



CPCRI

News



Views and News on Advances in Coconut, Arecanut and Cocoa



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DDG visits CPCRI, Kasaragod and (RS) Vittal

Dr. N.K. Krishna Kumar, DDG (Hort.) visited CPCRI, RS, Vittal on 29-10-2012 along with Dr. P.L. Saroj, Director, DCR, Puttur. DDG took stock of the activities going on at the station and appreciated the performance. In the afternoon he visited CPCRI headquarters, Kasaragod, addressed the staff and inaugurated the Vigilance Awareness Week. On 30-10-2012, DDG visited the laboratories and also the field experiments. He stressed the need for integrating the available management technologies to maximise the yield and demonstrate it in the Institute plots at Kasaragod on coconut and at Vittal on arecanut.

Vigilance Awareness Week

The Vigilance Awareness Week was observed at CPCRI, Kasaragod from 29th October to 3rd November, 2012. Dr. George V. Thomas, Director administered the pledge in English and Shri Suresh Kumar,



Dr. N.K. Krishna Kumar, DDG (Hort.) visiting the experimental field and Agro-processing Centre at CPCRI Kasaragod



Dr. N.K. Krishnakumar, Deputy Director General (Hort.), ICAR addressing the staff at Kasaragod

Chief Administrative Officer administered the pledge in Hindi to the staff members. The Director briefed the gathering on the importance of vigilance, especially in a scientific organization like ICAR/CPCRI. Dr. N.K. Krishnakumar, Deputy Director General (Hort.) in his inaugural address spoke at length on the scourge of corruption spreading to all spheres of governance and no institution is immune to it, seriously impairing the economic growth and development, even infringing on national security. He stressed the need to be honest,



hardworking and transparent in all activities. On 2nd November 2012, Shri T.K. Shibu, IPS, Assistant Superintendent of Police, Kasaragod delivered a lecture on the vigilance procedures and good governance with special reference to transparency in procurement of stores/ services in government institutions.

At CPCRI Regional Station, Kayamkulam, pledge was administered to the staff on 29.10.2012. Dr. V.K. Chaturvedi, Head-in-charge of the Station made a brief speech on the importance of the Week. The valedictory function was held on 3rd November, 2012 and Dr. V. Krishnakumar delivered a speech on “General Management in Scientific Organisations”.

At CPCRI Regional Station, Vittal, Dr. K.S. Ananda, Head administered the pledge to all officers and staff of the station on 29-10-2012. A guest lecture on the “Transparency in public procurement” was also arranged on 2nd November, 2012. The Vigilance Awareness Week was also observed at CPCRI Minicoy Centre and CPCRI Research Centres at Kidu, Mohitnagar and Kahikuchi.

22nd Swadeshi Science Congress

The 22nd (All Kerala) Swadeshi Science Congress was held at CPCRI Kasaragod from 6th to 8th November 2012. The Congress was inaugurated by noted writer and scientist, Shri C. Radhakrishnan. Dr. George V. Thomas, Director, CPCRI presided over the function. Dr. V.P.N. Nampoori, President of Swadeshi Science Movement, briefed the gathering. Prof. Jancy James, Vice-Chancellor, Central University of Kerala was the chief guest. During the Congress Dr. P.V. Joseph, an eminent scientist was honoured with Swadeshi Sastra Puraskaram.

A total of 110 research papers were presented under mathematics, ocean technology and fisheries sciences, life sciences (biotechnology, microbiology, botany and zoology), environmental sciences, agriculture, animal and aquatic sciences, health sciences, physical sciences (IT, engineering, physics and chemistry) and traditional sciences during the three days. Sir C.V. Raman memorial lecture was delivered on 7-11-2012 by Prof. V.N. Rajashekharan Pillai, Secretary to the Govt. of Kerala and Executive Vice-President, KSCSTE.

The Valedictory Session was held in the evening on 8-11-2012 and

Dr. B. Madusudhana Kurup, Vice-Chancellor Kerala University of Fisheries and Ocean Sciences, Kochi delivered his valedictory address. Dr George V Thomas, Director, CPCRI & Chairman, Organizing Committee read out the 'Resolution on Ecosystem Services'.



Shri C. Radhakrishnan delivering inaugural speech

Brainstorming meeting on phytoplasmal diseases management

A Brainstorming session on “Management of phytoplasmal diseases

of coconut and arecanut” was conducted at CPCRI, RS, Kayamkulam on 8th December, 2012. The meeting was chaired by Dr. George V. Thomas, Director, CPCRI, Kasaragod and Dr. M. Anandaraj, Director, IISR, Kozhikode inaugurated the session. Director, CTCRI and Project Coordinator (Palms) offered felicitations. A total of 46 subject matter experts from different ICAR Institutes and SAUs attended the meeting. The deliberations were conducted under three technical sessions - 'Current status of

phytoplasmal diseases of various crops', 'Current research and future strategies of phytoplasmal diseases of coconut and arecanut' and 'Management of phytoplasmal diseases in horticultural crops'. Various working group were formulated and an action plan for the flagship project “Management of phytoplasmal diseases of coconut and arecanut” was developed.

Group meeting on management of *Phytophthora* diseases

A group meeting on “New approaches for the management of *Phytophthora* in Plantation Crops” was



Dr. M. Anandaraj, Director IISR delivering inaugural speech

held at CPCRI, Kasaragod on 29-10-2012. Dr. George V. Thomas, Director, chaired the Group Meeting. Dr. M. Anandraj, Director, Indian Institute of Spices Research, Calicut was the Chief Guest. Dr. ChandraMohanar delivered keynote address on “Strategies for the integrated management of *Phytophthora* diseases in Plantation Crops”, followed by a technical session on “Epidemiology

and Management of *Phytophthora* diseases”. Dr. M. Anandraj delivered a lecture on “Management of *Phytophthora* diseases in spices” detailing management strategies for quick wilt in black pepper, followed by a panel discussion on *Phytophthora* diseases management.



Dr. M. Anandraj, Director IISR inaugurating the Group Meeting on *Phytophthora* diseases, Dr. George V. Thomas, Director and Dr. R. ChandraMohanar, Head are also seen



INSTITUTIONAL NEWS

ICAR Short course organised

ICAR short course on “Non-parametric approaches in crop

modelling” was organized at CPCRI during 20-29 November 2012. Fifteen participants from ICAR institutes and State Agricultural Universities of Kerala, Karnataka, Tamil Nadu and Uttaranchal participated in the programme. Exposure to advanced non-parametric modelling techniques was imparted to the participants along with hands on sessions

using statistical software like SAS 9.3.

Bioinformatics training

DBT-funded training programme on “Genetic diversity and mapping analysis using molecular marker data” was organized at CPCRI, Kasaragod from 15th-20th October 2012. There were nine participants.

RESEARCH HIGHLIGHTS

Cryopreservation of plumular explants: a new approach for conservation of coconut genetic diversity

Considering its small size, abundance of meristematic cells and potential for regeneration as well as



Regeneration of plantlet from cryopreserved plumular explant

exclusion of most of the pathogenic agents, cryopreservation of plumule provide a new approach for conservation of genetic diversity in coconut. Supplementation of glutamine along with NAA was beneficial for healthy growth of plumule. Sucrose, at three concentrations (0.3, 0.4 and 0.5 M), was incorporated in the pre-growth media as a cryoprotectant for explant conditioning. Droplet freezing method was then carried out utilizing PVS3 as cryoprotectant. Plumule tissue, with a portion of the radicle, was ideal for fast *in vitro* growth and recovery of whole plants of coconut.

Authentication of coconut hybrids using RAPD analysis

RAPD markers for plant type trait were identified using a bulked DNA

approach. Screening of tall and dwarf palm bulk DNA with 200 decamer primers revealed a RAPD primer OPBA3 which could clearly differentiate both the tall and dwarf bulks. For validation, the primer was used to screen individual tall and dwarf coconut palms representing different geographic regions. Primer OPBA3 produced a band of around 1200 bp present only in tall palms and a band of around 1300 bp present only in dwarf palms. The primer was also used to screen the dwarf (female) and tall (male) parents and validate hybrids of D x T crosses. The results could pave the way for the development of SCAR markers for distinguishing tall and dwarf coconut accessions which would go a long way in achieving varietal purity and ensuring the quality of T x D and D x T hybrid seedlings produced.

LTTRPred: A tool for prediction of transcriptional regulator of pyoluteorin pathway in *Pseudomonas* species using SVM based approach

The LTTR family represents one of the largest classes of bacterial transcriptional regulatory proteins. A large number of LTTRs function as global transcriptional activators or repressors of unlinked genes or operons involved in metabolism, quinoline signal, virulence *etc.* The proposed method, LTTRPred, is a useful tool developed for identifying and predicting the LTTR, which is responsible for the activation of Plt transcription regulators, in whole genomes of various *Pseudomonas* spp. LTTRPred was developed using support vector machine (SVM) based on the composition of amino acid and amino acid pairs. Modules were first developed using traditional amino acid, dipeptide (n+1) and hybrid amino acid composition and an overall accuracy of 98%, 100% and 98% respectively was achieved. The performance of the tool was tested using various datasets of LTTR genes from

different *Pseudomonas* spp. and compared with other gene predicting tools. This tool can be used for the functional annotation of the microbial genome data providing insights into genome evolution and identifying different strains containing LTTR genes.

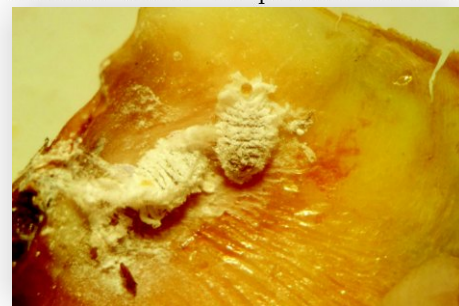
Response of Coconut to climate change

The interaction effect of climate change variables, elevated CO₂ (ECO₂) and elevated temperature (ET) with drought and nutrients on growth and development of coconut seedlings was studied in Open Top Chamber (OTC). At 700 ppm CO₂ the biomass production was almost double that of ambient-grown plants. With ET, biomass had significantly reduced. In ECO₂ both root and shoot growth contributed significantly to the increase in biomass. The whole plant water use efficiency measured in coconut seedlings grown in normal and water-limited condition was significantly high in ECO₂ treatments suggesting coconut would produce higher biomass in the future climate

scenarios, but with the present level of moisture availability.

Rare occurrence of mealy bug in coconut

Incidence of mealy bug (*Dysmicoccus* sp) was observed on coconut buttons/ immature nuts under the perianth, which is a rare phenomenon in North East India, in particular. Presence of both eriophyid mite and mealy bug has also been observed beneath the coconut perianth in some instances. The colour of the mealy bug is white to creamish white. Older nymphs are covered with fluffy white wax. Mealybugs are seen to colonize under the perianth lobes of



Incidence of mealy bug in perianth of coconut

HUMAN RESOURCE DEVELOPMENT

Ph.D. awarded

Shri M. Senthil Amudhan Scientist (Sr. Scale) has been awarded Ph.D. Degree from Tamil University, Thanjavur, Tamil Nadu for his thesis entitled “Studies on biopotential of *Areca catechu* seed extract” under the guidance of Dr. (Mrs.) V. Hazeena Begum, Professor of Biochemistry, Department of Siddha Medicine and Dean, Faculty of Science, Tamil University.

Smt. Sajini K.K. Technical Officer (T 7-8) was awarded Doctoral Degree by Mangalore University for her thesis “Long term *in vitro* conservation of coconut (*Cocos nucifera* L.) by embryo and pollen” under the guidance of Dr. Anitha Karun, Head, Division of Crop Improvement, CPCRI, Kasaragod.

Awards/honors

Dr. Ravi Bhat, Principal Scientist (Agronomy) and Acting Head, CPCRI, Kasaragod received “Best Arecanut

Scientist award for the biennium 2011-2012” for outstanding contribution in the field of Arecanut Research & Development.

Dr. V. Krishnakumar, Principal Scientist (Agronomy), CPCRI, Regional Station, Kayamkulam received the certificate of Fellow of the Indian Society for Plantation Crops.

Dr. V. Krishnakumar, Principal Scientist (Agronomy), Central Plantation Crops Research Institute, Regional Station, Kayamkulam has been nominated as Member, Board of Studies for the M. Sc. (Plantation Science) of the Calicut University for a period of three years from October 2012.

Dr. A. Joseph Rajkumar, Sr. Scientist has been nominated as a Member of Academic Council, Kerala Agricultural University, Thrissur for a period of two years.

Dr. Chandrika Mohan, Dr. A. Joseph Rajkumar and Sri P. Rajan were bestowed

with Dr. CS Venkata Ram Memorial Award for the second best original research paper entitled “Field Validation of Biological Suppression of Coconut Black Headed Caterpillar, *Opisina arenosella* Walker using larval parasitoids, *Goniozus nephantidis* and *Bracon brevicornis*” presented at XX PLACROSYM 2012 held at Coimbatore during December 12-15, 2012.



Dr. Chandrika Mohan receiving best paper award from Dr. A.P.J. Abdul Kalam

Trainings within India

Name and Designation	Title of training course	Place and duration
Dr. G.C. Acharya, Sr. Scientist	Advanced Techno-management programme for G & H Level scientists	ASCI, Hyderabad 17-09-2012 to 19-10-2012
Dr. Regi Jacob Thomas, Sr. Scientist (Hort.)	DBT sponsored training programme on "Genetic diversity and mapping analysis using molecular marker data"	CPCRI, Kasaragod 15-10-2012 to 20-10-2012
Mr. Nagaraja, N. R. Scientist (Plant Breeding)	Quantitative Genetics in the Era of Genomics	TNAU, Coimbatore 16-11-2012 to 06-12-2012
Dr. S. Kalavathi, Pr. Scientist Dr. Regi Jacob Thomas, Sr. Scientist and Dr. M. Shareefa, Scientist	Workshop on Protection of Plant Varieties and Farmers' Rights	CTCRI, Sreekaryam 20-11-2012
Dr. Samsudeen K., Sr. Scientist, Dr. S. Jayasekhar, Scientist (SS), Dr. C. Kesavan Nampoothiri and Shri C.H. Amarnath, Technical Officers	ICAR Short Course on Non-parametric Approaches in Crop Modelling	CPCRI, Kasaragod 20-11-2012 to 29-11-2012
Mr. Rajeev M.S., SMS	Hi-Tech farming	CTI, KAU, Mannuthy 04-12-2012 to 06-12-2012
Dr. G. Rajeev, Technical Officer	'Molecular markers for genetic variability analysis'	NBFGR, CMFRI, Kochi 12-12-2012 to 19-12-2012
Dr. S. Kalavathi, Sr. Scientist and Dr. Jeena Mathew, Scientist	CeRA Awareness Workshop	CTCRI, Thiruvananthapuram 17-12-2012

PUBLICATIONS

Research Articles

- Ambili K., George V. Thomas, Indu P., Viji M.V., Murali Gopal and Alka Gupta. 2012. Distribution of arbuscular mycorrhizae associated with coconut and arecanut based cropping systems. *Agril. Res.* **1**(4): 338-345.
- Dilip K. Ghosh, Sumit Bose, Shivankar, V. J., Manimekalai, R. and Gowda, S. 2012. Molecular detection of *Candidatus* Phytoplasma spp. causing witches' broom disease of acid lime (*Citrus aurantifolia*) in India. *J. Plant Biochem. Biotechnol.* DOI **10.1007/s13562-012-0160-z**.
- Dushyanth Singh, Kushwaha, H. L., Mathew, A.C., Manoj Kumar, T.S., Hebbar, K.B., Madhavan, K., George V. Thomas and Bhargava V.K. 2012. Performance evaluation of paddle type and push up type coconut climbing devices. *J. Plantation Crops* **40**: 224-226.
- Jose, C. T., Jayasekhar, S., Muralidharan, K., Chandran, K. P. and Jaganathan, D. 2012. A robust estimate for location in experiments with plantation crops. *J. Plantation Crops*. **40**(2): 132-134.
- Kesavan Subaharan, Charles Sahayaraj, Prasad, A.R. and Ravikumar, N. 2012. Effect of sub lethal dose of insecticides on electrophysiological and behavioral response of *Bracon brevicornis* a parasitoid of coconut black headed caterpillar, *Opisina arenosella*. *Intl. J. Innovative Hort.* **1** (1): 74-78.
- Manimekalai R., Smita Nair, V. P. Soumya, and George V. Thomas. 2012. Phylogenetic analysis identifies '*Candidatus* Phytoplasma oryzae'-related strain associated with Yellow Leaf Disease of Areca palm (*Areca catechu* L.) in India. *Int. J. Syst. Evol. Microbiol.* **10**.1099/ij.s.0.043315-0.
- Manimekalai, R. 2012. Inter simple sequence repeat (ISSR) markers for identification of germplasm and diversity analysis in coconut (*Cocos nucifera* L.) *Int. J. Innovative Hort.* **1**(1): 63-67.
- Manimekalai, R., Deeshma, K. P., Manju, K. P., Soumya, V. P., Smitha Nair and Ananda, K. S. 2012. Molecular-marker based genetic variability among Yellow Leaf Disease (YLD) resistant and susceptible arecanut palm (*Areca catechu* L.). *Indian J. Hort.* **69**(4): 455-461.
- Rajan, P., Nair, C.P.R., Josephraj Kumar, A. and Chandrika Mohan 2012. Another invasive pest, coconut leaf beetle, *Brontispa longissima* (Gestro), an imminent biosecurity threat at the doorsteps of India. *J. Plantation Crops* **40**(2): 140-143.
- Rajesh, M.K., Thomas, R.J., Rijith, J., Shareefa, M. and Jacob, P.M. 2012. Genetic purity assessment of D X T hybrids in coconut using SSR markers. *Indian J. Genetics and Plant Breeding* **72** (4): 472-474.
- Rajesh, M.K., Jerard, B.A., Preethi, P., Thomas, R.J., Fayas, T.P., Rachana, K.E. and Anitha Karun. 2012. Development of a RAPD-derived SCAR marker associated with tall-type palm trait

- in coconut. *Scientia Horticulturae* **150** (4): 312-316.
- Senthil Amudhan, M. Hazeena Begum, V. and Hebbar, K. B. 2012. A review on phytochemical and pharmacological potential of *Areca catechu* L. seed. *Intl. J. Pharmaceutical Sci. and Res.*, **11**: 4151-57.
- Sivakumar, G., Josephraj Kumar, A. and Rangeshwaran, R. 2012. Bioefficacy of peat formulation of bacterial antagonists on growth promotion and disease suppression in cardamom (*Elettaria cardamomum* Maton). *J. Biol. Cont.* **26**(3): 255-259.

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- Jerard, B.A., Niral, V., Samsudeen, K., Rajesh, M.K., Nair, R.V. and Sendur Kumaran, S. 2012. Exploiting variability among coconut palms for identifying *in situ* drought tolerant palms. In: First National Biodiversity Congress NBC 2012 held at Thiruvananthapuram from 27th-30th December, 2012, pp.44.
- Mathew, J., Krishnakumar, V. and Anithakumari, P. 2012. Potassium content of coconut palms in relation to soil physico chemical properties in an acidic soil of Kerala. In: Proceedings of 8th Intl. Symp. Plant soil interaction at low pH. UAS Bangalore, 18-22nd October 2012, pp.
- Murali Gopal, Alka Gupta and George V. Thomas. 2012. Understanding the microbial diversity in the coconut leaf vermicompost using next-generation sequencing technology. In: Proc. Third International Conference of Sustainable Utilization of Tropical Plant Biomass through Biotechnology 'SUPBT-2012' at KVM College of Engineering and Information Technology, Cherthala, Alappuzha, 13-15th Dec 2012. pp. 76-78.
- Paul, S.C., Chakrabarty, R., Acharya, G.C., Hussain, M. Ray, A.K. and Maheswarappa, H.P. 2012. Integrated management of Arecanut based cropping system for sustainable development of the acid soils in North Eastern Region of India. In: 8th Intl Symp Plant-soil interactions at Low pH, Bangalore, pp. 344-345.
- Rajesh, M.K., Samsudeen, K., Jerard, B.A., Rejusha, P., Moosa, H., Jacob, P.M. and Anitha Karun 2012. Phylogenetic relationships and genetic diversity among Laccadive Tall coconut populations from Amini and Kadmat islands, Lakshadweep. In: First National Biodiversity Congress 2012, Thiruvananthapuram from 27th-30th December, 2012 pp.38.
- Shareefa, M., Srivastava, M., Dubey, A. K., Singh, N. K., Singh, A.K. 2012. Comparison of genomic SSRs with EST derived SSR markers for estimating genetic diversity in mango genotypes. In: Proc. Vth Indian Horticultural Congress, PAU, Ludhiana 6-9th November 2012 pp. 52.
- Abstracts: 22nd Swadeshi Science Congress 2012 - Ecosystem Services through Plantation Crops** (Eds. George V. Thomas, Muralidharan, K., Rajesh, M.K., Jayasekhar, S., Mathew, A.C., Subaharan, K., Ravi Bhat, Amarnath, C.H. and Muralikrishna, H.), Central Plantation Crops Research Institute, Kasaragod, Kerala, Nov. 6-8, 2012, Book of Abstracts, p. 134.
- Ambili K., George V. Thomas, Indu, P., Murali Gopal and Alka Gupta. Species diversity of arbuscular mycorrhizal fungi in arecanut - based cropping systems under organic management practices and AM relationship with soil physico-chemical properties, pp. 90-91.
- Anil Paul, Rajesh, M.K., Hemalatha, N., Jamshinath, T.P., Murali Gopal and George V. Thomas LTTRPred: a tool for prediction of transcriptional regulator of pyoluteorin pathway in *Pseudomonas* species using SVM-based approach. pp. 106-107.
- Bharath, B.G., Ananda, K.S., Rajesh, M.K., Nagaraja, N.R. and Rijith, J. Evaluation of microsatellite markers for genetic diversity analysis among different accessions of arecanut. pp. 100-101.
- Bhavyashree, U., Lakshmi Jayaraj, K., Fayas, T.P., Sajini, K.K., Rajesh, M.K. and Anitha Karun Comparative study of three different methods of coconut plumule extraction for embryogenic callus induction. pp. 73.
- Chandran K.P. and Muralidharan, K. Latent variable approach for measures of association between variables. pp. 57.
- Chinchu, K., Fayas, T. P., Regi Jacob Thomas, Muralidharan, K., Rejusha Ramakrishnan P. and Anitha Karun. Leaf anatomy and molecular characterization of healthy and root (wilt) affected palms. pp. 76.
- Fayas, T.P., Jeeha Muneem, Lakshmi Jayaraj, K., Bhavyashree, U., Sajini, K.K., Rajesh, M.K. and Anitha Karun. Effect of brassinosteroid, glutathione and adenine sulphate on callogenesis of coconut (*Cocos nucifera* L.) plumule. pp. 109-110.
- Jayasekhar, S., Chandran, K.P., Muralidharan, K. and C. Thamban. Coconut blues: Tracing the reason for looming crisis. pp. 80.
- Jamshinath, T.P., Philip Job, N., Rajesh, M.K., Murali Gopal and George V. Thomas. Homology modeling deduced 3-D structure of adenylation domain of *Pseudomonas fluorescens* non-ribosomal peptide synthetases (NRPS). pp. 100-101.
- Jose, C.T., Chandran, K.P., Muralidharan, K., Jaganathan, D. And Jayasekhar S. Kernel weighted local regression surface technique for detection of outliers. pp. 57.
- Lakshmi Jayaraj K., Bhavyashree U., Fayas T.P., Sajini K.K., Rajesh M.K. and Anitha Karun. Histological studies of somatic embryogenesis of coconut plumule derived callus. pp. 73-74.
- Litty Thomas, Alka Gupta, Murali Gopal, Priya George and George V. Thomas. Evaluation of plant growth promotion ability of fluorescent *Pseudomonas* spp. on cocoa (*Theobroma cacao* L.) seedlings. pp. 87.
- Manjula, C., Samsudeen, K., Shafeeq Rahman and Rajesh, M.K. Morphological and molecular characterization of Kuttiyadi ecotype of coconut (*Cocos nucifera* L.). pp. 100-101.
- Murali Gopal, Alka Gupta and George V. Thomas. Microorganisms mediate ecosystem services offered by soil - a case study of vermicompost application. Lead talk pp. 35-36.
- Panchami P.S., Alka Gupta, Murali Gopal, Khadeejath Rajeela, T.H., Anusree, G.K. and George V. Thomas. Diversity analysis based on BIOLOG and 16S rDNA sequencing of bacilli from rhizosphere of coconut palms growing in acidic soils of Kerala and Karnataka. p. 99.
- Patil, J. Rajkumar and Subaharan, K. Impact of entomopathogenic nematodes on rhinoceros beetle larvae, *Oryctes rhinoceros* (Coleoptera: Scarabaeidae). pp. 82.
- Rachana, K.E., Naganeeswaran, S. and Rajesh, M.K. 2012. Amplification and sequencing of partial length disease resistant gene homologues coding NBS-LRR type proteins in coconut. pp. 107.
- Rajesh, M.K., Preethi, P., Jerard, B.A., Regi Jacob Thomas and Anitha Karun. Authentication of coconut hybrids using RAPD analysis. pp. 108.
- Rajesh, M.K., Rijith, J., Shafeeq Rahman, Ramya, K.K., Sajini, K.K. and Anitha Karun. Estimation of out-crossing rate in West Coast Tall cultivar in coconut using microsatellite markers. pp. 108-109.
- Sajini, K.K., Anitha Karun, Amarnath, C.H. and Rajesh, M.K. A complimentary conservation strategy for coconut (*Cocos nucifera* L.) through pollen cryopreservation. pp. 75-76.
- Sheena, T.L., Shwetha Kumari, K., Sugatha, P., Arivalagan, M., Hebbar, K.B. 2012. Response of coconut seedlings to elevated CO₂ and high temperature. pp. 76.
- Yashaswini, N., Niral, V., Jerard, B.A., Samsudeen, K. and

Devadas, K. A study of sprouting, sprout elongation rate and seedling characters in selected coconut varieties. pp. 91.

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Arunachalam, V., Augustine Jerard, B., Dilna Shaji, Elain Apshara, S., Jayabose, C., Subaharan, K. Ravikumar, N. and Palaniswami, C. 2012. Plant traits associated with resistance to eriophyid mite (*Aceria guerreronis* Keifer) infestation in coconut: morphological, digital phenotyping and molecular markers. pp. 112.

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Chandrika Mohan, Josephraj Kumar, A. and Rajan, P. Field validation of biological suppression of coconut black headed caterpillar, *Opisina arenosella* Walker using larval parasitoids *Goniozus nephantidis* and *Bracon brevicornis*. pp. 107.

Dhanapal, R., Impact of intercropping on root distribution in coconut under coastal sandy soil. pp. 77.

Elain Apshara, S. 2012. Comparative yield performance of selected cocoa clones under arecanut and coconut. pp. 22-23.

George V. Thomas, Madhavan K., Mathew A.C., Hebbar, K. B. and Vidhan Singh, T. Mechanization of coconut: present status and future perspective. Pp.

Hebbar, K.B., Sheena, T.L., Padmanabhan, S., Balasimha, D., Mukesh Kumar and George V. Thomas. Response of coconut to climate change: interactive effects of CO₂ and high temperature with drought and nutrients. pp. 55.

Jaganathan, D., Thamban, C., Jose, C.T., Jayasekhar, S. and Anithakumari, P. Analysis of organic farming practices in coconut in south India. pp. 135.

Jayasekhar, S., Chandran, K.P., Radhika, C., Muralidharan, K., Thamban, C. and Damodaran, V.K. Puzzlements in an evolving commodity chain: The case of tender coconut market in Kerala. pp. 132.

Krishnakumar, V. Alka Gupta, P. Subramanian, P. Khadeejath Rajeela, T.H. and Indu, P. 2012. Microbial and soil enzyme status in organically maintained coconut based cropping system in different farmers' fields. pp. 81-82.

Maheswarappa, H.P., Subramanian, P., Dhanapal, R. and Palaniswami, P. Evaluation of coconut high density multi species cropping system under organic and integrated management. pp. 64.

Manimekalai, R. And Manju, K.P. Prediction of microsatellites in partial genomes of coconut, date palm and oil palm. pp. 48.

Mathew, A.C., Manoj Kumar T.S., Hebbar K.B. and Madhavan K. A Safety attachment to the Joseph model of paddle type coconut climbing device. pp. 8.

Muralidharan, K. Thamban, C. Anithakumari, P., Subramanian, P., Palaniswamy, C. and Krishnakumar, V. 2012. Production forecasting of coconut: variation in palm density and productivity in selected districts in India. pp. 143-144.

Nihad, K., Krishnakumar, V. and Sheela, V.L. 2012. Floral traits of *Heliconia stricta*: impact of cropping system and nutrition. pp. 88.

Paul, S.C., Acharya, G.C., Hussain, M. and Ray, A.K. 2012. Influence of integrated nutrient management on soil properties, plant nutrition and yield of arecanut in North East India. pp. 76.

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TRANSFER OF TECHNOLOGY

Trainings

A model training course for extension personnel on 'Value addition through product diversification in coconut' sponsored by Directorate of Extension, Ministry of Agriculture, Govt. of India, was conducted at CPCRI, Kasaragod during 16-23 November 2012. Dr. P.L.Saroj, Director, Directorate of Cashew Research, Puttur inaugurated the training programme. 21 officers from Goa, Karnataka, Tamil Nadu, Pondicherry, Orissa and Kerala attended the MTC.

A special training programme for extension personnel on 'Hybridization technique in coconut' was conducted at CPCRI, Kasaragod on 29-11-2012 in collaboration with State Department of Agriculture, Kerala. 17 officers from seven northern districts of Kerala attended the training programme. Dr. George V. Thomas, Director inaugurated the training programme. Mr.

B. J. Jayakumar, Additional Director of Agriculture, presented the details of the scheme proposed for the production of quality coconut hybrid seedlings utilizing dwarf coconut palms available in farmers' gardens.

A special training programme on 'Coconut Production Technology' for farmers from Pollachi sponsored by Department of Agriculture under ATMA project was conducted at CPCRI, Kasaragod during 28-30 November 2012.

A special training programme on 'Coconut Production Technology' for farmers from Kalyasseri block, Kannur district sponsored by Department of Agriculture under ATMA project was conducted at CPCRI, Kasaragod on 21-12-2012.

A special training programme for farmers on 'Value addition of coconut' sponsored by Krishi Bhavan, Muliyar under ATMA project was organized at CPCRI, Kasaragod 30-11-2012.

An off campus training programme on 'Coconut production technology' was conducted at Pollachi on 16-12-2012. The training programme was organized as a follow up activity to the earlier exposure visit programme of coconut farmers to CPCRI Kasaragod. Nearly 150 coconut farmers attended the training programme. Shri K. Sukumar, Hon'ble Member of Parliament, Pollachi formally inaugurated the training programme. Dr. George V. Thomas, Director, CPCRI gave an account of the field



Dr. P.L. Saroj, Director, DCR, Puttur inaugurating MTC on value addition



Off-campus training programme on coconut cultivation at Pollachi



Training programme on hybridization technique in coconut



Special training programme for farmers on value addition of coconut

problems observed during the diagnostic visit and also listed the technological options to make coconut farming viable. Shri V. Ravi Sundaram, Chairman, ATMA project, Pollachi South presided over the inaugural function.

“Refinement of production technology of green muscardine fungus and participatory field validation of integrated biocontrol technology against rhinoceros beetle of coconut” funded by Coconut Development Board was launched at Kundalloor panchayat on 22-12-2012. Shri C.K. Sadasivan, Hon'ble



Launching the new CDB funded project on biological suppression of rhinoceros beetle at Kandalloor, Kayamkulam

MLA, Kayamkulam inaugurated the function. A CD on black beetle was released on the occasion. In addition, Green muscardine fungus, *Metarhizium anisopliae* and plant growth promoting rhizobacteria, *Pseudomonas fluorescens* were distributed to farmers.

An off-campus training on "Strategies for community adoption of technologies among coconut farmers" was conducted at Munroe Island on 18-12-2012 in which 50 coconut farmers from 3 coconut producers society attended. A group discussion on field problems and solutions on small holding coconut gardens was conducted at Kandalloor panchayath on 17-12-2012.

One day programme on "Hybridization technique in coconut" was held at Demonstration cum Seed Production Farm, Neriamangalam, Ernakulam District, Kerala State on 11-12-2012.

Two days training programme was conducted for 22 farmers and two block technology managers under ATMA from Theni District of Tamil Nadu on Advances in Coconut cultivation and Processing during 26-27 November, 2012 at RS, Kayamkulam.

During the period, exposure visits to Kayamkulam under ATMA programme benefitted more than 300 farmers from Southern Kerala and Tamil Nadu along with around 20 officials. A training programme on Scientific Coconut Cultivation was organised at RATTC, Kazhakkootam for lead farmers of

Kollam District on 29-10-12, in which 58 farmers participated. An off-campus demonstration on coir pith composting, mass multiplication of *Trichoderma* on neem cake and *Metarhizium* treatment of manure pits was held at Chingoli on 03-11-12 under ATMA programme, in which 22 farmers participated.

Training cum exposure visit on 'Arecanut and cocoa production technology' was organized on 4th October, 2012 at Vittal for 29 trainees from Andaman and Nicobar Islands.

Training on 'Advances in arecanut and cocoa production technology' was organized during 3rd - 9th December, 2012 at Vittal for 6 officers.

Training cum exposure visit on 'Arecanut and cocoa production technology' was organized on 30th November, 2012 at Vittal for 9 trainees from Pollachi taluk, Coimbatore, Tamil Nadu.

Three off-campus and two on-campus training programmes were

organized by RC, Kahikuchi for 241 farmers/ farm women of Assam and Meghalaya State.

Two on-campus and four off-campus trainings were conducted by CPCRI, RC, Mohitnagar during the period on plantation crops and black pepper cultivation.

Diagnostic field visit

Diagnostic field visit was conducted on 16-12-2012 by a team of scientists from CPCRI lead by Dr. George V. Thomas, Director to selected coconut gardens of



Dr. George V. Thomas, Director along with a team of scientists visiting a coconut garden in Pollachi



Participants in the training programme on cocoa production technology along with resource persons



Field visit of farmers to RC, Kahikuchi

Ambarampalayam and Samathur villages of Pollachi district in Tamil Nadu along with officials of Department of Agriculture and farmers. It was observed that many coconut gardens were affected by root (wilt) disease. The team recommended control measures against various pest and disease problems observed in coconut.

Interface programme

A Scientist-Extension-Farmer interface programme on the 'Scope of mixed farming in coconut gardens under Lakshadweep Ecosystem' at Minicoy was held on 12th November 2012 presided over by Shri B. Hassan, Vice-chairperson, Village Dweep Panchayat. Sri Anoop Thakur, Deputy Collector, Minicoy inaugurated the group discussion. In the evening, the farmers had a field visit to CPCRI farm for



Interface programme at Minicoy



Scientist-Extension personnel-Farmer interface

assessing coconut-vegetable intercropping system for sustainability.

Another scientist-farmer interface programme on the 'Impact of technological interventions implemented under NAIP on 'Value chain in coconut' was organised at CPCRI, Kasaragod on 27-11-2012.

Cyber Extension Programmes

Two interface programmes were conducted between CPCRI, Kasaragod, and CTCRI, Thiruvananthapuram. First one involving extension personnel attending MTC on 'Tuber crops production technology' at CTCRI, Thiruvananthapuram on 09-10-2012 and the other in which extension personnel attending MTC on 'Value addition in coconut' at CPCRI, Kasaragod on 21-11-2012 interacted with experts on the other end.

Participation in exhibitions

Exhibition stall of CPCRI was arranged at Vivekananda College, Puttur, Dakshina Kannada district, Karnataka during 02-11-2012 to 04-11-2012 in connection with 'Krishi Yantra Mela

2012'. Exhibition stall was also arranged at Cardamom Research Centre, Appangala, Kodagu district, Karnataka during 20-12-2012 to 22-12-2012 in connection with 'Golden Jubilee Celebrations'. Large number of farmers, college and school students, industrialists and general public visited the exhibition stall.

RS, Kayamkulam participated in an exhibition arranged in connection with the Biodiversity Congress at Kanakakkunnu Palace organized by Biodiversity Board during 21-30, December, 2012. RS, Kayamkulam also participated in an exhibition organized by Gandhi Study Centre at Newman College, Thodupuzha from 26th December 2012 to 5th January 2013.

Radio talks/ TV programme broadcast

A documentary on women group engaged in green muscardine fungus at Edava panchayath was recorded on 17-10-2012 by Doordarshan, Thiruvananthapuram.

Another programme on 'Money and nutrients from coir pith' was broadcast on 2-12-2012 by All India Radio, Thiruvananthapuram.

Two programmes viz. "Areca nut based cropping system" and "Black pepper - a profitable intercrop" were recorded by Kisan Channel, Doordarshan Kendra Jalpaiguri on 14-11-12 and telecast during this period.

Krishi Vigyan Kendra, Kasaragod

SAC meeting

The Scientific Advisory Committee meeting of KVK, Kasaragod was conducted on 21-12-2012 at CPCRI Kasaragod. Dr. B. T. Rayudu represented the Zonal Project Directorate, Bangalore. Dr. George V. Thomas, Director, CPCRI presided over the function.

Frontline demonstrations

Trichoderma enriched neem cake was applied to the basins of pepper vines as curative and prophylactic measure in farmers fields at Iriyanni-Kunieri. Scientific Backyard Poultry Rearing in 6 units covering Bedakam, Mogral Puthur and Chengala panchayats was

undertaken. Dual purpose breed Gramashree were supplied to the beneficiaries and adoption of scientific package of practices of KAU resulted in an average annual income of Rs.923 per bird with BC ratio of 2.2.

Integration of bee colonies for better pollination and yield was demonstrated in 5 units covering an area of 2 ha under 21 farmers at Kodavalam (Pullur Periy). With encouraging results, number of colonies increased to 15 and honey yield was on an average 5 kg per hive.

Farmer participatory method demonstrations, such as planting fodder grass sets, sowing fodder cowpea and fodder maize and preparation of azolla tank and inoculation of azolla, preparation of coir pith compost, vermicomposting and sowing cow pea seed as green manure crop in coconut basins, pruning techniques in cocoa, mechanisation in paddy and coconut, paddy seed treatment with pseudomonas, seed sowing in paddy with seed drum, raising paddy nursery under SRI method and transplanting in SRI were carried out.

On Farm trials

Organic vegetable cultivation was undertaken with production of bittergourds weighing a maximum of 0.75 kg per fruit. Cue lure traps were supplied @ 1 trap for 20 cents to the beneficiaries to manage fruit flies in bittergourd. Amaranthus (var. Arun) transplanted after root dipping with PGPR, Bhindi (var. Salkeerthi), yardlong bean (var. Jyothika) are under the trial. In addition to the regular organic practices of the farmers, vermicompost, poultry manure and fish meal are tried as alternate practices.

Disease incidence of rhizome rot in beds of ginger seedlings was checked by application 1% BM during the monsoon periods, thus preventing the spread of the disease to other beds. *Trichoderma* enriched organic manure, ginger beds sprayed with *Pseudomonas fluorescens* (5ml/l) once in a month after planting during monsoon period showed no symptom of rot at Karivedakam areas of Kuttikol panchayath.

Application of PGPR mix-2 in amaranthus cultivation at Ozhinjalappu and Thakadappuram in

Type of training	Numbers	Men		Women		Total	
		Others	SC/ST	Others	SC/ST	Others	SC/ST
On-campus	29	473	18	255	1	728	19
Off-campus	21	301	14	93	3	394	17
TOTAL	50	774	32	348	4	1122	36

Nileshwaram indicated no incidence of *Cercospora* leaf spot in the treated plants.

Farmers Field School

A FFS on Mechanisation in paddy was initiated at Patla in 6 acres. A training programme on SRI method of paddy cultivation also was organised at Karadka in collaboration with Dept. of Agriculture as a part of this programme.

Training programmes

Training programmes on various topics were conducted by KVK, Kasaragod during the period from October to December, 2012. This also included the CDB-KVK vocational training programme “Thenginte Changathikkootam”.

External linkage of KVK

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.

TV Coverage

News broadcast in Kannada on “Women venturing in mechanical palm climbing after obtaining training from KVK, CPCRI, Kasaragod” in Janashree and Public TV channels on 27-11-2012. Success story of Friends of Coconut Tree (one Women group and Smt. Reena) was telecast in Kissan Krishideepam (Asianet) and Kairali channels.

Krishi Vigyan Kendra, Alleppey Inauguration of Technology demonstration on “Integrated Crop Management in paddy”

Under the “National Initiative on Climate Resilient Agriculture” project being implemented by KVK Alleppey in

Muttar village, a technology demonstration programme on “Integrated Crop management in Paddy” is initiated for the pancha season (Nov'12 to Mar'13). Sri. P. Venugopal, IAS, District Collector, Alleppey inaugurated programme at Kalayankary padasekharam in an area of 35 acres (involving 25 farmers) on 12-11-2012 by sowing the seeds using the drum seeder. Dr. George V. Thomas, Director, CPCRI, Kasaragod, presided over the function.

Twenty two farmers under this project from the Muttar village participated in the exposure visit for two days on 21st - 22nd December, 2012 to various research stations like Banana Research Station, Kannara, Agricultural Research Station, Mannuthy, Krishi Vigyan Kendra, Thrissur and Agricultural Technology Information Centre, Mannuthy under Kerala Agricultural University. In addition the farmers were exposed to the activities of



Shri P. Venugopal, IAS, District Collector inaugurating programme on paddy at Muttar village

the Green Army of Vadakkanchery at Chittilappally on mechanisation of paddy cultivation. Mat nursery preparation and mechanised transplanting were demonstrated to them.

Frontline demonstrations

Field day of “Varada- High

yielding ginger variety” for intercropping in coconut gardens was conducted at Karuvatta panchayath on 12-12-2012. Smt. C. Sujatha, President Harippad Block panchayath inaugurated the field day. More than 40 farmers including about 25 demonstration partners attended the programme. Field day of “Cage culture of pearl spot fish (*Etroplus suratensis*)” was held on 20-10-2012 at Arattupuzha panchayath.

KVK-Alleppey in association with the Women's Forum of MSM, College Kayamkulam initiated vegetable cultivation in the college campus. Twelve different vegetable seeds were sown in plots laid out in 10 cents of land in the campus by the forum members with the guidance and inputs provided by the KVK. A similar vegetable garden in a larger area has been established with inputs and technical guidance from the KVK at Koipalli Karazhma as a part of the NSS students of the college in the last week of December, 2012.

Training programmes

Organized 37 training programmes benefitting a total number of 1099 farmers/rural youths during the period including two batches of friends of coconut tree programme . The details of the training programmes are as follows:

KVK-ATMA Linkage

An interface programme was conducted on “Successful technologies in disease management of crops” for the ATMA functionaries of the district. A training programme on Oyster mushroom cultivation was conducted for 31 farm women under ATMA activities.

Harithavruathantham- SMS Service

A total of 4319 messages on different topics like weather forecasting, training details, technology tips etc. were delivered to various stakeholders during the period.

Training	No. of batches	Participants		
		Men	Women	Total
On campus	20	311	312	623
Off campus	12	149	211	360
Vocational	2	21	25	46
Sponsored	3	38	32	70
Total	37	519	580	1099

COMMERCIALISATION OF TECHNOLOGY

Commercialisation of vermicompost technology

A Memorandum of Agreement was signed between CPCRI and Abraham V.K., Vanchipurakkal, Kallar, Rajapuram Post, Kasaragod on

19th December 2012 for the transfer of 'Coconut Leaf Vermicomposting Technology'. The technology transfer fee of Rs. 5,000/- was charged for a period of five years. Mr. Abraham is basically a farmer, and taken up the

coconut leaf vermicomposting technology from the Institute to market the large scale vermicompost produced from coconut leaves using the indigenous earthworms.

PARTICIPATION IN MEETINGS/ SYMPOSIUM/ SEMINAR

Name of personnel and Designation	Name of the Programme	Place & duration
Dr. G.C. Acharya, Sr. Scientist and Dr. Jeena Mathew, Scientist	8 th International Symposium on Plant-Soil Interaction at Low pH	UAS, Bangalore 18-10-2012 to 22-10-2012
Dr. Murali Gopal, Principal Scientist	Biodiversity conservation and solutions for environmental pollutions	Dr. P.K. Rajan Memorial Campus, Kannur University, Nileshwaram 02-11-2012 to 03-11-2012
Dr. M. Shareefa, Scientist	V Indian Horticultural Congress	PAU, Ludhiana 06-11-2012 to 09-11-2012
Smt. Saritha Hegde SMS	44 th National Conference, Nutrition Society of India	Tirupathi 16-11-2012 to 17-11-2012
Dr. P. Muralidharan	7 th National Conference of KVK -2012	PAU, Ludhiana 20-11-2012 to 22-11-2012
Dr. Nilofar Illias Kutty SMS	18 th International Congress for Rural health and medicine	Panaji, Goa 10-12-2012 to 12-12-2012
Dr. A. Joseph Rajkumar, Sr. Scientist	National Conference on Recent Trends in Molecular Biology (RTMB-2012)	Bishop Moore College, Mavelikara 12-12-2012
Dr. Murali Gopal, Principal Scientist	3 rd International Conference of Sustainable utilization of tropical plant biomass through biotechnology	KVM CE&IT, Cherthala 13-12-2012 to 15-12-2012
Dr. V. Niral Principal Scientist	Sensitization meeting of SICs of PME Cells	NDRI, Karnal 08-12-2012
-Do-	National consultation on horticultural PGR	NBPGR, New Delhi 17-12-2012 to 18-12-2012
Dr. Murali Gopal, Principal Scientist and Dr. K. Samsudeen, Sr. Scientist	National Seminar on Advances in Biological Sciences	Govt. College, Kasaragod 18-12-2012 to 19-12-2012

PLACROSYM XX was held at Jenny's Residency, Coimbatore during 12-15 December 2012. Dr. George V.

Thomas, Director, Dr. H.P. Maheswarappa, PC (Palms), Dr. K. Muralidharan, Dr. Anitha Karun, Dr.

K.B. Hebbar, Dr. Ravi Bhat, Heads of Division, Er. K. Madhavan, Dr. V. Krishna Kumar, Dr. P. Subramanian and

Dr. Chandrika Mohan, Principal Scientists, Dr. A.C. Mathew, Dr. C. Thamban, Dr. K. Samsudeen, Dr. M.K. Rajesh, Dr. Elain Apshara and Dr. G.C. Acharya, Sr. Scientists, Shri S. Jayasekhar, Scientist SS, Dr. M. Shareefa, Dr. D. Jaganathan and Mrs. K. Nihad scientists attended the Symposium.

22nd Swadeshi Science Congress was held at CPCRI Kasaragod during 6-8 November, 2012. Dr. George V. Thomas, Director, Dr. K. Muralidharan, Dr. K. B. Hebbar, Heads, Dr. H.P. Maheswarappa, PC (Palms), Er. K. Madhavan, Alka Gupta, Dr. Murali

Gopal, Principal Scientists, Dr. A.C. Mathew, Dr. B.A. Jerard, Sr. Scientist, Shri S. Jayasekhar, Scientists (SS) and Smt. Sajini K.K., Technical Officer attended the Congress.

Brainstorming meeting on "Management of phytoplasmal diseases of coconut and arecanut" was organised by CPCRI, RS, Kayamkulam at Hotel Royal Regency, Oachira on 08-12-2012 in which Dr. George V. Thomas, Director, Dr. H. P. Maheswarappa, PC (Palms), Dr. K. Muralidharan, Dr. K. B. Hebbar, Dr. Anitha Karun, Dr. K. S. Ananda,

Dr. V. K. Chaturvedi, Heads, Dr. Ravi Bhat, Acting Head, Dr. Vinayaka Hegde, Dr. V. Krishnakumar, Dr. Chandrika Mohan, Dr. Murali Gopal, Dr. S. Sujatha, Principal Scientist, Dr. K. Subaharan, Dr. M. K. Rajesh, Dr. R. Manimekalai, Dr. S. Kalavathi, Dr. P. Anithakumari, Dr. Regi J. Thomas, Dr. A. Josephraj Kumar, Sr. Scientists, Dr. P. Muralidharan, PC, KVK, Mr. Arivalagan, Mr. N. R. Nagaraja, Dr. M. Shareefa, Mrs. K. Nihad, Dr. Merin Babu, Dr. Jeena Mathew, Scientists, Dr. G. Rajeev, Tech. Officer participated.

CELEBRATIONS

Communal Harmony Flag Day

Communal Harmony Flag Day was observed at CPCRI Headquarters and its Regional Stations and Research Centres. At Kasaragod, on 23-11-2012, Rev. Fr. Edwin Joseph, Janab Shihabuddin, Prof. Chandrasekharan Koppal addressed the

staff with thought provoking lectures. Dr. George V. Thomas, Director, CPCRI presided over the function.

New Year Eve

New Year Eve was celebrated at CPCRI Kasaragod by the CPCRI Staff Recreation Club on 31-12-2012. Dr.

George V. Thomas, Director presided over the programme and Shri Abdulla, Chairman, Kasaragod Municipality was the chief guest. The programme began at 7 PM and there was variety entertainment programme to welcome the New Year.

WOMEN'S CELL ACTIVITIES

Vocational training on machine embroidery and tailoring was imparted to rural women from Thanal SHG at Chowki and Varalaxmi Kutumbashree unit at Kambar, Kasaragod.

Three training programmes for women farmers on 'Rural entrepreneurship on integrated value addition of homestead based farm products for additional income' was conducted on 09-11-2012 at Kaviyur panchayath, 03-12-2012 at Vallikkunnam panchayath and 06-12-2012 for block level functionaries and SHG leaders at State Institute of Rural Development of Alapuzha.

Hindi Workshop

Three workshops were organised at CPCRI, on 20-11-2012 at Kasaragod, 22-11-2012 at RS, Vittal and on 12-12-2012 at RS, Kayamkulam. Dr. George V. Thomas, Director inaugurated the workshop at Kasaragod. Shri D.K. Panicker, Former Retired Deputy Director, Hindi Implementation was the resource person. At Vittal the workshop was inaugurated by Shri D.K. Panicker, Former Deputy Director, Hindi Implementation and was presided over by Dr. K.S. Ananda, Head of the Station. Staff of CPCRI, Kasaragod, TOLIC, Kasaragod, staff of RS, Vittal, members of TOLIC, Puttur and staff of RS, Kayamkulam have participated in the workshop and were guided regarding

grammar and usage of Hindi in day-to-day administration.

Infrastructure facilities developed

Solid phase micro-extraction technique facility is created at Entomology Section, Kasaragod to estimate the volatiles released from plant and insect samples. Two-dimensional gel electrophoresis (2-DE) system has been installed and made functional in biochemistry laboratory. This will be useful for protein profiling (proteomics) studies in plantation crops to understand various biological processes including abiotic stresses by determining the presence or absence, up or down regulation, and modification states of proteins.

DISTINGUISHED VISITORS

Name & Designation	Place/ Date of Visit	Purpose
Dr. N. K. Krishnakumar, DDG (Hort.), ICAR, New Delhi	CPCRI, RS, Vittal 29-10-2012 CPCRI, Kasaragod 30-10-2012	To review the ongoing research and extension programmes
Dr. M. Anandaraj, Director, IISR, Calicut	CPCRI, Kasaragod 29-10-2012	Attended Group Meeting on <i>Phytophthora</i> diseases
Prof. Jancy James, Vice- Chancellor, Central University of Kerala, Kasaragod	CPCRI, Kasaragod 06-11-2012	Participated in the 22 nd Swadeshi Science Congress
Prof. V.N. Rajashekharan Pillai, Secretary to the Govt. of Kerala and Executive Vice-President, KSCSTE	CPCRI, Kasaragod 07-11-2012	-do-
Dr. B. Madusudhana Kurup, Vice-Chancellor Kerala Uni- versity of Fisheries and Ocean Sciences, Kochi	CPCRI, Kasaragod 08-11-2012	-do-
Dr. S.K. Chakrabarthi, Director, CTCRI, Trivandrum, Dr. M. Anandaraj, Director, IISR, Calicut	CPCRI RS, Kayamkulam 08-12-2012	Participated in the Brainstorming Session on Phytoplasmal diseases

SUCCESS STORIES

Bold initiative of a woman entrepreneur in coconut sector

Ms. Kaavya Nag, woman entrepreneur and founder of 'Coconess', got attracted to the coconut-based enterprise of virgin coconut oil because she grew up on a coconut farm. She always wished to have access to high quality coconut oil, this lead her to take a bold step to make a humble beginning with ICAR technology for a business enterprise in December 2012. She also hopes to be able to use a cluster model to meet demand, and initial value-addition at the level of the grower.

With the encouragement from her mother, Mrs. Arundhati Nag who is a theatre personality, Kaavya approached CPCRI for the virgin coconut oil (VCO) production process with low-cost, labour saving machinery and process. The fermentation process of VCO production was new, based on the efforts of scientists of CPCRI,

Kasaragod under the NAIP funded project on 'Value chain of coconut'. VCO produced by this method was analysed by DFRL, Mysore and the results proved the benefits of this process. Adopting this technology, Ms. Kaavya is presently producing 100 litres of VCO per month and aims to double the production by February 2013. Coconess produced from the

outskirts of Bangalore is presently available in selected organically produced commodity sales outlets in Bangalore city.

Traditionally, the virgin coconut oil has many advantages in medicine, nutrition for all age groups and palliative care due to medium-chain fatty acids and anti-oxidants. While virgin coconut oil has been used traditionally across Southern India, its several benefits are only just being realized in modern times. Ms. Kaavya is very much hopeful to grow with this product not only in India but also in international markets giving wellness to people who wish natural and greener products. Ms. Kaavyas is very much hopeful as a woman entrepreneur, while most of the entrepreneurs venture to set-up high-tech industries and technology-heavy enterprises.



Coconess - virgin coconut oil and Ms. Kaavya (on the right) at her workplace

PERSONALIA

TRANSFERS

Name of the staff / Designation	From (Place)	To (Place)	w.e.f.
Shri T.E. Janardhanan, Asst. Admn. Officer	CPCRI, RS, Vittal	CPCRI, Kasaragod	08-10-2012
Shri P. Balabrahmaiah, SFAO	Sr. Fin & Acc. Officer CPCRI, Kasaragod	Chief Fin. & Acc. Officer, IIHR, Bangalore	31-10-2012
Shri T.D.S. Prakash, FAO	AFAO, DOPR, Pedavegi	FAO, CPCRI, Kasaragod	16-11-2012
Shri V. Radhakrishnan, J.T.A. (T-1)	CPCRI, RS, Vittal	CPCRI, Kasaragod	20-12-2012

PROMOTIONS

Name of the staff	From (Designation)	To (Designation)	w.e.f.
Dr. Vinayaka Hegde	Senior Scientist	Principal Scientist	01-01-2009
Dr. V. Krishnakumar	Senior Scientist	Principal Scientist	01-01-2009
Dr. Chandrika Mohan	Senior Scientist	Principal Scientist	01-01-2009
Dr. Alka Gupta	Senior Scientist	Principal Scientist	20-02-2010
Dr. P. Subramanian	Senior Scientist	Principal Scientist	12-03-2010
Dr. S. Sujatha	Senior Scientist	Principal Scientist	06-07-2010
Dr. Murali Gopal	Senior Scientist	Principal Scientist	30-08-2010
Dr. V. Niral	Senior Scientist	Principal Scientist	22-03-2011
Shri S. Thajudin	Technical Officer (T-6)	Technical Officer (T7-8)	01-07-2010
Smt. Jissy George	SMS (T-6)	SMS (T 7-8)	22-05-2011
Shri M.S. Rajeev	SMS (T-6)	SMS (T 7-8)	24-04-2011
Shri T. Sivakumar	SMS (T-6)	SMS (T 7-8)	24-05-2011
Smt. Lekha G.	SMS (T-6)	SMS (T 7-8)	27-05-2011
Dr. S. Ravi	SMS (T-6)	SMS (T 7-8)	06-06-2011
Shri G.V. Nair	Astt. Administrative Officer	Administrative Officer	11-10-2012 (A.N.)
Shri N. Ramakrishnan	Technical Officer (T-5)	Technical Officer (T-6)	06-03-2010
Shri Nagen Chandra Das	Technical Assistant (T-4)	Technical Officer (T-5)	03-02-2010
Shri T.H. Nagaraj	Assistant	Asst. Admin. Officer	01-10-2012 (A.N.)
Smt. C.H. Usharani	Assistant	Asst. Admin. Officer	03-11-2012
Smt. K. Narayani	Personal Assistant	Personal Secretary	05-10-2012
Shri P.K. Pramod Kumar	SSS	LDC	01-10-2012 (A.N.)

RETIREMENTS

Name	Designation	Place	Superannuation on
Dr. R. Chandramohan	Head, Crop Protection	CPCRI, Kasaragod	31-10-2012
Shri K. Radhakrishnan	JTA (T-1-3)	CPCRI, RS, Kayamkulam	31-10-2012
Shri V.K. Damodaran	Technical Officer (T7-8)	CPCRI, Kasaragod	30-11-2012
Shri V. Kuttynarayanan	SSS	CPCRI, Kasaragod	30-11-2012
Shri Biren Das	SSS	CPCRI, RC, Kahikuchi	31-12-2012

OBITUARY

Two of our former colleagues, Shri M.S. Narayana Shetty, former Asst. Administrative Officer and Shri K. Baduvan, former supporting staff of CPCRI passed away respectively on 23-10-2012 and 26-10-2012. We pray the Almighty that the departed souls may rest in peace.