

From the Director's Desk



Shri. Sharad Pawar, Hon'ble Union Minister for Agriculture & Food Processing, GOI, addressing Scientists and farmers during his visit to CRC, Appangala.

February 2013 saw the confluence of all Directors and Head of Divisions of Horticulture Division, at ICAR, New Delhi under the Chairmanship of the Director General and Secretary (DARE), Government of India, Dr S. Ayyappan. The objective of the meeting was to prioritize research projects under the ambit of the Council in the XII plan. This indeed was a bold step given the fact that many research projects are mere reinventions or just business- as- usual projects under different guises.

At the institute level, the PME cell has been prioritizing our research in the IRC meetings and what we now have is a critical mass of research projects. Though it is a dicey situation, we have been looking at what will be the most beneficial for the short- and long-term. The aim is to develop game changing technologies and simultaneously create opportunities and open up potential futures.

Though research prioritization is complicated and a major challenge, it should take into account the emerging threats and extreme events that are bound to occur in the near future. Among these, Climate Change will profoundly affect agriculture worldwide. Food security in many countries is under threat from unpredictable changes in rainfall and weather. According to FAO, producing 70 percent more food for an additional 2.3 billion people by 2050 while at the same time combating poverty and hunger, using scarce natural resources more efficiently and adapting to climate change are the main challenges world agriculture will face in the coming decades. Professor Ramesh Chand, Director, National Centre for Agricultural Economics and Policy Research (NCAP) while addressing the Directors of ICAR Institutes mentioned that in order to meet the growing population demand and considering the demographic and economic scenario, 4-fold increase in productivity of land, 3-fold increase in productivity of water, 6-fold increase in productivity of labour and 2-fold increase in energy efficiency would be imperative. All this notwithstanding, India will surpass China as most populous country by 2030 and our population size is expected to stabilize at 1.8 billion at 2041. The total grain demand will increase from 201 Mmt in 2000 to about 291 and 377 Mmt by 2025 and 2050, respectively. To say the least, we are in for a dire situation, probably requiring a long haul.

Since climate change is predicted to reduce yields in many regions by 5% to 25%, what we need to feed this ever-burgeoning population is "CLIMATE SMART" agriculture. By climate smart, FAO mean agriculture that sustainably increases productivity and resilience to environmental pressures, while at the same time reduces GHG emissions or removes them from the atmosphere.

The Hon'be Union Minister for Agriculture and Food Processing Dr. Sharad Pawar visited Cardamom Research Centre, Appangala on 28 March 2013, interacted with scientists and farmers' representatives. The Minister assured to create infrastructural facilities for training farmers.

(M Anandaraj)

Inside

- 2 Research update
- 4 Personalia
- 6 News and Events
- 7 Transfer of Technology
- 9 Publications

Research Update

Detection of Banana bract mosaic virus infecting cardamom by RT-LAMP (reverse transcription loop mediated isothermal amplification)

A quick detection assay based on reverse transcription loop mediated isothermal amplification (RT-LAMP) was developed for detecting *Banana bract mosaic virus* (BBrMV) (a ssRNA virus) infecting cardamom. The RT-LAMP assay used a set of five primers designed against conserved sequences located in the viral coat protein gene. Total RNA isolated from cardamom was used as template for the assay. The results of RT-LAMP reaction was assessed visually by checking turbidity and green fluorescence in the reaction tube and also by gel electrophoresis. The assay successfully detected the virus in infected plants while no cross-reactions seen with healthy plants. The optimized RT-LAMP was validated by testing field samples of cardamom collected from different regions. RT-LAMP is a rapid, sensitive, low cost diagnostic method that can be used to identify virus-free plants of cardamom.

Analysis of differentially expressed genes in *Curcuma amada* and *Zingiber officinale* upon infection with *Ralstonia solanacearum* by suppression subtractive hybridization

Bacterial wilt, one of the major diseases in ginger is caused by *Ralstonia solanacearum* and lack of resistant genotype adds constraints to the crop improvement programmes and for the management of bacterial wilt. *Curcuma amada* is a potential donor for bacterial wilt resistance to *Zingiber officinale*, if the exact mechanism of resistance is understood. In this study, a PCR-based suppression subtractive hybridization (SSH) was used to identify *C. amada* genes that are differentially and early expressed in response to the *R. solanacearum* infection compared to *Z. officinale*. A forward subtracted library of differentially expressed genes was synthesized by cloning DNA fragments (300–1,200 bp) from subtracted sample and sequenced. Upon computational analysis of the 150 SSH clones sequenced, 137 produced suitable sequences and 15 had no identity with sequences in the databases. The other 119 SSH clones showed high homology with the genes whose function was known and they were classified into three potential functional categories: proteins involved in biological processes (31%), cellular component (43%) and molecular

function (26%). Among these differentially expressed genes, sequences coding for putative proteins related to defense response (high homology between 85% and 100% identity) were, cell wall associated hydrolase, xyloglucan transglycosylase (XTG), cytochrome P 450, metallocarboxypeptidase inhibitor, peroxiredoxin, nitrilase associated protein, leucine rich protein (LRR) and glutathione -S-transferase (GST). Some transcripts were discriminative: expression of LRR and GST was much higher in resistant species (*C. amada*) than in susceptible species (*Z. officinale*) at every time point, whereas expression of XTG gene was higher in susceptible species. The isolated ESTs reported here contribute to improve our understanding about this plant–pathogen interaction.

DNA Barcoding to discriminate traded spices from their adulterants

Standardized eight barcoding loci (*mat K*, *rbcL*, *trnH-psbA*, *ITS*, *atpH-atpF*, *psbK-psbI*, *rpob*, *rpoC1*) for *Curcuma* species (*C. longa*, *C. xanthorrhiza*, *C. zedoaria*), *Piper* species (*P. nigrum*, *P. attenuatum*, *P. galeatum*), chilli (*Capsicum annum*) and *Cinnamon* species (*C. verum*, *C. cassia*, *C. malabatum*) and four barcoding loci (*mat K*, *rbcL*, *trnH-psbA*, *ITS*) were selected based on their discriminatory power.

In the black pepper group comprising five accessions each of *P. nigrum*, *P. attenuatum*, *P. galeatum*; four different varieties of papaya and five branded market samples, the selected four barcoding loci were amplified and the products were gel purified and sequenced bidirectionally. The sequences were aligned using Clustal W, trimmed by Bioedit software and analysed using MEGA 5. Single Nucleotide Polymorphisms (SNPs) were found to be higher in *trnH-psbA* locus and the locus was found to be the best for adulteration detection.

Detection of adulterants in pepper market sample was done using *trnH-psbA* locus. Out of five branded pepper market samples, in one of the samples an adulterant specific band (~600bp) could be observed. Sequence analysis (NCBI Blast) has revealed that this band has high similarity with capsicum.

Further validation of the locus was done by checking with simulated samples of chilli: pepper in the ratio 1:10, 1:25, 1:50, 1:100, 1:200. In all the simulated samples the adulterant specific band (~600bp) was amplified.

New species of Entomopathogenic nematode

A new species of entomopathogenic nematode, isolated from ginger rhizosphere of the IISR Experimental Farm, Peruvannamuzhi, was identified as *Oscheius gingeri* based on morphological and molecular characterization.

Micronutrient formulations for high yield

Micronutrient formulations, IISR PowerMix-T for turmeric and IISR PowerMix-G for ginger were tested in farmers' plots in Kozhikode and Wayanad and in FLD plots of KVK. Yield increase ranged between 16-30% in ginger and 18-25% in turmeric.

Germplasm enrichment

Collected 189 cultivars of black pepper, 3 wild Piper species from Kerala, Karnataka and Tamil Nadu and five drought tolerant cardamom cultivars from Sultania region in Megamalai area.

Diversity of rhizome- root rot pathogens and their antagonists in cardamom

Rhizoctonia solani, *Pythium vexans* and *Fusarium* spp. namely, *F. oxysporum*, *F. solani*, *F. pallidoroseum* and *F. verticillioides* were found to be associated with rhizome rot disease of cardamom. Forty five isolates of *Trichoderma* have been characterized based on morphological characters. *In vitro* screening of respective *Trichoderma* spp. against the most virulent root rot pathogen, *Fusarium oxysporum* isolates from Kerala, Karnataka and Tamil Nadu led to the identification of WYD T 6, RT 7 B and RT 2 A, respectively as the most effective isolates. Protocols for DNA isolation of *F. oxysporum* and *Trichoderma* have been standardized.

Bacterial antagonists

One hundred and fifty isolates of *Actinomyces*, were isolated from 120 samples collected from different black pepper growing tracts of Kerala and Karnataka. The isolates varied in their colony as well as spore morphology, pigmentation in media, growth etc. More than 50% of the isolates showed antagonism *in vitro* against *Phytophthora capsici* and *Colletotrichum gloeosporioides* infecting black pepper.

Adoption of IISR Prathibha turmeric

Survey conducted in Guntur district of Andhra Pradesh, a traditional turmeric belt, has revealed that under the initiative of Mr. Chandrasekhar Azad, a progressive farmer, who maintains a garden with IISR Prathibha variety since 2006, about 500 ha has been covered by this variety through lateral spread

and farmer to farmer exchange of seeds. Compared to Traditional varieties like *Dugiralla*, *Thekurpet* and *Kadappa*, IISR *Prathibha* has registered a consistently higher yield of 25-30t/ha. The survey also reported higher dry recovery and relative tolerance to rhizome rot.

Spread of IISR Vishwasree Nutmeg

Survey carried out in Pollachi Taluk of Coimbatore district and Udumalpet taluk of Tirupur district in Tamil Nadu showed that the nutmeg variety IISR *Viswasree* has been introduced as an intercrop in coconut gardens, the buds of established trees being widely used for vegetative propagation in Pollachi region of Tamil Nadu. Popularisation of the variety started since 2000 and the present standing crop is in full bearing stage of around 12 years. The reported average yield under proper shade, canopy management and assured irrigation is 1500 nuts. The various cropping systems identified are Coconut + Nutmeg, Coconut + Nutmeg + Arecanut, Coconut + Arecanut + Banana + Nutmeg and Coconut + Cocoa + Nutmeg.

Observations on interspecific hybrids between leafy and leaf less *Vanilla* species

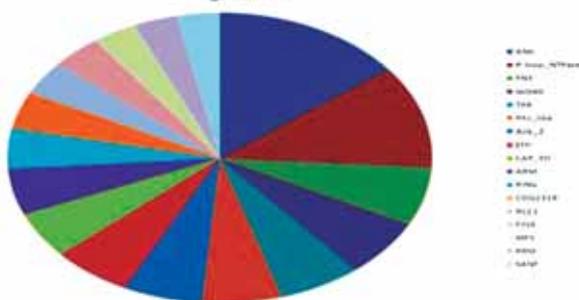
Interspecific hybrids between *Vanilla* sp. (A&N Islands-White) with wide leaves and *V. aphylla* without leaves showed leaf less nature of hybrid progenies in the juvenile stage. However, these developed leaves after 1-2 years of growth in the nursery. These leaves also showed variation in size and more similarity in shape to the leaves of *V. ptilifera*. A few progenies flowered during 2011-2013. The flowers were smaller than that of *Vanilla* sp. (A&N) and slightly bigger than that of *V. aphylla*. In general the flower architecture was similar to that of *V. aphylla*, but, the frill of labellum was similar to that of *Vanilla* sp. (A&N). These hybrids showed 100% pollen sterility and failed to set fruits on self pollination. However, pollination with *V. aphylla* pollen in these hybrids resulted in fruit set. Further investigations are in progress.

Hybrid seedlings between *V. planifolia* and *V. aphylla* showed the presence of well developed leaves right from the *in vitro* seedling stage and no hybrids without leaves were observed. These hybrids are at their second year of *ex vitro* establishment and have normal growth. The results indicate that in general leafy nature is dominant in vanilla.

Next Generation Sequencing of *Phytophthora capsici*

Useful information from the Statistics of functional annotation, conserved domain identification and comparative genome analysis of two different isolates of *Phytophthora* sp. infecting black pepper has been extracted.

Conserved Domain super-families which repeats more than 500 times in *Phytophthora capsici* genome



Docking studies in phenylpropanoids from black pepper

Docking studies for identifying inhibitory activity of phenylpropanoids from black pepper (*Piper nigrum* L.) and their mechanism of phytochemical-mediated plant defense against the burrowing nematode (*Radopholus similis*) was carried out using β -1, 4, *endoglucanase*, calreticulin 1, xylanase, transthyretin-like protein 3 precursor, cathepsin B, cytochrome C oxidase subunit III, cathepsin S-like cysteine proteinase and glutathione-S-transferase.

Personalia

Awards/ Honours/ Recognitions

TOP 25 Certificate by Elsevier Science (Science Direct)

Engineered nanoparticles in the soil and their potential implications to microbial activity (2012) *Geoderma* (Elsevier) 173-174: 19-27, authored by **Dinesh R, Anandaraj M, Srinivasan V & Hamza S** was adjudged as 9th among the TOP 25 downloads of GEODERMA during January-December 2012.

Best Research Paper Presentation

Mass production of entomopathogenic nematodes in different artificial media authored by **Pervez R, Eapen S J, Devasahayam S & Jacob T K** in XVth Indian Agricultural Scientists and Farmers Congress, Allahabad during 22-24 February 2013.

Conservation and enhancement of genetic variability of vanilla (Vanilla planifolia Andrews) at Indian Institute of Spices Research-A Status Report by **Nair R R, Mathew P A & Anandaraj M**, in the National Dialogue in the Orchid Conservation & Sustainable Development for Community Livelihood organized by NRC Orchids, Pakyong and TOSI, Chandigarh at Chintan Bhavan, Gantok, Sikkim during 8-9 March 2013.

Best Poster Presentation

Chromosome counts in cultivated and wild species of Vanilla by **Nair R R**, in the National Dialogue in the Orchid Conservation & Sustainable Development for Community Livelihood; organized by NRC Orchids, Pakyong and TOSI, Chandigarh at Chintan Bhavan, Gantok, Sikkim during 8-9 March 2013.

Chemoprofiling of nutmeg (Myristica fragrans Houtt) volatiles authored by **Leela N K, Angayarkanni V, Vipin T M, Krishnamoorthy B & Senthilkumar R**, in the National Seminar on Production, Productivity and Quality of Spices held at Jaipur, during 2-3 February 2013.

Krishnamoorthy B Chairman,

Technical session, Awareness Programme on *the provisions of PPV & FRA Act 2001*, RARS (KAU), Anakkayam, 27 March 2013

Pervez R Fellow of the Society of Plant Protection Sciences Co-chairman:

Technical Session, XVth Indian Agricultural Scientists and Farmers Congress, University of Allahabad, Allahabad, 23 February 2013

Utpala Parthasarathy Co-Chairperson:

Session on Bioavailability and Bio accessibility of Bioactive compounds, Vth International Symposium on Human Health Effects of Fruits and Vegetables FAV Health 2012, Dharwad, 7-11 January 2013

Participation in Symposia/ Seminars/ Workshops/ Conferences/ Meetings

All Scientists

Interactive Meeting on *High Density Horticulture*, IISR, Kozhikode, 7 March 2013.

Anandaraj M

Results Framework Document Meeting, New Delhi, 15-17 January 2013.

ISPC Executive Committee Meeting, CPCRI, Kasaragod, 30 January 2013.

Visit to Solar power generation plant , Hykon Electronic Systems, Trichur, 7 February 2013.

Qualifying examination for Ph.D. Students, UAS, Dharwad, 12 February 2013.

NBA Court case hearing, Raipur, 15 February 2013. Executive Committee Meeting, KAU, Vellanikkara, Trichur, 6 March 2013.

Directors' Conference, New Delhi, 18-21 March 2013.

Workshop on *Fungal Biology and Taxonomy*, University of Mysore, Mysore, 25 March 2013.

Anandaraj M

Ankegowda S J

Devasahayam S

Krishnamoorthy B

Zachariah T J

Meeting of Directors, Project Coordinators and Head of Divisions of Horticulture, SMD, New Delhi, 12-13 March 2013.

Ankegowda S J

Horticulture Seminar, organized by Kodagu Zillapanchayat and Department of Horticulture, Somvarpet, 12 February 2013.

Regional Seminar on *black pepper*, Spices Board, Somvarpet, 1 March 2013.

Black pepper traders' Meet, Coorg Pepper Traders Association, Madikeri, 24 March 2013.

Ankegowda S J

Senthil Kumar R

One day training-cum-awareness programme on *Protection of plant varieties and farmers' rights*, CHES, Chettalli, 27 February 2013.

Aiswariya K K

National workshop on *Strategies and action plan for plant health management in twelfth five year plan*, Trivandrum, 7-8 February 2013.

Bhat A I

Pre-Thesis submission colloquium of a PhD Scholar, Department of Applied Botany, Mangalore University, Mangalore, 4 January 2013.

Bhat A I

Devasahayam S

National workshop on *Strategies and action plan for Plant Health Management in Twelfth Five Year plan*, Kerala State Planning Board, Thiruvananthapuram, 7-8 February 2013.

Biju C N

Meeting on *Introduction to EM technology – the use of Effective Microorganisms in plantations*, Coorg Planters Association, Madikeri, 15 January 2013.

Biju C N

Prasath D

Rajeev P

Training Workshop on *Production management and on-farm processing and post harvest technology of major spice crops in Arunachal Pradesh*, Itanagar, Arunachal Pradesh, 18-20 February 2013.

Devasahayam S

Second Meeting of Institute Management Committee of CPCRI, Kasaragod, 25 March 2013.

Devasahayam S

Krishnamoorthy B

Saji K V

Sasikumar B

Suseela Bhai R

Awareness Programme on *The Protection of Plant Varieties and Farmers' Rights Act 2001*, RARS, Anakkayam, 27 March 2013.

Hamza S

Seminar on *Conservation of soil, water and organic matter*, Kerala State Land Use Board, Kozhikode, 5 January 2013.

Jayashree E

Group meeting of the consortia partners to finalize the project proposal under the Platform of Secondary Agriculture, CIPHET, Ludhiana, 15-16 January 2013. National Workshop on *Foresight and Future Pathways of Agricultural Research through Youth in India*, NASC Complex, New Delhi, 1-2 March 2013.

Leela N K

Chemists' Conclave, IARI, New Delhi, 14-15 January 2013.

Third Meeting of the *Scientific Committee on Quality Standards of Spices*, Spices Board, Kochi, 8 February 2013.

Leela N K

Suseela Bhai R

DST-Sponsored Training on *Communication and Presentation Skills*, International Centre, Goa, 7-11 January 2013.

Leela N K

Nirmal Babu K

Sasikumar B

Thankamani CK

National Seminar on *Production, Productivity and Quality of Spices*, organized by NRCSS, Ajmer, ISSS and DASD, Calicut, International Horticulture Innovation and Training Centre, Durgapur, Jaipur, 2-3 February 2013.

Manoj P S

ATMA SREP meeting, AWM, Vengeri, Kozhikode, 17 January 2013.

Manoj P S**Shanmugavel S**

Pre-action plan meeting of KVK's, KAU, Thrissur, 15 February 2013.

Nair R R

National Dialogue on *Orchid Conservation & Sustainable Development for Community Livelihood*, Chintan Bhavan, Gangtok, Sikkim, 8-9 March 2013.

Pervez R

Xth National Symposium on *Biotechnological approaches for plant protection: constraints and opportunities*, ICAR Research Complex, Goa, 27-29 January 2013.

XVth Indian Agricultural Scientists' and Farmers' Congress, University of Allahabad, Allahabad, 22-24 February 2013.

Pradeep B

ATMA governing body meeting, District Collector's Chamber, 18 March 2013.

State level workshop on *Strategies for drought mitigation in agriculture*, Directorate of Extension, KAU, Mannuthy, 21 March 2013.

Praveena R

Seminar on *Introduction to EM technology*, Coorg Planters Association Hall, 15 January 2013.

Ritto Paul

Workshop on *Technology Management of Researchers*, NAARM, Hyderabad, 28 February- 6 March 2013.

Santhosh J Eapen

Workshop on *Agropedia*, ICRISAT, New Delhi, 24-25 January 2013.

XXIVth BTISNet Coordinators Meet, CIMAP, Lucknow, 3-4 February 2013.

ITRA-ICAR Strategy Formulation Meeting *IT in Agriculture & Food*, NAAS Complex, New Delhi, 15-16 March 2013.

Meeting on *Prioritization of Research Activities for Agricultural Bioinformatics/ Computational Biology in Horticulture*, IASRI, New Delhi, 23 March 2013.

Suseela Bhai R

Workshop on *Plant health management*, Mascot Hotel, Trivandrum, 7-8 February 2013.

Zachariah T J

NASC Complex, New Delhi to present QRT report of IISR and AICRPS to Hon'ble DG, ICAR, 12 February 2013.

National Seminar on *Value Addition and Product Diversification in Agriculture & Food Processing – Status and Strategies*, Department of Industries & Commerce, Government of Kerala in association and KAU, Kochi, 18 February 2013.

News and Events

Interactive Meeting on High Density Horticulture

One day Interactive Meeting on High Density Horticulture was organized at IISR, Kozhikode on 7 March 2013 in connection with the superannuation of Shri PA Mathew, Principal Scientist and Scientist –in- Charge, Peruvannamuzhy Farm. The meeting was presided over by Dr. M. Anandaraj, Director. Shri Mathew shared his experiences and vision on High density horticulture. Dr. K Nirmal Babu, Project Coordinator (Spices), Dr. P C Rajendran, Professor (Hort.) and Head, RS, Anakkayam (KAU), Dr. S Elain Apsara, Senior Scientist (Hort.), CPCRI-RC, Vittal, Dr. B Sasikumar, Principal Scientist and Dr. J Rema, Principal Scientist also spoke on the occasion.



News from Bioinformatics Centre

A new database (Ginger Transcriptome Database) based on transcriptome of *Curcuma amada* and *Zingiber officinale* has been developed. The major research work undertaken by the centre during the past three months include functional annotation, conserved domain identification and comparative analysis of two genomes of *Phytophthora* sp. infecting black pepper; docking studies with phenyl propanoids from black pepper using additional targets like calreticulin 1, xylanase, transthyretin-like protein 3 precursor, cathepsin B, cytochrome c oxidase subunit III, cathepsin S-like cysteine proteinase of *Radopholus similis*.

The Centre also organized two short-term training programmes viz., Cheminformatics – Tools and

Applications (19 - 22 February 2013) and Next Generation Sequencing: Data Analysis & Annotation (12 -16 March 2013) in which 14 participants each from various organizations participated.



Consultancy Processing Cell

Senthil Kumar R

Consultancy visit to Hammiyala Estate, Near Rifle Range, Madikeri, 18 February 2013.

News from Library

During the period under report three issues of the electronic version of 'AGRI titbits' were published. 15 CeRA requests were catered online. Two computers and 3 e-book readers were added to the digital library. Library was enriched with 13 books and one thesis. Forty external users and 1250 internal users made use of the library facilities.

हिन्दी अनुभाग

संस्थान में राजभाशा कार्यान्वयन समिति की बैठक डा. एम. आनन्दराज, निदेशक की अध्यक्षता में 08 मार्च 2013 को संपन्न सुश्री. एस. माया, प्रबन्धक ;राजभाशाद्ध, विजया बैंक, कोशिककोड ने अनुवाद एवं हिन्दी व्याकरण पर उच्चारण विशय पर व्याख्यान दिया। सुश्री. एन. प्रसन्नकुमारी ने दिनांक 23 जनवरी 2013 को नगर राजभाशा कार्यान्वयन समिति की उप समिति की बैठक में तथा संयुक्त हिन्दी पक्ष समापन समारोह में दिनांक 7 फरवरी 2013 को डा. राषिद परवेज़, तथा सुश्री एन. प्रसन्नकुमारी ने भाग लिया। समारोह में संस्थान के श्री. बी. कृष्णमूर्ति, प्रभागाध्यक्ष, फसल सुधार एवं जैवप्रौद्योगिकी प्रभाग को नराकास द्वारा आयोजित हिन्दी प्रतियोगिताओं में विजेता स्वरूप पुरस्कार मिले जिसे उनकी अनुपस्थिति में डा. राषिद परवेज़ ने ग्रहण किया। संस्थान का वार्षिक प्रतिवेदन तथा मसाला समाचार पत्र अंक 23 ;खंड 4द्ध को हिन्दी में प्रकाशित किया।

News from SARANI

Celebrated New Year- 2013 on 1 January 2013. Arranged farewell to Shri P.A. Mathew on his superannuation on 31 March 2013.

Distinguished visitors

Mr. Umesh Srivastava, ADG (Hort.) ICAR, New Delhi – 5 March 2013.

Shri. Sharad Pawar, Hon'ble Union Minister of Agriculture & Food Processing, GOI, CRC, Appangala – 28 March 2013.

Transfer of Technology

Technology inputs and Advisory services from ATIC

Two hundred and ninety nine farmers including 50 from other states availed advisory services from the centre. Under sponsored programme 3 farmers' groups from Kerala and 1 from Maharashtra had exposure visit. 174 students from various educational institutions visited the centre on study tour.

Total revenue from sale of technology products was Rs. 147,116 of which Rs. 99,232 from planting material, Rs. 37,129 from publications and the rest from Bioagents.

Training of extension functionaries

Conducted training for extension functionaries :

- Training workshop on *Production management, on farm processing and post harvest technology in major spices* in Arunachal Pradesh under the Horticulture Mission for NE and Himalayan states, 18-20 February 2013
- *Production management in Black pepper* for the Senior managers of M/s. Malayalam Plantations Pvt. Ltd., IISR, Kozhikode.
- Production management and field training on *Black pepper* for the Assistant managers and field officials of M/s. Malayalam Plantations Pvt. Ltd., CRC, Appangala.

Awareness programme on the Protection of Plant Varieties and Farmers' Rights Act, 2001

The Indian Institute of Spices Research, Kozhikode and Agricultural Research Station of KAU at Anakkayam jointly organized an awareness programme on 'Protection of Plant Varieties & Farmers' Rights Act, 2001'. Sri. P. Ubaidulla, Hon. MLA, Malappuram, inaugurated the event at ARS Anakkayam in Malappuram district on 27th March

2013. Sri. K.V. Muhammadali, President, Anakkayam Grama Panchayat, presided over the function. Dr. P. Rajendran, Professor & Head, ARS Anakkayam, welcomed the gathering and highlighted the significant achievements made by ARS, Anakkayam in agriculture and IISR in Spices research.

Dr. Abraham Mathew, General Council Member, KAU, Sri. Sharangan, Deputy Director of Agriculture, Malappuram; Sri. Jacob Joy, Agricultural Officer, Anakkayam; Sri. P.T. Ashraf, Member, Anakkayam Grama Panchayath also spoke. Dr. Johnson K George, Principal Scientist, proposed the vote of thanks.

Besides Scientists from IISR, Dr. P. Ahamad, Professor, Agriculture Extension & Director, Centre for E-Learning, KAU; Mr. Prajeesh, MSSRF, Wynad; Joseph John, NBPGR, Trichur and Jiji Joseph, KAU Trichur took classes on various aspects of the protection of plant varieties and farmers rights and farmers variety registration.

Mr. B Krishnamoorthy, Head of Division (Crop Improvement & Biotechnology) chaired the technical session and B Sasikumar, Principal Scientist served as the co-chairman. Around 150 participants including scientists from different institutions and farmers participated in the programme.



(A)



(B)

(A)-Sri. P. Ubaidulla, Hon. MLA, Malappuram inaugurating the awareness programme on 'Protection of Plant Varieties & Farmers' Rights Act, 2001' and (B) A view of participants during the event.

Training on Spices Production Technology

A one day training programme on *Spices Production Technology* was held at Agricultural Research Station (KAU), Anakkayam on 28th March 2013. Dr. S. Devasahayam, Director-In-Charge, Indian Institute of Spices Research, Kozhikode inaugurated the training.

IISR, Kozhikode, ARS, Anakkayam and KAU also showcased various technologies for spices and plantation crops and displayed various value added products. Sri. PA. Salam, Hon. Member, Executive Committee, KAU inaugurated the Exhibition.

Dr. B. Sasikumar and Dr. CK. Thankamani, chaired different technical and interactive sessions under the 'Training on Spices Production Technology'. Dr. B. Pradeep of KVK spoke on 'Fresh Water Aquaculture' during the function.

Extension activities

Dr. Ankegowda S J

Delivered lectures during the following Farmers' Seminars:

- *Scientific cultivation practices in black pepper with reference to arecanut and coffee based cropping system*, in Farmers' Seminar on Black pepper and cardamom organized by Spices Board, Shimoga, Sringeri, 9 January 2013.



Abstract from Karnataka daily

- *Scientific cultivation practices in black pepper and disease management*, Seminar on black pepper and cardamom, Spices Board, Madikeri, 16 January 2013.



- *Recent advances in black pepper cultivation and disease management*, Seminar on black pepper and cardamom, Spices Board, Sakleshpur, 17 January 2013.

**Kandiannan K
Prasath D**

Production Management in Ginger, farmers Training Workshop on Production Management and on farm processing and Post Harvest Technology of major spice crops in Itanagar, Arunachal Pradesh, 18-20 February 2013.

Prasath D

Varietal status and production management in black pepper, Farmers' seminar on 'Production and post harvest technology of black pepper', Janaki Ammal Kalyana Mandapam, Gudalur conducted by HRS, Ooty, under NHM scheme sponsored by DASD, Kozhikode, 27 March 2013.

Saji K V

Varietal distinction on PPV: Characteristics for DUS in Black pepper, Awareness programme on the 'The protection of plant varieties & farmers' rights and training on spice production technology', ARS, Anakkayam, 27 March 2013.

Sasikumar B

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Spices production in Wynad - Problems and Prospects, Farmers' Seminar, Vellamunda, Wayanad, 16 February 2013.

Varieties and improvement of black pepper, Training programme on production technology in black pepper for Harrison Malayalam Plantation Managers and Asst. Managers IISR, Kozhikode, 27 February 2013.

Spices varieties, PPV & FRA awareness programme, ARS (KAU), Anakkayam, 27 March 2013.

**Sasikumar B
Suseela Bhai R
Sheeja T E**

Black pepper, Training on spices production technology, ARS, Anakkayam, 28 March 2013.

Senthil Kumar R

Black pepper varieties to Asst. Managers of Harrison Malayalam Pvt. Ltd., 19 March 2013.

Suseela Bhai R

Resource person, Training programme on *Nutmeg as key*, Annammanada, Trichur, 2 February 2013.

Resource person, Mass campaign on *Ginger cultivation as key*, MSSRF, Kalpetta, 18 February 2013.

Krishi Vigyan Kendra

Front Line Demonstration

In addition to the ongoing programmes new programmes initiated were:

- Popularization of live feed for rearing ornamental fishes
- Cage culture of fishes in large water bodies
- Demonstration of use of biological agents in paddy
- Demonstration of recently released HYV of YLB Vellayani Jyothika
- Demonstration of use of banana nutrient mixture to increase the yield of nendran banana

On Farm Testing

- Seed production of pearl spot fish in fresh water area
- Management of root mealy bug in banana
- Management of pseudostem weevil in banana
- Management of foot rot of black pepper
- Induction of flowering in Olour mango through paclobutrazol application combined with INM and IPM

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quality of spices, National Research Centre for Seed Spices & Directorate of Arecanut and Spices Development, pp.31-59.

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Effect of temperature on infectivity and multiplication of entomopathogenic nematodes against shoot borer infesting ginger. Xth National Symposium on Biotechnological approaches for plant protection: constraints and opportunities, ICAR Research Complex Goa, 27-29 January 2013 (Pervez R, Eapen S J, Devasahayam S & Jacob T K).

Diagnostics and management of viral diseases of black pepper and cardamom. National Workshop on Strategies and Action Plan for Plant Health Management in XII Five Year Plan, Thiruvananthapuram, 7-8 February 2013 (Bhat A I, Biju C N & Devasahayam S).

Mass production of entomopathogenic nematodes in different artificial media. XVth Indian Agricultural Scientists and Farmers Congress, Allahabad, 22-24

February 2013 (Pervez R, Eapen S J, Devasahayam S & Jacob T K).

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Screening spices for production of food extrudates and optimization of machine parameters for extrusion of cassava - cardamom flour. In: Abstracts, National Seminar on Production, Productivity and Quality of Spices at Jaipur, 2-3 February 2013, pp.175 (Jayashree E, Shereiff J T, Dennis A G, John Zachariah T & Leela N K).

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Black pepper cultivation practices and important operations in cardamom and ginger, Horticulture Seminar by Kodagu Zillapanchayat and Department of Horticulture, Somvarpet, 12 February 2013 (Ankegowda S J).

Business Opportunities in Spice processing, to Prospective Food Processing entrepreneurs,

National Institute of Technology, Kozhikode, 27 March 2013 (Jayashree E).

Chemistry, flavouring properties and antioxidant potential of spices, to PG -Botany students, Devagiri College, Kozhikode, 4 February 2013 (Zachariah T J).

Cultivation aspects and disease management in black pepper, Training and interstate exposure visit of farmers of Moopainad Grama Panchayat, Wayanad under the Western Ghats Development Programme, Cardamom Research Centre, Appangala, 8 January 2013 (Biju C N).

Cultivation aspects of black pepper, Vichara Sankirana on Horticulture Crops, Bee keeping training Centre, Bhagamandala, Madikeri, 04 March 2013 (Biju C N).

Cultivation Practices, Pest and disease management in Black Pepper, to Black pepper growers, by Department of Horticulture, Madikeri at Chembu, Sulliya, 22 February 2013 (Praveena R).

Entomopathogenic nematodes: a potent biopesticide, XVth Indian Agricultural Scientists and Farmers Congress, University of Allahabad, Allahabad, 24 February 2013 (Pervez R).

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Improved cultivation practices and nursery management practices in black pepper, Regional seminar on black pepper, Spices Board, Somvarpet, 1 March 2013 (Ankegowda S J).

Loop mediated isothermal amplification (LAMP) and microarray: their application for detection of plant pathogens. ICAR Niche Area of Excellence sponsored training on Exploitation of microbial and Genomic resources for plant disease management, Department of Biotechnology, UAS, Dharwad, 14 February 2013 (Bhat A I).

Next generation sequencing: an overview, Training programme on 'Next Generation Sequencing: Data Analysis & annotation', IISR, Kozhikode, 12 March 2013 (Bhat A I).

Nursery management in black pepper, Training programme for staff of Harrisons Malayalam Ltd., Cardamom Research Centre, Appangala, 20 March 2013 (Praveena R).

Pest and disease management in black pepper, Interstate farmers training organized by ATMA, Angamaly block, Ernakulam at Cardamom Research Centre, Appangala, 16 January 2013 (Biju C N).

Pest and disease management in ginger and turmeric, Training workshop on Production Management and On-Farm Processing and Post Harvest Technology of Major Spice Crops, Itanagar, Arunachal Pradesh, 18-20 February 2013 (Biju C N).

Pest and disease management in black pepper, Training programme on Production Management in Black pepper for Managerial staffs of M/s Harrison Malayalam Plantation Ltd., Cardamom Research Centre, Appangala, 19-21 February 2013 (Biju C N).

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Pest management in black pepper, For officials of M/s. Harrison Malayalam Plantations, IISR, Kozhikode, 27 February 2013 (Jacob T K).

Pests and diseases of spices, Farmers' Seminar - Calicut Flower Show, DASD, Kozhikode, 07 February 2013 (Santhosh J Eapen).

Post Harvest handling of Spices, for Farmers' & Agricultural officers, State Agmark Grading Lab, Kozhikode, 18 March 2013 (Jayashree E).

Post Harvest Processing and Value Addition in Black pepper, ginger, turmeric, nutmeg, cinnamon, and garcinia, Training programme on Scientific Production and Processing of Spices by NHM, KVK, Peruvannamuzhi, 14 February 2013 (Jayashree E).

Post Harvest processing of black pepper, All black pepper traders meet, Coorg Pepper Traders Association, Madikeri, 24 March 2013 (Ankegowda S J).

Post Harvest Processing of ginger and turmeric, for farmers from Raigad district of Maharashtra, IISR, Kozhikode, 22 February 2013 (Jayashree E).

Post Harvest Technology in Nutmeg, Training programme on Nutmeg, World Spice Organization, Annamanada, Thrissur, 2 February 2013 (Jayashree E).

Soil test based nutrient management, Farmers training Programme, Vegetable & Fruits Promotion Council of Kerala (VFPCCK), Vellannur, 9 January 2013 and Thamarassery, Kozhikode, 17 January 2013 (Hamza S).

Spicepedia – a knowledgebase for spices, Scientists meeting, IISR, Kozhikode, 31 January 2013 (Santhosh J Eapen).

Techniques in Molecular Biology, VIIIth Refresher course in Life sciences on 'Current trends in life

sciences', UGC-Academic Staff College of University of Mysore in cooperation with Department of studies in Botany, University of Mysore, 15 February 2013 (Bhat A I).

Technological advancements in value addition and product diversification of spices, National Seminar on 'Value Addition and Product Diversification in Agriculture & Food Processing – Status and Strategies', Department of Industries & Commerce, Government of Kerala in association with KAU, Kochi, 18 February 2013 (Zachariah T J).

Value Addition of Spices, Technology clinic for promotion of Small and Micro Enterprises under Food and Agro based Sector, District Industries Centre, Kannur, 8 January 2013 (Jayashree E).

Value addition in Spices, to Farmers on Spices Production Technology, 28 March 2013 (Jayashree E).

Tree spices cultivation, KVK, Peruvannamuzhy, 15 February 2013 (Mathew P A).

Nutmeg cultivation, RARS, Anakkayam, 28 March 2013 (Mathew P A).

Radio Talk

Ankegowda S J

Scientific cultivation of cardamom, AIR, Madikeri, 18 February 2013.

Scientific cultivation of black pepper, AIR, Madikeri, 28 February 2013.

TV Programme

Ankegowda S J

Cultivation practices adopted in Murugarajendra estate, Madapur, Kodagu Channel, 23 & 29 January 2013.



(A)



(B)

A: Dr. S. Devasahayam, Director- in- charge, IISR, Kozhikode inaugurating the training programme on "Spices Production Technology"; B:- A view of the participants.



Participants of the training programme on "Cheminformatics - Tools and Applications", with Director and HODs"



Participants of the training programme on "Next Generation Sequencing, Data Analysis & Annotation" with the Director-in-charge and faculty members

PhD Awarded

Name	University	Guide
Mr. Anoop K	Mangalore University	Suseela Bhai R

New Appointment

Name	Post	w.e.f.
Faizal Moossa A	Bioinformatics trainee	11.02.2013
Anoop T A	Bioinformatics trainee	12.02.2013

Resignation

Name	Post	w.e.f.
Ms. Dhanya K P	SRF	31.03.2013

Silver Medal in ICAR Sports Meet

Mr. P. Muraleedharan, AAO, bagged Silver Medal in 400 mts race and High Jump, in ICAR Inter-Institutional Sports Meet (South Zone) held at Sugarcane Breeding Institute, Coimbatore, during 18-22 February 2013.



Dr. PA. Baby Shari, Head, Dept. of Psychology, University of Calicut, addressing the staff during International Women's Day celebration on 8 March 2013.

Superannuation



Shri. P A Mathew
Principal Scientist
IISR Experimental Farm, Peruvannamuzhi
31 March 2013



हर कदम, हर डगर
किसानों का हमसफर
भारतीय कृषि अनुसंधान परिषद

Agrisearch with a human touch

SPICES NEWS

A newsletter of Indian Institute of Spices Research
An Institution of Indian Council of Agricultural Research (ICAR),
Marikunnu P.O., Kozhikode (Calicut) - 673 012, Kerala, India,
Phone : 0495-2731410, Fax : 0495-2731187

A PDF version of the newsletter is also available at <http://www.spices.res.in/newsletter/index.php>

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