



CPCRI

News



Views and News on Advances in Coconut, Arecanut and Cocoa

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Inauguration of KVK building at Kayamkulam

New building of Krishi Vigyan Kendra - Alappuzha was inaugurated by Shri K.C. Venugopal, Hon. Minister of State for Civil Aviation, Govt. of India on 22nd November, 2013. Dr. George V. Thomas, Director, CPCRI, Dr. S. Prabhukumar, Zonal Project Director, Zone VIII, Bangalore, Dr. P. V. Balachandran, Director of Extension, KAU, Smt. Saira Najumuddin, Chairperson, Kayamkulam Municipality, Shri. N. Ravi, President, Krishnapuram Grama Panchayath, Smt. T. Saleena, Councilor, Kayamkulam Municipality, were present among dignitaries. On this occasion, cash awards, mementos and certificates were presented to selected farm innovators of the district. KVK publications, "Imprints- a decade in service to farmers (2004 - 2013), Newsletter and three technical folders from CPCRI, RS, Kayamkulam were released on the occasion.



Shri K. C. Venugopal, Hon. Minister of State for Civil Aviation Inaugurating the new building of KVK, Alleppey

Kisan Mela held at CPCRI, RC, Kidu

A Krishi Mela was held at CPCRI, RC, Kidu during 17th & 18th December, 2013. Scientist-Farmer Interface Programme on coconut, arecanut and cocoa crops was organized on 17-12-13 as part of this Mela. Smt. Shakunthala Shetty, MLA, Puttur inaugurated the Krishi Mela - 2013 and delivered inaugural address. Dr. George V. Thomas, Director, CPCRI, Kasaragod delivered the introductory remarks. Smt. Sasi Prabha, President, Puttur Taluk Panchayat presided over the function. Mr. K. S. Devaraj, Member, ZP & Director, SCDDC Bank, Smt. Kumari Vasudevan, Member, ZP, Kadaba, Smt. Sharada, President, Bilinele Grama Panchayat and Smt. Sarojini Jayaprakash, Member, Puttur Taluk Panchayat offered felicitations. Technological advances and developmental opportunities available to address the field problems and to enhance the profitability of coconut, arecanut and



Inauguration of Krishi Mela at CPCRI, RC, Kidu by Smt. Shakunthala Shetty, MLA, Puttur



Participants of Krishi Mela at RC, Kidu cocoa farming were dealt in the interface programme. Exhibits of varieties, agronomic practices, nursery management, pests and diseases management and harvesting of coconut, arecanut and cocoa were displayed. 619 farmers and more than four hundred college and school students had participated in the Krishi mela. In the evening, a quiz competition was organized for the participants of Krishi mela.

A seminar on 'Advances in cocoa production technologies for enhancing profitability' was organized as a part of Krishi Mela on 18th December, 2013 at CPCRI, Research Centre, Kidu, Karnataka with the sponsorship from Directorate of Cashew and Cocoa Development (DCCD), Cochin. The seminar was inaugurated by Mr. H. M. Krishnakumar, DGM, CAMPCO, Mangalore. He emphasized the need to increase cocoa production to meet the increasing demand. Value added products need to be developed to overcome price volatility. Shri Krishnaprasad Madhila, President, Managing Trustee, Kukke Subrahmanya presided over the function. Shri Konkodi Padmanabha, President, CAMPCO, Mangalore and Mr. Srinivas Achar, President, All India Arecanut Growers Association, Puttur participated in the interactive session with farmers and other stakeholders. Over 518 farmers and more than three hundred college and school students participated in the seminar.



CAMPCO president Mr. Konkodi Padmanabha addressing during the Krishi mela

Quinquennial review team visit

QRT has been constituted for CPCRI and AICRP (Palms) to review the progress



A view of farmers gathering at Krishi Mela

during the period 2008-2013. Following is a list of QRT team.

Dr. S.P. Ghosh, Ex-DDG (Hort.) and FAO Expert	Chairman
Dr. V.A. Parthasarathy, Ex-Director, IISR, Calicut	Member
Dr. R.D. Rawal, Ex-Head, Division of Plant Pathology, IIHR, Bangalore	Member
Dr. T.P. Rajendran, Ex-ADG (PP) ICAR & Officer on Special Duty, National Institute of Biotic Stress Management, Raipur, Chhattisgarh	Member
Dr. D.M. Hegde, Ex-Director, DOR Hyderabad	Member
Dr. K.B. Hebbar, Head, PB&PHT Division, CPCRI, Kasaragod	Secretary

The team visited various locations of CPCRI and AICRP (Palms).

Date	Place of visit
05-12-2013	Preliminary meeting with DDG (Hort.) at KAB-II, New Delhi
06-12-2013	CPCRI, RS, Vittal
07-12-2013	CPCRI Kasaragod
08-12-2013	CPCRI RS, Kayamkulam, CDB Kochi
10-12-2013	Mohitnagar
11-12-2013	Kahikuchi
12-12-2013	Mondouri
28-12-2013	Bhubaneswar
30-12-2013	Arsikere



QRT members visiting experimental plots at Kasaragod

Research Advisory Committee reconstituted

New RAC of the institute has been constituted. This will be functioning from 5-6-2013 to 4-6-2016. The members are



A view of the QRT meeting

Dr. S. Edison, Former Director CTCRI	Chairman
Dr. Subhash, Professor & Head, Tissue Culture Division, AAU, Gujarat	Member
Dr. V.S. Korikantimath, Former Director, ICAR Res. Complex for Goa	Member
Dr. T.M. Manjunath, Consultant in IPM & Agri-Biotechnology, Bengaluru	Member
Dr. Brahma Singh, Advisor, World Noni Research Foundation	Member
Dr. S. Arulraj, Director, DOPR, Pedavegi, Andhra Pradesh	Member
Dr. George V. Thomas, Director, CPCRI, Kasaragod	Member
Dr. S.K. Malhotra, Assistant Director General (Hort.I), ICAR, New Delhi	Member
Dr. Anitha Karun, Head, Crop Improvement Division, CPCRI, Kasaragod	Secretary

Training conducted on Genetic Resources

An ICAR-funded Short Course on 'Recent Advances in Conservation of Genetic Resources of Plantation Crops' was conducted from 22nd to 31st October 2013. Dr. Anitha Karun, Principal Scientist and Head of Division of Crop Improvement had been the Course Director.



Dr. Oommen V. Oommen, Chairman, Kerala State Biodiversity Board inaugurating the Short Course

Training conducted on Molecular Marker Data

A DBT-funded training programme entitled, "Tools for Genetic Diversity and Mapping Analysis Using Molecular Marker Data" was conducted from 25th to 30th November 2013. Dr. George V. Thomas, Director, CPCRI and



Dr. Nirmal Babu, Project Coordinator (Spices), IISR inaugurating the training programme

Coordinator, Sub-DIC was the Course Director.

Training on Mother Palm Selection and Hybridization in Coconut

A training was organized on "Mother palm selection and Hybridization Technique in Coconut" for the agricultural officers of Department of Agriculture, Govt. of Kerala from 19th December to 20th December at CPCRI Kasaragod. Twenty two officers from four northern districts viz., Malappuram, Kozhikode, Kannur and Kasaragod attended the training funded by the Department of Agriculture, Govt. of Kerala.



Participants of the training along with resource persons at RS, Kayamkulam

Seminar on Bioinformatics

The National Seminar on "Applications of Bioinformatics in Agriculture" was organized at Central Plantation Crops Research Institute, Kasaragod during Nov 11-12, 2013. The seminar was inaugurated on 11-12-13 by Dr. S.K. Malhotra, Assistant Director General



Inauguration of seminar on bioinformatics (Horticulture), ICAR and Horticulture commissioner in-charge. The book of Abstracts was released by Dr. S.K. Malhotra, Assistant Director General (Horticulture). The keynote lecture was given by Dr. V. A. Parthasarathy, Formerly Director, Indian Institute of Spice Research, Calicut, and Kerala on Applications of metabolomics for horticulture. Dr. George V. Thomas, Chairman of the Organizing Committee and Director, CPCRI, highlighted the achievements of Agribioinformatics centre of CPCRI in his address. The seminar had six technical sessions: Genomics and Markers, Bioinformatics in Molecular Diagnosis, Proteomics, Metabolomics, and Cheminformatics, Bioinformatics Tools and Database, Sequence Analysis, Metagenomics and Systems Biology. Lead lectures were given by the expert in various fields of genomics, metabolomics, cheminformatics, computational analysis and diagnostics.

RESEARCH HIGHLIGHTS

Characterization of the global transcriptome responsive to root (wilt) disease in coconut using RNA-seq

Understanding the molecular basis of host-pathogen interactions is imperative

for devising root (wilt) disease management strategies. To explore the molecular mechanisms involved in compatible and incompatible interactions, transcriptome profiling of

susceptible and resistant Chowghat Green Dwarf (CGD) palms was conducted. RNA-Seq analysis generated more than 102 million 86 bp paired-end reads, which were assembled into

2,54,302 contigs, with a mean size of 488 bp. Based on sequence similarity searches, 1,66,429 (~ 65 %) of assembled transcripts have at least one significant hit (E^{-20}) in NCBI database. Differential gene expression analysis was performed statistically using DESeq program. Overall, 3,033 transcripts differentially expressed (p-value < 0.01 and at least 100 reads in one of the sample) between resistant and susceptible samples were found. Of the total, 1266 transcripts were up-regulated in resistant samples. Many of these differentially expressed transcripts were primarily involved in defense responses, signaling pathways, cellular transport and other metabolic processes. The resources generated in this study provide new insights into the interaction of coconut palms with root (wilt) disease pathogen.

Molecular characterization of arecanut white grubs, *Leucopholis* spp. (Scarabaeidae: Coleoptera)

White grub complex in palms comprises of closely related three species viz., *Leucopholis coneophora* Burm., *L. burmeisteri* Brenske and *L. lepidophora* Blanch. These three species are morphologically similar and difficult to identify because of homoplasy in many morphological characters. Use of molecular tools provides a faster and dependable tool for confirming the identity. An attempt was made to establish relatedness at molecular level of three species using PCR based partial amplification of 16s rRNA and *COI* gene. The white grubs were collected from areca gardens in Sringeri, Sullia and Kasaragod areas were identified as *L. lepidophora*, *L. burmeisteri* and *L. coneophora* respectively based on morphological markers. Sequence available for *L. burmeisteri* in the public databases was used for designing the primers. Amplified products of expected sizes (625 bp) were purified, cloned and

sequenced. Homology (blastn) search of *L. burmeisteri*, *L. coneophora* and *L. lepidophora* showed 98, 83 and 89 percentage similarity with *L. burmeisteri* isolate sulyareca respectively. Multiple alignments using CLUSTAL W revealed that *L. coneophora* showed maximum variation compared to the other two species.

Pheromone trap for red palm weevil

Severe damage of young palms by red palm weevil, *Rhynchophorus ferrugineus* was reported from Maniyampara in Kasaragod district. As Kasaragod is declared as green eco belt by Govt. of Kerala, the aggregation pheromone was used to attract and trap the weevils. The pheromone loaded in controlled release dispenser was installed in the garden. A total of 53 adult weevils were trapped within 25 days of installation. No fresh incidence of weevil infestation was noticed in the garden. This technology could be used with ease for managing the red palm weevil.

PUBLICATIONS

Research article

Alagar, M., Rachana, K. E., Keshava Bhat, S., Shafeeq Rahman and Rajesh, M. K. 2013. Biology, damage potential and molecular identification of *Conogethes punctiferalis* Guenee in cocoa (*Theobroma cacao* Linn.). *J. Plantation Crops*, **41**(3): 350-356.

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Goniozus nephantidis in suppression of *Opisina arenosella* in field conditions in Andhra Pradesh. *J. Plantation Crops*, **41**(3): 460-462.

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- Samsudeen, K., Thamban, C., Niral, V., Augustine Jerard, B., Rajesh, M. K., Manjula, C., Devadas, K. and Anitha Karun 2013. *In situ* approach for rapid characterization to aid on farm conservation of coconut germplasm - A case study of two ecotypes from West coast of India. *J. Plantation Crops*, 2013, **41**(3): 357-363.
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- Thomas, R.J. and Josephraj Kumar, A. 2013. Flowering and pollination biology in coconut. *J. Plantation Crops* **41**(2): 109-117.
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- Alagar M. and S. Keshava Bhat. 2013. Biology of tea mosquito bug, *Helopeltis bradyi*, Waterhouse (Hemiptera: Miridae) on different Phenological stages of cocoa. Oral presentation in 23rd Swadeshi Science Congress, Organised by Kerala Swadeshi Science Moment, at Mahatma Gandhi University on November 6-8th 2013.
- Elain Apshara, S. 2013. Comparative performance of selected cocoa parents and progenies as clones in South India. In: Abstracts of Malaysian International Cocoa Conference on Innovation and technology driving cocoa productivity/ sustainability, 7-8 October 2013, Sunway Pyramid Convention Centre, Kuala Lumpur. (Eds). Sabariah Samsudin, Samuel Yap Kian Chee and Badrul Hisyam Zainudin. p. 25.
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- George V. Thomas, Murali Gopal and Alka Gupta. 2013. Diversity, functional traits and application of PGPR in plantation crops current status. Lead paper presented during the National Seminar on "Microbes and Human Welfare", Bharathidasan University, Tiruchirappalli, Tamil Nadu, July 20-21, 2013.
- Hemalatha N. and Rajesh M. K. 2013. Design and implementation of computational tools for prediction of abiotic stress-responsive genes in the genome of indica rice using machine learning algorithms. Presented as an oral paper at the National Seminar on 'Applications of Bioinformatics in Agriculture', Organized by Department of Information Technology and Agri-Bioinformatics Promotion Centre, CPCRI, Kasaragod November 11-12, 2013.
- Jaganathan, D., Thamban, C., Jose, C.T., Jayasekhar, S. and Muralidharan, K. 2013. Analysis of organic farming practices in cocoa in India. *Abstracts of papers*. International conference on Extension educational strategies for sustainable agricultural development A global perspective. 5-8th December, 2013, University of Agricultural Sciences, Bangalore, p. 55.
- Monica, V., Rachana, K. E., Rajesh, M. K., Anitha Karun and George V. Thomas 2013. Isolation and structural perspectives of Phospholipase D from coconut. Presented as an oral paper at the National Seminar on 'Applications of Bioinformatics in Agriculture', Organized by Department of Information Technology and Agri-Bioinformatics Promotion Centre, CPCRI, Kasaragod November 11-12, 2013.
- Murali Gopal, Alka Gupta and George V. Thomas. 2013. Power of the small : gut and root microbiome control human and plant health. Invited lecture delivered during the National Seminar on 'Trends in Environmental Biotechnology & its Applications', St. Aloysius College, Mangalore, Dec. 10-11, 2013. Book of Abstracts, pp. 34.
- Murali Gopal, Alka Gupta and George V. Thomas. 2013. State-of-art disease management : can roots follow the guts. Invited lecture delivered during the Metagenomics session of 54th Annual Conference of AMI and International Symposium on 'Frontier Discoveries and Innovations in Microbiology and its Interdisciplinary Relevance', MD University, Rohtak, Haryana, Nov. 17-20, 2013.
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- Naganeeswaran, S., Elain Apshara, S. and Manimekalai, R. 2013. Bioinformatics tools for EST/transcriptome data analysis. *In: Abstracts of National Seminar on Applications of Bioinformatics in Agriculture*, November 11-12, 2013, CPCRI, Kasaragod. (Eds.) George V. Thomas, Manimekalai, R. Rajesh, M.K. and Subaharan, K. Kasaragod Printing & Multi- Industrial Co-operative Society Ltd. p. 53.
- Nanthakumar A., Rajesh M. K., Anitha Karun and George V. Thomas 2013. Isolation and in silico characterization of a full-length cDNA encoding a cyclic nucleotide gated ion channel protein in coconut. Presented as an oral paper at the National Seminar on 'Applications of Bioinformatics in Agriculture', Organized by Department of Information Technology and Agri-Bioinformatics Promotion Centre, CPCRI, Kasaragod November 11-12, 2013.
- Prathibha P. S., Rachana, K. E., Shafeeq Rahman, Sabana, A. A., Subaharan, K. and Rajesh, M. K. 2013. Molecular characterization of arecanut white grubs, *Leucopholis* spp. (Scarabaeidae: Coleoptera). Presented as an oral paper at the National Seminar on 'Applications of Bioinformatics in Agriculture', Organized by Department of Information Technology and Agri-Bioinformatics Promotion Centre, CPCRI, Kasaragod November 11-12, 2013.
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- Rachana, K. E., Rajesh, M. K., Regi Jacob Thomas and Anitha Karun 2013. Molecular cloning, structural modeling and docking studies of CnCCR1, a CC-NBS-LRR type

- Resistance Gene Analogue (RGA) from coconut. Presented as an oral paper at the National Seminar on 'Applications of Bioinformatics in Agriculture', Organized by Department of Information Technology and Agri-Bioinformatics Promotion Centre, CPCRI, Kasaragod November 11-12, 2013.
- Rajesh, M. K. and George V. Thomas 2013. *Development of bioinformatics tools and databases at the DBT Distributed-Information Sub-Centre, CPCRI: An overview.* Invited paper presented at the National Seminar on 'Applications of Bioinformatics in Agriculture', Organized by Department of Information Technology and Agri-Bioinformatics Promotion Centre, CPCRI, Kasaragod November 11-12, 2013.
- Rajesh, M. K., Rachana, K. E., Manjula, M. S., Regi Jacob Thomas and Anitha Karun 2013. Characterization of Resistance Gene Analogue (RGA) sequences in coconut transcriptome and an evolutionary meta-analysis of palm RGAs. Paper presented as a poster at the *Second Current Opinion Conference on 'Plant Genome Evolution 2013'* held at Amsterdam, The Netherlands, 8-10 September, 2013.
- Rajesh, M. K., Rachana, K. E., Merin Babu, Regi Jacob Thomas and Anitha Karun 2013. Characterization of the global transcriptome responsive to root (wilt) disease in coconut using RNA-seq. Presented as a oral paper at the National Symposium on 'Pathogenomics for Diagnosis and Management of Plant Diseases' held at CTCRI, Thiruvananthapuram from 24-25 October, 2013.
- Rajkumar, Rachana K. E., Sabana A. A., Shahin S., Subaharan K. and Rajesh M. K. 2013. Molecular identification of entomopathogenic nematodes of North Kerala. Presented as an oral paper at the National Seminar on 'Applications of Bioinformatics in Agriculture', Organized by Department of Information Technology and Agri-Bioinformatics Promotion Centre, CPCRI, Kasaragod November 11-12, 2013.
- Ravi Bhat 2013. Coconut- an ideal crop for coastal ecosystem under changing climatic conditions
- S.A. Lone, Sudheer Kumar, Alka Gupta, G.T. Gujar, A.K. Saxena, A. Malik and J.C. Padaria. 2013. Genetic diversity of crystalline protein encoding genes in native *Bacillus thuringiensis* strains isolated from diverse extreme environments of India. Paper presented in the "International Conference on *Bacillus anthracis*, *B. cereus*, and *B. thuringiensis* (Bacillus ACT, 2013)", Victoria, Canada, Sept. 1-5, 2013. Abstract No. 45C, pp. 71-72.
- Sabana A. A., Rachana K. E., Rajesh M. K., Jerard B. A. and Anitha Karun 2013. Start Codon Targeted (SCoT) markers: A novel marker system to assess genetic diversity of coconut germplasm accessions. Presented as a oral paper at the National Seminar on 'Applications of Bioinformatics in Agriculture', Organized by Department of Information Technology and Agri-Bioinformatics Promotion Centre, CPCRI, Kasaragod November 11-12, 2013.
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- Chandrika Mohan, Kalavathi, S. and Merin Babu 2013. Thengulakshanam arinjuvenam chikilsa rogangalum prathividhiyum (Malayalam) *Kerala Karshakan* **59** (3): 41-43.
- Elain Apshara, S. 2013. Scientific approaches for seedling production in Cocoa. *The Cashew and Cocoa J.* **2**(1): 20-25.
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- Shareefa M., Rema, L. and Renjith, P. B. 2013. Njangal ilaneer thengukal (Malayalam) *Kerala Karshakan* **59** (5): 28-29.
- Thamban, C. and Leena, S. 2013. Climbing coconut trees...past and present. *Indian Coconut J.* **56** (8): 7-9
- Thamban, C., Muralidharan, K., Ravikumar, N. and Amarnath, C. H. 2013. Videoconferencing for organising research-extension-farmer interface programmes. *Indian Coconut J.* **56** (7): 31-33
- Thomas, R.J. and Shareefa, M. 2013. Neerachethintte labha kanakku (Malayalam). *Karshakasree* **19** (11): 26.
- Thomas, R.J. and Shareefa, M. 2013. Neerulpadanam: Karshaka Anubhavangaliloode (Malayalam) In: Neera: Thengil Minulla Akshayanidhi (eds: Remany Gopalakrishnan and Mini Mathew), Coconut Development Board, Kochi pp.70-72.

Contd in pg. 13...

HUMAN RESOURCE DEVELOPMENT

Trainings within India

Name and Designation	Title of training course	Place and duration
Dr. Maheswarappa H.P., PC (Palms)	Management Development Programme on Leadership Development	NAARM, Hyderabad 26-12-2013 to 04-01-2014
Dr. V. Krishnakumar, Head RS, Kayamkulam	Management Development Programme on Leadership Development (Pre-RMP Cadre)	NAARM, Hyderabad 26-11-2013 to 07-12-2013
Dr. A. Joseph Rajkumar, Sr. Scientist (Ag. Entomology)	Taxonomy of Leafhopper and Plant hopper Vectors	UAS, Bengaluru 30-09-2013 to 12-10-2013
Dr. K. Subaharan, Sr. Scientist (Ag. Entomology)	Bioinformatics: <i>in vitro</i> , <i>in silico</i> approaches in entomology	NBAII, Bangalore 18-11-2013 to 30-11-2013
Shri Radhakrishnan and Mrs. Vimala, JTA	Capacity building programme on mass multiplication of entomopathogenic fungus <i>Metarhizium anisopliae</i>	CPCRI, RS, Kayamkulam 29-11-2013 to 30-11-2013

Deputation Abroad

Dr. George V. Thomas, Director, CPCRI, Kasaragod visited Bangkok, Thailand as Expert Consultant on coconut sector development in Asia and Pacific region during 30-10-2013 to 01-11-2013.

Dr. M. K. Rajesh, Sr. Scientist (Biotech.) attended the Second Current Opinion Conference on 'Plant Genome Evolution 2013' held at Amsterdam, The Netherlands from 8-10 September, 2013.

Dr. S. Elain Apshara, Senior Scientist (Hort.), CPCRI, RS, Vittal, attended Malaysian International Cocoa Conference at Kuala Lumpur, Malaysia and presented papers during 7-8 October 2013.

Dr. Manimekalai visited Coconut Research Institute (CRI), Sri Lanka for development of capacities for early diagnosis, surveillance, spread prevention and integrated management of Weligama coconut leaf wilt disease programme during 8-12-2013 to 14-12-2013. She associated for development of protocol for molecular diagnostics of phytoplasma associated with Weligama coconut wilt disease.

Dr. M.R. Manikantan, Senior Scientist (APE), PB&PHT Division participated in NAIP sponsored international training on Smart Packaging at Kansas State University, Manhattan, Kansas State, USA under Dr. Kingsly Ambrose, Assistant Professor, KSU from 16-09-2013 to 14-12-2013. During the training, he fabricated the biodegradable food packaging films and evaluated the storage stability of coconut milk residue

flour and *kalkam* flour in the developed films. He also studied the flow characteristics and operational rheological properties of coconut milk residue flour and *kalkam* flour.



Dr. M.R. Manikantan carrying out experiments at Kansas State University

Dr. K. Devakumar, Senior Scientist (Biotech.) underwent three months NAIP training on "Marker Assisted Selection" from 1-10-2013 to 31-12-2013 at the Boyce Thompson Institute for Plant Research, Cornell University, Ithaca, USA. He worked with Prof. James Giovannoni, USDA-ARS, on understanding the regulation of the folate biosynthetic pathway by exploiting the genetic diversity present in the Introgression lines of wild type tomato *S. pennellii* in the genetic background of cultivated tomato variety *S. lycopersicum* (M82).

Awards/ Honours

Mr. Nagaraja, N. R., Scientist (Plant Breeding) has been awarded with Ph.D. in Genetics from Indian Agricultural Research Institute, New Delhi for his thesis entitled "Genetic and Molecular Marker Analysis of Stem Rust (*Puccinia*

graminis f. sp. *tritici*) Resistance in Wheat (*Triticum aestivum* L.) under the guidance of Dr. K. V. Prabhu, Head & Principal Scientist, Division of Genetics, IARI, New Delhi.

Awards for the best oral presentations at the National Seminar on 'Applications of Bioinformatics in Agriculture', Organized by Department of Information Technology and Agri-Bioinformatics Promotion Centre, CPCRI, Kasaragod November 11-12, 2013.

- Hemalatha N. and Rajesh M. K. 'Design and implementation of computational tools for prediction of abiotic stress-responsive genes in the genome of indica rice using machine learning algorithms'.
- Rachana K. E., Rajesh M. K., Regi Jacob Thomas and Anitha Karun. 'Molecular cloning, structural modeling and docking studies of CnCCR1, a CC-NBS-LRR type Resistance Gene Analogue (RGA) from coconut'.

Award for the best poster presentation at the National Seminar on 'Applications of Bioinformatics in Agriculture', Organized by Department of Information Technology and Agri-Bioinformatics Promotion Centre, CPCRI, Kasaragod November 11-12, 2013.

Lakshmi Jayaraj K., Sreejith K., Bhavyashree U., Fayas T. P., Rajesh M. K. and Anitha Karun. 'Isolation and analysis of proteins present at different developmental stages of somatic and zygotic embryos of coconut'.

Training programmes

A model training course for extension personnel on 'Participatory Technology Transfer Approaches For Plantation Crops' sponsored by Directorate of Extension, Ministry of Agriculture, Govt. of India, was organised at Central Plantation Crops Research Institute, Kasaragod during 19-26 November 2013. Dr. R.M. Prasad, Associate Director of Extension (Retd), KAU & Advisor to Govt. of Meghalaya inaugurated the model training course. 27 Officers from five states including Assam, Karnataka, Tamil Nadu, Andhra Pradesh and Kerala attended the MTC.



Participants of MTC along with Director and resource persons

One day training programme on 'Production and processing technologies of coconut' was organised at CPCRI, Kasaragod under ATMA project in collaboration with Department of Agriculture. The training programme for the first batch of 40 farmers from Neyyatinkara block of Thiruvananthapuram district was conducted on 09-12-2013 and for the second batch of 50 farmers from Kinanoor-Karindalam panchayat of Kasaragod district was conducted on 20-12-2013.

Empowerment Programme on Coconut production and Processing Technologies for Coconut Producers Societies, was organized at Kasaragod in collaboration with Kasaragod District Cooperative Bank on 17-10-2013. Mr. K.G. Sankaranarayanan, District Planning Officer Kasaragod inaugurated the programme. Dr. George V. Thomas, Director CPCRI presided over the inaugural function of Empowerment Programme. Mr. C. Balakrishnan, Deputy General Manager, Kasaragod District Cooperative Bank offered felicitations. 80 selected members and office bearers of Coconut Producers Societies, Coconut Producers Federations and Farmers Clubs from various parts of Kasaragod District attended the empowerment programme.

One day training programme on 'Organic farming in coconut' was organised at CPCRI, Kasaragod in collaboration with Department of Agriculture under the scheme for popularising organic farming in Kasaragod District. The training programme for the first batch of 50



Participants of training programme on 'Production and processing technologies of coconut' from Neyyatinkara block

farmers from West Eleri panchayat was conducted on 27-11-2013 and for the

second batch of 50 farmers from East Eleri panchayat was conducted on 30-12-2013.

Interface programme

As part of the cyber extension activities of the Institute, a research-extension interface programme facilitated through videoconferencing on 'Promoting group approach among coconut growers' was organised on 25-11-2013. Dr. Sugatha Ghose, CCDO and Dr. Remany Gopalakrishnan, Deputy Director, Coconut Development Board at Ernakulam and Dr. C. Thamban, Principal Scientist and Dr. K.P. Chandran



Research-extension interface programme facilitated through videoconferencing on 'Promoting group approach among coconut growers'

Sr. Scientist at CPCRI Kasaragod along with 27 extension personnel representing different states participated in the interface programme.

Training on 'Areca nut and cocoa production technology' was organized during 2-3rd December, 2013 at Vittal for 11 trainees of Erode district of Tamil Nadu.

Trainings on "Selection of mother palms and production of seedlings of dwarf varieties of coconut" for Agricultural Officers from Department of Agriculture, Govt. of Kerala were

conducted at CPCRI, Regional Station, Kayamkulam. A total of 28 participants attended the first batch training programme conducted during 7th and 8th Nov. 2013 representing Trivandrum (3 nos.), Kollam (7 nos.), Alappuzha (12 nos.) and Pathanamthitta (6 nos.) districts. A total of 21 participants representing Kottayam (2 nos.), Ernakulam (7 nos.), Trichur (7 nos.) and Palakkad (5 nos.) districts attended the second batch held during 12th and 13th Nov.2013. Class room lectures, field visits for identification of typical dwarf mother palms, demonstration of hybridization techniques in coconut etc. were dealt in detail.

Training on coconut climbing for Pazhakulam Service Society on 25-10-2013 & 13-12-2013 for and 28 climber trainees, respectively.



Participants of training from Erode, T.N.

Three off-campus trainings were organized for 153 farmers/ farm women of Assam.

CPCRI Kahikuchi has organized a training programme in collaboration with NRC, Seed Spices, Ajmer during 21st -22nd November, 2013 in which 50 farmers from Tinsukia, Golagaht, Jorhat,



Participants of training at RC, Kahikuchi



Visitors to CPCRI exhibition stall at Sirsi



Inauguration of Arasikere interface programme

Nalbari, Kamrup, Darrang and Dibrugarh districts participated.

Research Farmer Extension Interface programmes

Scientist-Farmer-Extension Interface Programmes on Coconut and Arecanut were organized in Shimoga, Tumkur and Hasan districts of Karnataka. Lecture cum discussions on production, protection and processing technologies and developmental programmes on coconut and arecanut were held. Exhibits were displayed for giving first hand information to the farmers. In total, 531 farmers had participated.



Participants at Sirsi interface



Participants of Hassan interface

S. No.	Name of the programme	Date	Venue	No. of Participants
1	Research- Farmer -Extension interface programme on Arecanut and Coconut	07-10-2013	Sri Chapparada Anjaneya Temple, AHRS, Sringeri	190
2	Research- Farmer -Extension interface programme on Coconut and Arecanut	09-10-2013	College of Forestry, Sirsi	122
3	Awareness cum demonstration on management of black headed caterpillar in coconut	10-10-2013	Govt First Grade College, Arasikere	107
4	Research- Farmer -Extension interface programme on Coconut and Arecanut	11-10-2013	KVK, Hassan	112

Expert review committee meeting on root (wilt) disease of coconut and yellow leaf disease of arecanut

Expert review committee meeting on root (wilt) disease of coconut and yellow leaf disease of arecanut was organized at CPCRI, RS, Vittal during 18-19th October, 2013. Experts from UAS, Bangalore, KAU, Thrissur, IARI, New Delhi, CPCRI, Kasaragod, Kayamkulam and Vittal had participated in the meeting.



Experts of meeting on YLD of arecanut



Field visit to YLD gardens at Sampaje

Exhibition

Attended the Agri-Business camp and provided a stall to showcase the technologies at ICAR NEH, Umiam on 21st December 2013-organized jointly by ICAR Research Complex for NEH Region in collaboration with Zonal Technology Management-Business Planning and Development Unit NIRJAFT, Kolkata.

Frontline demonstrations

Area-wide community approach for integrated management of red palm

weevil and rhinoceros beetle of coconut initiated at RS, Kayamkulam with the financial support of the Kerala State Planning Board. A stakeholders' meet comprising of Panchayat president, Vice-president and members of Bharnikavu panchayat was organized on 23-11-2013 at Community Hall, Bharnikavu to launch the programme. Glimpse of the project including data-collection procedure as well as training cum field sensitization campaigns on key pests and diseases of coconut were conducted at Bharnikavu on 3rd and 28th December 2013 by Dr. P. Anithakumari, Dr. A. Joseph Rajkumar and Dr. Merin Babu. A poster campaign about red palm weevil and its management was initiated to enhance the awareness and area-wide management of the pest in the Panchayat.

An awareness campaign cum Farmer-scientist interface programme was held at Jajur, Arsikere on 10-10-2013 under the leadership of Dr. George V. Thomas, Director, CPCRI. A team of CPCRI scientists including Dr. Vinayaka Hegde, Dr. Ravi Bhat, Dr. Chandrika Mohan, Dr. M. Alagar Dr. Jaganathan, and Dr. Rajkumar participated in the interface programme on health management of coconut with emphasis on drought mitigation. A demonstration trial was



Release of parasitoids in the field for the control of black headed caterpillar

laid out in a farmers plot at Jajur. The palm health management strategies were included in the demonstration trial.

TV/Radio programme

Dr. A. Joseph Rajkumar, Senior Scientist, Ag. Entomology participated in the *Krishidarshan* phone-in-live programme on Integrated Pest Management in coconut held at Doordarshan studio, Thiruvananthapuram on 20-12-2013.

Dr. Nagaraja, N. R., Scientist (Plant Breeding), RS, Vittal participated in a TV programme on Crop Improvement in Arecanut broadcast by DD Chandana, on 28-11-2013.

Dr. C. Thamban, Principal Scientist (Agrl. Extension) presented a radio talk on 'Kisan Vani programme for disseminating technologies for sustainable agricultural production' which was broadcast by All India Radio, Kannur on 31-12-2013.

Krishi Vigyan Kendra, Kasaragod

Success Story on value addition

A success story has come out from KVK, Kasaragod in the Food processing sector. Smt Omana a housewife from Kasaragod was an ex-trainee of KVK, Kasaragod. She who had no earnings on her own previously is now bagging a good amount of money from making jams,



Capacity building programme for master farmers at KVK Kasaragod

squashes, syrups and biscuits. The products are marketed under the name Meenu's Food products.

Backyard poultry

KVK, Kasaragod distributed 12 poultry birds to each of its Integrated Farming System demonstration plots. Scientifically prepared cages were also supplied along with. The birds were vaccinated and 60 days old. A good outcome is expected from this additional unit of IFS plots. The dual purpose birds were of BV 380 breed and are said to have acclimatized well with the new environment. The expected yield is around 320 eggs in 72 wks by the end of which the bird would attain a body weight of 2kg. 100g feed per day is required for each bird.

Training programmes

Training programmes on various topics like banana fibre extraction and handicraft making, communication, group dynamics, leadership, beekeeping, mechanical palm climbing and plant protection in coconut, IPM in paddy, management of diseases in cocoa cultivation, IDM practices of crops in organic cultivation, Mushroom production technology, etc.

High hopes in pearl culture

KVK has taken up Fresh water pearl culture as one of its FLD programmes. Demonstrations are being taken up by a Kudumbashree unit comprising of 10 women members at Bara. Each member will be raising fresh water mussels in 10 transparent buckets. The algae required for the growth of mussels are being raised in tanks now. The fabrication of buckets for pearl culture has also been completed.

As soon as the phytoplankton and zooplankton are optimum in the tanks, the water medium will be transferred to buckets and fresh water mussels will be introduced into them @ 5 mussels per bucket.

ATMA linkage

KVK has collaborated with ATMA to give training on IPM and IDM in coconut and other topics of importance like Organic farming technologies for coconut, Inter cropping in coconut garden, Organic Pest Management in crops, Bee Keeping and processing of honey, Machine aided coconut palm climbing and plant protection, Biological control of paddy pests, organic vegetable cultivation and Coconut based home stead farming.

Banana fibre extraction

KVK guided and conducted training in Banana fibre extraction, dyeing and handicraft making for staff and students of BEMP UP School, Kasaragod who were to participate in the School Science exhibition and competition. They presented and demonstrated the process and bagged first prize in the competition.

On Farm Trials

On farm trials on role of bio control agents on the growth and performance of ginger, performance evaluation of growth promoting formulations in organic cultivation of YLB, management of Fusarium wilt and dry root disease of cowpea, management of Sigatoka leaf disease in banana, assessment of PGPR in amaranthus cultivation, management of basal stem rot (Ganoderma wilt) disease of coconut, management of black pod disease in cocoa by organic methods, etc

are in progress.

Under the OFT at Muthenadukkam, Kallyot and Pollakkada of Periya and Erikkulam of Madikai panchayath, *Pseudomonas fluorescence* sprayed to the spindle and inner whorl leaves. Considerable decline in the spread of disease incidence was noticed.

Ongoing FLDs

Integrated farming system, Integrating bee colonies in the existing cropping system, Management of root grub in arecanut using bio control agents, Use of vermiwash as GAP in organic cultivation of vegetables, Light traps for pest monitoring in organic cultivation, Micronutrient management in banana using Banana Shakthi.

Krishi Vigyan Kendra, Alleppey

Kalpakam-2013

Technology week celebrations was organised from 19th to 22nd Nov 2013 in connection with the inauguration of the new administrative building of KVK Alappuzha. The four days programme included KVK ATMA Plus technology Meet, Training cum awareness programme on Protection of Plant Varieties & Farmers' Right Act and an interface on "Prospects of value addition in coconut". During the period, an Agricultural Exhibition was organised.



Adv. U. Prathibha Hari, President, District Panchayath inaugurating the exhibitions

The exhibition was inaugurated by Adv. U. Prathibha Hari, District Panchayath President, on 19-11-2013. About 1100 farmers and 150 students visited the exhibition stalls. An Interface session on “Prospects of Value Addition in Coconut” was conducted as part of the technology week celebrations.

ATMA linkage

KVK ATMA Plus technology meet, a two day programme jointly organised by Krishi Vigyan Kendra and ATMA - Alappuzha district was conducted on 19th and 20th Nov, 2013 at CPCRI, RS, Campus. Adv. U. Prathibha Hari, District Panchayath President, inaugurated the programme on 19th November which was presided over by Smt. S. Mayakumari, Principal Agricultural Officer, Alappuzha. Dr. V. Krishnakumar, Head, CPCRI, (RS), Kayamkulam; Smt. Annie. K. Cherian, Joint Director, Dept. of Agriculture, Vikas Bhavan, Thiruvananthapuram; Smt. Lizy P. Scaria, District Animal Husbandary Officer; Smt. K. G. Sreelatha, Asst. Director, Dairy Development Department, Alappuzha; Sri.K.K. Anirudhan, Regional Executive, ADAK; Smt. Jasmine. K. Jose, Asst. Director, Dept. of Fisheries, Alappuzha; Smt.

Meera Senan, Project Director, ATMA, Alappuzha and Smt. Neena Raphael, Deputy Project Director, ATMA, spoke on the occasion. Two farmers Smt. Radhamani, Pollathayi and Sri. Suresh Kumar, Vallikunnam, the best partner farmers on demonstration of IFS models of KVK, were honoured on the occasion. About 250 selected farmers from 6 blocks of the district participated in the programme. The technology advisory meetings were also organised.

Training cum awareness programme on Protection of Plant Varieties & Farmers' Right Act'

A training cum awareness programme on Protection of Plant Varieties & Farmers' Right Act sponsored by the Protection of Plant Varieties and Farmers Right Authority, New Delhi was conducted - to create awareness among the farmers and other stake holders about the provisions of the PPV & FR Act, 2001 on **21-11-2013**. Dr. V. K. Raju, Associate Director of Research, Kerala Agricultural University inaugurated the programme, presided over by Dr. V. Krishnakumar, Head, CPCRI Regional Station. About 110 participants from various parts of the district attended the programme.

Training programmes

Organized 9 training programmes benefitting a total number of 268 farmers/rural youths during the period. The details of the training programmes were as follows:

Training	No. of batches	Participants		
		Men	Women	Total
On campus	3	77	34	111
Off campus	5	64	83	147
Vocational training	1	9	1	10
Total	9	150	118	268

....Contd. from pg. 7

Training Manual

Thamban, C., S. Jayasekhar, Chandran, K. P. and D. Jaganathan. 2013. Participatory Technology Transfer Approaches For Plantation Crops. Central Plantation Crops Research Institute, Kasaragod. pp: 198.
Thomas, R.J. and Shareefa, M. 2013. Manual on “Selection of mother palms of dwarf varieties and hybridization technique in coconut”. CPCRI, Regional Station, Kayamkulam, Kerala 45p.

Chapters in training manual

Thomas, R. J. and Shareefa, M. 2013. Utilization of genetic resources for disease resistance In: *Training Manual “Recent advances in conservation of genetic resources of Plantation Crops”* 22-31st October, 2013 CPCRI, Kasaragod.
Elain Apshara, S. 2013. Conservation strategies and status of crop improvement in cocoa. In: ICAR-sponsored short course on Recent advances in conservation of genetic resources of plantation crops (Eds). Anitha Karun, Rajesh, M.K., Jerard, B.A., Amarnath, C.H. and Samsudeen, K., 22-31 Oct., 2013, CPCRI, Kasaragod. pp. 39-58.



Honouring Smt. Radhamani for the IFS model unit



Inauguration of training cum awareness programme on PPV&FRA

PARTICIPATION IN MEETINGS/ SYMPOSIUM/ SEMINAR

Name and designation	Title of the programme	Place and date
Dr. V. Krishnakumar, Principal Scientist & Head	National Workshop on soil based Plant Nutrient Management Plan” organized by the State Planning Board	Thiruvananthapuram 8-10-2013 to 9-10-2013
KVK, Kasaragod and KVK, Alleppey team	National level KVK Meet	UAS, Bangalore 23-10-2013 to 25-10-2013
Dr. Vinayak Hegde, Dr. Murali Gopal, Dr. M. K. Rajesh and Dr. R. Manimekalai	National Symposium on Pathogenomics for Diagnosis and Management of Plant Diseases	CTCRI, Thiruvanan- thapuram 24-10-2013 to 25-10-2013
Dr. Chandrika Mohan, Principal Scientist	13 th workshop of the IOBC Global Working Group on mass rearing and quality assurance organised by NBAII, Bengaluru	Bengaluru, 06-11-2013 to 08-11-2013
Dr. George V. Thomas, Director, Dr. K. Muralidharan, Dr. K.B. Hebbar, Dr. Anitha Karun, Dr. Ravi Bhat, Dr. Vinayaka Hegde, Heads of Division, Dr. Augustine Jerard, Dr. K. Samsudin, Dr. Alka Gupta, Dr. K. Subaharan, Dr. Josephraj Kumar, Dr. S. Elain Apshara, Senior Scientists Mrs. Pratibha P.S., Dr. Rajkumar, Dr. Nagaraja, N. R. Scientists	National Seminar on application of bioinformatics in agriculture	CPCRI, Kasaragod 11-11-2013 to 12-11-2013
Dr. George V. Thomas, Director,	Annual Conference of Association of Microbiologists of India 2013	Rohtak 19-11-2013
Dr. Murali Gopal, Principal Scientist		
Dr. S. Kalavathi, Principal Scientist	International Conference on Extension Educational Strategies for Sustainable Agricultural Development A Global Perspective and presented a poster entitled “Community based approaches and models for technology transfer in coconut: Prospects and concerns at grass root level	UAS, Bengaluru, 5 th to 8 th Dec. 2013
Dr. Ravi Bhat, Acting Head, Crop Production	10 th National Symposium on Managing natural resources for enhancing agricultural and allied productivity in coastal region under changing climate	CSSRI, Karnal 11-12-2013 to 13-12-2013
Dr. M. K. Rajesh Senior Scientist	National Seminar on New Frontiers in Molecular Biology	MAC, Kothamangalam 12-12-2013 to 13-12-2013
Sandip Shil, Scientist	Workshop on Statistical Methods for Bioinformatics	IISc, Bangalore 12-12-2013 to 14-12-2013

CELEBRATIONS

Hindi Chetana Mas

Closing ceremony of the Hindi Chetana Mas was held on 28-10-2013 at CPCRI Kasaragod, in which Dr. Jitendra Gupta, Guest Faculty on Hindi from Central University of Kerala was the chief guest. He felt that Hindi is a valuable medium to take the research findings to the farmers at large. Distribution of prizes to the winners of various competitions held during the Chetana Mas was held during the programme.

Hindi Workshop

A workshop on use of Unicode for Hindi was held at CPCRI, RS, Kayamkulam on 4-10-2013, which was handled by Smt. K. Sreelatha, Sr. Technical Officer (Hindi).

Vigilance Awareness Week

Vigilance Awareness Week was observed in the Institute from 28-10-2013 to 2-11-2013. A guest lecture on 'Promoting good Governance' by Prof. Xavier D'Souza, Principal, Ist Grade College, Vittal on 31.10.2013 at RS, Vittal.



A view of the Vigilance Awareness Week programme

Communal Harmony

Communal Harmony Flag Day was observed at CPCRI, Kasaragod on 25-11-2013. During the meeting, felicitations were offered by Shri Shri Swamy Viviktananda Saraswathi, Chinmaya Mission, Kasaragod, Rev. Fr. Mani Melvattom, Priest, St. Joseph Church, Kasaragod and Janab Nassar, Cherukara, IMAM Islamic Centre Masjid, Kasaragod.

International Year of Statistics celebrations

A special study circle meeting was held on 18-12-2013 at 11.00 am under the leadership of Dr. V. Krishnakumar, Head, CPCRI, Regional Station, Kayamkulam



Shri Viviktananda Saraswathi, Chinmaya Mission speaking during the Communal Harmony programme

in connection with celebrations of International Year of Statistics-2013. Dr. N. Balakrishna, Professor (Statistics), CUSAT, Kochi, the chief guest for the programme highlighted on the time-series analysis and stochastic modeling and how these models are validated and perfected for use.

Recreation club activity: The Recreation club of CPCRI, Regional Station, Kayamkulam conducted a one day trip to Idukki dam and Wagamon on 12th Oct.2013. A total of 40 club members along with their family enjoyed the picnic.

DISTINGUISHED VISITORS

Hon'ble Secretary, DARE and DG (ICAR); Dr. S. Ayyappan visited the centre on 27th November 2013 along with DDG, Education,



Dr. S. Ayyappan, Secretary DARE & DG, ICAR visiting CPCRI, RC, Kahikuchi

PERSONALIA

APPOINTMENT

Name of the official	Designation	Location	w.e.f.
Dr. Vinayaka Hegde	Head, Division of Crop Protection	CPCRI, Kasaragod	31-12-2013
Dr. Ravi Bhat	Head, Division of Crop Production	CPCRI, Kasaragod	31-12-2013
Smt. L. Leena	SSS	CPCRI, RS, Kayamkulam	19-10-2013
Smt. K. Vanamalini	SSS	CPCRI, Kasaragod	18-10-2013

PROMOTION

Name of the staff	From (Designation)	To (Designation)	w.e.f.
Shri M.P. Ramesh Kumar	Technical Officer (T 7-8)	Chief Technical Officer (Lib.)	03-02-2012
Dr. K.K. Sajini	Technical Officer (T 7-8)	Chief Technical Officer (Lab Tech.)	01-08-2012
Dr. G. Rajeev	Technical Officer (T 6), RS, Kayamkulam	Asst. Chief Technical Officer (Lab Tech.)	02-12-2011
Shri Jacob Kurien	Technical Officer (T 6), RS, Kayamkulam	Asst. Chief Technical Officer (Field/ Farm Tech.)	01-07-2012

RETIREMENT

Name	Designation	Place	Superannuation on
Shri C.H. Amarnath	Technical Officer (T 7-8)	CPCRI, Kasaragod	31-10-2013
Smt. K. Meenakshy	SSS	CPCRI, Kasaragod	30-11-2013
Shri N. Mohanan	SSS	CPCRI, RS, Kayamkulam	30-11-2013
Shri M.C. Muthanna	Technical Officer	CPCRI, RS, Vittal	31.12.2013
Shri K.V. Kumaran	SSS	CPCRI, Kasaragod	31-12-2013
Smt. N. Anitha	LDC	CPCRI, RS, Kayamkulam	resigned on 11-12-2013



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

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