

From the Director's Desk

Greetings!

I am glad that the year 2014 has got off to a perfect start. Our dream of conducting field experiments at Chelavoor campus has now been fulfilled with the availability of terraces for making more than 500 beds for cultivating ginger and turmeric. Besides, we now have the leeway to set up exclusive blocks for organic cultivation of spices and for tree spices including cinnamon in Chelavoor. Other infrastructural developments include the setting up of a high speed data centre through PhytoFuRa and a modern hardening facility through our BPD unit. Besides, our new techniques for rapid multiplication of black pepper cuttings using plug trays and through vertical columns have been receiving high fives from the farmers, entrepreneurs, spice experts and the like. On the business front, we are favourably placed with the successful licensing of our varieties and micronutrient formulations. We can consider these achievements as just a good beginning or as the culmination of our painstaking efforts. However, I for one would like to consider this as a modest beginning, a beginning that would make us more conscientious, more focused and one that would provide us the necessary impetus to develop technologies that provide more at lesser cost. We have accumulated lot of information on our crops and this information is in a sense raw data that needs to be properly interpreted and either transformed to rational technologies or published in high impact journals. As Arthur CClarke rightly said, raw data is not knowledge, that knowledge is not wisdom, and that wisdom is not foresight.



Terraces ready for planting at Chelavoor campus

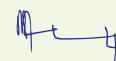


IN THIS ISSUE

Research Update	2
Personalia	4
News and Events	7
Transfer of Technology	9
Krishi Vigyan Kendra	10
Publications	11



Though we have made rapid progress, lots of questions still remain and these questions are certainly worth mulling. I am not being pessimistic here because we all know that pessimism is a luxury, which under most circumstances can dampen our spirits. More importantly, let us also not pretend that we have all the answers and let us also not wait for the answers to reveal itself. Instead let us meet the challenges with utmost resolve with all our resources and keep our faith with ourselves and with one another. Such faith and unity have carried us through many obstacles which at times seemed overwhelming. Let us fight, strive, endure and prove that our collective will-power, knowledge, intellect and vitality are inexhaustible.



(M. Anandaraj)

Research update

Transplanting of ginger saves seed rhizome

A transplanting technique in ginger by using single bud sprouts raised in pro-trays was standardized. The results of replicated trial with different treatments revealed no significant difference for fresh yield between single sprout transplanted and direct planting of 20-25g seed rhizomes. The advantages of this technology are low cost production of healthy planting materials and reduction in seed rhizome quantity.



Ginger plants derived from single bud ready for transplanting



Effective root system of single bud derived plants

PGPR encapsulation boosts ginger yields

Trials on encapsulation and field testing of a plant growth promoting rhizobacteria (IISR GRB35- *Bacillus amyloliquefaciens*) for growth promotion and disease control in ginger indicated that application of GRB 35 cell suspension, 1 capsule 5 kg⁻¹ seed and 2 capsules 5 kg⁻¹ seed registered comparable yields (7.9, 7.6 and 7.8 kg 3m⁻² bed, respectively) and were significantly greater than metalaxyl-mancozeb (4.0 kg 3m⁻²) and absolute control (3.3 kg 3m⁻²). A patent for this encapsulated delivery process has been filed and commercialization is in progress.

Paddy straw and leaf mulch minimizes weed growth and maximize yield in ginger

Field experiment on effect of various weed management practices on growth and yield of ginger revealed that application of paddy straw (6t ha⁻¹) at the time of planting + leaf mulches (7.5t ha⁻¹) at 45 and 90 days after planting produced maximum yield which was on par with application of coconut leaves and coir pith compost.

Black pepper encourages carbon build up in soils

Studies on soil carbon build up under high density cropping system having coconut, banana, nutmeg, cinnamon and black pepper component crops at CPCRI, Kasaragod and the C build up in terms of total organic carbon (TOC) and particulate organic carbon (POC) at the basin of different component crops revealed that the POC and TOC contents were higher under black pepper basin (11.6 g kg⁻¹ and 35.2 g kg⁻¹) followed by nutmeg and coconut. The total organic nitrogen content was also found to be higher under black pepper basin followed by coconut. POC constituted 18-33% of the TOC content.

Actinomycetes for black pepper growth and disease suppression

Four shortlisted Actinomycetes (isolates Act 2, Act 5, Act 6 and Act 9) individually and in consortia were evaluated under green house conditions for growth promotion and disease suppression in black pepper variety Sreekara. The growth was very promising in consortia containing Act 5+9 followed by 2+5 and 2+9 and lateral branches emerged in six months time. *Phytophthora capsici* and *Radhopholus similis* infection was also negligible in these treatments. The potential Actinomycetes belonged to *Kitasatospora setae* (Act 2), *Streptomyces* (Act 5) and *S. tauricus* (Act 9).



2+5

2+9





5+9

Control

Plant growth promotion by actinomycetes consortia

New fungicides for *Phytophthora* control

Two new strobilurin fungicides viz., Ergon 44.3% (w/w) [Kresoxim methyl and RIL-070/FI (72WP)] were evaluated *in vitro* and *in planta* against *Phytophthora capsici* causing foot rot disease of black pepper. Ergon showed complete inhibition of mycelial growth and sporulation at 6000 ppm and zoospore germination at 2000ppm. The average ED₅₀ and ED₉₀ values were 845.51 ppm and 1740.71 ppm respectively. Soil application at different concentrations from 6000-8000 ppm showed no infection or mortality at 7000 ppm. RIL-070/FI showed complete mycelial inhibition at 50 ppm, sporulation at 100 ppm and zoospore germination at 200 ppm. The average ED₅₀ and ED₉₀ values were 29.23 and 54.43 ppm respectively. Foliar spraying of the RIL at concentrations from 100-600 ppm showed 100% reduction in lesion development. Soil application of the chemical at 400 ppm showed 100% reduction in mortality. The *P. capsici* population was also reduced to 77.58%.

Integrated disease management for black pepper anthracnose

Validation of efficacy of fungicides namely, carbendazim + mancozeb (0.1%), carbendazim (0.2%), Bordeaux mixture (1%) and hexaconazole (0.1%), and soil application of *T. harzianum*, singly and in combination against anthracnose showed that spraying carbendazim + mancozeb (0.1%), at 30 days intervals (three sprays) was superior over other treatments in reducing the disease incidence, under field conditions.

Gene expression studies in response to water deficit stress in black pepper

Identification of water deficit stress-induced genes of functional relevance in black pepper was undertaken by

studying expression level of genes viz., dehydrin, osmotin and a regulatory protein, DREB of black pepper using real-time quantitative PCR. All the genes studied showed significantly higher expression in the tolerant genotype under stress, the maximum expression being observed in case of dehydrin. The transcript expression level of dehydrin was much high in the tolerant genotype Acc. 4216 (3571 fold) than in the drought susceptible variety Sreekara (108 fold) when compared to the respective control (well watered) plants.

Influence of temperature on symptom expression of Piper yellow mottle virus in black pepper

Expression of symptoms in black pepper plants infected with Piper yellow mottle virus vary depending on the season, being high during summer months. Controlled environment study revealed increase in virus titer, total proteins, IAA and reduction in total chlorophyll when exposed to temperature stress. There was change in the 2D separated protein before and after exposure to temperature stress. The 2D proteomics-LC MS identified host and viral proteins suggesting virus-host interaction during symptom expression.

Adulteration detection in traded turmeric using DNA barcoding

Cassava adulteration was detected in one out of 5 market samples analyzed by PCR amplification of ITS and rbcL loci of turmeric DNA.

Antagonists to control cardamom pathogens

Under *in vitro* conditions, nine isolates of *Trichoderma* namely, KA-1, KA-3, KA-20 (Karnataka), KL-3, KL-10, KL-13, KL-17, KL-19 (Kerala) and TN-3 (Tamil Nadu) were effective against *Pythium vexans* (21.48-67.77%), *Rhizoctonia solani* (44.44-60.74%) and *Fusarium oxysporum* (49.62-77.40%).

Screening of chemicals to control cardamom pathogens

Among the seven fungicides tested against *P. vexans*, fenamidone + mancozeb (0.2%) and captan + hexaconazole (0.2%) were effective under *in vitro* conditions. Fenamidone + mancozeb (0.2%) and tebuconazole (0.05%) were



effective against *R. solani* whereas, tebuconazole (0.05%) was superior over other fungicides against *F. oxysporum* under laboratory conditions.

Integrated disease management for cardamom leaf blight

Validation of efficacy of fungicides namely, carbendazim + mancozeb (0.1%), carbendazim (0.2%) and hexaconazole (0.1%), and soil application of *T. harzianum*, singly and in combination showed that combined application of hexaconazole (0.1%) (three sprays) and soil application of *T. harzianum* at 30 days interval was promising in reducing leaf blight incidence under field conditions.

Integrated disease management for leaf spot of cardamom nursery plants

Validation of efficacy of fungicides namely, carbendazim + mancozeb (0.1%), carbendazim (0.2%) and Bordeaux mixture (1%), and soil application of *T. harzianum*, singly and in combination showed that spraying carbendazim + mancozeb (0.1%) at 30 day intervals was promising in reducing leaf spot incidence under nursery conditions.

Nutrient advisory cards distributed to farmers

About 17,069 soil samples representing 87 Panchayats have been analyzed for pH, EC, major, secondary and micro-nutrients. Results of all the representative soil samples have been uploaded into www.keralasoilfertility.net. Nutrient advisory cards have been generated through IIITMK, Trivandrum and distributed to farmers by the State Planning Board and Department of Agriculture, Trivandrum

IISR gets an in-house Data Centre

IISR has set up a state-of-art data centre under the aegis of the ICAR Outreach Project on *Phytophthora*, *Fusarium* and *Ralstonia* in order to centralize its IT operations and equipment. A data centre is a dedicated space to house the most critical systems and is vital to the continuity of daily operations. The performance, operational integrity, security and reliability of the data centre are ensured with provisions for temperature and humidity controlled conditions, uninterrupted power supplies and back up, fire and water detection systems and security controls. Apart

from the stand alone webserver, mailserver *etc.*, a High Performance Computing (HPC) facility has also been set up exclusively for the analysis of next generation sequence (NGS) data. PhytoFuRa-HPC is a cluster of three nodes with GPU accelerators and high speed (InfiniBand) connections between nodes. Each node is with 8 processing cores, 48GB of RAM, and Intel Xeon processors. The processing speed of the HPC is 1.4 TF.



Data centre facility

Personalia

Awards/ Honours/ Recognitions

IARI Innovative Farmer Award

Mr. Chandra Sekhar Azad from Vijayawada and Mr. Jone Joseph from Kodencherry, Kozhikode (Nominated by IISR, Kozhikode)

Anandaraj M

Chaired a session in National Conference on 'The Science of Omics for Agricultural Productivity: Future Perspectives', GBPUA &T, Pantnagar, 6 March 2014.

Jayashree E

Distinguished Service Certificate Award 2013 by Indian Society of Agricultural Engineers at the 48th Annual Convention of Indian Society of Agricultural Engineers (ISAE), College of Technology & Engineering, Maharana Pratap University of Agriculture & Technology, Udaipur, Rajasthan, 21-23 February 2014.





John Zachariah T

Chaired session on Spices in the seminar on 'Challenges and Opportunities in plantation sector' organized by WTO Cell of Govt. of Kerala, Plantation Corporation of Kerala, Kottayam, 28 February 2014.

Sasikumar B

Judging Committee Member (Biotech.), XXVIth Kerala Science Congress, Kerala Veterinary & Animal Science University, Pookkodu, Wyanad.

Chaired Farmer's interactive session in KVK Technology Week, Kozhikode, 21-24 January 2014.

Participation in Symposia/ Seminars/ Workshops/ Conferences/ Meetings

All Scientists and technical staff

Workshop on Harnessing IPRs and its Management for Growth and Prosperity, IISR, Kozhikode, 16 January 2014

Training on ISO 9001-2008 Standards, IISR, Kozhikode, 17 February 2014

Technical seminar on Advances in Biosciences, IISR, Kozhikode, 26 February 2014.

National Workshop on Developing Institutional Repositories using DSpace, IISR, Kozhikode, 12 March 2014.

Anandaraj M

IJSC Meeting, Cardamom Research Centre, Appangala, 6 January 2014

Vice Chancellors-Directors Interface Meet, Baramati, 19 January 2014.

ICAR Directors' Conference, Baramati, 20 January 2014.

Visited NRC Grapes, Pune, 21 January 2014.

Executive Committee Meeting of KAU, Thrissur, 25 January, 15 February, 21 February and 29 March 2014.

Executive Committee Meeting of KAU, Thiruvananthapuram, 5 February 2014.

Visit to Pilot Smith to examine the equipments being manufactured for BPD, Thrissur, 13 February 2014.

World Spice Congress Cochin, 17 February 2014.

ISPC Annual General body meeting, CPCRI, Kasaragod, 24 February 2014.

Executive Committee meeting of Indian Phytopathological Society, IARI, New Delhi & Administrative work at Technical Cell, Krishi Bhavan, New Delhi, 5 March 2014.

The Viva Voce examination of Ph.D. student, Mangalore, 10 March 2014.

Visit to CRC, Appangala and CHES, Chettalli, Madikeri to review the progress of work, 24 March 2014.

Anandaraj M Prasath D

National Conference on The Science of Omics for Agricultural Productivity: Future Perspectives, GBPUA & T, Pantnagar, 6 March 2014.

Biju C N

Meeting on Guidelines for developing 'Good Agricultural Practices (GAP) for cardamom', IISR, Kozhikode, 24 January 2014.

Public workshop on Value chains for sustainable conservation, integrated development, and livelihoods promotion: An application to butterfly farming in India, organized by NUPI, Norway, ISEC, Bengaluru, UAS, Bengaluru, ASF, Kodagu, The Chai Kadai Initiative, Bengaluru and Swastha, Kodagu at Swastha, Suntikoppa, Kodagu, 7 March 2014.

Master Training Programme on Black pepper, organized by Spices Board at Cardamom Research Centre, Appangala, 18 March 2014.

Jayarajan K

Meeting on Implementation of Office Automation, DDG's Office, Division of Horticulture, New Delhi, 18 February 2014.

Sensitization Workshop on Internet Protocol Version 6



(IPv6) in DARE/ICAR, NASC Complex, New Delhi, 27 February 2014.

Jayashree E

XLVIIIth Annual Convention of Indian Society of Agricultural Engineers (ISAE) and Symposium on Engineering on Interventions in Conservation Agriculture, College of Technology & Engineering, MPUA & T, Udaipur, Rajasthan, 21-23 February 2014.

Made in Kerala- Conference and Exposition on Opportunities in Value Added Agriculture & Food Processing, Kochi, 29 March 2014.

Jayashree E Santhosh J Eapen Suseela Bhai R

Workshop on Developing IPM Package for Ginger and Turmeric, National Institute of Plant Health Management, Hyderabad, 8 January 2014.

John Zachariah T

Review workshop on NAIP Sub-Project -Mobilizing Mass Media Support for Sharing Agro-Information, IIVR, Varanasi, 24-25 January 2014.

IPC committee on quality organized by International Pepper Committee, Spices Board, Kochi, 15 February 2014.

Seminar on Challenges and Opportunities in plantation sector, organized by WTO Cell of Govt. of Kerala, Plantation Corporation of Kerala, Kottayam, 28 February 2014.

Town Official Language Implementation Committee (TOLIC) meeting, Hotel Malabar Palace, 6 March 2014.

Kandiannan K

Review meeting to finalize the technical programme and action plan of ICAR Seed Project (Horticulture component) XII Five Year Plan, IIHR, Bengaluru (jointly organized by DSR, Mau; CISH, Lucknow and IIHR, Bengaluru), 22 February 2014.

Leela N K

Seminar on Application of NIR in tea quality analysis, Sonnet Hotel, Calcutta, 5 February 2014.

Xth Meeting of National Steering Committee of Projects on Application of Electronics for Agriculture & Environment (eAgriEn), IIT Kharagpur, 6-7 February 2014.

Training on Food safety and quality management systems, IISR, Kozhikode, 18 February 2014.

Praveena R

XXXVth Annual Conference and Symposium on Innovative and Eco-friendly Research Approaches for Plant Disease Management, organized by Department of Plant Pathology, Dr. PDKV, Akola, Maharashtra and Indian Society of Mycology & Plant Pathology, Udaipur, Rajasthan, 8-10 January 2014.

Field demonstration on Cardamom organized by Department of Horticulture, Somwarpet at Tholurusettalli, Shanthalli Hobli, Somwarpet, 22 January 2014.

Master Training Programme on Black pepper, organized by Spices Board, Cardamom Research Centre, Appanaga, 18 March 2014.

Santhosh J Eapen

XXVth Annual Meeting of BTIS Co-ordinators, NIO, Goa, 27-28 February 2014.

XVIIIth Workshop of AICRP on Nematodes, College of Agriculture, Thiruvananthapuram, 4-5 March 2014.

Sasikumar B

Project Development Workshop on National Fund for Basic, Strategic & Frontier Area Research in Agriculture, NAARM, Hyderabad, 24-26 March 2014.

Senthil Kumar C M

SERB school on Chemical Ecology, NCBS, Bengaluru, 17-28 February 2014.

Senthil Kumar R

Interactive meeting on Male Sterility Systems in Horticultural Crops-Present Status and Future Strategies, IIHR, Bengaluru, 24 January 2014.

National Meet on Betel vine - farmers, traders and researchers interface, IIHR, Bengaluru, 22-23 February 2014.





Suseela Bhair R

Workshop on IPM, National Institute of Plant Health Management, Hyderabad, 8 January 2014.

Thankamani C K

Group meeting to develop Good Agricultural Practices (GAP) on cardamom, IISR, Kozhikode, 24 January 2014.

T V Programme

Rajeev P

Training programme on Turmeric, DD Sapthagiri (Telugu Regional channel), 21 January 2014.

Radio talk

John Zachariah T

Medicinal Uses of Spices, Interview in Malayalam, AIR, Kozhikode, 17 February 2014.

Santhosh J Eapen

Biological control, AIR, Kozhikode, 12 March 2014.

Thankamani C K

Weed management in ginger (Malayalam), Interview in Farm and Home programme, AIR, Kozhikode, 30 March 2014.

News and events

Institute Technology Management - Business Planning & Development (ITM-BPD) Unit

ITM-BPD conducted a Business meet for commercialization of IISR technologies “Micronutrient mix” and “Seed coating composition” on 15 January, 2014 at IISR premises, Chelavoor. This event provided a common platform for interactions with the inventors, entrepreneurs and tech-transfer experts for striking successful business partnerships and commercialization of our technologies. 14 entrepreneurs from many Chemicals and Fertilizers industries, start ups from Hyderabad, Coimbatore, Bangalore, Cochin, Idukki, Thrissur, Kannur and Kozhikode

participated in the meeting.



Business Meet with technology partner, Mr. N. G. Lakshminarayan, NRDC and 14 entrepreneurs

Organized a one day workshop on “Harnessing Intellectual Property Rights (IPR) & its Management for Growth and Prosperity” in collaboration with National Research Development Corporation (NRDC), on 16 January, 2014 at IISR campus in Chelavoor.

Dr. V. S. Ramachandran, Director of Regional Science Centre and Planetarium, Kozhikode inaugurated the workshop. He stressed the need for safe guarding intellectual property rights, especially in the area of scientific research, for growth and prosperity. The workshop was organized in collaboration with National Research Development Corporation (NRDC), New Delhi. Around 100 participants from research organizations, educational institutes and developmental agencies participated. Director, Dr. M. Anandaraj presided over the function. Lectures on Indian Patent System, Overview of IPR Spectrum in India, Geographical Indications and Protection of Plant Varieties and Farmers’ Rights in context of Spices Research were also arranged.



A view of inaugural function of IPR workshop



Trials on Seed coating technology were conducted in 15 different vegetables in collaboration with Kerala Agricultural University, Anakkayam to explore the potential in other horticultural crops.



Vegetables grown in bags using seed coating technology

ITM-BPD unit has commercialized 5 technologies: ginger variety, IISR Varada to Mr. Abdul Latheef, 2 technologies of Micronutrient mix for ginger (pH above 7 and pH below 7) to M/s. Hi-7 Agri Bio Solutions, Bengaluru and technologies of Micronutrient mix for ginger (pH above 7) and Micronutrient mix for turmeric (pH above 7) to M/s. Natura Nursery and Agro Products, Meppayur.

A one day training programme on “ISO 9001-2008: Quality Management Systems” by a consultant, Mr. K. B. Venkateshwara, Grow Up Inc. was conducted to create awareness in quality management necessary for processing unit at IISR farm.

Interactive Meeting on Advances in Biosciences

Technical meeting on “Advances in Biosciences” was held on 26 February 2014. Three guest speakers, Dr. S.K. Mukherjee from Delhi University, Dr. E.K. Radhakrishnan from MG University and Dr. A. Augustin, former Professor from KAU, delivered lectures on recent advancements in their respective areas.

National Science Day Celebration

National Science day was celebrated on 28 February 2014 under the chairmanship of Dr. M Anandaraj, Director. The chief guest Dr. Yateendra Joshi delivered a talk on “How to avoid common errors in English”. He also distributed prizes for the winners in essay writing & quiz competitions conducted by IISR for school children as a part of National Science day celebrations.



A view of National Science Day celebrations

NAIP Workshop on Institutional Repositories

A two day workshop on ‘Developing Institutional Repositories using DSpace’ was organized at IISR from 12-13 March 2014 as part of the e-Granth project. Dr. A K Jain, National Coordinator, e-Granth Project, IARI, New Delhi inaugurated the workshop. Dr. K. Mohammed Haneefa, Assistant Professor, Department of Library and Information Science, University of Calicut; Dr. M.G. Sreekumar, Adjunct Professor, Indian Institute of Management, Kozhikode and Dr. Santhosh J. Eapen, Principal Scientist, IISR handled various sessions. The workshop was attended by 20 selected experts in the field of library and information science from various ICAR institutes and universities.

DBT training on NGS Data Analysis & Annotation

A short-term training on “Next Generation Sequencing: Data Analysis & Annotation” was organized by the Bioinformatics Centre from 17-20 March 2014. Fifteen short-listed candidates from eight states participated in this training program. The program was inaugurated by





Dr. Sailas Benjamin, Director of Research, Calicut University. Apart from resource persons from IISR, Mr. R. Anantharamanan, Scientist, RRII, Kottayam and Dr. Uday Deshpande, CLC Bio, Vishakapatnam spoke on the occasion.



Dr. Sailas Benjamin addressing the trainees

Institute Joint Council Meeting

The first meeting of IXth IJSC was held at IISR, Kozhikode on 4 October 2013 while the second meeting was held on 6 January 2014 at Cardamom Research Centre, Ap-pangala under the Chairmanship of Dr M. Anandaraj, Director, IISR.

Consultancy Processing Cell

Consultancy Processing Cell generated Rs. 70,771 through GC-MS analysis of essential oils by Dr N.K. Leela.

Dr K. Kandiannan and Dr S.J. Anke Gowda made Consultancy visit to Merryland Estate, Kunnalady, The Nilgiris District in Tamil Nadu for 'Black pepper and Cardamom yield improvement' on 11 March 2014.

हिन्दी अनुभाग

राजभाषा शील्ड 2013 पुरस्कार

संस्थान को वर्ष 2012-13 के लिये राजभाषा कार्यान्वयन हेतु नगर राजभाषा कार्यान्वयन समिति, कोषिककोड द्वारा राजभाषा शील्ड 2013

पुरस्कार से सम्मानित किया गया। यह पुरस्कार दिनांक 06 मार्च 2014 को नगर राजभाषा कार्यान्वयन समिति की अर्धवार्षिक बैठक एवं पुरस्कार वितरण समारोह में डा. टी. जोण ज़करिया, प्रभागध्यक्ष, फसल उत्पादन एवं फसलोत्तर प्रौद्योगिकी प्रभाग तथा डा. राशिद परवेज़, वरिष्ठ वैज्ञानिक एवं हिन्दी अधिकारी ने ग्रहण किया।

संस्थान में दिनांक 9 जनवरी 2014 को हिन्दी कार्यशाला आयोजित की गयी। प्रस्तुत कार्यशाला में श्रीमती टी. रजिता, कनिष्ठ हिन्दी अनुवादक, महाप्रबन्धक दूरसंचार कार्यालय ने हिन्दी टिप्पणी एवं मसौदा लेखन विषय पर व्याख्यान दिया। दिनांक 3 मार्च 2014 को राजभाषा कार्यान्वयन समिति की बैठक डा. एम. आनन्दराज, निदेशक की अध्यक्षता में संपन्न हुई। प्रस्तुत तिमाही में मसाला समाचार (अंक 24 खंड 4) तथा वार्षिक प्रतिवेदन (2012-13) को प्रकाशित किया। दिनांक 27 जनवरी तथा 6 मार्च 2014 को नगर राजभाषा कार्यान्वयन समिति की उपसमिति तथा अर्धवार्षिक बैठक में डा. राशिद परवेज़ एवं सुश्री. एन. प्रसन्नकुमारी ने भाग लिया।

Distinguished visitors

Dr T.R. Gopala Krishnan, Director of Research, KAU, Thrissur 7 March 2014

Transfer of Technology

Technology inputs and Advisory services from ATIC

Two hundred and ninety six farmers availed advisory services through direct visit to ATIC. 164 students visited the institute on study tour. Planting material for Rs. 89,949 was sold from the centre. The revenue generated from diagnostic services was Rs. 28,700.

Outreach programmes

Institute participated in the National Agricultural Fair organized by the Ministry of Agriculture and Cooperation, Krishi Vasant 2014 at Nagpur during 9-13 January 2014 and South Indian Agricultural Fair organized at KAU during 1-6 March 2014. Institute also participated in National Science Expo in connection with 27th Kerala Science Congress at Kalpetta, Wayanad during 28-31 January 2014. A farmer's field school sponsored by Krishi Bhavan, Puduppadi was organized on 20 February 2014. The centre also participated in the regional Spices Seminar organized by the Spices Board on 10 March 2014.



Crop cutting survey and harvest festival was organized in connection with the harvest of IISR Prathiba turmeric in the 4 FLD plots under NHM in Guntur district, AP. A two day training programme was also organized at the same time (20-21 January 2014) in which 68 farmers from various districts of AP participated. The programme was covered by the DD Sapthagiri, Regional Telugu channel of Doordarshan and was telecasted state-wide.



NHM plot harvest at Guntur



Farmers listening to a lecture at Guntur training programme

Training of extension functionaries

Five days training programme on Production Management and Post Harvest Technology in Major Spices sponsored by the Department of Agriculture, Assam was organized during 13-17 January 2014 in which 15 Officers participated.

Farmer's training programme on 'Planting material pro-

duction in black pepper' at Cheeral, was organized by MSSRE, Puthoorvayal, Wayanad on 30 January 2014.

Krishi Vigyan Kendra

Front Line Demonstration

The following FLDs were organized during the period

- Demonstration of shade tolerant HYVs of black pepper
- Popularization of pepper production through Bush pepper production technology
- Introduction of high yielding short duration upland rice variety Vaisakh
- Integrated disease management of *Phytophthora* foot rot of black pepper
- Popularization of bucket biofilter in maintaining water quality of ornamental fish culture tanks
- Popularization of grass carp for controlling submerged aquatic weeds
- High density planting of tissue culture nendran banana
- Demonstration of Gramasree layer chicks
- Introduction of a high yielding variety of amaranthus variety Renusree
- Value added product of spices and coconut inflorescence with branding and marketing
- Formulation of homemade rations for livestock and fishery

On Farm Testing

OFTs conducted during the period are as follows

- Assessing the performance of Arka Kalyan and Agrifound Dark Red onion under Kozhikode condition
- Assessing the performance of yard long bean varieties Lola, Vellayani Jyothika and Arka Mangala in Kozhikode district





- c) Performance evaluation of sandless nursery mixture for black pepper serpentine nursery
- d) Pest and disease management of bitter gourd under organic cultivation
- e) Management of Phytophthora foot rot of black pepper (continuing)
- f) Evaluating the growth performance of fishes using different feeds

Trainings

Thirty training programmes were conducted and 1442 farmers participated during this period

Seminar/Workshop

The KVK organized National workshop on Meliponiculture at KVK during 20 - 21 March 2014 under the financial assistance of National Bee Board, New Delhi. 178 farmers participated in the programme.



Inauguration of the workshop on Meliponiculture



Huge farmers turn out for the Meliponiculture workshop

Publications

Research papers

Dinesh R, Srinivasan V, Hamza S & Anandaraj M 2014 Massive phosphorus accumulation in soils: Kerala's continuing conundrum. *Current Science*, 106: 343-344.

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Rema J, Krishnamoorthy B, John Zachariah T & Mathew P A 2013 A9/71(IC-537220); INGR10142, A nutmeg (*Myristica fragrans*) germplasm with high sabinene. *Indian Journal of Arecanut, Spices & Medicinal Plants*, 15(4): 12-13

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Jhansirani P, Kandiannan K, Senthil Kumar C M, Subramanian C, Chitra R, Saravana Kumar T, Kumar N & Mariappan C 2013 Black pepper nursery techniques (Tamil), TNAU, Coimbatore, 12p.

Training manual

Santhosh J Eapen 2014 Next Generation Sequencing: Data Analysis and Annotation, DBT funded short-term training, IISR, Kozhikode, 17-20 March 2014, 52pp.

Technical/ popular articles

Anandaraj M, Dinesh R, Srinivasan V & John Zachariah T 2014 Environmental challenges in spice cultivation and mitigation measures. *Spices Handbook, CommodityIndia.com*, 13-15.

Anandaraj M, Dinesh R, Srinivasan V & John Zachariah T 2014 Processing and value addition in spices and machinery. *Spices Handbook, CommodityIndia.com*, 32-41.

Sasikumar B 2014 Adulterants in traded spices. *Kerala Karshakan (Malayalam)*, 59(7): 44-45.

Papers presented in symposia/ seminars/ workshops /conferences

Anandaraj M, Prasath D & Johnson K George 2014. Transcriptome sequencing for understanding plant-pathogen interaction in Spices. In: National conference on 'Science of omics for agricultural productivity: future perspectives', 4-6 March 2014, G.B. Pant University of Agriculture & Technology, Pantnagar, Uttarakhand .

John Zachariah T & Jayashree E 2013. Technological advancements in value addition and product diversification of spices. In: Proceedings of National seminar on 'value addition and product diversification in agriculture & food processin- Status and Strategies', Published by Kerala Bureau of Industrial Promotion and Kerala Agricultural university, pp.21-30 .

Praveena R, Biju C N & Sujatha, A M 2014 Geo-spatial diversity and ecological dynamics of rhizome and root - rot pathogens in small cardamom. XXXVth Annual Conference and Symposium on 'Innovative and Eco-friendly Research Approaches for Plant Disease Management' organized by Dr. PDKV, Akola, Maharashtra and Indian Society of Mycology & Plant Pathology, Udaipur, Rajasthan, 8-10 January 2014.

Lectures delivered

Bhat A I

Next generation sequencing: an overview and chemistry. Training programme on 'Next Generation Sequencing: Data Analysis & Annotation', IISR, Kozhikode, 17 March 2014.





Biju C N

Cultivation aspects of black pepper, Interstate farmers visit from Keezhur-Chavassery Krishi Bhavan, Iritty block organized by ATMA, Kannur at Cardamom Research Centre, Appangala, 30 January 2014 (26 farmers).

Disease management in black pepper, Master Training Programme on Black pepper, organized by Spices Board at Cardamom Research Centre, Appangala, 18 March 2014 (22 trainees).

Jayashree E

Post harvest technology and value addition in spices, Five days Training Programme on 'Production Management and Post Harvest Technology of Major Spices' for staff of Department of Agriculture, Assam, at IISR, Kozhikode organized by IISR, 16 January 2014.

Post harvest processing and value addition in black pepper, ginger, turmeric, nutmeg, cinnamon and garcinia, NHM programme, KVK, Peruvannamuzhi, 22 January 2014.

Post harvest processing and value addition in black pepper, ginger, turmeric, nutmeg, cinnamon and garcinia, NHM programme, Thamarassery, Kozhikode, 19 February 2014.

Kandiannan K

Handled class on Planting material production of black pepper, ginger and turmeric, two days District level farmers training on 'Scientific Production and Processing of Spices' (Sponsored by National Horticultural Mission), Harithavidya, Thamarassery, organized by IISR KVK, Peruvannamuzhi, 18 February 2014.

Production technologies in ginger and turmeric, two days District Level farmers Seminar on 'Recent trends in Production Technology of Turmeric, Ginger, Coriander, Curry leaves and Mint', organized by Department of Spices & Plantation Crops, TNAU, Coimbatore, 27 January 2014.

Handled class on Production management of ginger and turmeric, Five days Training Programme on 'Production Management and Post Harvest Technology of Major Spices' for staff of Department of Agriculture,

Assam, at IISR, Kozhikode organized by IISR, 13 January 2014.

Prasath D

Turmeric and ginger – Crop Improvement and varieties, Five days Training Programme on 'Production Management and Post Harvest Technology of Major Spices' for staff of Department of Agriculture, Assam, at IISR, Kozhikode organized by IISR, 13 January 2014.

Turmeric varieties and research highlights, NHM Sponsored training programme on 'Production Management of Turmeric', Vijayawada, 21 January 2014.

Praveena R

Cardamom Production Technology, Field demonstration on cardamom organized by Department of Horticulture, Somwarpet at Tholurusettalli, Shanthalli Hobli, Somwarpet, 22 January 2014 (50 farmers).

Pest and Disease Management of Black pepper, Interstate farmers visit from Keezhur-Chavassery Krishi Bhavan, Iritty block, organized by ATMA, Kannur at Cardamom Research Centre, Appangala, 30 January 2014 (26 farmers).

Cultivation Practices of Black pepper, Exposure visit of farmers from Mangalore organized by Department of Horticulture, Mangalore at Cardamom Research Centre, Appangala, 7 March 2014 (55 farmers).

Pest management in black pepper, Master Training Programme on Black pepper, organized by Spices Board at Cardamom Research Centre, Appangala, 18 March 2014 (22 trainees).

Rajeev P

Market lead extension and trade in spices, State Agmark Grading Lab, Kozhikode, 17 January 2014.

Inter cropping in coconut, ATMA Farmers Field School, Puduppadi Krishi Bhavan, 20 February 2014.

Production Management in Black pepper, Regional Seminar on 'Spices', Spices Board, Kalpetta, 10 March 2014.



Santhosh J Eapen

Nematode problems in spices, Five days Training Programme on 'Production Management and Post Harvest Technology of Major Spices' for staff of Department of Agriculture, Assam, at IISR, Kozhikode organized by IISR, 16 January 2014.

Copyrights, impact and security issues of institutional repositories, NAIP workshop on 'Developing Institutional Repositories Using DSpace', IISR, Kozhikode, 13 March 2014.

Anti-Microbial Peptides: Small but versatile biologicals, Study Circle Meeting, IISR, Kozhikode, 26 March 2014.

Senthil Kumar C M

Pest management in ginger and turmeric, District Level Seminar on 'Advances in Production Technology of Turmeric, Ginger, Curry leaf, Coriander and Mint', HC & RI, TNAU, Coimbatore, 27 January 2014.

Disease management in ginger and turmeric, District Level Seminar on 'Advances in Production Technology of Turmeric, Ginger, Curry leaf, Coriander and Mint', HC & RI, TNAU, Coimbatore, 27 January 2014.

Insect pest management in ginger and turmeric, Five days Training Programme on 'Production Management and Post Harvest Technology of Major Spices' for staff of Department of Agriculture, Assam, at IISR, Kozhikode organized by IISR 15 January 2014.

Senthil Kumar R

DUS testing in Spices, KVK, Gonikoppal, 5 February

2014.

Varieties of Black pepper, CRC, Appangala, 18 March 2014.

Suseela Bhai R

Training programme on production management and post harvest technology of major spices. Five days Training Programme on 'Production Management and Post Harvest Technology of Major Spices' for staff of Department of Agriculture, Assam, at IISR, Kozhikode organized by IISR, 13-17 January 2014.

Training programme on Spices organized by DASD, Kozhikode, Naduvannur, 24 January 2014.

Farmers Training programme, Cheeral, Sultan Bathery, 30 January 2014.

Thankamani C K

Participated in crop cutting survey, Harvest festival of Prathiba turmeric, Vijayawada, 20 January 2014.

Advanced production technologies in turmeric, Farmers seminar 'Training on production management and processing in turmeric', Hotel Swarna Palace, Vijayawada, (NHM Sponsored), 21 January 2014.

Planting material production in Black pepper, Farmers training programme, Cheeral, Wayanad, organized by MSSRF, Wayanad, 30 January 2014.

New propagation techniques in black pepper, ginger and turmeric, Planetarium, Kozhikode organized by DASD, Kozhikode, 6 March 2014.

M Sc Dissertations

Title	Student	Guide
Isolation, biochemical and molecular characterization of associated bacteria from entomopathogenic nematode	Mr. N. Anoop	Dr. Rashid Pervez

New Appointment

Name	Post	Date of joining
Ms. Amrutha Ashokan O	Bioinformatics Trainee	04-02-2014
Ms. Manjula M.S.	Bioinformatics Trainee	04-02-2014
Ms. Sunitha V	Office Assistant, ITM-BPD Unit	20-02-2014
Ms. Divya C.N.	Assistant	17-02-2014





Promotion

Name	Promoted as	Effective Date
Dr. P. Rajeev	Principal Scientist	01-01-2011
Dr. V. Srinivasan	Principal Scientist	30-05-2012
Dr. R. Senthil Kumar	Principal Scientist	28-08-2012
Mr. E.V. Ravindran	Senior Technical Assistant	05-09-2012

Transfer

Name	Post	Transferred to
Mr. Manjeet Singh	Assistant	NIASM, Baramati, Pune (relieved on 06-02-14)

Retirement



Dr. B. Chempakam
Principal Scientist (Date :28-02-2014)

Resignation

Name	Post	Date
Ms Ansha O.	SRF	31-01-2014

Farewell

Name	Designation	Effective Date
Mr Akhilesh V.S.	SRF	31-03-2014
Dr Bini Y.K.	SRF	31-03-2014
Ms Jincy R.	SRF	31-03-2014
Ms Parvathy V. A.	SRF	31-03-2014
Mr Riyas K.P.	RA	31-03-2014
Ms Subila K.P.	SRF	31-03-2014
Ms Swetha V.P.	SRF	31-03-2014
Ms Ummu Habeeba P.P.	SRF	31-03-2014





SPICES NEWS

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