10000 (5000 ppm)	1.0000 + 1.0000 kg
Phosphorus	20	20000 (2000 ppm)	0.1000 + 0.1000 kg
Potassium	100	10000 (1000 ppm)	1.0000 + 1.0000 kg

Recommendation: Based on quality soil fertility data for targeted yield in soil test based fertilizer recommendation.

Print

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Study on Identification of proper planting time for rhizomatous spices at ICAR-IISR Experimental Farm, Peruvannamuzhi based on historical meteorological data

Rainfall analysis of ICAR-IISR Experimental Farm, Peruvannamuzhi (110.34°N, 750.48° E and 60 m MSL) using monthly and annual rainfall data of 42 years (1980-2021) and weekly data for 31 years (1991-2021) indicated that annual average rainfall of this tract is 4594 mm with range of 2893mm-6413mm having CV of 16.8%. ($y = 8.3392x + 4414.8$; $R^2 = 0.0167$). The probability of getting 3976.4mm annual rainfall is 75% and it was predicted that chance of receiving 4000mm rainfall per year is 77.86%.

Research updates

Annual rainy days varied between 112 and 174 with a mean of 145 days. South-west monsoon contributed 74.3% to the annual rainfall and July month had received maximum monthly rainfall (1130mm). The rainfall between 1st (1-7 Jan) to 13th standard meteorological weeks (SMW) (26 March - 1st April) was less than 20mm and not suitable for planting rainfed crops, from 14th SMW (2-8 April) rainfall receipt gradually increased and up to 47th SMW (Nov 19-25) and rainfall received was above 20mm during this period with highest weekly mean of 306.8mm during 29th SMW (16-22 July) and this week alone contributed 6.6% of rain to annual rainfall. Further analysis indicated that annual, seasonal and monthly rainfall are in normal range however, there was a positive trend in annual and summer rain was noticed but it was not significant. The probability of receiving 20mm during April second week (09-15 April, 15th SMW) is 60% and land preparation activity may be initiated. Planting of rhizomatous and tuber crops can be started during 19th SMW (May second week, 7-13 May), as probability of getting 50mm rain is 60% and planting has to be completed during 22 SMW (28 May - 03 June) as chance of receiving 75mm and 100mm is brighter with 69.71% and 63.53% probability respectively and subsequent weeks are assured rainfall periods.

Study on efficacy of different fungicides against *Phytophthora* isolates

The inhibitory effect of thirteen systemic, contact and combination of systemic-contact fungicides were assessed for their efficacy against *Phytophthora capsici* (05-06) and *P. tropicalis* (98-93) under *in vitro* condition. Propineb, Bordeaux mixture, metalaxyl-mancozeb, copper oxychloride, cyanoxani-mancozeb, fluopicolide-propanoic acid and iprovalicarb-propineb completely inhibited mycelial growth of *P. capsici* at recommended concentrations. Sporangial production of *P. capsici* was significantly reduced by cyanoxani-mancozeb (97.99%) and chitosan oligosaccharide (98.19%). The hyphae of *P. capsici* exhibited abnormalities like hyphal swelling with propineb and chitosan oligosaccharide. *P. capsici* also found to be insensitive towards metalaxyl, chlorothalonil, kresoxim methyl, potassium phosphonate, penfufen-trifloxystrobin and chitosan oligosaccharide. Whereas, *P. tropicalis* was found sensitive to Bordeaux mixture, metalaxyl-mancozeb, copper oxychloride, cyanoxani-mancozeb, fluopicolide-propanoic acid and iprovalicarb-propineb at recommended concentrations. Sporangial production was significantly inhibited by Bordeaux mixture (93.74%) and iprovalicarb-propineb (98.94%). Abnormalities in hyphal architecture were induced by propineb, potassium phosphonate and chitosan oligosaccharide. *P. tropicalis* was found insensitive towards metalaxyl, chlorothalonil, propineb, kresoxim methyl, potassium phosphonate, penfufen-trifloxystrobin and chitosan oligosaccharide.

New rhizobacteria strains with effective antimycotic compounds against rhizome rot pathogens and identification of genes encoding antimicrobial peptides

New rhizobacteria strains with effective antimycotic compounds against rhizome rot pathogens and identification of genes encoding antimicrobial peptides An isolate of *Bacillus safensis*, produced indole 3-acetic acid, NH₃, HCN, siderophore, and cell wall degrading enzymes (cellulase, protease and pectinase) and exhibited remarkable suppression of various fungal pathogens infecting turmeric under *in vitro* conditions. In a subsequent greenhouse experiment, turmeric was inoculated with these fungal pathogens and in treatments with *B. safensis* the Disease Index (DI) was significantly reduced compared to the fungicide treatment. The greenhouse trials evidently demonstrated that the rhizome rot incidence in turmeric treated with *B. safensis* decreased by 84.61%, compared to fungicide treatments.

Research updates

The search for the presence of biosynthetic genes that encode for the production of antimicrobial peptides (AMP) in the shortlisted rhizobacterial strains and the *B. safensis* strain, with the most biocontrol efficiency showed the presence of the genes encoding bacillostycin, surfactin and iturin.

Chitosan-based packaging membrane for aflatoxin management

Eugenol, a key constituent of clove oil has showed its effectiveness as anti-aflatoxigenic compound in chilli and nutmeg. Spices frequently pose a serious risk to customers due to the presence of aflatoxin contamination. Therefore, a study was conducted to understand the efficacy of clove oil impregnated chitosan-based membrane for effective management of aflatoxin in chilli and nutmeg. The combination of chitosan (2% w/v) and glacial acetic acid (2% v/v) serves as the best base for making biopolymer with suitable plasticizers. Out of the plasticizers used, two combination was found to be very effective considering all parameters such as physical, optical, biochemical and mechanical properties. These two combinations of plasticizers were i) sorbitol: PEG (1:1) and ii) glycerol 30%. Addition of clove oil to chitosan found to significantly enhance its anti-microbial and antioxidant potential; increase total phenol content; improve barrier and mechanical attributes. This points to the ability of these membranes to improve shelf life and quality of spices to be stored. The prepared membranes were biodegradable as per the biodegradability assay.

News and Events

Dr. C.K. Thonkaran, Principal Scientist in Agronomy, has been appointed the new Director of the ICAR-Indian Institute of Spices Research (ICAR-IISR), Kozhikode on 01.06.2022. Dr. Thonkaran holds a doctorate in Agronomy from the Kerala Agricultural University and has played an important role in formulating organic management strategies and developing soil-less media for the production of planting materials in spice crops.

News from Human Resource Development

ICAR-Indian Institute of Spices Research, Kozhikode organized an Online Training on Data Digitalization and Visualization between 22nd & 24th February 2022. The training programme was inaugurated by Dr. J. Rema, Director ICAR-IISR & PC AICRPS. A total of 78 people participated and benefited in the training program.



Online Training on Data Digitalization and Visualization during 22-24 February 2022

News and Events

Table 1 Training programmes undergone by the staff during January - June 2020

Name	Name of Training	Date	Organized
Scientific staff			
Dr. C. Sarathambal	Online Training programme on Metagenomic Data Analysis	19-24 January 2022	ICAR- Indian Agricultural Statistics Research Institute, New Delhi
Dr. N.K. Leela	One day training on application of LC/MS/MS in food safety analysis	12 January 2022 to 5 pm	ICAR-IISR, Kozhikode
Dr. C.K. Thankamant			
Dr. K.S. Krishnamurthy			
Dr. K. Anees	Analysis of Experimental Data	17-22 January 2022	ICAR-NAARM
Dr. Mohammed Faisal Peeran			
Dr.HonnappaAsangi	Online training programme on Data Digitalization and visualization	22-24 February 2022	ICAR-IISR, Kozhikode
Dr.Shivakumar. MS			
Mr. Gobu R			
Mr. Muhammed Nissar V. A			
Mr. R. Gobu	Application form for Virtual Training Programme on Plant Taxonomy for Plant Genetic Resources Management	21 - 26 March 2022	ICAR - National Bureau of Plant Genetic Resources, New Delhi
Mr. V.A. Muhammed Nissar			
Technical staff			
Mr. R. Bharathan	Generic online Training in Cyber security for Center Government Ministries / Departments	28 January 2022	Ministry of Electronics and Information Technology (MeitY)
Mr. B.T. Hareesh	Online training programme Application of Decision Support System in Irrigated Agriculture"	10- 12 January 2022.	CWRDM, Kozhikode
Ms. N. Karthika	One day training on application of LC/MS/MS in food safety analysis	12 January 2022 am to 5 pm.	ICAR-IISR, Kozhikode
Administrative Staff			
Mr. V.C. Sunil	Pension and Other Retirement Benefits	12-14 January, 2022.	ICAR-NRRI, Cuttack
Mr. P.T. Jyaprakash	Generic online Training in Cyber security for Center Government Ministries / Departments	28 January 2022	Ministry of Electronics and Information Technology (MeitY)

News from AICRPs

National Group Meeting of AICRPs: The Project coordinator and scientist of PC cell visited AICRPs centre at RARS, Anbalavoyal and Protect mode centre at KAU, Thrissur and monitored AICRPs trials on 15 and 19 March 2022.

News and Events

News from Library

ISIR Library strives towards ensuring excellent academic services through online and offline to the users. Library has a collection of 5653 books and 6010 bound journals. ISIR Library is part of the Consortium of electronic Resources in Agriculture (CeRA) and more than 3500 full text journals on agriculture and allied subject are accessible. Library has subscribed 25 Indian journals and 8 Foreign journals during the year in addition to journals accessible under CeRA. Library maintains the Institutional Digital repository software 'DSpice'. Library also provided other academic service like detection of plagiarism in research thesis for Institute users.

New Externally Funded Projects Sanctioned

Title of the project	Investigators	Funding agency	Outlay
An Advanced Centre for Mass Production of Beneficial Microflora for Sustainable Agriculture	Dr. Praveena R	IKVY	Rs 219.21 Lakhs

News from Activities of ITM-BPD Unit

- ITM-BPD unit commercialized five technologies from January 2022 to June 2022 (Table 2). An amount of Rs. 31.50 lakhs were earned as revenue through technology commercialization.
- Coordinated the MoU signing event (online) for commercializing biocapsule technology of the institute with Lysterra LLC, Russia on 30th June 2022. The programme was chaired by Dr. Trilochan Mahapatra (Hon'ble Director General-ICAR).
- The Business Planning and Development Unit of ICAR-ISIR participated and showcased the technologies for commercialization and value-added products developed by the startup incubatees in an exhibition-cum-trade fair organized as part of the first annual celebration of government of Kerala during 19th to 26th April 2022 at Beach Road Calicut, and during 7th to 13th May 2022 at Kalpetta, Wayanad.
- Provided training and biocapsules to farmers under Funnathparamb Panchayath, Kaimur for commercial production of turmeric seeds as a part of establishing ISIR Seed hubs.
- The BPD Unit of ICAR-ISIR has actively participated in Rural India Business Conclave 2.0 at CPCRI Kasaragod on 11th -13th June 2022.
- License Agreement signed with M/s. Sugandhi J.C, Thrissur, for commercialization of ISIR-Keralathree and ISIR-Vishwashree Nutmeg, on 7th March 2022.
- License Agreement signed with Ms.Helen T Nabeel of M/s ZingiberAgro Tech for commercialization of ISIR-Mahina Ginger on 22nd March 2022.
- License Agreement signed with Ms. Siniol Mary Jacob, Peniel Plants and Spices Nursery, Kottayam for commercialization of ISIR- Thevan Black pepper on 6th May 2022.

Table 2 Commercialized technologies during January- June 2022

Sl No	Name of Technology/Know how	Name of contracting Party	Revenue earned (in lakhs)
1	A Novel Method of Storing and Delivering Agriculturally Important Microbes Through Hard Cellulose - Biocapsules	Lysterra LLC, Russia	3000
2	ISIR-Mahina Ginger	Ms. Helen T Nabeel	0.75
3	ISIR-Thevan Black Pepper	Ms. Siniol Mary Jacob	0.25
4	ISIR- Keralathree Nutmeg	M/s Sugandhi J.C, Thrissur	0.25
5	ISIR -Vishwashree Nutmeg	M/s Sugandhi J.C, Thrissur	0.25
Total			31.50

राजभाषा कार्यान्वयन समिति की बैठक

जनवरी-जून 2022 की अवधि में राजभाषा कार्यान्वयन समिति की दो बैठकें आयोजित की। पहली बैठक 21 फरवरी 2022 को डॉ. जे. रमा, निदेशक, आईसीएआर-आईआईएसआर एवं अध्यक्ष, राजभाषा कार्यान्वयन समिति की अध्यक्षता में संपन्न हुई। दूसरी बैठक 16 जून 2020 को डॉ. सी. के. तंकमणी, निदेशक, आईसीएआर-आईआईएसआर एवं अध्यक्ष, राजभाषा कार्यान्वयन समिति की अध्यक्षता में संपन्न हुई। बैठक में निदेशक महोदया ने संस्थान की राजभाषा कार्यान्वयन की समीक्षा की और नये दिशानिर्देश भी प्रस्तुत की।

हिन्दी कार्यशाला

राजभाषा को लोकप्रिय बनाने के लिए आईसीएआर-आईआईएसआर, कोच्चिक्कोड में दो हिन्दी कार्यशालाएं आयोजित की गयीं। पहली कार्यशाला दिनांक 16 मार्च 2022 को ऑनलाइन मोड में आयोजित की। डॉ. ओ. वासवन, सहायक निदेशक (राजभाषा), आकाशवाणी, कोच्चिक्कोड कार्यशाला में मुख्य अतिथि थे। डॉ. ओ. वासवन ने राजभाषा नीति पर व्याख्यान दिया। कार्यशाला में संस्थान के चेलवूर, पेस्वण्णामुषि तथा अप्पंगला के स्टाफ सदस्यों ने भाग लिया।



दूसरी कार्यशाला दिनांक 23 जून 2022 को आयोजित की। श्री. के. के. रामचंद्रन, उपनिदेशक (राजभाषा, सेवानिवृत्त), आयकर विभाग, कोच्चि कार्यशाला में मुख्य अतिथि थे। श्री. रामचंद्रन ने राजभाषा की लोकप्रियता पर स्लाइड प्रस्तुतीकरण के साथ विस्तार से व्याख्यान किया।

नराकास गतिविधियां

डॉ. सी. के. तंकमणी, निदेशक एवं सुश्री एन. प्रसन्नकुमारी, सहायक मुख्य तकनीकी अधिकारी

News from Hindi Cell

ने दिनांक 10 जून 2022 को आयोजित नगर राजभाषा कार्यान्वयन समिति की 69वीं अर्धवार्षिक बैठक एवं पुरस्कार वितरण समारोह में पुरस्कार विजेताओं के साथ भाग ली।

संस्थान के स्टाफ सदस्यों ने नरकास द्वारा आयोजित हिंदी गीत, चित्र कहानी, हिंदी प्रश्नोत्तरी आदि प्रतियोगिताओं में भाग ली और प्रश्नोत्तरी में तीसरा पुरस्कार और गीत में समाश्वास पुरस्कार प्राप्त हुए।

राजभाषा रिपोर्ट

1

संस्थान के राजभाषा कार्यान्वयन की तिमाही एवं वार्षिक रिपोर्ट तैयार करके भारतीय कृषि अनुसंधान परिषद, नई दिल्ली को भेज दिया। राजभाषा कार्यान्वयन का अर्धवार्षिक रिपोर्ट तैयार करके नगर राजभाषा कार्यान्वयन समिति को प्रस्तुत किया।

सुश्री एन. प्रसन्नकुमारी, सहायक मुख्य तकनीकी अधिकारी ने भारतीय कृषि अनुसंधान परिषद द्वारा 10 जनवरी 2022 को आयोजित ऑनलाइन विश्व हिंदी दिवस कार्यक्रम में भाग लिया।

डॉ. सोमा चोपड़ा, निदेशक (राजभाषा), भारतीय कृषि अनुसंधान परिषद ने दिनांक 16.04.2022 को आईसीएआर-आईआईएसआर की राजभाषा गतिविधियों का निरीक्षण किया।



प्रकाशन

प्रस्तुत अवधि में संस्थान तीन प्रकाशनों (कृषि संचालन का कलेंडर - काली मिर्च, हल्दी, अदरक) का हिंदी रूपांतर तैयार करके वेब साइट में अपलोड किया।

News from Agricultural Technology Information Centre

• Training on Soil and Plant Health Management

ICAR Indian Institute of Spices Research organized a resource training programme on Soil and Plant Health management under the Biotech Kisan Hub Project in collaboration with MSSRF, Wayanad. The training programme had special focus on spice crops grown in the district like black pepper, ginger, turmeric etc. The farmers were trained on the use of the technology inputs along with guidance on proper management of various spice crops.

**• Training on Technology advances for Enhancing Farm Income from Spices in NEH region**

ICAR-IISR joined hands with Mission Organic Value Chain Development for North East Region (MOVCDNER), a central sector scheme under the Ministry of Agriculture and Farmer Welfare to provide focused training on technology advances in spice crops to promote organic value chains in all eight states of North East Region (NER). Representatives from more than 170 FPOs from the NEH region benefitted from the training programme conducted during 06-08 April 2022.

- Technology clinic on spice processing organized with assistance from District Industries Centre, Kozhikode for 23 beneficiaries nominated by District Industries centre, Kozhikode
- Training on technology advances in spices cultivation for farmers from Krishnagiri district, Tamil Nadu was conducted during 06-08 April 2022.
- Exposure visit and resource training on Nursery management in Spice crops organized under the DBT Kisan Biotech Hub project in collaboration with MSSRF, Wayanad on 21 February 2021.

Exhibitions

**"EnteKeralan" Exhibition**

- ICAR IISR participated in the Exhibition titled EnteKeralan during 19-26 April 2022 showcasing the latest technologies in spice cultivation and opportunities for value addition in these crops.
- ICAR IISR Exhibition stall depicting technologies developed by IISR were exhibited in Three-Day Tech Bharat-2022 Conclave from 19th May to 21st May 2022 by CFTRI, Mysore.

Establishment of small-scale black pepper nurseries

Two small scale pepper nurseries were established at tribal locations in Wayanad to provide impetus for planting material production and supply for tribal beneficiaries. The black pepper nurseries are located at Cheeyarbanai tribal colony and Pazhuthana tribal colony. The units were inaugurated during March 2022.

Sale of technology products

The revenue generation from the sale of technology and information products was Rs. 14.65 Lakhs during the first quarter of the financial year 2022-23. The share of technology products leveraging microbial encapsulation technology was technology inputs other than planting material sold from the institute was 43.3 per cent. The demand for micronutrients remained robust during the period with total sales proceeds of Rs 257600. Sale of planting material brought in a revenue of Rs 184805 during the same period.

Table 5 Revenue generation from sale of IISR technologies

Category	April to June 2021
Planting Material (₹100+ general firm) (₹1000 + 5500)	203600.00
Farm produce - including Milk (Rs 5017+1040)	116475.00
Diagnostic services	10250.00
Micronutrients	128150.00
Bio-capsule for black pepper	28900.00
Bio capsule Trichoderma	59200.00
Bio-capsules (GRI)	59700.00
Total biocontrol agents (including facilities capsules - 150500.00)	15,80,000.00
Other	26479.00
GST	140626.00
TOTAL	1464860.00

Capacity building programmes for external faculty

Post MSc training on bioinformatics was offered to Dr. Merlin Lopez, Scientist, MSSRE, Wayanad for 3 months.

News from KVK, Kozhikode

Scientific Advisory Committee Meeting

The 22nd SAC meeting of KVK, IISR was held on 25.2.2022 at Indian Institute of Spices Research, Kozhikode under the Chairmanship of Dr. R. Dinesh, Director (Vc), IISR. Dr. V. Venkatasubramanian, Director, ATARI; Dr. Jayaraj, B. Asst. Director of Extension representing DE, KAU; dignitaries from various line departments of Kozhikode district, staff of KVK, and progressive farmers were attended the meeting. Director, ATARI lauded the entire KVK team for the achievements in the mandatory activities. The delegates reviewed the progress of activities during the period and gave suggestions for the upcoming activities.

Success story of CFLD on green gram

The Cluster FLD (CFLD) on green gram was taken up in 3 clusters viz., Kottur, Naduvannur and Marudankara covering 25 farmers in 10 ha area. Seeds of the variety BGS- 9, fertilizers and other bio-inputs were given to farmers and the demonstration was taken up as rice fallow crop. Seeding day celebration was inaugurated by District Panchayat President at Naduvannur. The farmers were very much satisfied with the technologies and their association with KVK. The farmers realized that if climate is good, instead of fallowing rice field they can get a bumper yield in a short time by adopting the improved technologies for green gram. As a result of the intervention the area under pulses in Calicut is improving gradually from mere 3 ha to more than 15 ha.

Capacity development programmes

A total of 24 on campus trainings and 9 off campus trainings were conducted benefitting 645 and 168 participants, respectively on agriculture and agri-allied topics. A total of 13 trainings on Petroleum Conservation Research Association (PCRA) was also conducted during the period benefitting 440 persons.

KisanBhagidariPrathmikataHinari campaign

Kitahi Vigyan Kendra organised District level Kisan Mela sponsored by CDB, Cochin and ICAR, New Delhi under KisanBhagidariPrathmikataHinari campaign. The programme was inaugurated by SmtSheelaSasi, District Panchayat President, Kozhikode and Presided by Dr. P. Rathakrishnan, Progressive Coordinator, KVK. Expert classes on coconut cultivation, value addition, Natural Farming and Government Schemes and loan facilities to farmers and an exhibition were also held, which were attended by about 300 beneficiaries from all parts of Kozhikode district.

Seminar/ Workshops/ Training attended:

- P. S. Manoj and K. K. Niswariya attended training on production technology of banana secondary micronutrient mixture AYAR at College of Agriculture, Padannakod, 20.01.2022.
- P. S. Manoj attended (Online) National workshop on Innovative agriculture, NITI Ayog, 25.04.2022.
- P. S. Manoj attended (Online) workshop "National dialogue on Extension services for efficient delivery of horticultural technologies - a way forward" organised by IISR Bengaluru, 20-21 May 2022.
- P. Rathakrishnan attended XII Biennial National KVK Conference organised by ICAR at Dr. Yashwant Singh Parmar University of Horticulture and Forestry, Solan, Himachal Pradesh, 1-3 June 2022.
- P. Rathakrishnan attended NICRA Phase-II launching cum Annual Review and Annual Action Plan 2022-23 workshop organised by ATARI Bangalore and CRDA, Hyderabad, 13-14 June 2022.
- P. S. Manoj attended KVKs Zonal workshop 2022 - Strengthening IFS through appropriate technologies along with organic and natural farming practices at UAS Dharwad, 19-22 June 2022.

News from KVK, Kozhikode

Field Days (Completed FLDs)

- Field day in connection with the ginger harvesting from the demo plot on Production of healthy ginger seeds at Katturon 22.01.22.
- Field day in connection with the harvesting of shrimps from the demonstration pond on scientific shrimp farming with water acidity management on 15.05.22 at Athol.
- Field day in connection with the harvesting of vegetables from the demo plots on KAU multiex Sarpooma in vegetables on 2.4.22 at Kavunthara
- Field day in connection with the harvesting of Green gram of CFLD demo plot on 7.04.22 at Naduvannur.

Exhibitions

- Exhibition in connection with 'EnteKeralas' project, Govt. of Kerala at Kozhikode beach -19.4.22 to 26.4.22.
- Exhibition in connection with District Kisan Mela, sponsored by CDB, Cochin and ICAR, New Delhi at KVK, 26.04.22.
- Exhibition in connection with balanced fertilizer usage in spices, coconut and banana jointly organised by KVK and IFCO at KVK, 21.05.22
- Exhibition in connection with Nisathuvela Chanda organised by Department of Agriculture and Farmers' welfare at Kottappara, 30.06.22.

Radio talk

- Dr. B Pradeep, Biofloc farming (Interaction with farmer) - Farm and home, 05.03.22.

Publications:

- Manoj P S and Ratha Krishnan R. 2022. 35 Centil Ninnu 25 lakshavaravanam, Kerala Karkhan 67(5) 66-68.
- Prakash K M, Manoj P S and Ratha Krishnan R. 2022. Vanilla fragrance returns to coconut garden. Indian Coconut Journal, 13(3): 10-11
- Thankamani C K, K M Prakash, Srinivasan V, Kandannan K and Jayarajan K, 2022. Coconut leaf mulching - a boon for ginger farming - Indian Coconut Journal, 13(3): 16 - 17.
- P S Manoj and P Ratha Krishnan, 2022. Keeezhikaththe Kera Nursery. Indian Nalikerajournal, 13(4): 23-25.
- Prakash K M, Manoj P S and Ratha Krishnan R. 2022. A tribute to an innovative pepper farmer. Spice India (English), 35 (4): 21-23.



Release of booklet during the Scientific Advisory Committee Meeting

News from KVK, Kozhikode



Inauguration of the Rasan Mela by Smt Sheela Sasi Kozhikode District Panchayat President



Harvest of green gram (ICRL programme) inaugurated by District Panchayat President

News from Administration

New appointment

Name	Post	Date of Joining
Ms. Alitya P.V	Scientist (Agriculture Structure and Process Engineering)	11-04-2022
Mr. Mukesh Sankar S	Scientist (Genetics and Plant Breeding)	22-04-2022

Transfer

Name	Post	Institute /Date
Mr. N M S Kannan	Personal Assistant (on deputation)	For repatriation to NRC Banana /05-04-2022
Dr. Neerthi K. C	Scientist (Agriculture Structure and process engineering)	ICAR-CIFT, Kochi/ 08-04-2022

Retirement

Name	Post	Date
Dr. Santhosh J Eapen	Principal Scientist	30-04-2022
Dr. J. Rema	Director (A)	31-05-2022
Dr. E. Radha	Chief Technical Officer	31-05-2022
Smt. C M Karalam	Skilled support staff	31-05-2022

Resignation

Name	Post	Date
Mr. H. D Praveena	Senior Technical Assistant	30-04-2022

News from Administration

Promotion

Name	Promoted as	Date
Dr. Anees K	Senior Scientist	27-02-2018
Dr. Divya P S	Senior Scientist	21-08-2020
Dr. Lijo Thomas	Senior Scientist	08-01-2021
Dr. C. Sellaperumal	Senior Scientist	27-04-2021
Dr. R Proveena	Senior Scientist	21-04-2021
Dr. A Jeevalatha	Senior Scientist	21-04-2021
Dr. M Alogupalamuthirisolai	Senior Scientist	03-05-2021
Dr. M S Shivakumar	Scientist	01-01-2020
Ms. R. Sivarajani	Scientist	01-07-2020
Mr. V A muhammed Nissar	Scientist	01-01-2021
Ms. Alfiya P V	Scientist	05-07-2021
Mrs. N Prasannakumari	Assistant Chief Technical Officer	29-06-2017
Mr. Suresh E S	Assistant Chief Technical Officer	05-06-2019
Mr. K. Jayarajan	Chief Technical Officer	07-09-2020
Mr. C. K. Jayakumar	Technical Officer (Programme Assistant Computer)	01-02-2015
Ms. Kausalya P N	Technician	07-03-2022
Mr. Rahul P K	Upper Division clerk	19-02-2022
Mr. P Sundaran	Administrative Officer	20-05-2022

News from SARANI

Sarani club day celebrations

SARANI organized the annual club day on 21st of April 2022. The day started off with a highly competitive Rangoli competition with five teams. In the forenoon session, an array of fun games was held. A delectable selection of cultural programmes showcasing the multifaceted talents of Sarani members was held at the Silver Jubilee Hall after the lunch. A selection of games and sports competitions in connection with the "Annual Club Day 2022" were held during April, 2022. The events witnessed active participation from all categories of staff members, students and project associates.



News from SARANI

Farewell programmes

- Farewell programme for Mr. Neela Mega Shyamala Kannan, who was on deputation as Personal Assistant at ICAR-IISR was held on 05th April 2022 at the Directors committee room.
- Farewell programme for Dr. Santhosh J Eapen, Head Division of Crop protection, who superannuated on 30 April 2022 was held at the Silver Jubilee Hall.
- Farewell programme to Dr J Renu, Director, Dr. E Radha Chief Technical Officer and Smt. C M Karolam, Skilled Supporting Staff was held on 31 May 2022.

Organized programme on personal finance management

As a part of the initiative to enhance competence in personal finance management among its members, SARANI organized a programme to introduce and to provide information on some of the financial products like mutual funds, which can be used to meet personal financial goals. The session was conducted by personnel from State Bank of India



Farewell programme for Mr. Neela Mega Shyamala Kannan



condolences for Sri EV Ravindran



condolences for Dr. KV Peeter



Farewell programme for Dr. Santhosh J Eapen



Farewell to Dr J Renu, Dr. E Radha and Smt. C M Karolam

News from SARANI

Programmes conducted to commemorate India's 75 years of freedom

Date	Title/theme of the programme	Venue
13.01.2022	Production practices in small cardamom and ginger	ICAR-IISR Regional Station, Appangala, Kodagu
24.01.2022	National Girl Child Day	ICAR-IISR (Headquarters), ICAR-IISR Krishi Vigyan Kendra, Peruvannamuzhi, Kozhikode and ICAR-IISR Regional Station, Appangala, Kodagu
03.02.2022	Soil health and organic farming in spices	ICAR-IISR Regional Station, Appangala, Kodagu
04.02.2022	World Cancer Day	ICAR-IISR (Headquarters), Kozhikode
10.03.2022	Production technology and biotic stress management in black pepper	ICAR-IISR Regional Station, Appangala, Kodagu
22.03.2022	Improved production technologies of major spices (Black pepper, Cardamom and Ginger,)	ICAR-IISR Regional Station, Appangala, Kodagu
26.04.2022	Student-Scientist interface "Digital Biology: Unravelling the Biological Puzzles"	ICAR-IISR (Headquarters), Kozhikode
26.04.2022	District Level Kisan Mela and Seminar on Coconut	ICAR-IISR Krishi Vigyan Kendra, Peruvannamuzhi, Kozhikode
27.04.2022	Expert session on "Intellectual Property Rights and Technology Commercialization"	ICAR-IISR (Headquarters), Kozhikode
12.05.2022	ICAR-IISR Lecture Series: Spicing up science "Pesticide residues in spices: Issues and management strategies"	ICAR-IISR (Headquarters), Kozhikode
03.06.2022	Training on "Production practices in black pepper, ginger and turmeric" to DAESI input dealers of Kollegala, Chamaraajanagara	ICAR-IISR Regional Station, Appangala, Kodagu
05.06.2022	World Environment Day	ICAR-IISR (Headquarters), ICAR-IISR Experimental Farm and Krishi Vigyan Kendra, Peruvannamuzhi, Kozhikode and ICAR-IISR Regional Station, Appangala, Kodagu
14.06.2022	Farmers Training Programme on "Pre and Post monsoon management strategies for spices cultivation"	ICAR-IISR Regional Station, Appangala, Kodagu
20.06.2022	6 th Dr. Y. R. Sarma Memorial lecture: "Modern insights into <i>Phytophthora</i> evading control efforts"	ICAR-IISR (Headquarters), Kozhikode
21.06.2022	8 th International Yoga Day : "Yoga for Humanity"	ICAR-IISR (Headquarters), ICAR-IISR Krishi Vigyan Kendra, Peruvannamuzhi, Kozhikode and ICAR-IISR Regional Station, Appangala, Kodagu
23.06.2022	Hindi Workshop	ICAR-IISR (Headquarters), Kozhikode

News from SARANI



75
independence 75 years

ICAR-INDIAN INSTITUTE OF SPICES RESEARCH
MADRASAPETA, KAZHAKKOTTA, DISTRICT, KERALA, INDIA

World Environment Day

Awareness lecture on
Aparna
Know the Future

Shri. T.V. Krishna Prakash
Environmental
State Resource Person
English Language Person
National level speaker
Writer, Retd. Teacher

4th June 2022 10:00 AM

Venue: SJ Hall

iisr

All are welcome...



Environmental day celebrations at ICAR-ISR headquarters



Environmental day celebrations at Appangala Regional Centre

Publications

Research papers

- Jayashree E and Neeta Basheer. (2022). Quality variation of turmeric during polishing in a power operated turmeric polisher. *Journal of Spices and Aromatic Crops*, 31(1): 34-44.
- C. N. Biju, K. S. Krishnasurthy and A. I. Bhat. (2022). Physiological and biochemical response of ginger varieties to virus infection. *Plant Physiology Reports*. <https://doi.org/10.1007/s40502-022-00643-2>.
- R. Suseela Bhat, A. Jeevalatha, C. N. Biju, K. B. Vinitha, Jose Clarin, O. B. Rosana, A. Fayad, R. Praveena, M. Anandaraaj and Santhosh J. Eapen. (2022). Sympatric occurrence of sibling *Phytophthora* species associated with foot rot disease of black pepper in India. *Brazilian Journal of Microbiology*. <https://doi.org/10.1007/s42770-022-00716-2>.
- A. Jeevalatha, Fatmehath Zumala, C. N. Biju and Mohammed Faisal Peeran. (2022). Multiplex PCR assay for simultaneous detection of *Phytophthora*, *Pythium* and *Fusarium* associated with foot rot and yellowing diseases of black pepper. *Journal of Spices and Aromatic Crops*, 31(1): 92-96.
- Praveena, R., Kothamburath, A., Jeevalatha, A., Bhat, A.I. and Krishnasurthy, K.S. (2022). Association of *Exserohilum rostratum* with ginger: Morphological characterization, phylogenetic relationships and pathogenicity assays. *Australasian Plant Pathology*, 51: 333-344.
- Revathy, K.A., Jijay, M.V. and Bhat, A.I. (2022). Coat protein-mediated resistance to cucumber mosaic virus subgroup IB in black pepper (*Piper nigrum* L.). *In Vitro Cellular & Developmental Biology-Plant*, 58:351-360.
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- Praveena R, Sreetha K, Revathy R, Srinivasan V, Sarathanbal C, Priya George, Subila K P, Dinesh R. (2022). New rhizobacteria strains with effective antifungal compounds against rhizome rot pathogens and identification of genes encoding antimicrobial peptides. *Rhizosphere*, 22, 100515.
- Sarathanbal C., R. Dinesh, V. Srinivasan, TE Sheela, V. Jeeva and Muhammed Manzoor. (2022). Changes in bacterial diversity and composition in response to co-inoculation of Arbuscular mycorrhizae and Zn solubilizing bacteria in turmeric rhizosphere. *Current Microbiology*, 79(1):4 <https://doi.org/10.1007/s00284-021-02682-8>.
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- Muhammed Shebeeb C, Antony Joseph, Farzeena C, Dinesh R, Sajith V. (2022). Fluorescent carbon dot embedded polystyrene particle: an alternative to fluorescently tagged polystyrene for fate of microplastic studies: a preliminary investigation. *Appl. Nanosci.* 12, 2725-2731.
- Biju CN, Jeevalatha A, Peeran MF, Suseela BR, Fadla B, Muhammed Nissar VA, Srinivasan V and Lita, T. (2021). Association of *Lasiodiplodiatheobromae* with die-back and decline of nutmeg as revealed through phenotypic, pathogenicity and phylogenetic analyses. *3 Biotech*. doi: 10.1007/s13205-021-02961. Traits Together with Gas Exchange Measurements in Rice (*Oryza sativa* L.). *Plants*, 11, 1270.

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- K. Kandannan, Shalendra Prasad and Aruna Banuve. (2022). Spices of the Pacific region with special reference to vanilla and ginger production: Challenges and the way forward. *Journal of Spices and Aromatic Crops*, Vol. 31 (1): 1-14.
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- Ravindran, A., Jayashree, E. and Anees, K. (2022). Recent advances in the extraction of spice essential oil and oleoresin: A Review. *Agricultural Reviews*. DOI: 10.18805/agr-2519.

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Compendium on PGR

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- Aarthi, S., Sarathkhal, C. and Sharon Aravind. (2022). *Training Manual on "Online training on Data Digitalization and Visualization"* ICAR-Indian Institute of Spices Research, Kozhikode-673012, India. 22 - 24, February 2022, pp -88.

Popular articles

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- Sellaperumal C, Santhosh J, Eapen and R Praveena (2022), Nematode menace in major Spices, *Spice India* Vol.35 (3), pp.11-14.
- Sharon Aravind, Krishnasurthy K S., Rena J, Radha E, John George. (2022). New spice varieties and technologies for release. *Spice India*. Vol.35 No.1 pp. 19-21
- Sharon Aravind, Krishnasurthy K S., Santhosh J, Eapen, Radha E, John George. (2021) ICAR- Akhil bharaathiyasamavith marala anusandhanpariyojana se vinachithikarnekelyeonusasthinaakrasam. (Hindi). *Masalon-Mehak*. 34-36.
- Sharon Aravind, Akshitha H J, Muhammed Nissar V A, Kandianan K, Radha E, Krishnasurthy K S Nirmal Babu. (2021). An overview of spice varieties developed by AICRP on spices in the present decade. *Indian Journal of Arecanut, Spices & Medicinal plants* 23 (1): 3-12.

Publications

Popular articles

- Sharon Aravind, Krishnasurthy K. S., Renu J, Radha E & John George. (2021). XXXII Annual Group Meeting of ICAR- All India Coordinated Research Project on Spices. Indian Journal of Aracanut, Spices & Medicinal plants 23 (4): 21-23.
- Shivakumar, M. S., Bindu C.R., HonnappaAsangi, Ankegowda, S. J and Akshitha HJ. (2022). Grafting in black pepper. Spice India. 34(10): 27-30.
- Sonia Charles. Aduthariyaan big datayumbioinformaticcum -in Sashtiragathi by Kerala SashtiraSahithya Parishad.

Extension pamphlet

- Ankegowda, S. J, Ishwara Bhat, A, Jayasree, E., Leela, N. K., Senithil Kumar, C. M, Nagupalamuthirisolai, M, Akshitha, H. J. and Mohammed Faisal Peeran, 2022 (March), Cardamon, Lijo Thomas, Rafeeq, P and Dinesh R. (Eds.), published by ICAR-IISR, Kozhikode. pp. 1-28.
- Ankegowda, S. J, Balaji Rajkumar, M, HonnappaAsangi, Akshitha, H. J, Mohammed Faisal Peeran and Shivakumar, M. S., 2022. ICAR- IISR Regional Station Appangala at a glance (in English); ICAR-IISR RS, Appangala.
- Ankegowda, S. J, HonnappaAsangi, Balaji Rajkumar, M, Shivakumar, M. S, Akshitha, H. J, and Mohammed Faisal Peeran 2022. Production technology of Black pepper (in Kannada); ICAR-IISR RS, Appangala.
- Prasath D, K. S Krishnasurthy, Praveena R, E Jayashree, N. K. Leela, C Sellaperumal and Aarthi S. (2022) Turmeric (extension pamphlet). Indian Institute of Spices Research, Kozhikode, March, 2022. pp. 28.
- Sharon Aravind, Prasath, D, Mukesh Sankar, S, Shivakumar, M. S., Akshitha, HJ, Aarthi, S, Sait, K. V. and Renu, J. (Eds.). 2022. Varieties of spices: ICAR-IISR. ICAR-Indian Institute of Spices Research, Kozhikode, Kerala, India. 60 p.

Chapters in E-Manual

- Mohammed Faisal Peeran, Biju C. N. and Jeevalatha A. (2022). Disease management in black pepper.
- Mohammed Faisal Peeran and Biju C. N. (2022). Biotic stress management in small cardamon-Diseases.
- Balaji Rajkumar, M, Mohammed Faisal Peeran and Biju C. N. (2022). Biotic stress management in ginger and turmeric-Insect pests and diseases. [In: Akshitha, H. J., Mohammed Faisal, P. and Ankegowda, S. J. (Eds.), Azadi Ka Amrit Mahotsav Spices Webinar Series-E Manual, ICAR-Indian Institute of Spices Research Regional Station, Appangala, Madikeri. p. 94.
- Ankegowda S.J, HonnappaAsangi, Shivakumar MS, Akshitha HJ, Mohammed Faisal P and Balaji Rajkumar M (Eds) (2022) Training e-manual on Improved Production Technologies of Major Spices (Black pepper, Cardamon and Ginger). RSO.

Paper presented in Symposia/Seminar/Workshops/Conferences:

- Thankamoni, C.K., Kandannan, K., Dinesh, R., Nagupalamuthirisolai, M. and Srinivasan, V (2022). Black pepper Yield as Influenced by Fertigation Schedule in Humid Tropical Climate, International Conference on Water and Environmental Management 22-24 June 2022, pp.335-336.
- Nagupalamuthirisolai, M., Renuka Suresh, Thankamoni, C.K., Srinivasan, V, Gobu, R (2022). Evaluation of chemicals on water Stress tolerance of black pepper (*piper nigrum* L.) Rooted cuttings, International Conference on Water and Environmental Management 22-24 June 2022, pp. 32-34.
- K. Kandannan, C. K. Thankamoni, V. Srinivasan, K. S. Krishnasurthy (2022). Rainfall Variability and Probability Analysis for Estimating Onset of Cropping Season at High Rainfall Tract of Northern Agro-Climatic Zone of Kerala. National Conference on Climate Resilient and Sustainable Development of Horticulture. 28-31 May 2022.

Publications

Paper presented in Symposia/Seminar/Workshops/Conferences:

- Fathimathuzunna, A. Jeevalatha and C. N. Biju. Analysis of haplotypes to resolve the genetic structure among *Phytophthora* species infecting black pepper. 8th International Conference (hybrid mode) on Plant Pathology: Retrospect and Prospects organized by Indian Phytopathological Society at Sri Karan Narendra Agriculture University, Jabner, Jalpur, Rajasthan during 23-26 March 2022.
- C. S. Karthika, C. N. Biju and A. Jeevalatha. Evaluation of fungicides for anti-oospore activity against *Phytophthora* species, the incitant of foot rot in black pepper. [Papers presented in 8th International Conference (hybrid mode) on Plant Pathology: Retrospect and Prospects organized by Indian Phytopathological Society at Sri Karan Narendra Agriculture University, Jabner, Jalpur, Rajasthan during 23-26 March 2022].
- Revathy, K.A., Jiby, M.V. and Bhat, A.I. 2022. Coat protein-mediated resistance to cucumber mosaic virus in black pepper. Lead lecture presented at the National conference VROCON-2021 on Emerging and Re-emerging Viral Diseases-Climate Change Impacts and Mitigation held through virtual mode during March 26-28, 2022 at AIIMS, Hyderabad.
- Greeshma, M., Bhat, A.I. and Jeevalatha, A. 2022. Rapid on-site detection of piper yellow mottle virus infecting black pepper by recombinase polymerase amplification - lateral flow assay (RPA-LFA). Paper presented at the Indian Phytopathological Society 8th International Conference on Plant Pathology: Retrospect and Prospects held at SKN Agriculture University, Jabner-Jalpur, Rajasthan, India during March 23-26, 2022.
- Mohammed Faisal Peeran, Biju C.N, Akshitha H], and Ankegowda S].2022. Epidemiology of Ginger leaf spot in high altitude and high rainfall region of Kodagu. Book of Abstracts : National Conference on "Horti Phyto Path", 11-12 May, 2022 R 20 organized by Plant Protection Advisory Cell (PPAC), Dr YSR Horticultural University, Venkataravannagudem, West Godavari Dt, Andhra Pradesh
- Honnappa Asangi, K. N. Kattinani, A. B. Mastihal, R. Siddappa and C. B. Harisha, 2022. Oral presentation on "Alwain (*Trachypemanum* L. Sprague) based intercropping for higher system productivity of semiarid tropics of Northern Karnataka." in the 1st International Conference on "Recent Advances for Managing Sustainable Soil Health and Crop Production" organized by CKV Society, Agra, India on virtual mode during 18-20th February, 2022.
- K. Kandannan, K.S. Krishnamurthy, V. Srinivasan, S.J. Ankegowda, C.K. Thankanani, J. Rema and K. Nirmal Babu. 2022. Strategies for climate resilient and sustainable production of spices presented during National Conference on Climate Resilient and Sustainable Development of Horticulture, May 28-30, 2022, CSAUA & T, Kanpur, Uttar Pradesh, India
- Dr. K. Kandannan Presented "Climate Resilient Spices Technologies" during Review-cum Action plan workshop for the Implementation of NICRA in Phase-II during June 14-15th, 2022, at ATARI, Bengaluru.
- Praveena R, Uja Thomas, Dinesh R, and M Anandaraaj (2022) Microbial encapsulation technology: An emerging game changer in crop health disease management of ginger. International Conference (hybrid mode) on "Plant Pathology: Retrospect and Prospects" March 23-26, 2022.
- Vijayashanti K.V, Titty Thomas, Krishnamurthy K.S, Priya George, & Praveena R (2022). Role of *Trichoderma* spp. in mitigating moisture stress in black pepper (*Piper nigrum* L.) through antioxidative defence system. International Conference (hybrid mode) on "Plant Pathology: Retrospect and Prospects" March 23-26, 2022.

Paper presented in Symposia/Seminar/Workshops/Conferences:

- Anurutha Lakshmi M, Praveena R, Priya George, Ishwara Bhat A and Suresh K. (2022). Effect of plant protection chemicals on the survivability of *Phytophthora* spp infecting Black Pepper (*Piper nigrum* L.) International Conference (hybrid mode) on "Plant Pathology: Retrospect and Prospects" March 23-26, 2022.

Publications

Awards/ Honours/ Recognitions

- Best oral presentation award: K. Kandianan, C. K. Thankanant, V. Srinivasan, K. S. Krishnamurthy. (2022). Rainfall Variability and Probability Analysis for Estimating Onset of Cropping Season at High Rainfall Tract of Northern Agro-Climatic Zone of Kerala during National Conference on Climate Resilient and Sustainable Development of Horticulture on 28-30 May, 2022, CSAUA & T, Kanpur, Uttar Pradesh, India.
- Best Oral presentation award: Dr. Mohammed Faisal Peeran, Biju C. N., Akshitha H. J. and Ankegowda S. J. "Epidemiology of Ginger leaf spot in high altitude and high rainfall region of Kodagu" in the National Conference on "HORTIPHYPATH" held virtually on 11th & 12th May, 2022, organized by Plant Protection Advisory Cell (PPAC), Dr. YSR Horticultural University, Venkatarannagudem, West Godavari Dt, Andhra Pradesh.
- Young scientist award: Dr. Mohammed Faisal Peeran received Dr. YR. Sarma Memorial trust "Young Scientist Award 2022" for developing disease management strategies in spices.
- Young researcher award: Vijayashanti K. V, Tilly Thomas, Krishnamurthy K. S, Priya George, & Praveena R (2022). Role of Trichoderma spp. in mitigating moisture stress in black pepper (*Piper nigrum* L.) through anti-oxidative defence system. International Conference (hybrid mode) on "Plant Pathology: Retrospect and Prospects" March 23-26, 2022.
- Best oral presentation award: Anurtha Latahari M, Praveena R, Priya George, Ishwara Bhat A and Suresh K. (2022). Effect of plant protection chemicals on the survivability of Phytophthora spp infecting Black Pepper (*Piper nigrum* L.) International Conference (hybrid mode) on "Plant Pathology: Retrospect and Prospects" March 23-26, 2022.

Training organized

- Dr. E Jayashree conducted 'Technology Clinic-2022 on Value Addition of Spices in Food Sector' jointly by ICAR-IISR and District Industries Centre, Kozhikode. The two days training programme was conducted in three batches and 59 entrepreneurs were provided hands on training programme at the Spice Processing Facility as detailed below:
 - i. 24-25 Jan, 2022 - 18 persons
 - ii. 27-28 Jan, 2022 - 18 persons
 - iii. 1-2 Feb, 2022 - 13 persons
 - iv. 3rd Feb, (Practical's)- 10 persons
- Dr. C. N Biju organized a training (as coordinator)-S. J Eapen, A. Jeevalatha and C. N. Biju. Phytophthora - From Isolation to functional genomics. ICAR sponsored 10 days Short Course on Phytophthora - From Isolation to functional genomics held at ICAR-IISR, Kozhikode during 2-11 March 2022.
- Dr. Akshitha H J coordinated the DASD sponsored farmers training programme on "Improved production technologies of major spices (Black pepper, Cardamom and Ginger)" at ICAR-IISR RS, Appangala on 22.03.2022.
- Dr. Akshitha H J coordinated the farmers training program on "Pre and Post monsoon management strategies for spices cultivation" at ICAR-IISR RS, Appangala on 14.06.202.
- Dr. Sharon Aravind Served as a Coordinator for the online training program on data digitization & visualization held during 22-24 February 2022 for 80 participants including scientists from various AICRPS centres & ICAR-IISR along with Research Scholars.

Publications

Training organized

- Dr. Sharon Aravind Served as Coordinator for the online training program on Technology advances for enhancing farm incomes from spices in North eastern Region during 6-8 April 2022 in which 75 farmers of various FPOs of North Eastern Region participated.

Personalia

- Dr. Thankarasi.C.K participated in International conference on Water and Environmental Management during 22-24 June 2022 at CWRDM Kozhikode.

- Dr. A I Bhatt participated in IISR-Bayer meeting to strengthen capacity building in Spices at ICAR-IISR, Kozhikode (11-02-2022)

- Dr. A I Bhatt participated in the Selection Committee meeting for the recruitment of Scientist B in the discipline of Plant Pathology at the Kerala Forest Research Institute, Thrissur (5th April 2022).

- Dr. A I Bhatt participated in CAS for the promotion of scientists at ICAR-DFR, Pune on 08-04-2022.

- Dr. A I Bhatt participated in CAS for the promotion of scientists at ICAR-CTCRI, Thiruvananthapuram on 18-05-2022.

- Dr. A I Bhatt participated in CAS for the promotion of scientists at ICAR-CPCRI, Kasaragod on 02-06-2022

- Dr. A I Bhatt participated in Meeting for conducting demonstrations to address the issue of decline in the large cardamom in Arunachal Pradesh and Sikkim (24-6-2022)

- Dr. Rajeev P attended a workshop on Technology Clinic Sponsored by the District Industrial Centre, Calicut -24-25th January and 27-28th January 2022 at IISR Kozhikode.

- Dr. Rajeev P attended Krishi Vigyan Kendra Scientific Advisory Meeting (SAC) 25th February 2022 at IISR Calicut

- Dr. Rajeev P National science day Meeting IISR Calicut 28-02-2022

- Dr. Rajeev P Meeting on Project Collaboration and HRD Tata Trust Online 5th May 2022

- Dr. Rajeev P PhD research Committee meeting of PhD students of Agricultural Economics at IISR Calicut 12th May 2022.

- Dr. A Jeevalatha Participated in 8th International conference: Plant Pathology-Retrospect and Prospects" held at Sri Karan Narendra Agriculture University Jobner-Jalpur, Rajasthan, India during 23-26th March, 2022 through online mode.

- Mohammed Faisal Peeron, Biju C.N, Akshitha HJ, and Ankegowda SJ,2022. Epidemiology of Ginger leaf spot in high altitude and high rainfall region of Kodagu. Book of Abstracts : National Conference on "Horti Phyto Path", 11-12 May, 2022 P: 20

- Dr. R Gobu attended Students-Scientist Interface on Digital Biology: Unravelling the Biological Puzzles" on 26.04.2022.

- Dr. HonappaAsangi participated in the 1st International Conference on "Recent Advances for Managing Sustainable Soil Health and Crop Production" organized by GKV Society, Agra, India on virtual mode during 18-20th February, 2022.

- Dr. HonappaAsangi participated in webinar on An Overview of Protected Cultivation of Horticultural Crops organized by ICAR-Directorate of Cashew Research, Puttur on 14th January, 2022

- Dr. HonappaAsangi attended webinar on "Innovations in Vertical Farming" organized by ICAR-Indian Institute of Horticultural Research (ICAR-IHR), Bengaluru on 21st January, 2022.

- Dr. HonappaAsangi participated in webinar on "Pesticide residue in spices: Issues & management strategies" delivered by Dr. Mohammed Shabeer T P which was organized lecture series "Spicing up Science" by ICAR- IISR, Kozhikode on 13.05.2022.

Publications

Personalia

- Dr. Honappa Asangi participated in "One day Workshop-cum-Field day on Avocado Cv Arka Supreme and Spine Gourd Cv Arka Bharathi" on 02nd July 2022 organized by Central Horticultural Experiment Station at Chettali.
- Dr. K. Kandianan attended the National Conference on Climate Resilient and Sustainable Development of Horticulture May 26-30, 2022, CSAUAST, Kanpur, Uttar Pradesh, India
- Dr. K. Kandianan attended Review-cum Action plan workshop for the implementation of NICRA in Phase-II during June 14-15th, 2022, at ATARI, Bengaluru.
- Sellaperveni C. has participated in the NABARD Sponsored International Workshop on "Climate Proofing of Watershed Development Projects with special reference to Soil and Water Conservation Technologies" from 02-03 May, 2022 at ICAR-IISWC, Research Centre, Udhamanandaram, Tamil Nadu.
- Dr. V Srinivasan attended the 18th SAC meeting of KVK, Wayanad, KAU, Amalavoyal as subject Expert, 22 Jan 2022
- Dr. V Srinivasan attended the 22nd SAC meeting of KVK, ICAR-IISR Kozhikode, as Committee member, 25 Feb 2022
- Dr. V Srinivasan attended as Subject Expert, Panel for selection of Scientist, KFRI, Thrissur, 2 April 2022
- Dr. V Srinivasan attended the Soil fertility management for crop productivity, ICAR-IISR, KVK, 5 July 2022
- Dr. V Srinivasan attended the black pepper - Production management, Spice Expo, Horticultural College and Research Institute, Periyakulam, Tamil Nadu Agricultural University, 13-14 July 2022
- Dr. V Srinivasan attended the 16th Annual review meeting of MIDH programme, 13-14 July 2022, DASD & Horticultural College and Research Institute, Periyakulam.
- Dr. E Jayashree served as a member in the Assessment Committee for CAS for considering the cases for promotion of ARS Scientists (Agril. Process Engineering) of ICAR- Central Institute of Agricultural Engineering, Kanchi on 17.3.2022.
- Dr. E Jayashree participated as member in the 13th Committee meeting to appraise the proposals received from States/UTs for Common Incubation Centre establishment under PMFME through video conferencing organized by National Institute of Food Technology, Entrepreneurship and Management (NIFTEM) - Thanjavur on 5.7.2022.
- Dr. E Jayashree participated as member in 12th committee meeting to appraise the proposal received for the Common Incubation Center established under PMFME through video conferencing organized by National Institute for Food Technology, Entrepreneurship and Management (NIFTEM), Thanjavur that was held on 7.4.2022.
- Dr. E Jayashree attended the 19th meeting of FAD 9 on 4.5.2022, where the draft revision of IS- 2447 was deliberated.
- Dr. E Jayashree attended online the first meeting of the Research Committee of the Faculty of Ocean Science and Technology, of Kerala University of Fisheries and Ocean Sciences, Kochi on 8.6.2022.
- Dr. E Jayashree attended the Executive Committee meeting of 'The Indian Society for Spices' held at ICAR-Indian Institute of Spices Research, Kozhikode Spices on 2.4.2022.
- Dr. E Jayashree served as a Technical member for the site evaluation committee of Vegetable and Fruit Promotion Council Kerala (VFPCCK) for setting up of a common incubation facility for processing fruits and vegetables at Thiruvambady, Kozhikode on 14.1. 2022.
- Dr. E Jayashree served as Technical Expert for the inspection of Value Addition Units supported by Small Farmers Agri Consortium, Govt. of Kerala under MSME Scheme and visited Vengeri on 7.3.2022.

Publications

Personalia

- Dr. A Jeevalatha served as co-convenor for 6th Dr. Y.R. Sarma memorial lecture held on 20th June, 2022 at ICAR-ISR, Kozhikode.
- Dr. C N Biju as a member of the expert team, visited the tribal settlement at Poopara, Muthalassada, Palakkad to ascertain the status of disease-affected black pepper plots on 19th February 2022.
- Dr. K. Kandannan Convenor for session on "Varietal Improvement for Resilience to Climate Change and Sustainability in Production" National Conference on Climate Resilient and Sustainable Development of Horticulture May 28-30, 2022, CSAU&T, Raipur, Uttar Pradesh, India.
- Dr. K. Kandannan Nominated as Member of the Executive Committee of ISPC, CPCRI, Kasaragod for the year 2022-23.
- Dr. K. Kandannan, served as Scientist in Charge, Experimental Farm, Peruvannamuzhi from May 2022.
- Dr. Mukesh Sanjar attended one day National Conference on "Promotion of Isan drones: Issues, challenges and way forward" on 2nd May, 2022 at A.P. Shinde Hall, NARS Complex, New Delhi.

Table 3 Details of MSc Dissertation work done at IISR during January to June, 2022

Sl No.	Name	Title of the M.Sc. thesis	University to which submitted	Degree
1.	Ms. Renuka Suresh (Guide: Dr. M. Alogupalamuthirisolal.)	Studying the Water Stress Alleviating Effect of Melatonin in Susceptible Variety and Expression of Stress Related Candidate Gene in Contrasting Varieties of Black Pepper (<i>Piper nigrum</i> L.)	Bharathidasan university, Tiruchirappalli - 620 024, Tamil Nadu, India.	MSc Botany

Table 4 Details of New PhD students joined at IISR

Name of the Student	Guide	Subject	University
Mr. Titto Mendez T S	Dr. Anees K., Senior Scientist (Plant Biochemistry)	Food Science and Technology	KUFOS, Kochi

Table 5 Details of IISR staff completed their PhD programme.

Name	Title of thesis	University	Guide
R. Gobu	Genetic improvement for drought tolerance through conventional and molecular approaches in rice (<i>Oryza sativa</i> L.)	Banaras Hindu University, Varanasi	Prof. Jai Prakash Lal

Publications

Radio talk

- Dr. HonappaAsangi delivered a radio talk on production technology in cardamom broadcasted by All India Radio, Madikeri on 16-05-2022.
- Dr. HonappaAsangi delivered a radio talk on different methods of black pepper propagation broadcasted by All India Radio, Madikeri on 09.06.2022.
- Dr. M Shivakumar delivered a radio talk on Cultivation aspects of Nutmeg, AIR-Madikeri, 18-05-2022 @ 6.50 pm.
- Dr. M Shivakumar delivered a radio talk on Cultivation aspects of Cinnamon, AIR-Madikeri, 30-05-2022 @ 6.50 pm.
- Dr. Proveena R delivered a radio talk on "Integrated disease management in ginger and turmeric", AIR Tiruvandur, Vayaluviveeduru program. Broadcasted on 9th May, 2022.

Lectures delivered

Dr. AJ Bhatt

- Lecture on "Isothermal diagnostic assays for quick detection of phytopathogens" in the short course-Recent Advances in Nano-Biotechnology and Biological Management Approaches in Emerging Diseases of Field and Horticultural Crops for export promotion" organized by the University of Agricultural Sciences, Dharwad on 7.3.2022.
- Lecture on "whole genome sequencing and NGS" in the Short course on "Phytophthora- from isolation to functional genomics" organized by the ICAR-IISR, Kozhikode on 9.3.2022.
- Lecture on "detection and diagnosis of plant viruses" on the occasion of World Plant Health Day under a one-day workshop organized by the Department of Plant Pathology, School of Agriculture, Lovely Professional University, Jalandhar Punjab on 12.5.2022.

Dr. K. Kandiannan

- Lecture on "Agronomic management of major spice crops" Training Session from IISR on Technology advances for Enhancing Farm Incomes from Spices in NER during 6 - 8 April 2022.

Dr. V. Srinivasan

- Lecture on "production technology in black pepper" for Agriculture Information.com on 6.1.2022.
- Lecture on "nutrient management in spice crops intercropped in coconut/ arecanut gardens," in ICAR Sponsored short course on Ecosystem service analysis in diversified coconut and arecanut gardens, ICAR-CCARI, Goa on 26.2.2022.
- Lecture on 'soil health management and organic farming in spices', Asadi ka anruth Mahotsav, Regional Station, ICAR-IISR on 3.2.2022.
- Lecture on 'soil health management strategies for spices cultivation, in the Training on Technology advances for Enhancing Farm Incomes from Spices in NER during 6-8 April 2022 PMU MOVCDNER & 7.4.2022 ICAR-IISR.
- Lecture during training on technology advances in Spices cultivation for 30 farmers from Krishnagiri district, Tamil Nadu during 6-8 April 2022.
- Lecture on 'soil, nutrient management and agronomic practices for nutmeg', Training programme on technology adoption for upscaling nutmeg production, ICAR-IISR, 3 - 4 Aug 2022.

Lectures Delivered**Dr. Rajeesh P**

- Nursery management in Black pepper, ginger and turmeric on 21 February 2022 for organic certified farmers from Wynad at IISR Kozhikode
- Nursery management in spices for farmers under the project DBT sponsored Kisan Biotech Hub 04 March 2022
- Value addition in Spices- Opportunities for income enhancement -Training programme for NE states organized online by Mission on Value Chain Development for NER 7th April 2022.
- Technology Transfer and commercialisation in spices- Opportunities outside state training programme Kuttinagali district(Tamil nadu) 8th April 2022

Dr. E. Jayashree

- Lecture on "Value addition in Spices" during the Technology Clinic-2022 jointly organized by ICAR-IISR and District Industries Centre, Kozhikode on 24.1.2022 and 27.1.2022.
- Lecture on "Value addition in Spices" during the Technology Clinic-2022 jointly organized by ICAR-IISR and District Industries Centre, Kozhikode on 1.2.2022
- Lecture on "Mechanization in Spices Processing" during the PM-FME National Webinar- Entrepreneurial Opportunities in Spice processing organized by ABI, Kerala Agricultural University on 14.2.2022.
- Lecture on "Spices Processing and Packaging" during the training organized by District Industries Centre, Kozhikode on 19.2.2022.
- Lecture on "Quality management, Post-harvest handling and value addition in spices" during the Training Session from IISR on Technology advances for Enhancing Farm Incomes from Spices in North Eastern Region on 8.4.2022.

Dr. C N Biju

- Lecture on "Practical strategies for plant protection in spices" during "Training program on technology advances for enhancing farm incomes from spices in North Eastern Region: 06-08 April 2022" for representatives of FPO's in North Eastern Region organized by ICAR-Indian Institute of Spices Research and MOVCNDR, Ministry of Agriculture and Farmer's Welfare on 8.4.2022 at ICAR-IISR, Kozhikode (45 participants).

Dr. A Jeevalatha

- Lecture on "Laboratory Biosafety practices" to students and research fellows of ICAR-IISR, Kozhikode on 26.2.2022.
- Lecture on "Molecular detection and characterization of Phytophthora and Phytophthora effectors in the ICAR sponsored short course on "Phytophthora: from isolation to functional genetics" held during 2 - 11 March 2022 at ICAR-IISR, Kozhikode.

Dr. Anees K

- Lecture on "Prospects of agribusiness incubation in spices" on 4-4-2022 at College of Agriculture Vellanikkara.

Dr. Sharon Aravind

- Lecture on "Integrated crop management in ginger cultivation" at RARS, Anbalavayal in a farmer's training programme held on 15.3.2022.
- Lecture on "Networking of spices advancements in NER" in online training programme "Technology advances for enhancing farm incomes from spices in North eastern Region" on 7.4.2022 in which 75 farmers of various FPOs of NER participated.

Extension Activities

- Dr. V. Srinivasan coordinated and conducted FLDs on Bio Intensive management of ginger and turmeric in twenty farmer's plots in Wayanad under BioKisan Hub project by distributing inputs like seed rhizome of improved varieties, micronutrient mixtures and bioocapsules of Trichoderma and PGPRs.
- Dr. V. Srinivasan coordinated the advanced Technology Sensitization and Support Programme at Mattailayon in connection with KisanBhagidhar, Prathankkha Harari on 28th April 2022.
- Dr. Ankegowda S.J., Dr. Balaji Rajkumar, Dr. Shivakumar M.S. and Dr. Mohammed Faisal Peeran visited and advised on Crop protection aspects of black pepper to Farmers of Srial and Sagar during February 2022.
- Dr. S.J. Ankegowda and Dr. Mohammed Faisal Peeran visited CPCRI Vital and adjacent area for field inspection and advised package of practice for black pepper and Nutmeg on 07.03.2022.
- Dr. Ankegowda, Dr. Mohammed Faisal Peeran, Dr. Akshitha HJ and Dr. Hannappa Asangi visited Mr. Mahendra Ponnathiatte plot and advised for crop protection practices to be followed in black pepper on 08.06.2022.
- Dr. Ankegowda, Dr. Mohammed Faisal Peeran, Dr. Akshitha HJ and Dr. Hannappa Asangi visited Mr. Ramesh Nagrane Estate, Sunkikappa plot and advised for increasing productivity and crop protection practices to be followed in black pepper on 09.06.2022.
- Dr. Ankegowda, Dr. Mohammed Faisal Peeran and Dr. Akshitha HJ visited Mrs. Anitha Bellappa plot in Hattihole and Mr. Jeyaraj Plot at Madapura and advised for crop diversification and crop protection practices to be followed in black pepper on 09.06.2022.
- Dr. Mohammed Faisal Peeran visited Mr. Pradheep Poovayya plot in Kattabe noticed yellowing in black pepper and advised for nematode management and application of Copper oxychloride.
- Dr. R. Gobu organized the program "Garfo Kalyan Sammelan" in association with KVK, Peruvannuruzhi on 31.05.2022.
- Dr. Hannappa Asangi conducted one day training programme on production practices in small cardamom and ginger to the DAESI input dealers of Kodagu on 13.01.2022 at ICAR-ISR Regional Station Appangala.
- Dr. Hannappa Asangi Conducted DASD sponsored farmers training programme on "Improved production technologies of major spices" on 22.03.2022 at ICAR- ISR, RS, Appangala, Madikeri. More than 130 farmers attended the training programme.
- Dr. Hannappa Asangi Farmers Training Program on "Pre and Post monsoon management strategies for spices cultivation" at ICAR-ISR Regional Station, Appangala on 14-06-2022. 79 farmers participated.
- Dr. Hannappa Asangi Training on "pest and disease management in black pepper and ginger" was conducted to DAESI trainees from Mandya district on 22-06-2022 at ICAR-ISR RS, Appangala.
- Dr. Hannappa Asangi Participated in Kisan Mela (Exhibition) and discussion on Natural farming organizing by ICAR-Krishi Vigyan Kendra, Gonikappal on 26th April 2022.
- Dr. R. Gobu Visited "District Agricultural Farm, Koothal" on 03.01.2022 as a part of consultancy team and given suggestions to solve issues in black pepper planting material production.
- Consultancy visit was made by Dr. V. Srinivasan and Dr. K. Kandammann, Principal Scientists of ICAR-ISR, Kozhikode to estates of M/S. Bridgeway Group, Kochi located at Chermbra and Tholpetty in Wayanad district of Kerala on 08 March 2022.



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