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Kasaragod, Kerala - 671 124

From the Director's Desk

Ensuring sustainable future

In the ecological food web, natural control of various living organisms can be clearly seen. By observing such phenomena, for cultivation of economic crops, effective biocontrol methods can be developed. Biocontrol of diseases and pests through counter balance mechanisms of microorganisms in nature has been effectively utilised in plantation crops. By taking such cues in the integrated pest management (IPM), it has been possible to grow the crops and reap the benefits from agriculture.

Integrated nutrient management practices involving application of balanced fertilizers, incorporating of green manure in palm basins and recycling biomass through vermicomposting could improve health of root (wilt) affected coconut palms and Yellow Leaf Diseased (YLD) arecanut palms.

In certain cases, good management practices and adequate supply of irrigation and manures could minimize the pests and disease situation. It has also been observed that, biocontrol methods alone could control the pests and diseases effectively. In certain other cases, a combination of biocontrol with other cultural practices or combination of chemical control could judiciously safeguard the crops and the environment.

In case of eriophyid mite of coconut, the fungus *Hirsutella thompsonii* could effectively check the mite population. Besides palm oil and sulphur spray could prevent the mites further. For control of *Opisina arenosella*, the leaf eating caterpillar of coconut, release of *Goniozus nephantidis* for 3rd instar larval stages, *Elasmus nephantidis* for pre pupal stage and *Xanthopimpla punctata* for pupal stages could effectively control the pest. Application of *Oryctes baculovirus* (OBV) helps to reduce the yield loss in coconut due to rhinoceros beetle damage. We could also observe 70% of the rugose spiraling whitefly (RSW) colonies in coconut were eaten away by the aphelinid parasitoid, *Encarsia guadeloupae* parasitoids. Leiochrini beetle, *Leiochrinus nilgirianus* were found feeding on sooty mould developed over the honey dew excreted by RSW, completely cleaning of the sooty mould from palm leaflets.

Reduction in coconut leaf rot lesions was observed on application of consortium of *Pseudomonas fluorescens* and *Bacillus subtilis*, which could control the two main pathogens, *Colletotrichum gloeosporioides* and *Exserohilum rostratum*. *Trichoderma harzianum* in talc formulation and in cake form were useful to control black pod disease of cocoa. Mass production of *Trichoderma harzianum* and *Metarhizium anisopliae* have been successfully commercialized to help utilization in the field against the pests. Stem bleeding of coconut caused by *Thielaviopsis paradoxa* could be effectively controlled by *Trichoderma harzianum* and *T. viride*.

At ICAR-CPCRI, it could be proved that naturally occurring local isolates of biocontrol agents utilized through integrated pest and disease management were effective against pests and diseases. The focus is on the eco-friendly crop protection measures with long term ecological gains which proved to be greater in value than the short term gains from chemical control leading to ecological imbalances.

CONTENTS

RESEARCH HIGHLIGHTS

First record of *Pseudolagarobasidium acaciicola* from coconut plumule suspension cultures

Suspension culture is a type of culture in which single cells or small aggregates of cells multiply while suspended in agitated liquid medium. The callus obtained from coconut plumule culture in solid medium was more of compact nature and hence attempts were initiated for developing a protocol for raising cell suspension cultures using coconut plumules. The liquid culture systems provide more uniform culture conditions to the explants. During an attempt to develop suspension culture using coconut plumular explants, white cottony growth was observed in some of the viable cell clumps (Fig. 1). Under the microscope, hyphal threads could be seen protruding out of the living tissue mass. The mycelia was aseptically picked up and placed on MRB agar and purified (Fig. 2). DNA was extracted from polyspore mycelia using Invitrogen gDNA isolation kit and PCR amplified with ITS1 and ITS4 primers (Fig. 3). After sequencing, forward and reverse sequences were assembled and contig was generated. Sequence analysis using Bioinformatic tool BLAST of NCBI revealed it to be *Pseudolagarobasidium acaciicola* and was deposited in NCBI Genbank database with Accession number MK163558. Based on maximum identity score, first few sequences were selected and aligned using ClustalΩ and a dendrogram was constructed (Fig. 4). Fungal hyphae growing in the coconut plumule cell clumps belonged to a monophyletic genus, *Pseudolagarobasidium,* in a *Polyporales* clade, based on homology and phylogenetic analysis. This is the first time a basidiomycete known for white-rot was encountered thriving inside living coconut tissues. Interestingly, this resupinate fungus has also been reported as an endophyte of healthy, living cocoa trees. Largely known as a saprophyte, its existence in coconut host could be seen as a survival strategy switching from one mode to another, indicating its nutritional plasticity and hence, ecologically important.

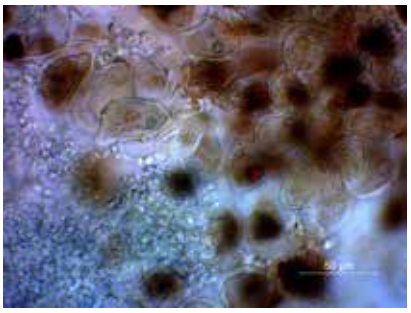

Fig. 1. Micrograph showing fungal spores

Fig. 2. Germinating fungal spores

Fig. 3. Pseudolagaro-basidium acaciicola TCF1 on MRB agar

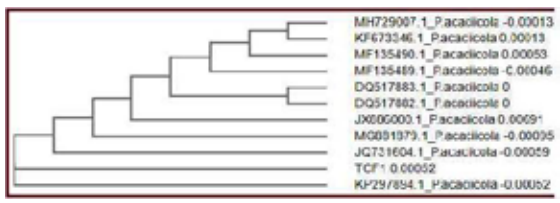

Fig. 4a. Amplified fragment (~650 bp) ITS1/ ITS4, Fig. 4b. Phylogeny of P. acaciicola TCF1

Neema M., Alka Gupta, Murali Gopal and Anitha Karun

Studies on nutrient uptake pattern in coconut

The quantum of nutrients apportioned as reserve in the stem, nutrients having the potential for *in situ* crop residue recycling and which are totally removed from the system once the nuts are harvested, were studied at ICAR-CPCRI, Regional Station, Kayamkulam. The nutrient uptake by the entire biomass could be classified into three such as a) recyclable, b) removable and c) reserve fractions. The amount of nutrients taken by an apparently healthy palm follows the order K>N>Ca>S>P>Mg>Zn>Cu>B. The magnitude of nutrient uptake per palm in an apparently healthy palm was found to be 889g N, 109.4 g P, 1075 g K, 389.7 g Ca, 71.6 g Mg, 229.69 g S, 1784 mg Mn, 569 mg Cu, 2304 mg Zn, and 321.63 mg B. N and K are in the forefront as nutrients being removed from the system through the harvest of nuts and are to be replenished by external addition of inputs

along with palm residue recycling (mulching and composting). Considering the rate of removal, calcium is another important nutrient particularly in acidic sandy soils.

Jeena Mathew, Abdul Haris, A., Muralidharan, K., Krishnakumar, V. and Ravi Bhat

Farm-based method for bioinoculant production

A farmer-friendly method for mass-production of bioinoculants utilizing a blend of mature coconut water, rice gruel and biochar, which are locally available, was standardized. Using this method, contaminant-free bioinoculants can be mass-produced from starter cultures by farmers themselves, on their own farm, for immediate field application. The method is farmer friendly and does not require any costly instrument/equipment. The method was found suitable for mass-production of both bacterial and fungal inoculants, including 'Kera Probio' and 'Cocoa Probio' cultures (Fig. 5&6), which could attain their satisfactory viable population.

Fig. 5. 'Kera Probio' culture growing in blended medium

Fig. 6. Intense fluorescence and enhanced production of active antibiotic substances by 'Cocoa Probio' in culture medium

Murali Gopal and Alka Gupta

Invasion of Rugose Spiralling Whitefly (RSW) on coconut in Kamrup and Nalbari districts of Assam

A new distributional record of rugose spiralling whitefly (RSW) [*Aleurodicus rugioperculatus* Martin] on coconut palms was reported during August 2018 from Kamrup (Damdama, Hajo, Kalitakuchi) and Nalbari (Bijulighat, Barkuriha, Madhapur, Katpua, Tilana) districts of Assam in North-East India. In addition, *A. rugioperculatus* was also observed on arecanut, ornamental yellow palm, banana and a croton, to a limited extent. The pest damage symptoms including deposition of sooty mould on the upper surface of palm leaflets, were observed at least eight months back in Nalbari district, where the pest incidence is at the receding phase now. Observation of RSW revealed 82.1% natural parasitism by *Encarsia guadeloupae* in samples collected from Nalbari and Kamrup districts. The neuropteran green lace wing predator, *Pseudomallada* n.sp. *astur,* was also registered in Madhapur, Nalbari district. To combat the pest incidence, augmentative biological control by releasing palm leaflets (10 cm) containing the *E. guadeloupae* - parasitized RSW pupae as well as the classical bio-scavenging programme by introducing sooty mould feeding Leiochrinid beetle, *Leiochrinus nilgirianus* was undertaken in all pest affected hamlets by ICAR-CPCRI (Fig. 7 & 8). As part of arresting the spread of RSW in different parts of Assam, strict domestic quarantine should be ensured in the transport of coconut seedlings from one place to other in the North-East region.

Fig. 7. Awareness programme on rugose spiralling whitefly at Tilana, Assam

Fig. 8. Release sooty mould scavenger beetle on whitefly infested palms

Chandrika Mohan, Josephrajkumar, A., Singh, L.S. and Alpana Das

Diversity of mushrooms growing in coconut gardens

Many different species of mushrooms were found to appear naturally in the coconut plots of ICAR-CPCRI farm (both Kasaragod and Kayamkulam) during the South-West monsoon rains from early July to September period. Drenching of soil from monsoon rains after dry summer spell led to germination of dormant spores and underground growth of a network of mushroom mycelium. Epigeous fruiting bodies of a host of mushrooms - *Agaricus trisulphuratus*, *Termitomyces heimii*, *Macrocybe gigantea*, *Trametes* sp., *Leucocoprinus zeylanicus*, *Macrocybe lobayensis*, *Volvariella volvaceae*, *Macrocybe* sp., *Polyporus arcularius* - emerged naturally in various coconut plots, both at Kasaragod and Kayamkulam station. Assistance of Dr. K.B. Vrinda, JNTBGRI, Thiruvananthapuram was sought for their definitive identification. Among the mushrooms, saprophytic (Fig. 11, 12, 13, 16, 19, 20, 21), symbiotic (Fig. 9, 22) and parasitic (Fig.10) types were observed. Polypores (wood rotters) (Fig.17,18) were observed growing in association with young coconut seedlings (Fig.10). Some were found colonizing a particular cropping/ system plot (Fig. 9, 11, 14, 15, 21) indicating their preference for specific substrates. *Termitomyces heimii*, also called termite-fungus, was found in clumps in two different sites at main farm and hill block, each clump with large number of epigeous sporocarps. Both *T. heimii* and *T. eurrhizus*, symbiotically associates with termites and are an excellent edible mushroom, considered a delicacy in Kerala (Fig. 9). *Macrocybe* spp., reported from both Kasaragod and Kayamkulam farm (Fig.13, 15, 16), grew, where

Fig. 9. Harvested cluster of *Termitomyces heimii* from coconut-cocoa intercropping plot (Kasaragod)

Fig. 10. *Trametes* sp. (a polypore) growing in collar region of coconut seedling (Kasaragod)

Fig. 11. *Volvariella* sp. found growing in coconut leaf vermicomposting site (Kasaragod)

Fig. 12. *Agaricus trisulphuratus* growing in Heritage Coconut Plot (Kasaragod)

Fig. 13. *Macrocybe gigantea* found growing in dwarf coconut evaluation trial plot at Hill Block (Kasaragod)

Fig. 14. *Leucocoprinus zeylanicus* grew in HDMSC plot soils (Kasaragod)

Fig. 15. *Macrocybe lobayensis* found growing in ecological engineering plot (Kayamkulam) where coconut wood was buried (Lobed cap measuring almost a foot across)

Fig. 16. Repeat emergence of *Macrocybe* sp. in ecological engineering plot (Kayamkulam)

Fig. 17. *Polyporus arcularius* (Kasaragod)

Fig. 18. Puff ball from HDMSC plot (Kasaragod) (b) its cross section

Fig. 19. *Gymnopilus zenkeri* growing on whole coconut with husk from near to Earthworm Multiplication Unit (Kasaragod) (gills bearing rusty-orange spores)

Fig. 20. *Lentinus squarrosulus* growing in Heritage Plot (Kasaragod) (Decurrent and dichotomous gills near the stem apex)

Fig. 21. *Agaricus* spp. growing on coir pith compost dumps (CPCRI, Kasaragod)

Fig. 22. *Termitomyces eurrhizus* growing on HDMSC plot soils (CPCRI, Kasaragod)

there was buried rotten wood and are one of those giant wild edible mushroom species which can be cultivated (tastes very similar to the milky mushroom).

The natural occurrence of these mushrooms in various coconut plots of ICAR-CPCRI is important as they decompose organic matter and release nutrients to soil. They may also form mycorrhizal associations. Additionally, the fruiting bodies produced by many of these wild species serve as food and medicine.

Alka Gupta, Indhuja, S. and Murali Gopal

Lowest rainfall in Kasaragod

The total rainfall during the rainy seasonal quarter (July-Sept) was minimum this year (1335 mm) as against the past 20 years (avg. 1716.5 mm) in Kasaragod. More alarmingly, the rainfall during the September month was one among the lowest (34 mm) in the last 100 years (20 year average is 321.73 mm). Next lowest in the last 20 years was in the year 2000 (92.4 mm) and the highest was in the year 2007 (670.6 mm). In perennial crops, there may not be any immediate stress symptoms due to the low rainfall. However, if continuous dry spell continues for another 4-6 months, drought related nutfall and leaf damage may occur subject to non-availability of irrigation.

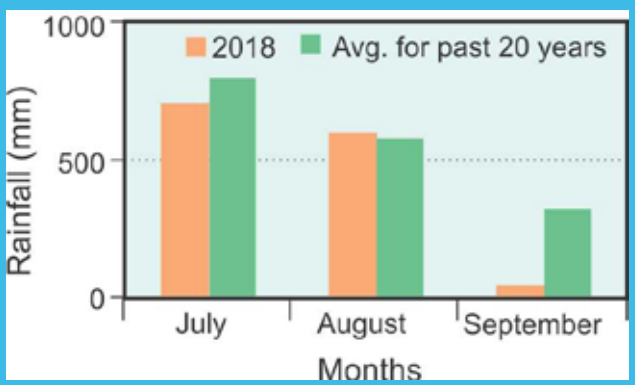

Fig. 23. Comparison of current year rainfall with previous 20 years average rainfall at Kasaragod

Important Events

Launching of ICAR-CPCRI developed 'Frozen Coconut Delicacy'

Shri Radha Mohan Singh, Honorable Union Minister of Agriculture and Farmers Welfare and Shri Gajendra Singh Shekhawat, Union Minister of State for Agriculture and Farmers Welfare, launched a non-dairy vegan product "Frozen coconut delicacy" developed by ICAR-Central Plantation Crops Research Institute, Kasaragod during the 90th ICAR Foundation Day celebration on 16th July 2018. Dr. Trilochan Mohapatra, Secretary (DARE) & Director General (ICAR), Shri Chhabilendra Roul, Special Secretary (DARE) & Secretary (ICAR) and Shri Bimbardhar

Shri Radha Mohan Singh, Hon'ble Minister of Agriculture and Farmers Welfare releasing the frozen coconut delicacy during the ICAR Foundation Day at New Delhi

Pradhan, Additional Secretary & Financial Advisor (DARE/ICAR) and Dr. P. Chowdappa, Director, ICAR-CPCRI were also present during the launching ceremony.

In view lactose intolerant population, ICAR-CPCRI has come out with a coconut based "Frozen Coconut Delicacy", which is composed of coconut milk, coconut sugar/refined sugar, tender coconut water and pulp. It is a premium product which is completely natural and healthy. It is enriched with vitamins, minerals and healthy fatty acids. Due to lauric acid rich coconut milk and potassium rich tender coconut water, this will be a functional and nutraceutical food. This technology has been transferred to Mangalore based M/s Hangyo Ice Creams Private Limited, which has started production of this frozen coconut delicacy.

Interactive Workshop on Arecanut and Human Health

An Interactive Workshop on 'Arecanut and Human Health' was conducted at ICAR-Central Plantation Crops Research Institute, (ICAR-CPCRI), Kasaragod on 24th and 25th July 2018. The meeting was inaugurated under the Chairmanship of Dr. P. Chowdappa, Director, ICAR-CPCRI. Shri V.V. Bhat, IAS, Former Secretary to the Govt. of India, Dr. Manjunatha K. Naik, Vice Chancellor, University of Agricultural and Horticultural Sciences, Shivamogga and Prof. Dr. Satheesh Kumar Bhandary, Vice Chancellor, Nitte University, Mangalore were the Chief Guests.

Dr. S.K. Bhandary, Vice Chancellor, Nitte University, Mangalore delivering inaugural address during the interactive workshop at ICAR-CPCRI, Kasaragod

Twenty five medical practitioners, 30 scientists associated with arecanut production and value addition, 150 traders and growers, administrators, advocates and officials of developmental agencies attended the Workshop. Presentations were made under the four themes a) phytochemistry, b) arecanut in Ayurveda, c) pharmacology studies and d) epidemiological studies.

The majority of the medical practitioners were of the opinion that reports on the effects of arecanut consumption on human health are only observational and not based on any systematic scientific studies. The earlier epidemiological research on

Shri K.N. Bhat, Former Additional Solicitor General of India, delivering valedictory address during the interactive workshop at ICAR-CPCRI, Kasaragod

arecanut consumption pattern indicated that arecanut alone could not cause any harmful effects on human health. There were also a few presentations to demonstrate the potential of arecanut for the treatment of a number of diseases. Arecanut was also described to possess anti-microbial properties and also reduces digestive disorders, diabetics, and depression.

Being a good source of phyto-chemicals, arecanut can be a treasure trove for substances of pharmacological interest. The research initiatives on various uses of arecanut are yet to be undertaken. Hence, a multi-institutional collaborative project on 'Arecanut Consumption Patterns and its Effect on Human Health' is imperative to undertake basic, strategic, biochemical, cell line and clinical research to understand the effects of various forms of arecanut consumption on human health. The valedictory session of the workshop was presided over by Dr. Chowdappa, Director, ICAR-CPCRI. Shri K.N. Bhat, Former Additional Solicitor General of India, delivered the valedictory address. Dr. Vijayalakshmi Deshmane, Former Professor and Head, Kidwai Memorial Institute of Oncology, Bangalore, Dr. K. Satyamoorthy, Director, School of Life Sciences, Manipal University, Manipal, Shri Anant Hegde Ashisar, Former Chairman, Western Ghats Task Force and Dr. Homey Cheriyan, Director, Directorate of Arecanut and Spices Development, Kozhikode were the Guests of Honour.

Workshop on Artificial Intelligence for Plantation Crops

A workshop on 'Artificial Intelligence (AI) for Plantation Crops' was organised at ICAR-Central Plantation Crops Research Institute (CPCRI) on 28th and 29th September, 2018. Dr. Raju Narayana Swamy, IAS, Chairman, Coconut Development Board, Kochi, inaugurated the workshop. He felt that Artificial Intelligence is the need of the hour for use in plantation crops, that needs to be properly implemented. He highlighted that it is helpful to improve lab to land interactions for better delivery of agricultural technologies to help farmers improve their livelihood. He made a point that agriculture needs to change drastically for which value addition and marketing research have to be step up. AI can be a catalyst acting in a mission mode to become engine of development for plantation sector.

Shri Raju Narayanaswamy, IAS, Chairman, Coconut Development Board, Kochi inaugurating the workshop

Dr. P. Chowdappa, Director, ICAR-CPCRI, in his presidential address, said that the workshop is a gathering of AI technocrats, policy makers, business and marketing experts along with agricultural scientists to solve the labour crunch and other issues in plantation crops and he put forward three important challenges that required AI interventions in: monitoring of pests and diseases, spraying of plant protection chemicals and precision farming for delivery of nutrients.

Dr. Kota Harinarayana, Founder Chairman, General Aeronautics Pvt. Ltd., Bangalore presented the keynote lecture on 'Drones, deep learning and doubling farmers' income'. He briefed the audience on basics of artificial intelligence, machine learning and deep learning and highlighted the fact that there is a great opportunity to exploit satellites and drones combined with deep learning image processing to solve the resource crisis and advance detection of biotic/abiotic stress in agriculture that can help double farmers' income.

Dr. G. Dhanakumar, Director,

Indian Institute of Plantation Management delivered a guest lecture on 'Disruptive Innovation (DI) and AIMDel Perspective'. He mentioned that there were very few DI in agriculture and there is an excellent opportunity to usher in Lean management using Artificial Intelligence-Machine and Deep learning (AIMDel) for making agriculture more resource use efficient. There were important presentations on different facets of AI advancements and more specifically suitable for plantation crops.

Introductory Bio-scavenging Programme in Andhra Pradesh on Palms Infested by Rugose Spiralling Whitefly

Introductory biological scavenging programme by introducing the sooty mould feeding Leiochrinid beetle, *Leiochrinus nilgirianus* Kaszab from Kerala to Andhra Pradesh was launched by ICAR-CPCRI at Amalapuram, Andhra Pradesh. The launching ceremony of the introductory biological scavenging programme was held during the inauguration of the Krushivala Coconut Farmers Producers Company held at Amalapuram, Andhra Pradesh on 10th August, 2018 under the chairmanship of the Sri Chiranjeevi Chowadary IFS, Horticultural Commissioner of Andhra Pradesh and Dr. P. Chowdappa, Director, ICAR-CPCRI, Kasaragod. In his key note address Dr. P. Chowdappa highlighted the uniqueness of introducing the sooty mould feeding beetle in to Andhra Pradesh which was not observed in the region so far. He further highlighted that this is the first time a bio-scavenger beetle, *L. nilgirianus* has been purposely introduced as part of classical bio-scavenging on whitefly-infested coconut palms. Field release of the beetle (*L. nilgirianus*) was undertaken at West Godavari District in the coconut groves of Shri Murali, Kalavalapalli and Shri Srinivasan, Chikkala.

Dr. P. Chowdappa, Director, ICAR-CPCRI, Kasaragod delivering the keynote address

Introductory Bio-scavenging Programme for the Suppression of Rugose Spiralling Whitefly at Pollachi, Tamil Nadu

ICAR-CPCRI has organized an introductory biological control through release of *Encarsia guadeloupae* parasitized pupae of rugose spiralling whitefly as well as classical bio-scavenging programme through liberation of the sooty mould scavenging beetle, *Leiochrinus nilgirianus* in synergy with Coconut Research Station (TNAU), Aliyarnagar for effective bio-suppression of the invasive rugose spiralling whitefly, *Aleurodicus rugioperculatus* infesting coconut palms at Pollachi, Tamil Nadu on 4th September, 2018. Farmers in Anamalai region of Pollachi, Tamil Nadu were formally empowered about the unique area-wide bio-scavenging programme and releases of the beneficial insects were made in the coconut plantations infested by rugose spiralling whitefly with pronounced development of sooty mould (*Leptoxyphium* sp.). These insects were released in the coconut plantations of Shri Sekhar, BG Farms, Anamalai and Shri Vishwak, Bedanayakanur, Anamalai.

Human Resources Development

Deputation Abroad

Dr. P. Chowdappa, Director and Dr. P. Subramanian, Principal Scientist (Agronomy) participated in the 48th APCC Cocotech Conference in Bangkok, Thailand during 20th - 24th August, 2018. The conference and exhibition were held with the theme 'Sustainable coconut development through climate smart agriculture, product innovation and advancing technologies'.

Dr. P. Chowdappa, Director, ICAR-CPCRI along with dignitaries at the 48th APCC Cocotech Conference in Bangkok, Thailand

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Nihad, K., Anes, K.M., Josephrajkumar, A. and Krishnakumar V. 2018. Countering Plastic Pollution through coconut. *Proceedings of Seminar 'Boost up Coconut to Beat out Plastics'(E-Manual)*. ICAR-CPCRI, Regional Station, Kayamkulam. 44p.

TRANSFER OF TECHNOLOGY

Training conducted

On campus training programme

Training Programme on 'Neera and its Value Added Products' for 25 Extension Officials from Department of Agriculture & Agricultural Marketing, Kanyakumari district, Tamil Nadu was conducted during 28th – 30th August, 2018 at CPCRI, Kasaragod. Another training programme on 'Mass production of EPN' for women entrepreneurs was organized on 20th August, 2018 at ICAR-CPCRI, Kasaragod in collaboration with Department of Agriculture, Nileshwaram block.

Training programme on '*Kera Probio Production*'

A training programme on 'Production Process of Kera Probio' was conducted at ICAR-CPCRI, Kasaragod during 28th - 29th June, 2018 for a group of rural educated youth from Pathiyur Panchayath, Alappuzha district, Kerala under the ICAR-CPCRI-FFP based on MoA with them.

The group comprising of six male and a female member, were taught the process of 'Kera Probio' production using talc as the carrier material and culture maintenance with hands-on training so that a decentralized '*Kera Probio* Production Unit' can be established in the FFP area for the field-level large scale quality production of this ICAR-CPCRI PGPR for farming community. Dr. S. Indhuja, Scientist (Microbiology), CPCRI-Kayamkulam also participated in the training programme.

The 'Kera Probio' culture was formally handed over to the group on 14th September, 2018 so that the first batch of the product could be rolled out.

Trainees getting hands-on experience on inoculation technique and culture maintenance

Refresher Course on 'Coconut Health Management'

ICAR-CPCRI, Regional Station, Kayamkulam organized a two days refresher course on 'Advances in Coconut Health Management' for the Technical Staff from Kasaragod, Kidu and Vittal during 6th - 7th July, 2018 as part of updating, re-skilling and up-skilling techniques in pest and disease management in coconut. Sixteen members participated in the training programme. A training and E-manual on '*Advances in Coconut Health Management*' was also released on the occasion and copies delivered to all trainees. In their feedback, trainees were overwhelmed by the technical know-how infused by the faculties of the Regional Station, Kayamkulam and the practical knowledge gained through field visits.

Refresher course on coconut health management at ICAR-CPCRI, RS, Kayamkulam

Inter-State Training Programmes

A capacity building programme on 'Integrated Crop Management in Coconut Plantations' for twenty farmers from Thirupullani Block (Ramanathapuram District), Tamil Nadu was conducted at ICAR-CPCRI, Regional Station, Kayamkulam during 19th - 21th July, 2018. The next batch was also convened during 5th - 7th September, 2018 for the benefit of 45 coconut farmers from Kottur (Thiruvarur District) and Pollachi (Coimbatore District), Tamil Nadu. The programme fully sponsored by ATMA, State Department of Agriculture, Tamil Nadu aimed at infusing cutting edge technologies on coconut to the farmer trainees as well as exposure visit to experimental plots of the Institute, Farmer FIRST programme site at Pathiyoor, ORARS, Kayamkulam and Onattukara Coconut Producers Company, Kattanam.

An Interstate training programme on 'Coconut production technologies' for 20 farmers from Kadayanallur block, Tamilnadu was organized during 30th July, 2018 to 2nd August, 2018 at CPCRI, Kasaragod in collaboration with ATMA, Kadayanallur block, Tamil Nadu.

A view of the inter-state farmers' training session at ICAR-CPCRI, Kasaragod

Another training programme for 20 Farmers from Moodakurichi block, Erode district, Tamil Nadu was conducted during 13th - 14th August, 2018 at CPCRI, Kasaragod in collaboration with ATMA, Erode district, Tamil Nadu.

An Inter State Exposure visit cum training programme on 'Integrated crop management in coconut' was conducted at CPCRI, Kasaragod for 20 farmers from Arcot block, Tamil Nadu in collaboration with ATMA, Vellore District, Tamil Nadu during 3rd - 5th September, 2018.

An inter State Exposure visit cum training programme on 'Coconut cultivation practices' was conducted for 20 farmers from Kanyakumari district on 11th September, 2018 at ICAR- CPCRI, Kasaragod in collaboration with ATMA, Kanyakumari district, Tamil nadu.

An inter State Exposure visit cum training programme on 'Coconut cultivation practices' was conducted for 20 farmers from Thiruvannamalai district on 17th - 19th September, 2018 at ICAR-CPCRI, Kasaragod in collaboration with ATMA, Thiruvannamalai

district, Tamil nadu.

An Inter State Exposure visit cum training on 'Integrated crop management, value addition and pest and disease management in coconut' for 20 farmers from Coimbatore district was organized during 17th - 19th September, 2018 at CPCRI, Kasaragod in collaboration with ATMA, Coimbatore District, Tamil Nadu.

Farmer-Scientist Interface on Good Agricultural Practices in Coconut

ICAR-CPCRI, Regional Station, Kayamkulam organized a one day Farmer-Scientist Interface on 'Good Agricultural Practices in Coconut' as part of ICAR-Foundation Day celebrations on 16th July, 2018. The Interface was inaugurated by Shri K.K. Anilkumar, Councillor, Kayamkulam Municipality. Farmers were taken around the experimental fields for infusing experiential learning on scientific coconut farming and doubling farmers' income.

Interactive Workshop for Agricultural Officers

A one-day Interactive Workshop on 'Advances in Palm Health Management' was held at ICAR-CPCRI, Regional Station, Kayamkulam in two batches for refreshing the technological updates in Palm Health Management to Agricultural Officers during 11th and 13th September, 2018. Agricultural Officers from Thiruvananthapuram, Kollam and Kottayam participated in the workshop sponsored by Department of Agricultural Development and Farmer's Welfare, Government of Kerala as part of the project on 'Technology Support for Plant Protection Campaign against Pests and Diseases of Coconut'. Shri Najeeb, Principal Agricultural Officer, Kollam inaugurated the Workshop

Members of Andhra Pradesh Toddy Tappers Co-operative Finance Corporation at ICAR-CPCRI, Kayamkulam

on 13th September, 2018. In his special address,

Delegation from Andhra Pradesh Toddy Tappers Co-operative Finance Corporation visited ICAR-CPCRI, Kayamkulam on 29th July, 2018 and got acquainted with latest production technologies of coconut. The team was impressed with early bearing nature of dwarf coconut genotypes.

INM, IPM and IDM techniques in coconut to 162 farmers from Nagercoil Block (Kanyakumari District) of Tamil Nadu on 13th September, 2018.

Training programmes cum hands-on-method demonstration on 'Mass production of biocontrol agents' were held at ICAR-CPCRI, Regional Station, Kayamkulam for the benefit of 40 selected participants of Alappuzha and Kottayam districts as a part of Technology Support project during 8th August, 2018 and 26th September, 2018. Farmers got acquainted with use of bioagents viz., *Metarhizium anisopliae and Trichoderma harzianum* pest and disease suppression which can be adopted for eco-friendly farming technologies.

Off campus Programmes

Off campus training programme on 'Coconut production Technology' was conducted for 50 farmers under the Coconut Development Programme 2018-19 at Krishi bhavan hall, Kalpetta on 19th July, 2018.

Off campus training programme on 'Scientific cultivation practices in coconut' was conducted for farmers at meeting hall, Collector

PRA approach to 'local adaptations to climate change' at Mavelikkara, Kerala

office, Ramanathapuram, Tamil Nadu on 14th August, 2018 in collaboration with Coconut Development Board.

Conducted a one day Workshop and PRA on 'Climate Change and Local Adaptations' was conducted at Mavelikkara Block Panchayat Office Hall involving 24 farmers, Assistant Director, Agricultural Officers and Assistant Agricultural Officers from Department of Agriculture Development and

Farmers Welfare on 3rd July, 2018. The programme was inaugurated by Shri Reghuprasad, President, Mavelikkara Block Panchayat.

Group meeting on the 'My Coconut My Legacy' (MCML) programme at panchayath conference hall on 4th July, 2018 and 27 stakeholder representatives of local panchayath, student representatives, teachers, farmer representatives participated and finalized the programs for the year.

Scientist of ICAR-CPCRI participated as resource persons in '*Block level Farmer interactive workshops under Coconut development programme on Pest and Disease management*' organized by State Department of Agriculture Development and farmers' welfare held at Kalpetta, Manathawadi and Sultan Battery of Wyanad district during 19-20th July, 2018 and handled sessions on Scientific coconut cultivation and Pest and disease management.

Nine training programmes on Integrated pest and disease management, Scientific coconut cultivation and Health management of coconut were conducted across the Kerala State for farmers, women and youth as part of State Govt. funded Technology Support project during July to September 2018. A total of 458 participants were benefitted out of the programmes.

ICAR-CPCRI also convened an awareness campaign as well as Introductory Biological Scavenging programme on Rugose Spiralling Whitefly (RSW) infesting coconut and oil palm at West Godavari district, Andhra Pradesh on 22nd September, 2018.

Farmer Field schools (FFS)

A Farmer Field School (FFS) programme was conducted in Government L.P. School, Oachira Panchayath on 4th August, 2018 with the cooperation and facilitation of Krishibhavan, Oachira which was inaugurated by Mr. Abdul Majeed, Panchayath president inaugurated the programme. 25 FFS participants attended the programme.

Technology Support for Farmers on Plant Protection of Coconut

Training programme on 'Integrated crop health management for doubling income from coconut' for coconut farmers organized on 6th September, 2018 at NSS auditorium, Pathiyoorkala in which 53 farmers participated.

Farmer FIRST programme

Training programme on 'Integrated nutrient management and yield improvement strategies' for model coconut farmers of Farmer FIRST Programme conducted on 31st July, 2018 in which 42 coconut farmers from five wards attended.

Community farming of vegetables, horse gram and finger millet in 300 acres initiated in ICAR CPCRI, FFS panchayath with participation of women SHGs, MGNREGS, coconut farmers in all the 19 wards. A group discussion on technologies to be adopted and training program organized at PHC hall on 6th August 2018 for 64 participants.

Farmers meet and direct interaction and appraisal of FFP interventions was organized at PHC hall on 14th September, 2018 which was inaugurated by Mr. Bibin C. Babu, President, Muthukulam Block Panchayath. In the programme, released FFP farmers products like cold pressed coconut oil. Virgin coconut oil (VCO) and 'Pathiyoor Karshaka' gingelly oil. KeraProbio unit – Kalpakam was inaugurated. More than 200 farmers attended the programme. The direct interaction and appraisal of the programme was done by Dr. S. Prabhukumar, Retd. Zonal project Director & National Expert Committee Member of FFP.

Exhibitions

Name of Exhibition	Place	Date (2018)
Agro Expo, Codissia	Coimbatore, Tamil Nadu	13th - 16th July, 2018
State Farmers day celebration 2018	Edappal, Malappuram, Kerala	12th - 16th August, 2018
Exhibition Cum Sales Mela	Pathiyoorpanchayath auditorium, Alappuzha, Kerala	7th July, 2018

Radio programme on All India Radio, Thiruvananthapuram

S. N.	Name of scientist	Topic	Date of broadcast
1	Dr. S. Kalavathi	Six programmes on 'Indigenous Technological Knowledge' in coconut under the 'Nattarivu programme'	July-September, 2018
2	Dr. P. Anithakumari	Live phone-in-programme on 'Pathiyoor model system integrating society and technology utilization'.	7th September, 2018
3	Dr. T. Sivakumar	live-phone-in programme on 'Weevil management in coconut'	28 th September, 2018

TV Programme

"Three documentaries were telecaste in Krishi Darshan programme of DD Malayalam. These were on 'Intreventions of KVK Alappuzha in Turmeric cultivation and formation of OSFPC', 'Management of crops during rainy season in Kuttanad region' and 'Climate Resilient Practises in Poultry and goat rearing' and telecaste respectively on 11th July 2018, 25th July, 2018 and 23rd August, 2018."

Commercialization of Technology

During the period from July to September, 2018, three technologies were commercialised by the Institute to entrepreneurs through MoA as per the details given below:

Name of technology	Date of licensing	Transfer Fee (Rs.)	Entrepreneur details
Technical knowhow of production of virgin coconut oil (VCO)	4th July, 2018	40,000	Mr. K.S. Hegde, Shantivana Estate, Kukkehalli Post, Udupi – 576124, Karnataka
-do-	28th July, 2018	40,000	M/s Vadakara Coconut Farmers Producer Company Ltd., Karimbanapalam, Vadakara-673101, Kerala
Coconut chips	-do-	25,000	-do-
Kalpa Soil Care	14th August, 2018	25,000	Mr. Younus Ali P.P., Akshaya, Pokkunnu Post, Kozhikode- 673018, Kerala
	Total	**1,30,000**	

Success Story

'Samruthy' - a coir-pith-derived compost to bridge the gap in bioorganic input requirement

M/s Sebastian Philip, Baby Mathew and Saju Joseph of Chooral, PayyannurDistrict, Kerala run a coconut coir fibre extraction unit that generates on an average 3-4 tonnes of coir-pith waste every month. Their extraction unit was commissioned about 15 years back and has been working round the year since then. Huge mounds of coir-pith had accumulated in their unit premises and it became a major disposal problem. They even had to excavate a large pit to accommodate the ever growing mound of coir-pith waste.

The coir-pith mound was growing out of proportion and taking up much of their available land area near their factory. The group started enquiring for means to dispose this waste in an environmental-friendly manner. Then they learned about the composting technologies available to recycle this lignin-rich waste to compost. They became

MoA exchange between Director, ICAR-CPCRI and M/s Sebastian and Co. for coir-pith composting technology through ITMU

aware of the popular technology of composting coir-pith using urea and oyster mushroom fungus *Pleurotus sajor-caju*. They also came to know about the co-composting procedure of coir-pith developed at ICAR-CPCRI, to produce organic manure, where the use of urea was not involved. This technology attracted them as the compost produced was entirely using organic inputs.

M/s Sebastian and group then visited ICAR-CPCRI, Kasaragod during December 2017 to learn more about this technology. They got first-hand information about the coir-pith composting procedure from Dr. Murali Gopal and Dr. Alka Gupta, co-developers of the technology. Convinced with what they saw, they approached Dr. P. Chowdappa, Director of the Institute and inked an MOA with ICAR-CPCRI during Feb. 2018, facilitated by Dr. K. Muralidharan, Head, Div. of Social Sciences and Nodal Officer, ITMU, got trained and immediately initiated the composting process in their place.

They received step-by-step guidance by the technology-developers and by the end of June 2018, their first batch of coir-pith compost was ready and launched with brand name 'Samruthy' Coir-pith compost. Currently their capacity is to generate 25 tonnes of compost in one round taking three months time. They plan to expand the production area.

The 'Samruthy' coir-pith compost produced by thisgroup will be used by horticultural units for vegetable and flower seedling production and also for plantation crops such as coconut, arecanut, rubber, banana and spices crop such as black pepper and cardamom.

This venture by M/s Sebastian and group highlights the successful conversion of 'waste to wealth' with technical support from scientists of ICAR-CPCRI, Kasaragod.

Murali Gopal and Alka Gupta

Huge mound of coir-pith waste dumped alongside the coir-fibre extraction unit

Coir pith heaps getting composted (right)

Coir-pith compost bagged and branded as 'Samruthy'

Mera Gaon - Mera Gaurav

Kerala witnessed one of the worst flood furies during August 2018 and the MGMG villages adopted by scientists were also badly hit. Yellowing of adult palms and as well as elephant yam was commonly observed in most of the villages. Banana, vegetables, nutmeg, black pepper, turmeric, tapioca were badly affected. A shoot up of soil temperature exceeding 42°C was recorded in certain villages after flood which induced cracks on silt deposits as well as loss of soil microflora and fauna. Habitat destruction and biodiversity loss occurred. Opening the soil for improving root respiration, correction of soil pH and incorporation of organic manures in flood-affected soil is very essential. Infusing farming instincts in young minds is imparted by motivating school students towards farming as a career to lead a prosperous life. More emphasis is now laid upon on *Kisan Sutra* viz., pedigree, protection, production, processing and prosperity to make farming inclusive remunerative targeting doubling farmer's income mainly through improvement in production and reduction in production costs. Knowledge transfer at the doorsteps of the farmers and translation of scientific farming practices are the main success of the MGMG flagship programme.

Scientist's interaction with farmers during MGMG visit

KVK Kasaragod

Prime Ministers' Interface programme

Prime Ministers' Interface programme with Women SHGs was live streamed on 12th July 2018. In this connection a training programmme was organized for women self help groups on value addition of jackfruit and around 30 members of WSHGs attended the programme.

Women SHG members participating in PM's interaction programme

Type of training	No. of training	Men	Women	Total
On Campus	14	124	147	271
Off Campus	06	33	62	95
Total	20	157	209	366

KVK, Kasaragod organized 20 training programmes (14 on campus and 06 off campus programmes) for the benefit of 366 participants comprising farmers, farm women, rural youth, self help groups and vocational students.

On Farm Trials

Two on farm trials on 'Eco friendly management of rhinoceros beetles in coconut' and 'Varietal evaluation of dwarf varieties of coconut' were carried out during the period under report.

Frontline Demonstrations

Frontline demonstrations on High Yielding Variety of paddy, Shreyas (5 ha at Chengala), HYV of fodder, Sampoorna (5 ha, at Paivalike and Kuttikkol), marigold variety, PusaNarangi (0.4 ha at Ajanur) and HYV and disease tolerant variety of pepper, Thevam (3 ha at Bellal and Pullur-Periye) were being demonstrated during the period. Further, demonstrations on Management of yellowing and wilting in pepper were initiated in an area of 2 ha at Kunjar.

Webcasting Interface meeting of Prime Minister

Farmers meeting were organised in connection with the webcasting of Prime Ministers inter face with women SHGs on 12thJuly, 2018 in which 45 women farmers and women SHG group members participated.

World Honey Bee day celebration

'World Honey Bee Day was celebrated on 20th August 2018 in collaboration with Horticorp, Thiruvananthapuram which was attended by around 120 farmers. The programme was inaugurated by Smt. Santhamma Philip, Vice

A view of the Honeybee Day programme at ICAR-CPCRI, Kasaragod

President, Kasaragod District Panchayat.

Other extension activities

KVK scientists participated in MTA meetings conducted by ATMA and provided crop advisory services and post flood crop management recommendations.

KVK staff members conducted post flood evaluation of crop losses in plantation crops in Kasaragod, Idukki and Calicut districts during 11th and 12th September 2018.

Success Story: Melissa Honey Group, KVK

KVK regularly conducts training programmes on Bee Keeping in collaboration with SHM through HORTICORP and Kasaragod Rural Development Society. During June and August, 2018, SHM sanctioned two training programmes on 'Value Added Products from Honey' for the first time for the trainees who had already undergone the training programmes on Bee Keeping in previous years with an objective of utilizing the honey produced for making value added products and thereby enhancing employment opportunities and ensuring increased income from this allied enterprise. Both the programmes were attended by 40 ex-trainees each.

Melisa Honeybee Group of KVK, Kasaragod with product exhibits

A total of 12 trainees comprising nine ladies and three men from the first batch formed a group named 'Melissa Honey Group of KVK' and initiated group activities towards the preparation of skin care products as its first step. The products being prepared by the group in the first phase include body cream, pain balm, foot care balm, lip balm and face pack. These five products are being marketed in the brand names, Madhukanthi and Madhulepa and the quality of these products are highlighted through the tagline, 'Natural Beauty at its Best'. Only pure, organic and natural products such as virgin coconut oil, coconut oil, bee wax, honey, red sandal powder, turmeric, Kasthuri Manjal, Aloe vera gel etc., are used for the preparation of these skin care products. The launching and first sale of the product was organized during the World Honey Bee Day celebrations conducted at ICAR-CPCRI on 20.08.2018. The products were introduced to the local marketing avenues during Onam sales melas, exhibitions etc., and the movement of the products show that these cosmetic and skin care products slowly conquering the local market. In a short period of two months, they could prepare around 500 bottles (50 gm bottles) and earn around Rs.50,000/-. The group members are Smt. Santhi, Jyothi, Usha Kumari, Remya, Anu, Sobha, Nabeesa, Syamala, Preethi, Shri Sudhakaran, Shri Jose and Shri Devarajan.

KVK, Alappuzha

Launching of activities (2018-19) at Thamarakkulam and Vallikunnam panchayaths

Thamarakulam and Vallikunnam Grama panchayaths of the district are selected as the operational area for implementing various activities of the KVK *viz.* farmer participatory On Farm Testing, Frontline Demonstrations, Training programmes, Farmer Field School and Extension activities during 2018-19. Launching of these activities was done by Sri. R. Rajesh, Hon'ble MLA, Mavelikkara on 12th July, 2018 at EMS Smaraka Community Hall in Thamarakulam. The chief guest in his inaugural address appreciated the initiatives by the Krishi Vigyan Kendra in the district and suggested to promote programmes integrating the traditional knowledge with novel scientific technologies to increase the farm production. KVK Newsletter for the period January-March 2018 was released on the occasion. Critical inputs for selected interventions *viz.* Turmeric HYV Pragathi, Kadaknath layer chicks, IISR PGPR Capsule and Multi nutrient mixture "Sampoorna", were also handed over to partner farmers during the occasion. Smt. Rajini Jayadev, President, Bharanikavu Block Panchayath presided over the function. About 100 persons including farmers, Grama Panchayath Members, Officers of the line departments, and Kudumbasree attended the programme.

Enterpreneurship Development training Programme on 'Food processing'

Ten days entrepreneurship development training programme on "Food Processing" sponsored by District Industries Centre (DIC) was conducted during 18th - 28th July 2018 at KVK- Alappuzha. A total of 26 selected participants from different parts of the district including kudumbasree members and small scale entrepreneurs attend the programme. Dr. P. Muralidharan, Head, KVK, gave an orientation to the participants in the programme and Smt. Jissy George, Subject Matter Specialist (Home Science) briefed about the content of the training in the inaugural session. The training focused mainly on value

added products from fruits and vegetables, coconut, Jack fruit and fish processing. Theoretical aspects about FSSAI Registration, Packaging and labeling of foods, Marketing etc. were also discussed in detail during the training. The trainees also got a chance to interact with successful entrepreneurs in food processing sector in the district. A visit to Incubation cum training centre of KVK Pathanamthitta was also conducted as part of the training. Sri. Krishnakumar, ADIO & Sri. Unnikrishnan, IEO from the DIC attended the program.

Third Annual General Body meeting of Onattukara Spices Farmer Producer Company Limited (OSFPCL)

Third Annual General Body meeting of the Onattukara Spices Farmer Producer Company Limited (OSFPCL) was conducted on 22.09.2018. The company is promoted and functioning usedthe technical guidance of ICAR-Krishi Vigyan Kendra –Alappuzha and funded by NABARD for the spice farmers of the district. The meeting was presided by Smt. RajaniJayadev, Managing Director,OSFPCL and President, Bharanikkavu Block Panchayath. While presentingaward (2017-18) of the OSFPC, she highlighted that company procured more than 20 tons of turmeric and 3 tons of ginger from the share holders and distributed more than 200 farmers of the district during the year. Dr. P. Muralidharan, Principal Scientist and Head, ICAR-KVK –Alappuzha reviewed the performance of OSFPC from the Producer Organization Promoting Institution (POPI) side and expressed satisfaction on the achievements made by the company. He emphasized the need for cultivating high yielding varieties of ginger and turmeric for achieving more income. Rajeev M. S., SMS (Agronomy), ICAR-KVK – Alappuzha, presented the audited report of OSFPCL and Smt. Deepa Rajendran, CEO of OSFPCL presented the business plan for 2018-19. Sri V. Vasudevan, Director, OSFPC and President, Bharanikkavu Grama panchayath, Smt. Jissy George, SMS (Home Science), ICAR-KVK – Alappuzha, Sri E.S. Ananadan, Director and farmer representatives spoke on the occasion. More than 100 share holder farmers attended the AGM and an amount of Rs. 10000/- was donated to the Chief Ministers Distress Relief Fund (CMDRF) by the company for the flood relief activities of the state.

Training programmes

During the period, 27 training programmes were organized benefitting a total number of 677 farmers/rural youths. The details of the training programmes were as follows:

Training	No. of Programmes	Participants		
		Men	Women	Total
On campus	6	56	87	143
Off campus	18	233	220	453
Vocational	1	6	20	26
On Job training to VHSE students	1	9	16	25
Training for extension officials	1	6	24	30
Total	27	310	367	677

Participation in national seminars/symposia/conferences/workshops

Name and designation	Title	Place and date
Dr. P. Chowdappa, Director	90th Foundation Day of ICAR	NASC Complex, New Delhi on 16th July, 2018
Dr. P. Chowdappa, Director	World Coconut Day Celebration	IGKVV, Raipur, Chattisgarh on 2nd September, 2018
Dr. V. Krishnakumar, Head of Station, Dr. A. Joseph Rajkumar, Pr. Scientist, Dr. K. Nihad, Dr. Jeena Mathew and Dr. S. Indhuja, Scientists	Workshop on Artificial Intelligence for Plantation Crops	ICAR-CPCRI, Kasaragod 28th - 29th September, 2018
Dr. Chandrika Mohan, Principal Scientist & Dr. K.M. Anes, Scientist	International Conference on Biological Control	Hotel Le Meridian, Bengaluru during September 27-29, 2018
Dr. Thamban C. and Dr. Regi J. Thomas Pr. Scientists	Kerala KarshakaSangham- 'Kerala KarshakaSadas'	Nalanda Auditorium, Kozhikode on 25th July, 2018
Dr. Rajesh M.K., Principal Scientist	Workshop on 'Biotechnology Ignition Grant (BIG)'	C-Camp, Bengaluru On 25th July, 2018

Dr. Nihad K.	20th Conference of Heliconia Society International	Kumarakom, Kerala during 4-6th August, 2018
Dr. Manikantan M.R., Principal Scientist	Workshop on Mechanization of Processing and Value Addition for Agricultural and Horticultural Produce	Lecture Hall, NASC, New Delhi on 5th September, 2018.
Dr. Rajkumar and Dr. Sujithra M., Scientists	International Conference on 'Biological Control Approaches and Applications	Society of Biological Control, Bangaluru 26th - 29th September, 2018
Dr. Chandrika Mohan, Principal Scientist and Dr. Anes K.M., Scientist	First International Conference on Biological Control	ICAR-NBAIR, Bengaluru 27th - 29th September, 2018
Dr. Ravi Bhat, Head, Div. of Crop Production	Workshop on 'Challenges of Raising Areca Plantation in Paddy Field' orgaized by Hugol Service Co-operative Society Ltd.	Bairumbe, Sirsi 25th August, 2018

New Projects

A project, funded by RKVY Kerala entitled 'Commercial production of arecanut tissue culture planting material of yellow leaf disease resistant palms and dwarf hybrids' by Dr. Anitha Karun, with an outlay of Rs. 60.08 lakhs for 2018-19.

Another project, funded by DASD, Kozhikode entitled 'Participatory demonstration plots of cinnamon intercropping in coconut' by Dr. Ravi Bhat and Dr. P. Subramanian with an outlay of Rs. 20,44,500/- during 2018-19.

Distinguished Visitors

Shri P. Sreeramakrishnan, Hon'ble Speaker of Kerala Legislative Assembly, visited the experimental plots of the ICAR-CPCRI, Regional Station, Kayamkulam and held interactive discussion with the Head, on 3rd September, 2018.

Dr. P. Rajasekharan, Chairman, Kerala State Agricultural Prices Board visited ICAR-CPCRI, Regional Station, Kayamkulam on 24th July, 2018 in connection with formulating 'Coconut Mission' for Govt. of Kerala.

Shri P. Sreeramakrishnan, Hon'ble Speaker of Kerala Legislative Assembly visiting the ICAR-CPCRI, Regional Station, Kayamkulam

Women Cell Activities

Women's Cell of ICAR-CPCRI, RS, Kayamkulam organized a resource lecture for staff member of ICAR-CPCRI, RS, Kayamkulam on 24th July, 2018. The lecture was delivered by Dr. R. Sreeni, Senior Medical Officer, Government Ayurveda Hospital, Kumarapuram, Alappuzha on the topic '*Importance of observing Ayurveda practice in Karkkadaka month for health rejuvenation*'. The unique medicinal porridge, '*Karkkadaka Kanji*', traditionally popular in Kerala during the Karkkadaka month, was prepared by women staff members and served to all staff members on the day.

Resource lecture to Women's Cell members at ICAR-CPCRI, RS, Kayamkulam

OTHER INFORMATION

Independence Day

The Institute has celebrated 72nd Independence Day of our nation. Dr. P. Chowdappa, Director hoisted the National Flag and delivered the Independence Day address at Kasaragod on 15thAugust, 2018. Independence Day was also celebrated in the Regional Stations at Kayamkulam and Vittal and Research Centres at Kahikuchi, Kidu and Mohitnagar.

Illumination of the campus on the eve of the Independence Day at Kasaragod

Dr. P. Chowdappa, Director, ICAR-CPCRI hoisting the national flag at ICAR-CPCRI, Kasaragod

Hindi Chethana Mas celebration

Inaugural function of Hindi Chethana Mas celebration was conducted on 14th September, 2018 under the chairmanship of Dr. P. Chowdappa, Director ICAR-CPCRI, Kasaragod. Dr. Taru S. Pawar, Associate Professor (Hindi) Central University of Kerala, Kasaragod was the Chief Guest of the function.

Hindi Chetana Mas inauguration at ICAR-CPCRI, Kasaragod

Different competitions like Hindi typing, translation and drafting letters, recitation, song, memory test were conducted for the staff members and picture based notes writing and memory test were conducted for Skilled support staff separately.

Hindi Week Celebration was conducted at this Regional Station, Kayamkulam from 14th to 22nd September 2018. A total of 12 competitions were conducted.

Valedictory function was organized on 24th September, 2018 and Shri P.S. Govinda Pillai, Retired Professor, MSM College, Kayamkulam was the Chief Guest.

TOLIC Meeting

Half yearly meeting of the Town Official Language Implementation Committee (TOLIC), Kasaragod has been conducted under the Chairmanship of Dr. Ravi Bhat, Acting Director, ICAR-CPCRI , Kasaragod. On 8thAugust, 2018. Interface discussion on Official Language Policy and Official Language Act 1963 and Rule 1976 was held on the same day. Sri Aravindakshan M., Senior Hindi Officer, Employees Provident Fund Organization, Kannur guided the discussion.

Swachhata Hi Seva Campaign

In connection with the 150th birth anniversary celebrations of Mahatma Gandhi and 4th anniversary of Swachh Bharat Mission, a Swachhta Hi Seva campaign was organised. Employees of ICAR-Central Plantation Crops Research Institute, participated in the Campaign by removing solid waste materials

scattered by the sides of National Highway-66. Dr. P. Chowdappa, Director, ICAR-CPCRI inaugurated the campaign. The Campaign started on 15th September, 2018 and continued till the Mahatma Gandhi Jayanti Day (2nd October, 2018). Various programmes such as awareness rally, door to door campaign on Swachhata, mural painting and other cultural activities on the ideas of cleanliness were organised.

This flagship campaign promulgated by Hon'ble Prime Minister aimed at showcasing "Clean and New India" as well as sanitation message to the young minds and to the rural masses of the Grama Panchayat. Different activities were also organized at ICAR-CPCRI, Regional Station, Kayamkulam, *viz.*, Swachhtha Shapath, toilet repair & cleaning, Organize cleaning of streets, Conduct door to door meeting in the neighborhood, Organize awareness campaign for School students, School/college students rallies to create awareness about Sanitation, Making provisions for segregation of wastes, Making compost Pits, Cleaning of roads inside campus. These activities

Swachhta Hi Seva programme at ICAR-CPCRI, Kasaragod

were held on all working days during the period 15th September, 2018 to 2nd October 2018. ICAR-CPCRI convened a village-level sensitization rally as well as awareness meeting with the

Swachhta Hi Seva programme at ICAR-CPCRI, RS, Kayamkulam

school kids from Government UPS, Krishnapuram on September 25, 2018 as part of *Swachhata Hi Seva* "Cleanliness is Service" campaign.

IMC Meeting

A meeting of the Institute Management Committee (IMC) was held on 17th September, 2018 at ICAR-CPCRI, Kasaragod under the chairmanship of Dr. P. Chowdappa, Director, ICAR-CPCRI.

IMC meeting being held at ICAR-CPCRI, Kasaragod

Atal Smaran Programme

A first monthly tribute to the former Prime Minister of India, Shri Atal Bihari Vajpayee was held on 15th September, 2018 at ICAR-CPCRI, Kasaragod. To mark the occassion, recital of poetries by the former Prime Minister was done by the staff of the Institute.

Atal Smaran programme held at ICAR-CPCRI, Kasaragod

Infrastructure development

A small dairy unit with a calf and an additional poultry unit have been established in the KVK Alappuzha farm, Kayamkulam.

PERSONALIA

APPOINTMENTS

Name of the staff	Designation	Place	w.e.f.
Shri Neil Vincer	Assistant Administrative Officer	ICAR-CPCRI, Kasaragod	06-07-2018

PROMOTIONS

Name of the staff	From (Designation)	To (Designation)	w.e.f.
Dr. S. Jayasekhar	Scientist (Sr. Scale), ICAR-CPCRI, Kasaragod	Senior Scientist, ICAR-CPCRI, Kasaragod	10-04-2018
Shri K.N. Radhakrishnan Nambiar	Sr. Tech. Asst., ICAR-CPCRI, Kasaragod	Technical Officer, ICAR-CPCRI, Kasaragod	05-04-2015
Shri Gopalakrishna A.S.	Sr. Tech. Asst., ICAR-CPCRI, RC, Kidu	Technical Officer, ICAR-CPCRI, RC, Kidu	07-09-2016
Smt. Arathy Balakrishnan	Sr. Tech. Asst., ICAR-KVK, Alappuzha	Technical Officer, ICAR-KVK, Alappuzha	02-04-2017

Shri C. Abdul Aziz	Sr. Tech. Asst., ICAR-CPCRI, RS, Vittal	Sr. Tech. Asst., ICAR-CPCRI, RS, Vittal	30-06-2017
Shri Pratap Kumar Sarkar	Technical Assistant, ICAR-CPCRI, RC, Mohitnagar	Senior Technical Assistant, ICAR-CPCRI, RC, Mohitnagar	19-11-2016
Shri M.V. Madhavan	Technical Assistant, ICAR-CPCRI, Kasaragod	Senior Technical Assistant, ICAR-CPCRI, Kasaragod	20-01-2017
Shri B. Ananda Gowda	Technical Assistant, ICAR-CPCRI, RS, Vittal	Senior Technical Assistant, ICAR-CPCRI, RS, Vittal	27-01-2017
Shri T.K. Gangadharan	LDC, ICAR-CPCRI, Kasaragod	UDC, ICAR-CPCRI, Kasaragod	05-07-2018
Shri Tharanath Naik B.	Senior Technician (Vehicles), ICAR-CPCRI, RS, Vittal	Technical Assistant (Vehicles) , ICAR-CPCRI, RS, Vittal	14-09-2016
Shri Satheesh Kumar A.V.	Senior Technician (Vehicles), ICAR-CPCRI, Kasaragod	Technical Assistant (Vehicles), ICAR-CPCRI, Kasaragod	21-09-2016

TRANSFER

Name of the staff	From (Place)	To (Place)	w.e.f.
Dr. Bhanuprakash	Principal Scientist, ICAR-CPCRI, Kasaragod	Principal Scientist, ICAR-IIHR, Bengaluru	16-08-2018
Dr. Bikash Chowdhury	Asst. Chief Technical Officer, ICAR-CPCRI, Kasaragod	Asst. Chief Technical Officer, ICAR-CPCRI, RC, Kahikuchi	21-07-2018
Shri N.B. Mahesan	SSS, ICAR-CPCRI, RS, Vittal	SSS, ICAR-CPCRI, Kasaragod	18-09-2018

RETIREMENT

Name of the staff	Designation	Place	Date
Shri N. Nagesh	Tech. Officer	CPCRI RC, Kidu	31-08-2018
Smt. K. Bhanu	SSS	ICAR-CPCRI, Kasaragod	31-08-2018
Smt. Niveditha M.S.	Technical Assistant	ICAR-CPCRI, Kasaragod	13-08-2018 (resignation)
Shri K. Ramadasan	Assistant	ICAR-KVK, Kasaragod	13-08-2018 (voluntary)

Agrisearch with a human touch

Front cover photo: A non-dairy vegan product "Frozen coconut delicacy" developed by ICAR-Central Plantation Crops Research Institute, Kasaragod

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