



SPICES NEWS



Indian Institute of Spices Research, Marikunnu (P.O.), Kozhikode (Calicut), Kerala, India
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Quarterly

From Director's Desk

While we bid adieu to the XI plan and enter the XII plan, it is imperative that we look back and assess whether the targets we set in the XI plan were met. I am absolutely certain that some of our programmes did not go the way we anticipated and some programmes performed better than we actually thought possible. Probably some of these will continue in the XII plan as well. This gives us an opportunity to devise a plan B that would help in achieving our goals. While doing so it is essential to evaluate the plan to ensure that we do not repeat the past mistakes. This evaluation will also indicate whether our program is likely to succeed or go awry or cause unwanted consequences, may cost too much or may simply not work. I know that the planning cycle is in itself a complex process but it does ensure that our research projects are well focused, resilient, robust and cost-effective. We look forward to the XII plan with lot of anticipation. This calls for new research approaches that combine disciplines and interact more closely with the farming society, policy and practice. The general comment is that some of our projects are one-dimensional, out of focus and unrealistic. Therefore, we must collaborate and integrate across disciplines, across traditional boundaries and bring together and sharpen our skills to sustain the world we wish to live in. We need to develop new research skills to tackle the complex problems that accost us and become more involved in the implementation of research projects that systematically address the myriad problems and complex issues in spice cultivation using evidence-based approaches. We need to share ideas, provide mutual support and give voice to farmers' needs. This is one major reason why the ICAR has finalized about 22 platforms on an array of themes to launch research projects that are considered to take Indian agriculture from a shaky existence to one that is strong and resilient. IISR has the honour of being associated with platforms on Nanotechnology, High value compounds/ phytochemicals, Climate change, Precision farming, Genomics and National Seed project. Each programme will involve a large number of institutes to work on various facets of the research platform that will help in tackling the existing and emerging complexities in Indian agriculture. This will also foster high levels of intellectual exchange and learning and provide unlimited exploitation of the significant synergies between institutes and researchers. The platforms envisaged by ICAR are the ones that will drive our research programme in the XII plan. While the challenges are many, the coming together of large number of institutes and scientists under a platform means that the challenges can be confronted with collective resolve.

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Research Update

Real time PCR for detection of BMV and CMV

A real time PCR-based method has been developed for the detection of *Banana mosaic virus* and *Cardamom mosaic virus* infecting cardamom plants.

Analysis of *Piper-Phytophthora* interactive transcriptome:

Transcriptome sequence assembly and analysis was carried out to facilitate a system-wide approach to study *Piper-Phytophthora* interaction with special emphasis on the identification of genes involved in resistance to the oomycete. A putative R gene with a coding sequence of 913 amino acids, presumed to be involved in resistance reaction with *Phytophthora capsici*, was identified from the transcriptome from *Piper colubrinum*. The gene was found to be induced upon challenge with the pathogen. A stress induced transcription factor gene *wrky* with a coding sequence of 313 amino acids was also discovered. The qRT-PCR analysis of *Piper colubrinum* samples indicated the expression of β -1,3-glucanase genes at its peak of expression at 48 h post inoculation with *Phytophthora capsici*, whereas the expression of osmotin was at its peak at 24 h.

Germplasm Exploration and Collection: Two black pepper accessions collected from Assam were added to the repository.

Personalia

Awards/ Honours/ Recognitions

Bhat A I

Member, Quality Control Team, for selection of mother vines for raising planting materials of black pepper at various nurseries of the Department of Agriculture, Kozhikode.

Leela N K

Member, Selection committee for UGC-BSR Research Fellowship in Science for 2011-12, University of Calicut.

Pervez R

Best Paper Award for the research paper entitled, *A new species of entomopathogenic nematode Oscheius gingeri sp. n. from ginger rhizosphere*, presented in 14th Indian Agricultural Scientists' and Farmers' Congress, Allahabad, 18-19 February 2012.

Senthil kumar R

Member Selection Committee for recruitment of SRF & JRF under NICRA & RKVY project at CHES Chettalli, 21 February 2012.

Participation in Symposia/ Seminars/ Workshops/ Conferences/ Meetings

All scientists

Kisan Mela and Technology Showcasing Expo, *Krishi Jalakam-2012*, IISR, Kozhikode, 16-18 February 2012.

Anandaraj M

III Global Conference of Indian Society of Mycology and Plant Pathology, AICRP (Spices) Centre, Udaipur, 10-13 January 2012.

Discussion on PhytoFuRa, IARI, New Delhi, 13 January 2012.

XXX Group Meeting of AICRP on Vegetable Crops, GBPUAT, Pantnagar, 14-15 January 2012.

National dialogue on *Climate resilient horticulture*, IIHR, Bengaluru, 28-29 January 2012.

74th Meeting of Spices Board and the World Spice Congress Meeting, Pune, 9-10 February 2012.

Review meeting of AICRP (Spices) Centre, Dapoli, 11 February 2012.

ASRB Meeting, ASRB, New Delhi, 14 February 2012.

Directors' Conference, ICAR, New Delhi, 17-18 February 2012.

National Dialogue on *Citrus Improvement, Production and Utilization*, NRC (Citrus), Nagpur, 27 February 2012.

Nanotechnology Meeting, New Delhi, 12 March 2012.

Anandaraj M

Biju C N

Johnson K George

Santhosh J Eapen

Third review meeting of Out Reach Programme on ALCOCERA and PHYTOFURA, IIHR, Bengaluru, 3-4 March 2012.

Anandaraj M

John Zachariah T

Meeting on *Evaluation study of NHM programme on rehabilitation of pepper in Idukki District*, Spices Board, Cochin, 31 March 2012.

Anandaraj M

John Zachariah T

Sasikumar B

One day Workshop on *Sustainable growth in Spices sector*, Bolghatty Palace, Kochi, 20 January 2012.

Anandaraj M

Kandiannan K

Meeting on Finalizing Action Plan for Production of quality planting material in roots and rhizomatous crops, CTCRI Regional Centre, Bhubaneswar, 9 January 2012.

Ankegowda S J

Training programme on *Phenotyping and molecular breeding for improving drought adoptive traits in crops*, organized by Department of Crop Physiology, UAS, Bengaluru, 13-22 February 2012.

Mobile pepper clinic programme of Sugandhi-Integrated Pepper Development Project for Wayanad Dt. 17 January 2012.

Ankegowda S J

Biju C N

Praveena R

Senthilkumar R

Foundation day of CHES, Chettalli, 1 February 2012.

Ankegowda S J

Senthil Kumar R

Seminar on *Plant Genomics-Genotyping and Marker Aided Selection*, organized by Genotypic Technology Pvt. Ltd., Bengaluru, 13 February 2012.

Bhat A I

Faculty meeting of Research Guides in Life Sciences of School of Life Sciences, Thalassery Campus, Kannur University, 13 January 2012.

Biju C N

Training to service providers for organic certification organized by Department of Horticulture, Somwarpet, Madikeri, 18 February 2012.

Chinchu E K

Shyna K S

Hindi Computer Training Programme, National Power Training Institute, Bengaluru, 13-17 February 2012.

Devasahayam S

First Standing and Working Committee Meeting on PLACROSYM XX, Coimbatore, 20 January 2012.

Devasahayam S

Kandiannan K

Krishnamoorthy B

Santhosh Eapen J

Sasikumar B

State-level Workshop on *Challenges of Crop Health Management in Organic Farming*, College of Agriculture (KAU), Padannakkad, 5 January 2012.

Devasahayam S

Saji KV

Senthil Kumar R

Brainstorming Session on *Challenges in Genetic Improvement in Plantation Crops and Spices*, IISR, Kozhikode, 22 March 2012.

Hamza S

Meeting of Research Guides in Chemistry, School of Chemical Sciences, Payyannur Campus, Kannur University, 11 January 2012.

Seminar on Production Technology of Spices, Regional Science Centre and Planetarium, Kozhikode, 22 February 2012.

Hamza S

Jacob T K

Review meeting of Sugandhi Black pepper Rehabilitation Projects, Wayanad and Brain storming workshop on future programme, Wayanad, 2-3 March 2012.

Jayarajan K

Kannan S

Rahul P R

Senthil Kumar R

Sheeja TE

Horticulture-Industry Meet, IHR, Bengaluru, 6 March 2012.

Jayashree E

Awareness Programme on the *Provisions of PPV & FRA 2001*, IISR, Kozhikode, 17 February 2012.

Jayashree E

Leela NK

National Steering Committee Meeting on *Application of Electronics for Agriculture and Environment (eAgriEn)*, C-DAC, Kolkota, 23-24 February 2012.

Johnson K George

National Workshop on *Statistical Computing in Life Sciences*, School of Life Sciences, Pondichery University, Pondichery, 27 February-2 March 2012.

John Zachariah T

Santhosh Eapen J

Sasikumar B

State-level Seminar on *Crop health management in organic farming*, College of Agriculture, Padannakkad, 5 January 2012.

Review meeting of NAIP on *Mobilizing Mass Media Support* for sharing agro information, CISH, Lucknow, 23-24 March 2012.

Kandiannan K

Meeting on *Formulation of Action Plan on Technological Advances made in Quality Planting Material Production in Root and Rhizomatous Crops*, Regional Centre, CTCRI, Bhubaneswar, 9 January 2012.

XXIV Kerala Science Congress, RRII, Kottayam, 29 January 2012.

National Seminar on *Watershed Planning for Natural Resources Management* organized by Kerala State Land Use Board, Thiruvananthapuram, 15 February 2012.

Krishnamoorthy B

Meeting of Research Guides for the formulation of syllabus for the Course work of Ph D students University of Calicut, Kozhikode, 23 February 2012.

Nirmal Babu K

Rahul P R

Sheeja TE

Santhosh Eapen J

Workshop on *Biotechnology for Biology teachers - Awareness programme on Biotechnology and IPR related issues*, Regional Science Centre & Planetarium, 30 January 2012.

Pervez R

Orientation Programme for Hindi officers at Central Hindi Teaching Institute, Department of Official Language, Home Ministry, Govt. of India, New Delhi, 19-23 March 2012.

XIV Indian Agricultural Scientists' and Farmers' Congress, SIMAT, Allahabad, 18-19 February 2012.

Pervez R

Prasannakumari N

Town Official Language Implementation Committee Meeting, Zonal Office of SBT, Kozhikode, 2 February 2012.

Pervez R

Prasannakumari N

Sunil V C

Workshop on *Use of computer for the implementation of Official Language in Office*, Regional Science Centre and Planetarium, Kozhikode, 2 March 2012.

Rahul P R

Saji K V

Agr IP 2012 Meeting cum Workshop on Evaluation of Agricultural Technologies for Commercialization, CIFT, Cochin, 24-25 February 2012.

Santhosh Eapen J

National Symposium on *Bioinformatics: Challenges in the Post-genomic Era*, University of Jammu, Jammu, 02 February 2012.

XXIII Annual Bioinformatics Coordinators' Meeting, Shri Mata Vaishno Devi University, Katra, Jammu & Kashmir, 3-4 February 2012.

Sasikumar B

Scientists-Farmers' Interface, SAMETI, Thiruvananthapuram, 8 February 2012.

Farmers' Seminar, Regional Science Centre and Planetarium, Kozhikode, 22 February 2012.

Senthil Kumar R

Pepper Standing crop estimation at Coffee Research Substation, Chettalli, 31 January 2012.

The brainstorming session on *Challenges to genetic improvement in plantation crops and spices*, IISR, Kozhikode, 22 March 2012.

Radio talk

John Zachariah T

Entrepreneurship potentials in major spices, AIR, Kozhikode, 2 March 2012.

Manoj P S

Avocado, AIR, Kozhikode, 7 February 2012.

Anthurium Cultivation, AIR, Kozhikode, 22 March 2012.

Pradeep B

Fresh water fish culture, AIR, Kozhikode, 16 February 2012.

Prakash K M

Mushroom Cultivation, AIR, Kozhikode, 22 February 2012.

Sasikumar B

Prathibha's Prathibha, AIR, Kozhikode, 15 March 2012.

News and events

Research Advisory Committee Meeting

The Research Advisory Committee (RAC) meeting of Indian Institute of Spices Research, Kozhikode was held during 16-17 March 2012 under the chairmanship of Dr. S.B. Dandin, Vice-Chancellor, UHS, Bagalkot. Dr. Umesh Srivastava, (ADG, Hort-II); Dr. B.B. Vashishtha, Former Director, NRCSS, Ajmer; Dr. Anil Kumar, Head, Division of Biotechnology, GBPUAT, Pantnagar; Dr. R. Samiyappan, Director, CPMB, TNAU, Coimbatore and Dr. K.V. Ramana, Former ADG (PC) were other members of the team. Shri. C.V. Damodaran, Advocate, attended the meeting in the capacity of IMC Member.

In the inaugural session, Dr. M. Anandaraj, Director, IISR, Kozhikode briefed the achievements of the institute since the last meeting, future programme of the XII plan and the focus of VISION 2030 of IISR. He also sought the attention of the RAC on specific aspects such as climate change, toxicology data of bioagents, mechanization/fertigation in spice

cultivation, soil less production of seed rhizomes, nutraceuticals etc. The Committee deliberated on the action taken on the recommendations of previous RAC meeting, progress made during the last one year in all the thirteen mega projects and suggested modifications.

News from Bioinformatics Centre

A DBT sponsored training programme on *Whole genome sequencing and annotation* was conducted during February 21-25, 2012 with 14 participants from various research institutions and universities. The training programme was inaugurated by Dr. A. Santhiagu, Head, School of Biotechnology, NIT, Kozhikode. Apart from the Institute faculty, resource persons from M/s Bionivid Technology, Bengaluru, also handled various theory and hands-on training sessions.



Consultancy Processing Cell

During January-March 2012, Rs 7.2 Lakhs were generated through analysis of soil and manure samples, sale of biocontrol agents and consultancy visit of scientists.

News from library

Three issues of the electronic version of 'AGRI Titbits' was published during January- March. A new multifunctional digital photocopier with scanning and network printing was purchased for the library. Sixty three CeRA requests were catered online and procured 19 articles as print/online.

News from ITMU

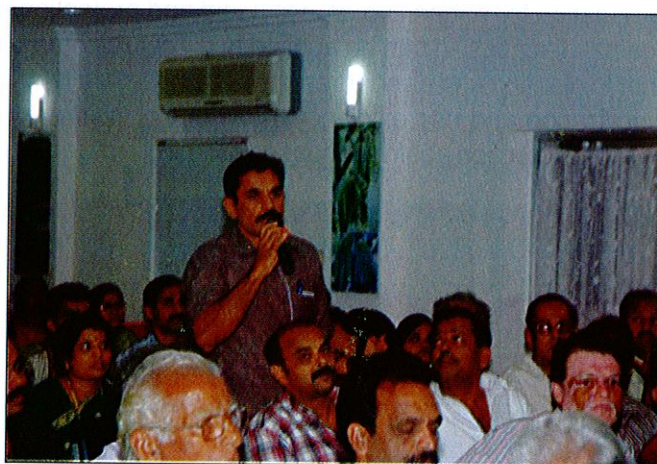
An Awareness programme on the *Provisions of Protection of Plant Varieties and Farmers Rights (PPV&FR) Act 2001*, sponsored by PPV & FRA, New Delhi was organized at this institute on 17 February 2012. Smt. R Ushamani, Principal Agricultural Officer, Department of Agriculture, Kozhikode, inaugurated the programme; Dr. S Ramachandran,

Director, Regional Science Centre and Planetarium, Kozhikode, presided over.

Mr. B Krishnamoorthy, HOD (Crop Improvement & Biotechnology) moderated the technical sessions. Experts from MSSRF, Wayanad, SBI, Coimbatore and KAU, Thrissur also spoke on various topics related to the act, besides the scientists from IISR.



Awareness programme on PPVFRA: inaugural function



Awareness programme: interaction by farmers

A training was organized by Techno Serve India, Mumbai for ten members of *Amalgamated Plantations Private Limited*, Guwahati, through ITMU, IISR, Kozhikode.

हिन्दी अनुभाग

संस्थान में राजभाषा कार्यान्वयन समिति की बैठक दिनांक 03. 01. 2012 को डा. एम. आनन्दराज, निदेशक की अध्यक्षता में संपन्न हुई। बैठक में गत तिमाही में किये गये कार्यों की समीक्षा एवं अगली तिमाही के लिये लक्ष्यों को निर्धारित किया गया। डा. राशिद परवेज़ ने 2 फरवरी 2012 को नराकास की बैठक एवं 3 मार्च 2012 को नराकास द्वारा आयोजित कार्यशाला एवं संयुक्त हिन्दी पक्ष समारोह में भाग लिया। संस्थान के अधिकारियों एवं कर्मचारियों को

हिन्दी के प्रति रुचि पैदा करने के लिये 7 मार्च 2012 को एक हिन्दी कार्यशाला का आयोजन किया। इसमें सुश्री नेहा गोयल, सहायक प्रबन्धक ;राजभाषाद्वए स्टेट बैंक आफ त्रावणकोर ने राजभाषा नियम के संबन्ध में व्याख्यान दिया। राजभाषा कार्यान्वयन सम्बन्धी तिमाही रिपोर्ट तैयार करके भारतीय कृषि अनुसंधान परिषद, नई दिल्ली, नगर राजभाषा कार्यान्वयन समिति, कालिकट तथा उप निदेशक ;कार्यान्वयनद्व, क्षेत्रीय कार्यान्वयन कार्यालय, कोचिन को प्रेषित की गयी।

News from SARANI

Sarani, celebrated the New Year day and arranged farewell function on the occasion of the superannuation of staff members.

Transfer of Technology

PGPR formulation for ginger

The Institute has developed a simple PGPR formulation for enhancing growth, yield and protection against diseases. It can be applied to ginger rhizomes prior to planting and as soil drench. It enhances nutrient mobilization and use efficiency, growth and yield and provide protection against diseases at a negligible cost.



PGPR treated ginger and untreated ginger in field

Microbial Consortium for black pepper

A new microbial formulation for enhancing the rooting and performance of black pepper has been developed at the institute. It can be applied both in nurseries and field as soil drench or along with FYM.



Root system of (a) untreated and (b) treated black pepper

PGPR formulation and seed coating technology for enhanced growth, yield and viability in seed spices

A novel method for delivering PGPR formulation as seed-coat has been developed by AICRPS for coriander, cumin, fennel and fenugreek. Being an ecologically safe technology, it provides enhanced nutrient mobilization, nutrient use efficiency and increased growth, yield and protection against diseases, besides, increased shelf life of seeds. The technology has been successfully demonstrated in farmers' fields located at eight seed spice-growing states through AIRCP (Spices) and they recorded increase in yield to the tune of 10%-30%.



PGPR technology adopted & successfully demonstrated in a farmers' field in Haryana

Micronutrient mix for enhanced growth, yield and quality of cardamom, ginger and turmeric

IISR has developed a novel soil pH-based micronutrient mixture for promoting growth, yield and quality of turmeric, ginger & cardamom. Under proper conditions it can be stored for up to one year/one crop season. It is recommended as foliar spray at the rate of 10 g/L on 60th and 90th day after planting in turmeric and ginger and as foliar spray at the rate of 10 g/L in April/ May and September/October every year in cardamom. Increase of up to 15% yield is expected at a cost-benefit ratio of 1:2.5.



Krishi Jalakam -2012

The Institute organized *Krishi Jalakam 2012* (Kisan Mela), a farmers' meet and showcasing of technologies during 16-18 February 2012 under the auspices of NAIP on "Mobilizing Mass Media Support for sharing agro information" at the main campus. Mr. Sparjan Kumar, IPS, District Police Chief, inaugurated the farmers' meet and Dr. M. Tamil Selven, Director, DASD, Kozhikode inaugurated the exhibition stalls. Twenty organizations including public and private sectors displayed their technologies and products in the exhibition. Over 400 farmers attended the meet and more than 1000 people visited the stalls.



Mr. Sparjan Kumar, IPS, District Police Chief, inaugurating *Krishi Jalakam -2012*
Dr.M Anandaraj, Director, is also seen



A view of the exhibition stall

During the meet three innovative farmers - Shri. Chandrasekhar Azad Pidikitti, IISR Prathibhat-urmeric grower from Andhrapradash; Shri. John Joseph, a dairy farmer from Kodanchery, Shri. George Vazhapparambil, a black pepper farmer from Anakkampoyil and Shri. Prakashan Thatteri- and an entrepreneur who developed a coconut climbing machine, were felicitated for their achievements and

they also shared their farming experiences. High quality planting materials of various spices and other crops were also sold. The meet was presided over by Dr. M. Anandaraj, Director, IISR, Kozhikode. Dr. T John Zachariah, Head, Division of Crop Production welcomed the gathering and Dr. T Arumughanathan, Programme Coordinator, KVK, proposed vote of thanks.

TOT at Appangala

A group of 30 farmers visited Cardamom Research Centre, Appangala as a part of exposure visit organized by ATMA, Taliparamba Block, Kannur district on 09 February 2012. During the occasion, a farmer-scientist interactive session was organized, in which the queries raised by the farmers on various aspects on spices production were answered by the scientists. The group was also taken to Murugarajendra estate, Madapur and had detailed discussion with Sri. Jayaraj, owner of the estate. Dr. Biju participated in the training to service providers for organic certification organized by Department of Horticulture, Somwarapet, Madikeri on 18 February 2012. The talk hovered around the practices that need to be followed for the production of organic black pepper. Around 15 service providers participated in the programme which was also attended by the officials from the department of horticulture.



Farmers visiting CRC, Appangala

Twenty field staff associated with *Pepper Rehabilitation Project for Wayanad* - Sugandhi, lead by Dr. Jabbar, Associate Professor and Dr. Reshmi, Assistant Professor, KVK, Ambalavayal and other officials of KVK visited the centre on 3 February 2012 and a field visit was arranged to three promising cardamom estates viz., Durgadevi estate, Murugarajendra estate and Mr Boppana's estate.



Field staff of Sugandhi project with the Scientists of CRC, Appangala

Technology inputs and Advisory services from ATIC

During the period under report, planting material of improved varieties of spices worth Rs. 54,903, publications and extension literature for Rs. 8,820 and bioagents for Rs. 24,527 were distributed. An amount of Rs. 2,500 was generated through diagnostic services, the total income from the centre being Rs. 90,760. A total of 231 farmers availed advisory services by direct visit to the centre and four hundred and fifty two students in 12 groups visited the institute. Two farmers' touring groups also visited the institute. The Centre participated in four exhibitions and farmers' fares. One on-campus training programme on "Post harvest technology of spices" was organized for the benefit of a private seed company, Jayanthi Seeds, from Coimbatore.

Krishi Vigyan Kendra

Krishi Vigyan Kendra conducted 49 training programmes on various aspects of spices production benefiting 2450 farmers during January-March 2012 and published pamphlets on 'Nutrition garden', 'Anthurium cultivation' and 'Banana Cultivation'. The following FLD programme and OFT trials are in progress:

Front Line Demonstration programme in progress: Demonstration of pheromone trap for control of fruit fly in bitter melon; High density planting of tissue culture banana; Demonstration of HYVs of black pepper with high intrinsic qualities; Bush pepper production technology in pots; Demonstration of serpentine method of rapid multiplication of planting material in black pepper; Integrated Disease Management of *Phytophthora* foot-rot of black

pepper; Composting of poultry carcass; Vermicomposting of poultry manure; Cage culture of Pangasius (Tiger shark) in large fresh water areas; Cage culture of pearl spot (*Etroplus suratensis*) in brackish water area.

On Farm Testing trials: Performance evaluation of mixed cropping of nutmeg variety, *Viswasree* graft in coconut gardens; Integrated nutrient management in cassava based on soil test data for higher yield and cooking quality; Induction of flowering in Olour mango through paclobutrazol application combined with INM and IPM; protected cultivation of vegetables using rain shelter; use of human placenta extract to augment fertility in repeat breeder crossbred cows; effect of probiotic supplementation on growth performance in heifer calves; use of biofilters and probiotics in maintaining water quality of ornamental fish culture tanks and quality analysis of nutmeg product.

IJSC Meeting: 29 March 2012

International Women's Day: 8 March 2012

Publications

Research papers

Ankegowda S J 2011 Impact of irrigation on cardamom production. Indian Journal of Horticulture 68(4): 581-582.

Arumuganathan T, Madhavan K, Mathew A C & Sugada Padmanabhan, 2011 *Lipid Profile of virgin coconut oil by different methods*. Journal of Plantation Crops 39(1): 247-251.

Dinesh R, Anandaraj M, Srinivasan V & Hamza S, 2012 Engineered nanoparticles in the soil and their potential implications to microbial activity. Geoderma (Elsevier) 173-174: 19-27.

Eapen S J, Ramana K V & Saji K V 2011 Host resistance in black pepper (*Piper nigrum* L.) against root-knot and burrowing nematode. Journal of Plantation Crops 39: 341-346.

Jaleel kizhakkayil & Sasikumar B, 2012 Characterization of ginger (*Zingiber officinale* R.) germplasm based on volatile and nonvolatile components. African Journal of Biotechnology 11: 777-786.

Siljo A, Bhat A I, Biju C N & Venugopal M N 2012 Occurrence of *Banana bract mosaic virus* on cardamom. Phytoparasitica. 40: 77-85.

Popular articles

Anandaraj M & Dinesh R, 2012 *Need for sustainable farm practices*. www. Commodity India.com (Spices Special), 12: 12-16.

Ankegowda S J, Venugopal M N, Biju C N & Senthil Kumar R 2012 *Problems and prospects of spice crops production in Kodagu*. Spice India 25(3): 9-15.

Krishnamoorthy B & Rema J 2011 *Economic uses of nutmeg*. Spice India 24(5): 28-29 (English), 22-24 (Tamil) and 24-25 (Hindi).

Manoj P S & Nazia Sherif, 2012 *Nutrition garden*, Karshakan, 20(2): 25-28.

Pervez R & Eapen S J 2011 *Adrak mein sutrkirmiyoon ki samsya avam samadhan*. Spice India (Hindi), 23 (11): 20-22.

Rema J & Krishnamoorthy B, 2011 *Harvesting and post harvest processing of nutmeg*, Spice India 24(5): 4-7 (English); 14-18 (Tamil) and 17-19 (Hindi).

Rema J, Krishnamoorthy B & Mathew P A 2011 *Varieties of nutmeg and their cultural practices*. Spice India 24(5): 12-14 (English); 4-8 (Tamil) and 7-9 (Hindi).

Rema J, Mathew P A & Krishnamoorthy B 2011 *Green chip budding in nutmeg-A technique for production of orthotropic grafts/budded plants* Spice India, 24(11): 18-21.

Saji K V, Sasikumar B, Johnson K George & Krishnamoorthy B 2011 *Genetic resources in spices*. Spice India (M) 25: 6-8.

Book chapters

Parthasarathy V A, Shiva K N & Krishnamoorthy B 2011 *Plant Genetic Resources in improvement of spices in India: An overview*, In: *Recent Advances in Seed Spices*. (Eds.) Ravindrababu Y, Jaiman R K, Patel K D, Patel N R & Tikka S B S, pp 31-41.

Parthasarathy V A, Srinivasan V, Nair R R, John Zachariah T, Kumar A & Prasath D 2012 *Ginger: Botany and Horticulture*, In: *Horticultural Reviews*, (Ed.) Jules Janick Wiley-Blackwell, New Jersey, 39: 273-388.

Santhosh J Eapen, Prasath D & Suseela Bhai R (Eds.) 2012 *Annual Report 2010-11*. Outreach Project on *Phytophthora, Fusarium and Ralstonia*

Diseases of Horticultural and Field Crops, IISR, Kozhikode. 100 pp.

Training Manual

Santhosh J Eapen, Rosana O B, Arun John & Chandrasekar A (Eds.) 2012 *Whole Genome Sequencing and Annotation-Training Manual*, Indian Institute of Spices Research, Kozhikode. 85 pp.

Extension pamphlets

Manoj P S & Nazia Sherif 2012 *Nutrition garden*, KVK, Peruvannamoozhi, Kozikode.

Nazia Sherif & Manoj P S 2012 *Anthurium cultivation*, KVK Peruvannamoozhi, Kozikode.

Nazia Sherif Manoj P S 2012 *Banana Cultivation*, KVK Peruvannamoozhi, Kozikode.

Lectures delivered

**Ankegowda S J
Biju C N**

Spices cultivation, 40th Foundation day of CHES, Chettalli, 1 February 2012.

Bhat A I

Next generation sequencing-an overview, DBT sponsored training programme on 'Whole genome sequencing and annotation', IISR, Kozhikode, 21 February 2012.

Hamza S

Organic cultivation practices for spices, Seminar on homestead water harvesting and organic spices cultivation, CWRDM, Kozhikode, 22 March 2012.

Jacob T K

Insect pests of ginger, turmeric, black pepper and tree spices, Kozhikode Flower Show-2012, 13 February 2012.

Disease and pest management in spice crops, Regional Science Centre and Planetarium, Kozhikode, 22 February 2012.

Insect pest management in spices, Zamorin's Guruvayurappan College, Kozhikode, 25 February 2012.

Jayashree E

Value addition of Spices, KVK, Peruvannamuzhi, 10 January 2012.

Post Harvest Processing of turmeric and ginger, for farmers from Hoisarapur Dt., Punjab, IISR, Kozhikode, 17 January 2012.

Post Harvest Processing and value addition of turmeric and ginger, ATMA sponsored training programme for farmers, KVK, Peruvannamuzhi, 20 January 2012.

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John Zachariah T

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Kandiannan K

Ginger and Turmeric Production and Post Harvest Technology during Training Programme on Ginger and Turmeric Production and Post Harvest Processing, Guwahati, Assam, 19-20 January 2012.

Pervez R

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Santhosh J Eapen

SpicE-Lib for maximizing your impact, Study Circle Meeting, 25 January 2012, IISR, Kozhikode.

Application of Bioinformatics in biological Research, Workshop on Biotechnology, 30 January 2012, Regional Science Centre and Planetarium, Kozhikode.

Sheeja T E

Procedure for registration of farmers' variety, during Farmers Meet & Technology expo *Krishi Jalakam*-2012, IISR, Kozhikode, 16-18 February 2012.

Papers presented in symposia/seminars/workshops /conferences

Quality Planting Material Production of Ginger and Turmeric, pp. 19-22. In: *Formulation of Action Plan on Technological Advances Made in Quality Planting Material Production in Root and Rhizomatous Crops*"-Meeting held at Regional Centre, CTCRI, Bhubaneswar, 9 January 2012 (Anandaraj M & Kandiannan K).

Sustainable growth in spices, Workshop on Research and Extension in spices with focus on sustainability". Bolghatty Palace Hotel, Ernakulam, 20 January 2012 (Sasikumar B, Jayarajan K, Chembakam B & Anandaraj M).

Spices production in relation to climate change with a special emphasis on black pepper in Kerala. pp. 75-90. In: *Climate Change: Plantation Crops and Spices of Kerala*. Kerala State Council for Science, Technology & Environment. 24th Kerala Science Congress", RRII, Kottayam, 29 January 2012 (Kandiannan K, Krishnamurthy K S, Utpala Parthasarathy, Thankamani C K, John Zachariah T & Anandaraj M).

Latest technologies from IISR, Kozhikode. Scientists-Farmers' Interface, SAMETI, Thiruvananthapuram, 8 February 2012 (Sasikumar B).

Innovative Techniques in spices for sustainable land use system. pp. 43-45. In: *National Seminar-Watershed Planning for Natural Resources Management* organized by Kerala State Land Use Board, Thiruvananthapuram, 15 February 2012 (Anandaraj M, John Zachariah T & Kandiannan K).

Recent technologies from IISR, Kozhikode. Farmers' Seminar, IISR, Kozhikode, 16 February 2012 (Sasikumar B).

Genomic approaches for Crop Improvement, Department of Botany, Kozhikode University, Kerala, 16 February 2012 (Johnson K George).

Indian and International Instruments of interest to farming community, DUS Awareness Seminar, IISR, Kozhikode, 17 February 2012 (Sasikumar B).

A new species of entomopathogenic nematode Oscheius gingeri sp. n. from ginger rhizosphere. In: *Abstracts*, 14th Indian Agricultural Scientists and

Farmers Congress, Allahabad, 18-19 February 2012 (Pervez R, Eapen S J, Devasahayam S & Jacob T K, 2011).

Transcriptome sequencing-a case study in Piper, Bioinformatics training programme on Whole Genome Sequencing and Annotation, IISR, Kozhikode, 21-25 February 2012 (Johnson K George).

Organic production of spices. Farmers' Seminar, Regional Science Centre, Kozhikode, 22 February 2012 (Sasikumar B).

Provisions under the Protection of Plant Varieties and Farmers' Right Act (PPV FRA) 2001, ICRI,

Myladumpara, Idukki, Kerala, 9 March 2012 (Johnson K George).

Real time quantitative RT-PCR of osmotin and β -1, 3-glucanase genes in *Piper colubrinum* challenge inoculated with *Phytophthora capsici*, International Conference on Advances in Biological Sciences (ICABS), Kannur University, Kannur, 15-17 March 2012 (Vijesh Kumar I P, Johnson George K & Anandaraj M).

Protection of Plant Varieties and Farmers' Right Act (PPV&FRA) 2001 and its implications Tribal Biodiversity Fair, Kannavam forest Area, Kannur, Kerala, 31 March 2012 (Johnson K George).

PhD awarded

Name	Title of thesis	University	Guide
Mr. Asish G R	Biochemical, molecular and spatial (GIS) variability in <i>Garcinia</i> species with special reference to <i>Garcinia gummigutta</i> (L.) Robsn and <i>Garcinia indica</i> Choisy	Mangalore University	Dr. T. John Zachariah & Dr. Utpala Parthasarathy

PhD Registration

Student	Topic	University	Guide
Ms. Sajitha P K	Population diversity studies in some <i>Curcuma</i> species	Kozhikode University	Sasikumar B
Ms. Sruthi D	Chemoprofiling and antioxidant potential of selected <i>Piper</i> species	Kozhikode University	John Zachariah T
Ms. Reenu Joseph	Exploring the potential of <i>Curcuma caesia</i> as an antitumor agent	Kannur University	Shamina Azeez
Ms. Shimna K	Investigations on teh nutraceutical properties of <i>Cinnamomum verum</i> and <i>Cinnamomum cassia</i>	Kannur University	Shamina Azeez
Ms. Parvathy Viswanath A	Detection of plant based adulterants in selected market samples of spices using DNA barcoding	University of Calicut	Sasikumar B
Ms. Swetha V P	Phylogenetic and commodity authentication studies in <i>Cinnamomom</i> spp. and <i>Myristica</i> spp.	University of Calicut	Sasikumar B

New Appointment

Name	Designation	Date of Joining
Ms. H.D. Praveena	Technical Assistant (T-3)	18.01.2012
Mr. E.S. Sujeesh	JTA (T1)	14.02.2012
Ms. Rejina P. Govind	JTA (T1)	14.02.2012

Promotion

Name	Promoted as	w.e.f
Shri. N. Cholurappa	Technical Assistant (T1)	05.03.2012

Distinguished visitors

Dr. T.P. Rajendran	ADG (Plant Protection), Crop Science Division ICAR, New Delhi	26.01.12
Shri. G. Sparjan Kumar, IPS	District Police Chief, Kozhikode	16.02.12
Dr. S.B. Dandin	Vice Chancellor, UHS, Bagalkot, Karnataka	17.03.12
Dr. Umesh Srivastava	ADG (Hort II), ICAR, KAB II, New Delhi	17.03.12

Superannuation



Name	Designation	w.e.f
Shri. T. Balakrishnan	Skilled Support Staff	31-01-2012
Shri. K.K. Bhaskaran	Skilled Support Staff	31-01-2012
Shri. K. Chandran	JTA (T-1-3)	31-01-2012
Shri. N.K. Raghavan	Skilled Support Staff	29-02-2012
Shri. N. Ravindran	Skilled Support Staff	29-02-2012
Shri. P. Soman	Skilled Support Staff	29-02-2012
Shri. H.Y. Erappa	Skilled Support Staff	31-03.2012

SPICES NEWS

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