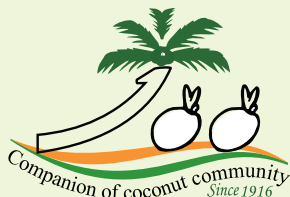




Dr. Trilochan Mohapatra New Secretary, DARE and Director General, ICAR



Contents...

Spectrum.....	2
Important Events.....	5
Human Resources Development.....	8
Publications.....	8
Transfer of Technology.....	11
Participation in National Seminars/ Symposia/ Workshop.....	18
Distinguished Visitors	18
Other Information	19
Personalia	20

Dr. Trilochan Mohapatra took over charge as the Secretary, DARE and Director General, ICAR on 22-02-2016 taking from Dr. S. Ayyappan. Dr. Mohapatra was born on 20th April, 1962 at village Kharibil, Cuttack Dist., Odisha, and completed his B.Sc. (Agriculture) from OUAT, Bhubaneswar in 1985, M.Sc. in Genetics from Indian Agricultural Research Institute, New Delhi in 1987 and Ph.D. in Genetics from Indian Agricultural Research Institute, New Delhi in the year 1992. He has served as Director, Indian Agricultural Research Institute, New Delhi in 2015. Prior to this, he worked as the Director of National Rice Research Institute (Formerly CRRI), Cuttack, Odisha and as a researcher and teacher for about 20 years at the National Research Centre on Plant Biotechnology, Indian Agricultural Research Institute (IARI), New Delhi, India. His area of expertise is molecular genetics and genomics.

Dr. Mohapatra has published over 145 research papers in national and international journals of repute and several book chapters. His research accomplishments include development of the first high yielding Basmati rice variety resistant to bacterial leaf blight through molecular marker assisted selection, and physical mapping and genome sequencing of rice and tomato.

He has the distinction of receiving several honours and awards in recognition of his excellent academic and research contributions including the INSA Young



Scientist Award, Prof. LSS Kumar Memorial Award, NAAS-Tata Award, IARI BP Pal Award, DBT Bio-science Award and NASI-Reliance Industries Platinum Jubilee Award. He is also the recipient of Award of the National Academy of Agricultural Sciences for the biennium 2013-14 for significant contributions in Plant Improvement and Lifetime Achievement Award of the Indian Genetics Congress in recognition of outstanding contribution in the field of Plant Genetics. He is a Fellow of the Indian National Science Academy, New Delhi, National Academy of Sciences-India, Allahabad and the National Academy of Agricultural Sciences, New Delhi.

The Director and Staff of CPCRI wish Dr. Trilochan Mohapatra all the best in the present assignment and look forward to his valuable support, guidance and leadership in the research and developmental activities of CPCRI.





Virgin Coconut Oil: Need to Tap the Potential

Virgin coconut oil (VCO) has received much attention globally in the recent times. The popularity of VCO is growing among consumers in all the continents due to its myriad properties including potential health benefits. Virgin coconut oil is reported to lower the lipid levels in serum and tissues, and possesses high potential in protecting low-density lipoprotein against oxidative stress induced by physiological oxidants. Apart from that, VCO is also well known for its high content of medium-chain fatty acids, which are used in medical and cosmetic applications. In addition to the intrinsic health properties of VCO, attention has been shifted to the possible effects of this product on combating diabetes, which essentially offers opportunities for VCO exporters in the niche market of food for the diabetics.

The fast developing and high value niche global market for virgin coconut oil offers a good prospect for the improvement of the income of coconut farmers and other. The USA is the largest importer of VCO in the world, also the European market for VCO has grown significantly over the past years, driven by the increasing attention that European consumers are paying to healthier diets.

Globally, the Philippines is the largest exporter of VCO. Besides the Philippines, other leading VCO exporters are Indonesia, India, Malaysia and Papua New Guinea. India exported 818 MT VCO in the year 2015-16, and this is 3.8% higher than the quantity exported in the previous period. The major export destination of India is the US.

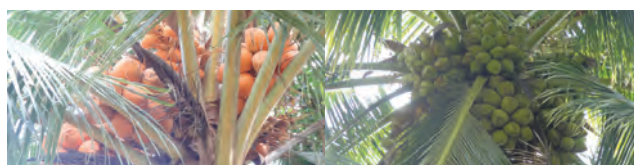
The protocols for the production of VCO by fermentation, and by hot process were standardized. Fermentation method is an economically viable technology that can be taken up as a cottage industry, whereas, the hot process is mostly suitable for small scale industries. In an initiative on technology delivery, the technical know-how, including hands on training, was imparted to Women Self Help Groups (SHG's) on production of VCO. Apart from technical aspects, good practices of food processing, attractive packaging, quality control, procurement plan of raw material, pricing and marketing were also given adequate emphasis. The net result of these interventions was observed as gaining more income to the farmers, employment generation to women folk and creation of entrepreneurship among the farmers. Consumer preference studies have shown that there is surging demand for VCO but the high cost of the oil than the commercial grade coconut oil and other cooking oils is a limiting factor. Business project proposals were prepared and provided to the prospective entrepreneurs and the technology for production of VCO was also transferred.

Feasibility analysis of the project on commercial production of virgin coconut oil revealed a Benefit Cost Ratio of 1.12, and an Internal Rate of Return of 21.5 %. Thereby, we may conclude that the commercial production of VCO could turn out to be a profitable venture. Though the market of VCO is expanding in the domestic and International front, as a matter of fact, India is yet to realize the potential benefit that the country holds in this segment. It is imperative to establish good quality, technically advanced VCO units across the country so as to realize the competitive market share of VCO in the global market.

SPECTRUM

Plant Genetic Resources Conservation in Coconut and Arecanut

Germplasm prospection was undertaken in Andaman and Nicobar Islands. Exploration of the self-sown and grown, natural coconut populations at Car Nicobar, resulted in the identification and collection of 16 trait specific accessions for dwarfness, large fruit size, high copra, robust stem, high nut production, fruit colour, fruit shape, sweetness of kernel and tender nut water, including a collection with desirable tender nut traits of thin husk, large internal cavity, sweet kernel and soft kernel types from New Kimios village



Coconut accessions collected from Car Nicobar and Andaman for conservation

of Car Nicobar. One coconut accession with compact canopy, regular bearing habit and high fruit yield was also collected from Port Blair. Further, a population with large

green fruits, bigger inner cavity with more than 900 ml of sweet tender nut water and firm but soft tender kernel was identified for collection from Baratang.

An arecanut accession with broad leaves, bigger canopy size and desirable features of semi tall plant habit and high chali recovery was identified and collected from Mus

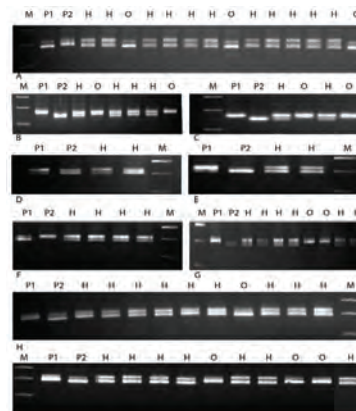
ESR - SSR Markers for hybrid detection in coconut

In coconut, identification of hybrid seedlings is difficult and EST-SSR primers, which were mined from leaf transcriptome data of Chowghat Green Dwarf cultivar, were used to screen polymorphism between eighteen parental lines. The polymorphic primers which were capable of differentiating the parental palms were then utilized for hybrid purity assessment studies of progenies derived from these parental palms. True hybrids possessed the banding pattern of both the parents. The selected markers could be utilized in hybrid seedling purity assessments and identification and removal of selfed progenies from seedling nurseries.

Anitha Karun and M.K. Rajesh

village of Car Nicobar. A dwarf arecanut collection with very close leaf scars and round fruit, conserved at CIARI, having distinctly different leaf and crown morphology from that of the Hirehalli Dwarf, was also obtained for conservation at CPCRI.

B. Augustine Jerard and V. Niral



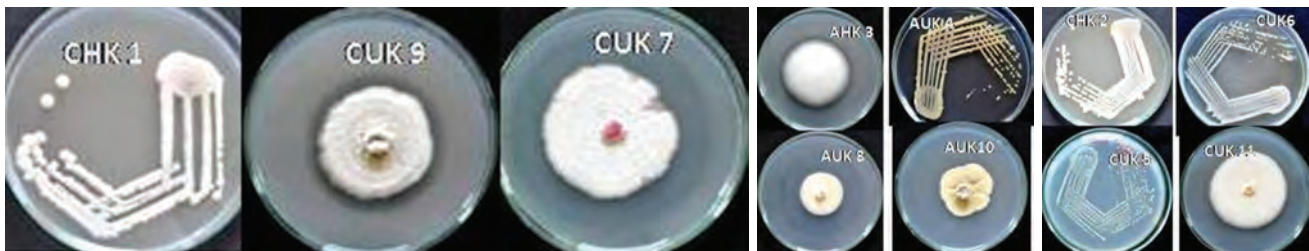
M: 100bp ladder; P1: Female parent; P2: Male parent; H: Hybrids; O: Offtypes
A: CGD x WCT; B: MYD x TPT; C: COD x WCT; D: GBGD x PHOT; E: GBGD x LCOT; F: LCOT x CCNT; G: GBGD x FJT; H: WCT x COD; I: LCOT x COD

Gel profile of coconut parents and their hybrids

Zn solubilizers/mobilizers from coconut, arecanut and cocoa

Zinc solubilizing microorganisms were isolated from rhizosphere soils of coconut, cocoa and arecanut collected from Kamrup District, Assam. Analysis of soils revealed very low levels of available Zn as compared to

total Zn present in soils. A total of eleven Zn solubilizing microorganisms, *Bacillus* spp. and Actinomycetes were isolated. four from arecanut, four from cocoa and three from coconut.



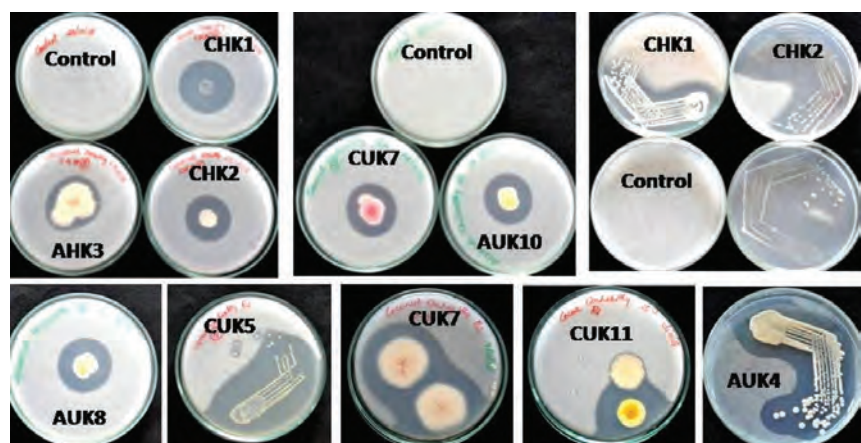
Coconut Isolates

Arecanut Isolates

Cocoa Isolates

The organisms exhibited varying degrees of solubilizing efficiencies in presence of insoluble Zinc salts – ZnO and ZnCO₃. Isolate CHK2, isolated from cocoa rhizosphere, showed highest solubilization efficiency of 5-fold after 5 days of incubation in presence of ZnCO₃.

Alka Gupta and V. Selvamani



Zinc solubilization by selected please mention organisms by scientific name isolates

Egg-parasitic activity of EPN

The entomopathogenic nematodes (EPNs) isolates were screened for parasitic activity towards eggs of rhinoceros beetle, *Oryctes rhinoceros* in vermicompost. Among the tested EPNs, *Steinernema carpocapsae* (CPCRI-SC1) and *S. abbasi* (CPCRI-SA1) resulted virulent at 200 infective juveniles (IJS) / 22.89 cm² and caused infection in 93.2 and 87.5% of inoculated eggs respectively followed by *Heterorhabditis indica* (CPCRI-HI1). The EPN infested eggs turned to brownish colour within 120 h of post exposure and suppress the hatching of rhinoceros neonate larvae. The nematodes emergence were found at the end of the five days from the infested eggs at temperature 25°C and relative humidity of 61%.

Rajkumar

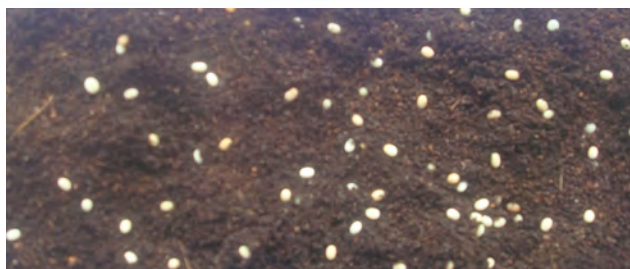
Heliconia stricta 'Iris' – A potential intercrop in coconut gardens

Performance of *Heliconia stricta* 'Iris' was evaluated under various shade levels (open, 30%, 50% and 75% shade) since 2013. The growth and flowering pattern of *H. stricta* 'Iris' was found to be positively related to shade intensity. The plants grown under 50 and 75% shade levels produced higher number of marketable inflorescence per plant (43 and 48, respectively) with >1 m length, 6-8 bracts and inflorescence girth of more than 9 cm. These inflorescences also recorded higher values in flower pigment parameters such as carotenoid (0.13 mg/g) and xanthophyll (0.99 mg/g) content. Significantly superior inflorescence characters under 75% shade level (inflorescence length 128.3 cm, 7.4 bracts, 37.6 cm spike length and 607.4 g

A repulsion paste to evade rhinoceros beetle

The rhinoceros beetle enters the young palms through the collar regions and affects the spindle portion. About 30-40% damage is reported from South Kerala affecting the initial establishment of palms. To withstand the feeding pressure of beetles, a black-coloured novel paste based on botanical extracts/oil, was developed for the repulsion of rhinoceros beetle attacking juvenile palms. About 10 g of the paste, when swiped over the spindle and adjoining petioles, safeguarded juvenile palms for about two-three months from rhinoceros beetle damage.

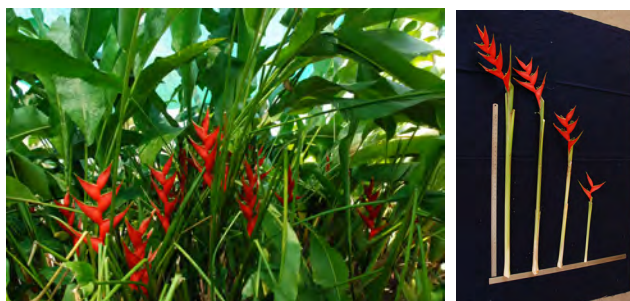
Josephraj Kumar, A. Chandrika Mohan, M. Shanavas, & Sunny Thomas



Four EPN infested eggs turned brownish and one uninfested egg showing emergence of larva



Mass production and collection of rhinoceros beetle eggs from adult mates in vitro



Heliconia stricta 'Iris' harvested from coconut garden at Kayamkulam

inflorescence weight) indicates potential of this variety as intercrop in young coconut gardens with higher shade levels.

Nihad, K. and Abdul Haris



Dispensable tubular formulation of botanicals against rhinoceros beetle

Snap survey on root (wilt) disease in Tamil Nadu

A snap survey on the incidence of root (wilt) disease of coconut was undertaken by ICAR-CPCRI scientists at Coimbatore district and Tirunelveli districts, Tamil Nadu in collaboration with AICRP on Palms, TNAU, Aliyarnagar. Occurrence of root (wilt) disease in Pollachi and Tenkasi and adjoining areas was confirmed as the palms exhibited characteristic flaccidity, yellowing and marginal necrosis. Root (wilt) disease (RWD) was presently confined to certain pockets around Pollachi and in those gardens nearly 25-30% palms are affected. Disease spots and healthy regions are not widely separated in Pollachi and many of these regions are quite nearby. RWD was prevalent in 25-30% palms in Tenkasi. Leaf rot disease was also associated in 15-20% of diseased palms. About 60-70% yield reduction was recorded in diseased garden. Integrated package



Root (wilt) affected coconut gardens of Pollachi and Tenkasi, Tamil Nadu

for the management root (wilt) disease of coconut developed by ICAR-CPCRI was recommended with emphasis on organic manuring, soil-test based nutrient application, management of leaf rot disease and red palm weevil damage in all disease-affected gardens.

Merin Babu, Josephraj Kumar, A. and Chandrika Mohan

IMPORTANT EVENTS

Centenary Celebrations Launched

Centenary celebrations of ICAR-CPCRI was launched on 12th March 2016 at CPCRI, Kasaragod. Dr. N.K. Krishnakumar, Deputy Director General (Horticultural Sciences), ICAR, New Delhi inaugurated the programme. Dr. P. Chowdappa, Director presided over the function and spoke on various programmes planned for the Centenary Celebrations of the Institute during the year. He informed that price fluctuations are common in these crops and have to be tackled through intercropping, which helps to sustain income and also provides recycling biomass for organic cultivation. He felt that value addition is the essence of prosperity for the farmer. Though more than 80% of the produce is consumed by the internal market, neera and value added products like coconut milk, virgin coconut oil, coconut sugar, ice creams, coconut chips and coconut fatty acids need to be promoted to stabilize prices and improve profitability of coconut cultivation.



An aerial view of planting of 100 coconut seedlings of 18 released varieties of CPCRI by farmers at the Institute on the occasion of launching of centenary celebrations of CPCRI



Releasing a publication on "CPCRI – A Century of Service to the Nation"



Unveiling of centenary painting and centenary logo by Dr. N.K. Krishnakumar, Deputy Director General (Hort. Sci.), ICAR, New Delhi



Dr. N.K. Krishna Kumar, DDG (Hort. Sci.) in his inaugural address, said that farmers problems are identical everywhere in India. Forming groups, joining hands with private - public partnership ventures for marketing of this production is advocated. ICAR-CPCRI is the Institute of international standards and encouraging the growers to maintain environmental safety and sustainability with lowest toxic input to the nature as compared to many other crops. He opined that coconut oil is one of the best oils and superior to most of the edible oils. He called for concerted efforts and research on marketing of packaged coconut soft drinks as the demand for tender coconut is tremendous in the country.

One hundred coconut seedlings belonging to 18 released varieties of CPCRI were planted by one hundred farmers in one minute to establish a "Centenary Coconut Park", which was a unique feature of the launching of centenary celebrations. Dr. N.K. Krishna Kumar, DDG (H.S.), Dr. P. Chowdappa, Director and former Directors of CPCRI and officials from developmental agencies joined hands in achieving this rapid task.

A "Centenary logo of CPCRI" and a painting by Shri P. S. Punichithaya on the "100 years journey of CPCRI", were also unveiled during the occasion. Three publications, a special chocolate "Kalpa Choco", made out of coconut sugar, organic products "Kalpa Organic Gold" and "Kalpa Soil Care" also were released during the function.

An exhibition was arranged as a part of the Kisan Mela, showcasing various technologies and products

Kisan Mela and National Seminar at Kahikuchi

Kisan Mela and National Seminar on "Technological options for bringing second green revolution in North East India" was conducted on 13th -14th February, 2016 at CPCRI, RC, Kahikuchi by ATARI, Barapani in collaboration with different ICAR Institutes of North Eastern Region and others Government Organizations. A National Seminar was conducted on 13th February, 2016 where Dr. P. Chowdappa, Director was the chief guest of the programme and on 14th February, 2016 Shri Radha Mohan Singh, Hon'ble Minister for Agriculture and Farmers Welfare, Govt. of India was the Chief Guest of the function. About 2,300 farmers participated in the programme. An exhibition was also arranged as part of the programme.



Dr. P. Chowdappa, Director addressing the gathering during the Kisan Mela

of horticultural research.

Shri S.R. Sathishchandra, President, CAMPCO, Mangaluru delivered the keynote address and urged for development of identification tools for arecanut from different countries in Indian market, detailed study on the human effects of components of arecanut and mechanization, which are the needs of arecanut growers. Former Directors of CPCRI, Dr. K.V. Ahmed Bavappa, Dr. K.U.K. Namboothiri and Dr. George V. Thomas have also spoke on the occasion, Directors of various ICAR Horticultural and Fisheries institutes, financial institutions, farmers and officials from department of agriculture also felicitated the Institute on its centenary. Around 3000 farmers participated in the function. Twenty eight exhibition stalls had showcased their technologies/inputs. During this Centenary year, a series of 100 programmes across the country are planned to be conducted.

The pre Rabi sammelan and a seminar on soil health management was also organized during the event by KVK. KVK also organized seminars on Pradhan Mantri Fasal Bima Yojana with the SBI General Insurance for providing information to the farmers.



Shri Radha Mohan Singh, Hon'ble Minister for Agriculture and Farmers Welfare, along with dignitaries at the Kisan Mela releasing publications

Dream Big Kalpa – 2016

An institute - industry interface meet “Dream Big – Kalpa 2016” was held at ICAR-CPCRI Kasaragod on 29th February 2016 in collaboration with Kerala Gramin Bank. More than 200 participants were present at the meet. The chief guests for the arena were Shri Krishnan Kutty, GM, Kerala Gramin Bank, Shri Jotis Jagannadh, AGM, NABARD and Dr. Sajan Kurien, Director of Research, KAU.

Dr. P. Chowdappa, Director, CPCRI in his presidential address, expressed the importance of research institutes to take the technologies to the common man. During

the interface, technology transfer were made with Pro B Products, Bangalore, to the tune of Rs. 1,20,000/- through MoUs in respect of virgin coconut oil and coconut chips production machineries. An exhibition on technologies including biotechnological processes, bio-fertilizers, bio-control agents, value added products such as kalparasa, virgin coconut oil, coconut chips for agro-industries and varieties and hybrids of coconut, arecanut and cocoa was also arranged. Experts made presentation and took part in one-to-one interaction with entrepreneurs.



Shri Krishnan Kutty, GM, Kerala Gramin Bank addressing the participants of the interface meeting

Biosafety Committee meeting

The first meeting of the reconstituted Institute Biosafety Committee (IBSC), CPCRI, Kasaragod was held on 19th February, 2016 under the chairmanship of Dr. P. Chowdappa, Director, ICAR-CPCRI and Chairman, IBSC, at ICAR-CPCRI, Kasaragod. The following members were present:

1. Dr. George Thomas, Scientist F, Rajiv Gandhi Centre for Biotechnology, Thiruvananthapuram (DBT Nominee),
2. Dr. Rekha Rai, Professor (Microbiology), K. S. Hedge Medical Academy, Mangalore (Medical

Officer),

3. Dr. Ginny Antony, Assistant Professor, Central University of Kerala, Kasaragod (External member),
4. Dr. Anitha Karun, Head, Division of Crop Improvement, ICAR-CPCRI, Kasaragod (Member),
5. Dr. Vinayak Hegde, Head, Division of Crop Protection, ICAR-CPCRI, Kasaragod (Member),
6. Dr. Joseph Rajkumar, Principal Scientist, CPCRI (RS), Kayamkulam (Member),
7. Dr. M.K. Rajesh, Principal Scientist, CPCRI, Kasaragod (Member Secretary)

Research Advisory Committee meeting

The 18th meeting of Research Advisory Committee was held at CPCRI, Kasaragod on 18th February 2016. Dr. S. Edison, Former Director, CTCRI, Thiruvananthapuram and Chairman, Dr. Brahma Singh, Formerly Director, Life Sciences, DRDO, Delhi, Dr. V.S. Korikantimath, Former Director, ICAR Research Complex for Goa, Dr. S. Arulraj, Former Director, IIOPR, Pedavegi, Andhra Pradesh, Dr. Subhash Narayanan, Professor and Head, Anand Agricultural University, Gujarat, Dr. T.M.

Manjunath, Former Director (R&D), Monsanto Research Centre, Bengaluru, Dr. P. Chowdappa, Director, CPCRI, members and Dr. Anitha Karun, Head, Division of crop Improvement CPCRI, Member Secretary were present:

Dr. P. Chowdappa, Director in his welcome address highlighted the various programmes contemplated to empower the stakeholders during the centenary year of the institute. The Chairman, RAC appreciated the



achievements of CPCRI of high standards set in the arena of quality planting material, field demonstrations on management yellow leaf disease of arecanut, root (wilt) disease of coconut, cocoa as inter cops under palms, bottling of kalparasa and its popularization, to name important ones. Chairman RAC also suggested to explore the possibilities to develop appropriate packaging of coconut products.

Following recommendations were given by the RAC:

Whole genome sequencing of coconut.

Development of soilless media for seedling production of cocoa, coconut and arecanut

Development of crop and site specific micro-nutrient formulations for mandate crops.

Work on coconut tissue culture needs to be



Chairman and members of RAC along with scientists of ICAR-CPCRI

strengthened with emphasis on enhanced induction of somatic embryogenesis

Carbon sequestration potential of coconut, arecanut and cocoa and palm based cropping systems should be worked out

Institute Research Committee meeting

The 44th Annual Institute Research Committee Meeting of the ICAR-Central Plantation Crops Research Institute was held at CPCRI, Kasaragod from 1st to 5th March 2016. Progress of work and achievements made under the ongoing research projects, including externally funded projects, during the year 2015-16, were discussed in detail and the technical programme for the year 2016-17 has been formulated during the meeting. Recommendations of the RAC, QRT and inputs from farmers, agribusiness entrepreneurs and officials from the developmental departments were incorporated in the respective projects. During the meeting, seven new projects were approved and nine projects were concluded. Coconut tissue culture, large scale demonstration of management strategies in root



Dr. P. Chowdappa, Director, CPCRI addressing members of IRC during Plenary session of IRC meeting. Dr. M. Maheswaran Director of Research, TNAU Coimbatore and Dr. J. Dilip Babu, Director of Research YSRHU are also seen

(wilt) of coconut and YLD of arecanut, coconut genome sequencing, soil-less media for production of planting material and bottling of 'Kalparasa' were identified as priority areas of research for 2016-17.

HUMAN RESOURCES DEVELOPMENT

Dr. V. Niral, Principal Scientist, participated in the training workshop on "Competency Development Programme for HRD Nodal Officers of ICAR" at NAARM, Hyderabad, during 10-12 February, 2016.

Dr. L.S. Singh, Scientist (Hort.) has undergone a training programme on "Statistical advances for Technological Enhancement in Agricultural Research" from 19-01-2016 to 08-02-2016 at IASRI, Pusa, New Delhi.

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anthracnose on black pepper in South India. *International Journal of Advanced Biotechnology and Research* **6**: 327-342.

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Keerthana Umapathy, Praveena, R. and Anandaraj, M. 2016. Characterisation of some isolates of *Phytophthora* infecting spices and plantation crops.

In: Abstracts of 6th Intl. Conf. *Plant, Pathogens and People*, ICAR-NASC Complex, New Delhi, 23-27 Feb, pp 278-279.

Rajeev, M.S., Muralidharan, P. and Bijila, P.V. 2016. Performance of turmeric varieties as intercrop in coconut garden. 1st KVK Symposium Zone VIII- Technology Delivery mechanisms of KVKs for higher Productivity and Profitability in Agriculture, 21-22 January 2016, UAS, Dharwad. pp 87.

Rajeev, M.S., Muralidharan, P., Reema Anand and Anjali R.Nathan. 2016. Climate resilient practices for banana cultivation in water logged areas. 1st KVK Symposium Zone VIII- Technology Delivery mechanisms of KVKs for higher Productivity and Profitability in Agriculture, 21-22 January 2016, UAS, Dharwad. pp 27.

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TRANSFER OF TECHNOLOGY

Training programmes

ATMA inter-state farmers training programme on Integrated crop management and value addition in coconut was organized at CPCRI, Kasaragod for 303 coconut farmers of 13 districts of Tamil Nadu in 13 batches.

Training on 'Potential of integrated farming for safe food and income – model for youth' was organized at RS, Kayamkulam, in which 48 farmers got benefitted on 15-01-2016.

A training programme on 'Cocoa production and processing technology' was conducted at ICAR-CPCRI,

RC, Kahikuchi, on 08-02-2016 in which, seventeen farmers participated.

Training on Profitable production, processing and marketing mechanisms in coconut was organized in two batches during 2-3 and 5-6, February, 2016 at CPCRI, Kasaragod for 34 SMSs from 29 KVKs covering three states viz., Kerala, Karnataka and Tamil Nadu. Training was organized to empower KVK personnel for formulating interventions for OFT, FLD and extension activities on coconut technologies.

A training program for a batch of 18 trainees



Farmers from Virudhunagar

(including Agricultural Assistants and Pollinators from Alappuzha district) was conducted at RS, Kayamkulam on "Hybridization techniques and plant health management in coconut" under *Kera Samrudhi* Programme of Department of Agriculture, Government of Kerala from 02-02-2016 to 06-02-2016.

Training on production and mass multiplication of microbial agents was conducted at CPCRI, Regional Station, Kayamkulam for 12 members from Agro-processing centre, Karmasena and one SHG of Kanjikuzhy Block on 22-02-2016.

A capacity building programme on "Health management in coconut and sensitization module on invasive pests" sponsored by State Department of Agriculture Development and farmer's Welfare was organised at CPCRI, Regional Station, Kayamkulam during February 23-25, 2016, in which 19 agricultural officers from Thiruvananthapuram, Kollam, Alappuzha and Kottayam districts of Kerala state have participated.

District level seminar on 'Advances in Cocoa Production and Processing Technologies for Enhancing Profitability'



Participants of the training programme for SMSs of KVKs along with resource persons



Farmers from Pudukottai

sponsored by Directorate of Cashewnut and Cocoa Development (DCCD), Kochi was organized on 12-03-2016 at ICAR-CPCRI, Kasaragod, Kerala.

Training on 'Advances in coconut production technologies' was organized at RS, Kayamkulam, in which 41 farmers from Thiruvananthapuram, Tamil Nadu, got benefitted on 22-03-2016. Another training on 'Varieties, mother palm selection and nursery management in coconut' was organized at RS, Kayamkulam, in which six farmers from Kottayam district, got benefitted on 22-03-2016.

A training programme on "Advances in Pest Management in Coconut" was organized at ICAR-CPCRI, Regional Station, Kayamkulam on 24-03-2016 as part of Coconut Centenary Celebrations. Twenty-seven farmers from Kazhakuttam, Thiruvananthapuram participated in the programme sponsored by State Department of Agriculture Development and Farmer's Welfare.

Training on 'Scientific Cultivation of Arecanut and Coconut' was conducted at ICAR-CPCRI, RC, Kahikuchi



for 19 farmers of Kamrup district on 29th March, 2016.

Training on 'Hybridization technique in coconut' was organized at RS, Kayamkulam, in which 12 students from Bishop Moore College, Mavelikara, got benefitted on 30-03-2016.

Training programme on 'Coconut production technology and value addition' was organized at Kasaragod on 30-03-2016 for 10 officers of Department of Horticulture, Coimbatore, Tamil Nadu.

A training program on various aspects of coconut planting material production from seed production to nursery management and also on hybrid production for the benefit of the farmers and coconut climbers was conducted on 30 March 2016 at ICAR-CPCRI, Research Centre, Kidu in which 32 farmers participated.

A batch of 21 B.Sc (Ag) students from College of Agriculture, Thiruvananthapuram has undergone RAW training programme during March 28-April 2, 2016 at the Regional Station Kayamkulam and were

Off-campus programmes

Training on "Management of Coconut Gardens" for four office bearers of Karshakamithra Farmers' Club, Nattika, Thrissur on 06-01-16.

A training session on "Pest management in coconut" for about 25 farmers was held at Kumarapuram near Haripad on 18-01-2016.

A training programme on "Hybridization technique and nursery management in coconut" was held at Seed Garden Complex, Munderi, Malappuram on 27-01-2016.

A training programme for coconut farmers groups (CPS) and extension officials on root (wilt) disease management and area wide community participation model for red palm weevil management at Poothakkulam panchayath, Thiruvananthapuram district was held on 03-02-2016 in which 48 farmers attended. Another training programme organized

ICT package to reach farmers digitally

An Information Communication Technology (ICT) package was developed for reaching out digitally to coconut farmers and other stakeholders of the root (wilt) affected areas more effectively and rapidly.



Training programme on planting materials production at CPCRI, RC, Kidu

exposed to all coconut production technologies including laboratory visit, field visit and project formulation tips.

Four training programme on Friends of Coconut Tree (FOCT) – Scientific Coconut cultivation and practice in palm climbing with palm climbing device were conducted sponsored by Coconut Development Board, State Centre, Kolkata, in which, 80 trainees were benefitted.

on the same subject at Kalluvathukkal panchayath, Thiruvananthapuram district on 23-02-2016 in which 33 farmers attended.

A Field Day-cum- Diversity Fair was conducted at Kanjikuzhy Block, in which 45 farmers participated in the programme and exchanged planting materials of tuber crops.

Training on Palm Health Management for Coconut Producer Federation at Mararikulam on 08-03-2016, in which 500 farmers participated.

Training-cum-demonstration on hillock composting of coir pith at Kanjikuzhy on 22-03-16 for an SHG consisting of 10 members.

Field day on 'Arecanut-cocoa mixed cropping system for higher productivity' was conducted on 30-03-2016 at Nellyady, Puttur Taluk, by which, around 128 farmers got benefitted.

The package consists of website, survey application knowledge base and mobile friendly applications in English and Malayalam. The application enable farmers/ extension officials/ coconut farmers

groups etc. to report their field problems in text, images, audio, video mode as well as facilitation through live chatting, synchronized farming App for farmers undertaking new plantings, Farmers diary to record their cultivation sequences and seek timely

and authentic technical advisories, report on the technology adoption and feedback. These Apps are designed in an interactive mode and GPS enabled so that the information could be archived for future analysis also.

Farmers' participatory research cum demonstration plots on cocoa

Fifty demonstration plots on cocoa technologies were established in 2015 on improved varieties, pruning, integrated nutrient management, organic farming, pest and disease management and post-harvest processing in five districts viz., West Godavari, East Godavari, Krishna, Vishakapatnam and Vizianagaram of Andhra Pradesh. Adoption of improved technologies by 50 farmers will be upscaled by Department of Horticulture, KVKs and mass media. This will help in increasing the productivity and profitability of cocoa farming in Andhra Pradesh.



Demonstration plot on improved varieties



Demonstration plot on Integrated nutrient management



Demonstration plot on Integrated pest and disease management



Demonstration plot on organic farming



Demonstration plot on post harvest processing

Field day

For the benefit of other farmers, a field day on 'Areanut based multispecies cropping system', was organized on 29-02-2016 at Puttur, Dakshina Kannada district, in the garden of Mr. Rama Prasad for the benefit of 107 stakeholders. As part of the Field day, visit to demonstration plot, lectures, demonstrations and

discussions were organized. Exhibits on varieties, agronomic practices, nursery management, pest and disease management and harvesting of areanut and cocoa were displayed for giving first-hand information to the farmers.



Field day on arecanut based cropping system at Puttur, Dakshina Kannada



Exhibitions

ICAR-CPCRI participated in Krishi Unnati Mela during 19-21 March, 2016 at IARI, Pusa campus, New Delhi organized by Ministry of Agriculture and farmers Welfare, Govt. of India. Dr. Trilochan Mohapatra, Secretary, DARE & Director General, ICAR, New Delhi visited CPCRI Stall on 19-03-2016.



Dr. Trilochan Mohapatra, Secretary, DARE & Director General, ICAR, New Delhi with the staff of CPCRI

CPCRI showcased the technologies at Police ground, Kannur during 24 -28 February 2016 in connection with Karshakashri Farm Fair organized by Malayala Manorama.

Personnel from CPCRI, Research Centre, Kahikuchi participated in stall exhibition during 3rd International Agri-Horticultural show from 06-01-2016 to 09-01-2016 at Khanapara, Guwahati, Assam.

CPCRI - Media interface

An ICAR-CPCRI-Media interface was organized at Kayamkulam on 04-01-2016 in which 25 media personnel participated and interacted with Dr. P. Chowdappa, Director. The interface was organised



Hon'ble Agriculture Minister visiting exhibition stall of CPCRI during Kisan Mela at Kahikuchi

to highlight technologies developed by the Institute on management of root (wilt) disease in coconut. Dr. P. Chowdappa elaborated on the salient research accomplishments of ICAR-CPCRI towards the welfare of the farming community. He also highlighted root (wilt) tolerant coconut varieties viz., Kalparaksha, Kalpasree and the hybrid, Kalpasankara suitable for the root (wilt) disease endemic zones of Kerala. Media optimistically gave a scintillating coverage in all dailies highlighting the contributions of ICAR-CPCRI.



Dr. P. Chowdappa, Director speaking to news correspondents during institute - media interface at CPCRI Regional Station, Kayamkulam

NERA GAON, NERA GAURAV

ICAR- CPCRI, Kasaragod and its regional stations and research centres have implemented "Mera Gaon Mera Gaurav" initiative in 68 villages by conducting training

programmes, demonstrations, farm advisory visits and mobile advisory services.

Venue	No of scientists	No of villages	No. of training programmes / meetings organized	No of farmers benefitted
CPCRI, Kasaragod	32	36	36	1,512
CPCRI, RS, Kayamkulam	13	16	20	760
CPCRI, RS, Vittal	8	8	8	440
CPCRI, RC, Kahikuchi	4	5	5	180
CPCRI, RC, Mohitnagar	2	3	6	204
Total	59	68	75	3,096



Demonstration on *Trichoderma* application for the management of Slow wilt of pepper at Neerchal, Badiadka



Farm advisory visit to Madikai



Farmers' meet at Kattachira



Field day at Cherthala South



Interface programme at Sullia



Training programme at Manchi

KVK, Kasaragod

KVK, Kasaragod has conducted seven on farm trials, the outcome of these indicated that botanical cake in tablet form developed by CPCRI is highly promising in reducing rhinoceros beetle attack in coconut, fodder grass variety CO-5 performed better (148.3 t/ha) followed by CO-3 (128.2 t/ha) Thumburmuzhy-1 (117.4 t/ha) and Australian Napier (95.5 t/ha).

The validation of wonder climber was carried out and was found to be highly safe and cost effective and useful for homestead farming with few arecanut palms.

KVK, Kasaragod has carried out 19 frontline demonstrations in farmers' fields, conducted 22 training programmes benefitting 718 farmers and farm women.

Harvest Festival

A harvest festival was organized in connection with the FLD programmes of ginger, turmeric and tuber crops at Kinanoor Karindalam on 19-01-2016 in which the chairpersons of various standing committees of the panchayat and 50 farmers participated.



Harvest festival of turmeric and tuber crops at Kinanoor - Karindalam

Exhibition

An exhibition pavillion was arranged during the Technology meet by ATMA on 26-1-2016 at Periya in which various technologies developed by CPCRI and KVK were demonstrated. Around 2000 farmers visited the pavillion during the exhibition.

An exhibition pavillion was arranged during the exhibition at Mavunkal, Kanhangad organized by MILMA dairy northern zone on 11 & 12 February 2016 in which various technologies developed by CPCRI and KVK were demonstrated. Around 2000 farmers visited the pavillion during the exhibition.

Action Plan meeting of KVKs organized at CPCRI

The Action Plan meeting of KVKs was organized at CPCRI by KVK Kasaragod and ATARI on 22 & 23 February, 2016. The meeting was attended by the Director of Extension, KAU, Scientists from ATARI, Bengaluru and Heads of fifteen KVKs from Kerala and Lakshadweep.



Action Plan presentation by KVKs

SAC meeting of KVK Kasaragod

The SAC meeting of KVK conducted at CPCRI on 17-03-2016 in which 30 delegates participated which included the heads of various line departments, farmer representatives, Scientists from KAU and ICAR-ATARI participated. The Director, ICAR-CPCRI chaired the meeting.



Release of KVK publication during SAC meeting

KVK-Alappuzha

Twenty nine training programmes were organised benefitting a total number of 639 farmers/rural youths/ extension officials during the period. Krishi Vigyan Kendra Alappuzha organized a state wide training programme on "Value addition in vegetables" in collaboration with Department of Agriculture, Govt. of Kerala under the scheme "Project-based Assistance for Value addition in Vegetables".

An Agricultural Technology Meet was jointly organized by KVK Alappuzha, Department of Agriculture, and ATMA at Rola Auditorium, Harippad from 23rd to 25th

January, 2016. Shri Ramesh Chennithala, Hon. Home Minister of Kerala inaugurated the meet. A Research-Extension-Farmer interface on "Integrated Farming System Technologies for Alappuzha district" was conducted. About 1000 farmers participated in the meet.



Training programme on value addition in vegetables

Field day: Field day of the frontline demonstration on "Management of stem bleeding disease of coconut" was conducted on 16-01-2016 at Karuvatta. An interface on "Integrated management of coconut" was

conducted on the occasion. About 70 coconut farmers participated in this programme. Another field day on 'Scientific cultivation of turmeric variety IISR Prathibha in coconut gardens' was conducted on 02-02-2016 at Bharanikkavu. The demonstration was conducted at Bharanikkavu and Aryad panchayaths with the participation of about 75 farmers attended the field day.

Harvest festival in Kainakari panchayath was conducted at Umbukkattusserry padasekharam on 17-03-2016. The programme was inaugurated by Smt. L. Sreelekha, Project Director, ATMA, Alappuzha. Another harvest festival and field day of the demonstration at Muttar panchayath was conducted at Pallikkadav Layikkari padasekharam on 21-03-2016.

Launching of Millet based Low glycaemic Index food mix was conducted at Athulya Kudumbasree unit Aryad on 21-03-2016. Around 40 Kudumbasree members and farmers club members attended the programme.



Harvest festival of turmeric and paddy



PARTICIPATION IN NATIONAL SEMINARS/ SYMPOSIA/ WORKSHOP

Name and Designation	Title	Place and Date
Dr. C. Chowdappa, Director, Dr. Vinayaka Hegde, Head, Dr. Prathibha V.H. and Ms. Keerthana Umopathy, Scientists	6 th International Conference on "Plants, People and Pathogens"	ICAR- NASC Complex, New Delhi. February 23-27, 2016.
Dr. M.K. Rajesh, Pr. Scientist	National Seminar on Recent Advances in Molecular Biology	Department of Molecular Biology, Kannur University 9 th March, 2016
Dr. Rajkumar, Scientist	25 th Conference Asian-Pacific Weed Science Society	PJTSAU, Hyderabad 13 – 16 October, 2015

Distinguished visitors

- Shri Radha Mohan Singh, Hon'ble Minister for Agriculture and Farmers Welfare, visited the Research Centre, Kahikuchi on 30-01-2016 and on 14-02-2016 during the Kisan Mela and National Seminar on "Technological options for bringing second green revolution in North East India".
- Dr. Anupam Barik, Assistant Commissioner of Agriculture, Govt. of West Bengal, visited RC,

Mohitnagar on 13-02-2016.

- Dr. A. K. Singh, DDG (Agricultural Extension) visited Research Centre, Kahikuchi on 14-02-2016 in connection with the Kisan Mela and National Seminar on “Technological options for bringing second green revolution in North East India”.
- Dr. N.K. Krishna Kumar, DDG (Horticultural Science) visited Research centre, Kahikuchi on 16-02-2016.



Shri Radha Mohan Singh, Hon'ble Union Agriculture Minister visited seedling nursery of CPCRI, RC, Kahikuchi

CELEBRATIONS

Republic Day

Republic Day was celebrated in the headquarters, Regional Stations and Research Centres on 26-01-2016 in a befitting manner. Dr. P. Chowdappa, Director, delivered the Republic Day speech at Kasaragod.

World water day

World Water day was celebrated at Regional Station, Kayamkulam on 22-03-2016. A special thought-provoking and inspiring talk on Water Literacy was delivered by Shri P.N. Premkumar, Retd. Jt. Director, Soil Survey and Soil Conservation.

OTHER INFORMATION

Science Talent Camp-2015 convened at Kayamkulam

Sasthra Prathibha Matsaram-2015 Level 2 camp was co-hosted by ICAR-CPCRI at Kayamkulam on 16-01-2016 where churning of talents and igniting minds took place for the selection of twelve selected students to represent the State of Kerala at National level.

Institute Management Committee meeting

The 2nd meeting of the Institute Management Committee for the year 2015-16 was held at CPCRI, Kasaragod on 29-02-2016 under the Chairmanship of Dr. P. Chowdappa, Director, CPCRI, Kasaragod & Chairman, IMC of CPCRI. Dr. Sajjan Kurien, Director (Research) and Dr. V.S. Devadas, Associate Director of Research (Farms I/c), KAU, Vellannikkara, Dr. James George, Director, CTCRI, Thiruvananthapuram, Dr. H.P. Maheswarappa, Project Coordinator (Palms), CPCRI, Kasaragod, Dr. (Mrs.) Anitha Karun, Head, Crop Improvement Division, CPCRI, Kasaragod, Shri T.A. Vishwanath, Finance & Accounts Officer, NBAIR, Bengaluru, Members and Shri Suresh Kumar, Chief Administrative Officer, CPCRI, Kasaragod & Member Secretary have participated.

Women cell activities

A secondary agriculture skill upgradation programme on virgin coconut oil (VCO) production for women

entrepreneurs was organized as an off-campus programme in Bharanikkavu panchayath. Twelve women attended the programme in which hands on training with method demonstration and product diversification in coconut were imparted to the participants.

Women cell members of CPCRI, RS, Vittal visited Ishwaramangala village and interacted with farm women on arecanut based cropping system, to commemorate women's day on 08-03-2016.

Swachh Bharat campaign

Cleaning drive was continued at headquarters on every Fridays of a week in ICAR-CPCRI Regional Stations and Research Centres punctually with participation of all the staff. Novel initiatives of good agricultural practices and vegetable farming in the context of Swachh Bharat Abhiyan were introduced at Regional Station, Kayamkulam.



Staff of CPCRI Kasaragod doing Swachh Bharat activity

PERSONALIA

PROMOTION

Name of the staff	From (Designation)	To (Designation)	w.e.f.
Shri A.J. Bhadrar	Technical Officer (Artist), CPCRI, RS, Kayamkulam (Retd. On 30-11-2015)	Sr. Technical Officer, CPCRI, RS, Kayamkulam	01-01-2005
Shri E.R. Asokan	Sr. Technical Asst. (Photography), CPCRI, RS, Kayamkulam	Technical Officer, CPCRI, RS, Kayamkulam	01-01-2014
Shri John George	ACTO (Lab.), CPCRI Kasaragod	CTO, CPCRI Kasaragod	01-07-2014
Shri Sebastian George Arayathinal	ACTO (Lab.), CPCRI Kasaragod	CTO, CPCRI Kasaragod	01-01-2015
Shri Devadas K.	Sr. Technical Officer (Field/Farm), CPCRI Kasaragod	ACTO, CPCRI Kasaragod	01-01-2014
Shri K. Sajnanath	Sr. Technical Officer (SMS-Soil Science), KVK, Alapuzha	ACTO, KVK, Alapuzha	11-03-2014

TRANSFER

Name of the staff	From (Place)	To (Place)	w.e.f.
Shri P.K. Surendran	AAO, CPCRI, RS, Vittal	AAO, CPCRI, RC, Kidu	12-02-2016
Shri P. Krishna Naik	AAO, CPCRI, RC, Kidu	AAO, CPCRI, RS, Vittal	02-02-2016
Shri Shivaji Hausrao Thube	Scientist, CPCRI, Kasaragod	Scientist, CPCRI, RS, Vittal	19-02-2016

RETIREMENT

Name	Designation	Place	Date
Smt. K. Arunakumari	Assistant	CPCRI, RS, Vittal	29-02-2016
Shri P.A. Radhakrishnan	Private Secretary	CPCRI, Kasaragod	31-03-2016
Shri K. Ismail	SSS	CPCRI, RS, Vittal	31-03-2016



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