



KALPA

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ICAR-CENTRAL PLANTATION CROPS RESEARCH INSTITUTE
Kasaragod - 671 124, Kerala



From The Director's Desk



Just after floods

The period June to August every year is an ordeal for farmers in most parts of our country, and more so with plantation crops farmers. Their agonies are further added with changing precipitation patterns in the recent years that is characterized by intense periods of heavy rain which will result besides flooding, landslide and congenial humidity for the buildup of pathogens/pests affecting the crops exponentially. While landslides will wipe off the crops instantly, the prolonged flooding will also cause crop loss within a short span of time. Either the case, the economic loss for the farmer is long-standing and irreversible. Hence it was worked out as proportion to the life-time economic returns from the crop.

The yield loss due to flood may last for two to three years. The immediate effect on perennial crops would be the increase in pests/disease incidence. Deposition of the silt will affect aeration in the root zone which in turn will affect the crop. Soil nutrient depletion due to runoff of topsoil and leaching will affect nutrient availability coupled with the increase in acidity will affect nutrient uptake.

The Institute is proactive in assessing crop loss and yield loss in the post-flood period: This year, field surveys were conducted in 12 flood-affected districts in Assam, one district in Kerala and six districts in Karnataka immediately after the floods. The respective reports were made available to the Council and other concerned stakeholders.

Dr. Anitha Karun, Director (Acting)

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SPECTRUM

Metagenomics reveals probiotic microbiome of fresh Kalparasa

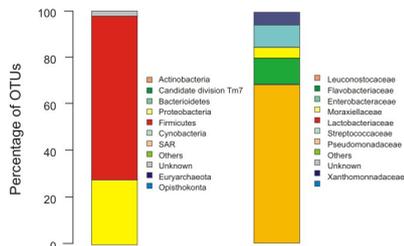


Fig. 1. Phylum (a) and Family (b) level classification of OTUs in the coconut inflorescence sap

Metagenomics of fresh, unfermented coconut inflorescence sap (Kalparasa®) harvested using Coco-sap chiller was attempted using high-throughput Illumina sequencing. Its microbiome consisted of two major phyla: Firmicutes with gram-positive cell wall structure, represented by leuconostocaceae; and

proteobacteria with gram-negative cell wall, represented by Acetobacteraceae, Enterobacteriaceae and Moraxellaceae. The pro-biotic bacterial species *Fructobacillus fructosus* and *Leuconostoc mesenteroides* were also present (Fig. 1).

Murali Gopal, Alka Gupta, Sandip Shil and K.B. Hebbar

“Microbial volcanoes” in coconut soils?

Volcano-like rimmed microbial colonies were isolated from sub-surface soils of coconut ecosystem (Fig.1). It was identified as *Bacillus subtilis* based on physiological and biochemical attributes. This self-organization of cell collectives of *Bacillus subtilis* could be a response to

nutrition-guided chemotaxis; with random, diffusive behaviour of motile cells just inside colony boundary creating the 'volcanic rim' (Fig.2).

Alka Gupta and Murali Gopal

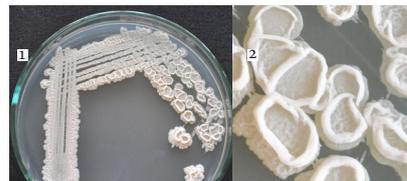


Fig. 1. Microbial colonies showing rim-like morphology in cultures
Fig. 2. Diffusive behaviour of motile cells inside the rims

Antagonism of phylloplane *Streptomyces* spp. against coconut leaf rot pathogen *Colletotrichum* sp.

Dual culture assay was done to screen five actinobacteria for antagonism against leaf rot fungus and their compatibility with biocontrol agent *Trichoderma* sp. Two isolates, viz., CP1A1 and CP1A4 suppressed pathogen growth with latter recording the higher antagonistic activity (53% inhibition) (Fig. 3). All the five tested actinobacterial isolates were compatible with *Trichoderma* sp. Morphological characters indicated that they belonged to the family Streptomycetaceae of class Actinobacteria, producing aerial mycelia of spore mass colour in grey series with retinaculiaperti and spira type of spore arrangement in CP1A1 and CP1A4, respectively. 16S rDNA sequence analysis confirmed both the isolates belong to the genus *Streptomyces*: CP1A1 showing 99.85% similarity with *Streptomyces amphotericinicus* strain 1H-SSA8 and CP1A4 showing 99.40% similarity with *Streptomyces chromofuscus* strain NBRC 12851.

Indhuja, S., Remya, R., Merin Babu, Haris, A.A., Krishnakumar, V.

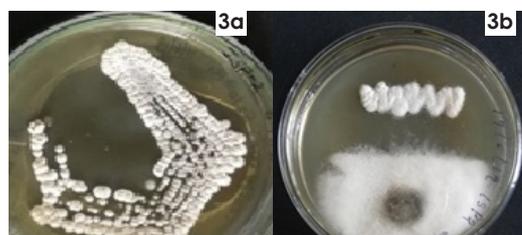


Fig. 3a. Growth of CP1A4 on YEME agar
Fig. 3b. Antagonistic activity of actinobacteria CP1A4 against *Colletotrichum* sp.

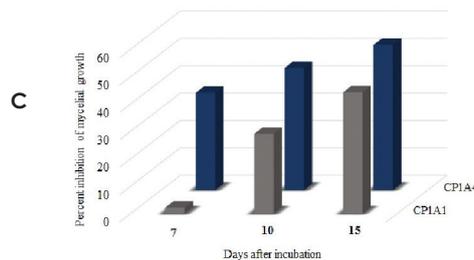


Fig. 3c. Antagonistic activity of actinobacterial isolates against *Colletotrichum* sp

Lasiodiplodia dieback disease in cocoa

Three *Lasiodiplodia* strains associated with cocoa dieback disease were isolated from infected samples collected from Andhra Pradesh (Chintalapudi Taluk, West Godavari district) and Kerala (Kasaragod district). The characteristics of these strains are grey color colonies

with dense aerial mycelium, oval-shaped conidia, initially hyaline and then turned to brown (20-25×10-16 μm in size) with a single septum and longitudinal striations (Fig.4a). Molecular identification of the pathogen was performed by sequencing the internal transcribed spacer (ITS), actin

(Act) and beta-tubulin (β-tub) loci (Fig.4b): β-tubulin gene (Lanes 1, 2), Actin gene (Lanes 3, 4). M:100 bp ladder. Pathogenicity tests confirmed their association with cocoa dieback disease.

Prathibha V.H., Merin Babu and Vinayaka Hegde

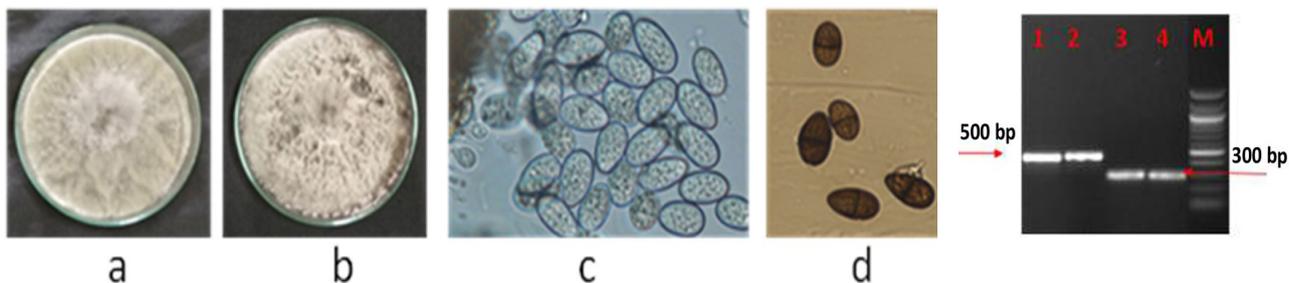


Fig. 4a. *L. theobromae* colony on potato dextrose agar plates (a & b); immature and mature conidia with striations (c & d)

Fig.4b.PCR amplification of *L. theobromae*

Occurrence of flower and fruit rot in dragon fruit grown as intercrop in coconut gardens

Flower-and-fruit-rot was observed in Dragon fruit *Hylocereus undatus* (Haworth) Britton & Rose intercropped with coconut in Kasaragod during June 2019. The symptoms include water-soaked, olive to black powdery spots to coalescing soft rot in the later stages (for both flowers and fruits) (Fig. 5a). The fungal pathogen *Curvularia eragrostidis* could be isolated from infected fruits (Fig. 5b). It was further confirmed with phylogenetic analysis using internal transcribed spacer (ITS) gene amplified with ITS1 and ITS4. Dual plate culture studies performed in vitro showed good antagonistic activity of *Trichoderma harzianum* (CPTD28) against this pathogen.



Fig. 5a. Rotting symptoms on flower and fruits



Fig.5b. Colony morphology of *C. eragrostidis*: colony on potato dextrose agar plates; immature and mature conidia with striations

Daliyamol, Prathibha, V.H., Panjavarnam, P. and Vinayaka Hegde

Competitive displacement subdued invasive potential of exotic whiteflies on coconut

Simultaneous occurrence of different invasive neotropical whitefly species has been reported from different coconut growing regions in India. Such combined incidences reduced the pestiferous potential among them, in which, one species could replace the other under optimum weather parameters and biological suppression, aided by

natural enemies. While the Bondar's nesting whitefly, *Paraleyrodes bondari* is associated with rugose spiralling whitefly, *Aleurodicus rugioperculatus* in most districts of Kerala and Tamil Nadu, the nesting whitefly, *Paraleyrodes minei* is interlinked with *A. rugioperculatus* at Kasaragod, Kerala. During June 2019, it could be found that the palm

whitefly, *Aleurotrachelus atratus* has been infesting coconut in Mandya, Karnataka. The aggressive feeding potential of *A. atratus* was reduced to a greater extent when their colonies are invaded by the nesting whitefly, *P. minei* (Fig. 6). The adult *P. minei* are seen triangular on rest and are absolutely flat, whereas *A. atratus* adults are narrower, slender and wings are appear roof-like on coconut leaflets.



Fig. 6. *Aleurodicus atratus* near the pupae and *Paraleyrodes minei* adult on the pupae of *A. atratus*

Josephraj Kumar, A.,
Chandrika Mohan, Merin Babu,
Anes, K.M. and Krishnakumar, V.

Pink husked Guam Tall coconuts

Pink husk, a rare trait in coconut, was observed in Guam Tall coconut accessions planted in 2014 at ICAR-CPCRI, Regional Station, Kayamkulam. Among 13 tall accessions, most of the green fruited palms were of pink husked types (Fig. 7) whereas as bronze fruited types were normal. There were no

other morphological differences concerning size and shape of the nut, quantity of nut water, TSS of nut water between pink and non-pink husked types in Guam Tall.

Shareefa, M., Regi J. Thomas,
Niral, V. and Anitha Karun

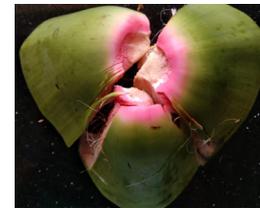


Fig. 7. Tender pink husked coconuts at ICAR-CPCRI, Regional Station, Kayamkulam

Post-flood loss assessment of plantation crops in Assam (2019)

Field survey was conducted in 13 flood affected districts where coconut and arecanut were grown (Dhubri, Goalpara, Dibrugarh, North Lakhimpur, Biswanath, Sonitpur, Berpetta, Baksa, Chirang, Kamrup (R), Nalbari, Morigaon, and Darrang) during 19-24 August 2019. A multi-stage randomized sampling design was adopted for collecting the information. From each district,

2 or 3 flood affected revenue circles were selected in the first stage. In the second stage, two flood affected villages were selected from each of selected revenue circle and four adjacent holding from the selected village. It was estimated that 118.8 lakh arecanut seedlings, 15.62 lakh juvenile palms and 56.87 lakh bearing arecanut palms were lost following the 2019

flood. Total amount of crop loss in arecanut in 13 districts of Assam state was worked out to be ₹ 109,471 lakhs. In the case of coconut, loss of seedlings, juvenile palms and bearing palms was estimated to be 2.37, 1.17 and 0.56 lakhs, respectively. The resulting economic loss was worked out to be ₹ 19,793 lakhs. Due to severe incidence of inflorescence dieback disease,

the arecanut yield is forecasted to be reduced substantially (7.01% to 36.7%). Overall in the flood affected districts, there would be reduction of 60,791.12 tones of arecanut for the year 2019-20 that will result in an economic loss of ₹ 21,277

lakhs to the farmers. Yield loss in coconut due to pre-mature nut fall and other diseases and disorders in the selected districts would be ₹19,793 lakhs. The prolonged water logging condition caused mortality of many horticultural crops such as

vegetables and banana and also the livestock, poultry and fisheries in the region.

*Sandip Shil, Alpna Das,
Regi J. Thomas, Shivaji, T. and
K. Muralidharan*



IMPORTANT EVENTS

ICAR Foundation Day

The ninety first Foundation Day of Indian Council of Agriculture Research was celebrated on 16 July 2019 at ICAR-CPCRI, Kasaragod. Dr. K.M. Sreekumar, Professor, Agricultural Entomology, College of Agriculture (Kerala Agricultural University), Padannakkad was the chief guest. Seminar on 'Converging Technologies for Inclusive Coconut Farming' and a quiz competition for farmers were also conducted.

Hundred farmers from villages under the Mera Gaon Mera Gaurav (MGMG) programme participated. A quiz competition was conducted. ICAR Foundation Day was also celebrated at ICAR-CPCRI, Regional Station, Vittal: different competitions were conducted like quiz, drawing, etc. for staff members, high school and higher secondary school children depicting the strength of Indian agriculture.



Address by the Chief Guest, Dr. K.M. Sreekumar during the ICAR Foundation Day at Kasaragod

Visit of ICAR-CPCRI Scientists to flood affected areas of Kerala

A multi-disciplinary team of scientists of ICAR- CPCRI along with officials from Agricultural Department, Kerala State visited flood affected areas in Nileshwar on 27 October, 2019. Local self government officials also accompanied the scientists

along with the secretaries of padashekharam and a few farmers. The team found that maximum damage occurred to paddy fields. Few coconut and arecanut palms were uprooted or broken, and bud rot of coconut at various stages was

observed in many gardens. After the field visit a meeting was arranged to appraise the farmers the short term and long term remedial measures to be undertaken by various stakeholders to mitigate the effects of the flood.

Mega tree planting campaigns

A tree planting campaign was organized on 17 September 2019 by the two KVKs of ICAR- CPCRI as part of National Programme on "Tree plantation campaign and Kisan Ghoshti", Ministry of Agriculture Development and Farmers Welfare, Government of India. At Enmakaje

panchayath in Kasaragod District 40 farmers planted 1000 saplings. Dr. Anitha Karun, Director (Actg.), ICAR-CPCRI, Kasaragod inaugurated the programme along with Smt. Sharadha Y., President Enmakaje grama panchayath.

Shri K.K. Anilkumar, Councillor, Kayamkulam Municipality inaugurated the function at GVHSS, Krishnapuram, Alappuzha district by planting fruit trees in school campus and distributed planting materials to about 160 students and teachers.

World Coconut Day

World Coconut Day (2 September 2019) was celebrated at ICAR-CPCRI, Kasaragod, Regional Station, Kayamkulam and Research Centre, Kahikuchi with various programmes. At Kasaragod, a district level seminar on 'Scientific cultivation and processing technologies in coconut' was conducted in which over 100 farmers representing Coconut Producer Companies participated. The seminar was organized by ICAR-KVK, Kasaragod with the financial assistance from Coconut Development Board, Kochi. Shri A. A. Jaleel, President, Mogral Puthur Grama Panchayat was the Chief Guest of the programme.

A publication entitled "Thengu Krishi Reethikal" in Malayalam was released during the occasion. At ICAR-CPCRI, Regional Station, Kayamkulam on a "grand powder carpet (kolam)" highlighting the ecological significance of coconut and commemorating the theme on "Coconut for Family Wellness" was made by a group of 20 women farmer-trainees from Virudhunagar, Tamil Nadu. At Research Centre Kahikuchi, a farmer's training programme was inaugurated by Dr D.N. Kalita, Programme Co-ordinator, KVK, Kamrup, Assam Agricultural University. Mr. Munindra Das, GVS, NGO, Kamrup was the

guest of Honour. Thirty seven farmers attended the programme.

The Institute participated in the World Coconut Day celebrations organized by Coconut Development Board, Kochi at Bhubaneswar which was inaugurated by Shri Narendra Singh Tomar, Hon'ble Minister for Agriculture and Farmers Welfare, Government of India. Dr. Anitha Karun, Director (Actg.) participated in the national level programme and presented a talk on 'the coconut value addition technologies from ICAR-CPCRI'. Technologies from the Institute were also displayed in the exhibition.

Workshop and National Seminar on 'Climate, flood and folklore'

A workshop cum seminar on 'Climate, flood and folklore' was organized at ICAR-CPCRI, Regional Station, Kayamkulam in collaboration with Folkland International Centre for Folklore and

Culture, Kasaragod during 22-23 August, 2019. Dr. Adeela Abdulla, IAS District Collector, Alappuzha inaugurated the seminar. Dr. K. G. Padmakumar, Special Officer and Director, International Research

and Training Centre for Below Sea Level Farming, Kuttanad delivered the key note address on the theme 'Ecosystem management for Climate resilience'.

National Workshop on 'Organic farming in plantation crops - Present status and future prospects'

National Workshop on 'Organic Farming in Plantation Crops-Present Status and Future Prospects' was held at ICAR-CPCRI, Regional Station, Kayamkulam on 20 September, 2019. Dr. M.N. Sreenivasa, Professor and Head, Institute of Organic Farming, UAS, Dharwad inaugurated the workshop. Dr. Anitha Karun, Director (Actg.), ICAR-CPCRI presided over the function. Dr. George V. Thomas, Former Director, ICAR-CPCRI, Kasaragod and Dr. R.D. Iyer, Retired Head, Division of Crop Improvement,

ICAR-CPCRI, Kasaragod offered felicitations.



Dr. M.N. Sreenivasa, Professor & Head, Institute of Organic Farming, UAS, Dharwad inaugurating the workshop at ICAR-CPCRI, Kayamkulam

EDP on “Pre- and post-harvest equipments”

Two - days Entrepreneurship Development Programme on Pre- and post-harvest equipments under SCSP scheme was held at ICAR-CPCRI, Kasaragod during 13

-14 August 2019. Forty participants belonging to SC communities attended the programme. Power tiller, mini tillers, sprayers, climbing devices and tender coconut

punch and cutter were distributed to the trainees in the valedictory function by Smt. Meenarani, District Welfare Officer.

Outreach Session on export trade facilitation measures



Mr. Sumit Kumar I.R.S., Commissioner of Customs-Preventive delivering the inaugural address

ICAR-CPCRI Agri Business Incubation Centre in collaboration with Federation of Indian Export Organizations and Kasaragod Chamber of Commerce conducted a programme on 'Export Trade Facilitation Measures' on 30 September 2019. Mr. Sumit Kumar I.R.S., Commissioner of Customs –Preventive, Kochi inaugurated the programme and briefed about the measures taken by the Government to

promote exports. Dr. Anitha Karun, Act. Director mentioned about the technologies from CPCRI used by the entrepreneurs and also mentioned about certain issues specifically quarantine, export of coconut seedlings and identification of origin of arecanuts ceased by customs. Mr. K.M. Harilal I.T.S., Joint Director General of Foreign Trade, Kochi in his key note address appraised the gathering about foreign trade policy and promotional schemes and international marketing. Mr. P.V. Narayanan, Superintendent of Customs (CGST) made a presentation on GST Refund Procedures on Exports. The topic on Baggage Rules of Customs was held by Mr. Madhusoodana Bhat I.R.S., Asst. Commissioner of Customs, Kannur International

Airport and Mr. Vijaykumar M., Retd. Asst. Commissioner Customs & Central Excise gave a talk on Customs Formalities in International Trade. Pre and Post Shipment Payment Options and Foreign Exchange Risk Management aspects were covered by Mr. George Paul, Deputy General Manager, South Indian Bank Ltd. Mr. Rajeev M.C., Management Executive & Head, FIEO briefed about the activities of FIEO. Mr. Mohammed Ali Fathah, General Secretary, Kasaragod Chamber of Commerce and Industry welcomed the gathering and Dr. K. Muralidharan, Head, Social Sciences Division and Agri Business Incubation Centre proposed vote of thanks. More than 100 delegates including few incubatees of ICAR-CPCRI ABI were participated.



PUBLICATIONS

- Chandrika Mohan, Josephraj Kumar, A., Merin Babu, Arya Krishna, Prathibha, P.S., Krishnakumar, V. and Hegde.V. 2019. Non-native Neotropical nesting whitefly, *Paraleyrodes minei laccharino* on coconut palms in India and its co-existence with Bondar's nesting whitefly, *Paraleyrodes bondari* Peracchi. *Current Science* **117**(3): 515-519. doi: 10.18520/cs/v117/i3/515-519
- Jose, C. T., Pandian, R. T. P., Naduthodi, N., Prathibha V. H., Rajkumar, Shivaji H. Thube and Chowdappa 2019. Yield loss due to fruit rot (Mahali) disease in arecanut in Kerala and Karnataka. *Indian Journal of Arecanut and Medicinal Plants*, 21 (2):15-19.
- Murali Gopal and Alka Gupta. 2019. A simple 'push-pull' strategy to harvest earthworms from coconut leaf vermicompost produced in tanks. *Current Science* **117**(1): 138-144.
- Panjavarnam, G. 2019. Studies on performance of pomegranate (*Punica granatum* L.) cv. Bhagwa raised through different propagules for yield and quality, *Int. J. Curr. Microbiol. App. Sci.* **8**(9): 947-950.
- Panjavarnam, G., Parthiban, S., Subbiah, A., Jeyakumar, P. and Gopal, N.O. 2018. Studies on the impact of planting density and nutrient management on growth and yield of banana cv. Ney Poovan under coconut plantation, *International Journal of Chemical Studies*; **6**(6): 1230 - 1233.
- Panjavarnam, G., Parthiban, S., Subbiah, A., Jeyakumar, P. and Gopal, N.O. 2018. Studies on the effect of planting density and nutrient management on yield, fruit quality and post-harvest characters in banana cv. Ney Poovan under coconut *Int. J. Curr. Microbiol. App. Sci.* **7**(12): 515-520.
- Rajkumar, Patil Jagadeesh, Subaharan Kesvan and Sujithra M. 2018. Effect of chloropyrifos on survival

and virulence of native entomopathogenic nematode. *Indian Journal of Nematology*, **48**(1):1-5.

Shareefa, M., Thomas, R.J., Sreelekshmi, J.S., Rajesh, M. K. and Anitha Karun. 2019. In vitro regeneration of coconut plantlets from immature inflorescence. *Current Science* **117** (5): 813-820 doi: 10.18520/cs/v117/i5/813-820.

Aparna Veluru A, Bhat, K. V., Janakiram, T., Prasad, K. V., Raju, D. V. S., Bharadwaj, C., Gayacharan, Kanwar P. Singh, Namita and Sapna Panwar. 2019. Understanding genetic diversity, structure and population differentiation in selected wild species and cultivated Indian and exotic rose varieties based on microsatellite allele frequencies. *Indian J. Genet.*, **79**(3) 583-593.

Deva Kumar, M., Anand, K.B., Poornima, V., Murali Gopal and Alka Gupta. 2019. Property enhancement of recycled coarse aggregate using biotreatment-approach. Paper in '4th International Conference on Advances in Materials and Manufacturing Applications (IConAMMA 2019). Amrita Vishwa Vidyapeetham, Bangalore, Aug. 29-31, 2019.

Indhuja, S., Sandhyaraj, J., Babu, M., Rajan, J.M., Anithakumari, P., Mathew, J. and Haris, A. A. 2019. Exploring diversity of biocontrol agents in agro-residues of coconut based farming system. pp 62 *In: Compendium on papers and abstracts -Workshop on organic farming in plantation crops-Present status and future prospects* (eds.) Ravi Bhat, Subramanian, P., Haris, A.A., Babu, M., Josephraj Kumar A., Krishnakumar, V. and Anitha Karun, 20th September 2019, ICAR-CPCRI, Kayamkulam. pp 62.

Josephraj Kumar, A., Chandrika Mohan, Thomas, R.J., Shareefa, M., Anes, K.M. and Krishnakumar, V. 2019 Crop pluralism in coconut plantation for pest regression. *In: "Compendium on papers and abstracts"- National Workshop on 'Organic farming in plantation crops-Present status and future prospects'* (eds.) Ravi Bhat, Subramanian, P., Haris, A.A., Babu, M., Josephraj Kumar, A., Krishnakumar, V. and Anitha Karun. 20th September, 2019, ICAR-CPCRI, Kayamkulam. pp 64.

Mathew, J., Darsana, S., Chinchu, M. R., Surya, R., Indhuja, S., Haris, A. A., Krishnakumar, V. and Bhat, R. 2019. Assessment of dehydrogenase activity in a coconut growing soil of South Central Lateritic zone and Southern Coastal Plain. *In: "Compendium of Papers and Abstracts" National Workshop on 'Organic Farming in Plantation Crops-Present status and future prospects'* ICAR-CPCRI, RS, Kayamkulam 20.09.2019. pp 66.

Nihad, K., Haris, A.A., Krishnakumar, V., Sudhanandan, K.K. and Subramanian, P. 2019. Efficacy of organic inputs on coconut productivity in root (wilt) disease tracts. *In: "Compendium of Papers and Abstracts" National Workshop on 'Organic Farming in Plantation Crops - Present status and future Prospects'* ICAR-CPCRI, Regional Station, Kayamkulam 20.09.2019. pp 63.

Sujithra M, Rajkumar, Vinayaka Hegde and Subramanian P. 2019. A cost effective passive trapping technique for managing rhinoceros beetle menace in coconut plantations. *In: Reddy P. V. R et al. (Eds.). Book of Souvenir and Abstracts, International Conference of Plant Protection in Horticulture: Advances and challenges, 24-27 July 2019, Bengaluru. pp. 59.*

Anithakumari, P. and Indhuja, S. 2019. Recycling for resource efficiency- A practical model for up scaling. *LEISA India* **21** (2): 33-36.

Aparna, V. and Subramanian, P. 2019. Intercropping under coconut gardens- benefits and suitable intercrops for coconut plantation (Telugu). *Vyavasaya Paadi Pantalu*, July, 2019, pp. 22-23.

Chandrika Mohan, Anoop, J.P., Parvathi, S. and Charles, D.M. 2019. Increase productivity of coconut by managing beetle attack. *Indian Naleekera Journal* **10** (8): 7-9.

Chandrika Mohan, Kalavathi, S. and Haris, A.A. 2019. Get rid of coconut pests by integrated management. *Kerala Karshakan* (In Malayalam) **65** (1): 21-24.

Haris, A.A. Thomas, R.J., Josephraj Kumar, A. and Krishnakumar, V. 2019. Rainy season management for adult and juvenile coconut palms (In Malayalam). *Kerala Karshakan* June Issue: 36-38.

Jissy George. 2019. Fruit juice and pulp can be frozen for storing: *Karshakashree*. **25** (7): 69.

Jissy George. 2019. Items ready for Onam: *Karshakashree*. **25** (9): 35-36.

Josephraj Kumar, A., Chandrika Mohan, Babu, M. and Krishnakumar, V. 2019. Conservation of biological control and bio-scavenging: *In: Rugose Spiralling Whitefly Management in Coconut. Indian Coconut Journal* **62** (5): 27-29.

Kalavathi, S. and Abdul Haris, A. 2019. Traditional Wisdom on Coconut (In Malayalam). *Indian Nalikera Journal* **10** (6): 14-16.

Kalavathi, S., Abdul Haris, A., Jacob Kurien and Anil Kumar, B. 2019. Climate Resilient Farming Techniques for Coastal Tracts (In Malayalam). *Kerala Karshakan* **65** (1): 16-18.

- Kalavathi, S., Haris, A.A., Mathew, J. and Krishnakumar, V. 2019. Farmer adaptations - Key for ecological sustainability (In Kannada). *LEISA India*, **20** (4): 6-9.
- Lekha, G., Muralidharan, P. 2019. Bheema, the best among milky mushrooms. *Krishijaganan*: (7):44-45.
- Mathew, J., Krishnakumar, V., Indhuja, S. and Haris, A.A. 2019. Nutrient management in coconut for sustaining productivity. *Indian Coconut Journal* **62** (2): 12-19.
- Mathew, J., Krishnakumar, V., Indhuja, S. and Haris, A.A. 2019. Susthira Nallekera Udpadanathinu chittayaya poshaka paripalanam. *Indian Nallekera Journal* **10** (7): 19-21.
- Nihad, K. 2019. Mesmerizing gardens. *Krishi Jagaran* **3** (7): 34-36.
- Nihad, K. 2019. Mughal garden to miracle garden. *Krishi Jagaran* **3** (8): 14-17.
- Nihad, K., Krishnakumar, V., Rajkumar, M., Haris, A.A. and Bhat, R. 2019. Papaya intercropping - an income source for newly planted coconut gardens. *Indian Coconut Journal* **62** (4): 27-29.
- Nihad, K., Krishnakumar, V., Haris, A.A. and Bhat, R. 2019. Fodder as intercrop in coconut garden under mixed farming system. *Indian Coconut Journal* **62** (2): 20-22.
- Nihad, K., 2019. Flower beds in ornamental gardening. *Krishi Jagaran* **3** (9): 20-23.
- Panjavarnam, G., Parthiban, S., Subramanian P. and Ravi Bhat. 2019. Banana cv. Ney poovan is potential intercrop in coconut plantation. *Indian Coconut Journal*, August, 2019 pp. 24-26.
- Rajeev, M.S., Muralidharan, P. 2019. 'Revival of upland paddy cultivation in Onattukara tracts: Kerala Karshakan. **65**(2): 26-28.
- Saneera, E.K., Najeeb, N., Suchithra, M. and Jose, C.T. 2019. "Adayavilayayi Kamuku (Malayalam)". *Farm Guide, Rashtra Deepika*, 72-86.
- Sivakumar, T. 2019. Collar rot in elephant foot yam. *Krishijaganan*. 03. (08): 66-67.
- Sivakumar, T. 2019. Leaf eating caterpillars in elephant foot yam. *Karshakan*. **27**(08):70 and 106.
- Sivakumar, T. 2019. Plant a sapling for good mango to harvest. *Karshakan*. **27**(08): 59-61.
- Sivakumar, T. 2019. Weevils on the dining table. *Indian Coconut Journal*. **10**. (08) 13-14.
- Sivakumar, T., Rajeev, M.S., Sreelekshmi, V. 2019. Jacob's dilemma and KVK's dream. *Karshakan*. **27**(08): 62-63.
- Suchithra, M., Najeeb, N., Saneera, E.K. and Jose, C.T. 2019. "Choclatinte Madhuryam (Malayalam)". *Farm guide, Rashtra Deepika*, 88-104.
- Thomas, R.J. 2019. QR Code: The synonym for quality of coconut seedlings (In Malayalam) *Krishi Jagaran* **3** (9): 52-53.

Books

- Ravi Bhat, Subramanian, P., Haris, A. A., Babu, M., Josephraj Kumar, A., Krishnakumar, V. and Anitha Karun. 2019. *Compendium on Papers and Abstracts*, Workshop on organic farming in plantation crops-Present status and future prospects, ICAR-CPCRI, Kayamkulam, 74p.

Extension pamphlet

- Lekha, G. and Rani Krishna, K. 2019. Betelvine cultivation ICAR-KVK- Alappuzha, CPCRI, Regional Station, Kayamkulam. p 6.
- Rajkumar, Nagraja, N. R., Pratibha V. H., Vinayaka Hegde and Surekha 2019. Adikayali baruva rogalalu mathu avugala nirvahanna (Kannada). Extension folder No. 274. p 6.

E-Publication

- Nihad, K., Haris, A.A., Krishnakumar, V. and Anithakumari, P. 2019. CD on Scope of floriculture in coconut garden - A farmer's success story. ICAR-CPCRI, Regional Station, Kayamkulam.
- Ravi Bhat, Subramanian, P., Haris, A.A., Babu, M., Josephraj Kumar, A., Krishnakumar, V. and Anitha Karun. 2019. "E-compendium of Papers and Abstracts" National Workshop on 'Organic Farming in Plantation Crops - Present status and future prospects' ICAR-CPCRI, Regional Station, Kayamkulam 20.09.2019.



HUMAN RESOURCES DEVELOPMENT

Training attended

Name & Designation	Training Programme	Place & Duration
Dr. Murali Gopal, Principal Scientist (Agril. Microbiology)	MDP on Priority Setting Monitoring & Evaluation(PME)	ICAR-NAARM, Hyderabad 18 th to 23 rd July, 2019
Dr. M. K. Rajesh, Principal Scientist (Agril. Biotechnology)	Workshop on fundamentals of Proteogenomics for beginners	Centre for Systems Biology and Molecular Medicine at Yenepoya University Mangalore 22 nd to 24 th July, 2019
Shri Anil Kumar B. Technical Officer, CPCRI, RS, Kayamkulam	Farm mangement	ICAR-IIFSR, Modipuram 17 th to 23 rd September, 2019
Shri Gopinath Malekar, Sr. Technician, CPCRI, RS, Kahikuchi	Automobile maintenance, road safety and behavioural skills	ICAR-CIAE, Bhopal 24 th to 30 th September, 2019

Ph.D. awarded

Mrs. Panjavarnam, G. has been awarded Doctor of Philosophy in Fruit Science at Tamil Nadu Agricultural University, Coimbatore for her thesis "Studies on comparative efficiency of planting systems and nutrient management in banana cv. Ney Poovan under coconut plantation", under the

guidance of Dr. Parthiban, S., Professor and Head, Department of Fruit Science, Horticulture College and Research Institute for Women, TNAU, Trichy.

Shri Khadke Ganesh Navanath, Scientist, was awarded Ph.D. Horticulture from the University of

Horticulture Sciences, Bagalkot for his thesis "Morphological and Molecular Characterization of coconut accessions and Identification of DNA marker for the Spicata type Coconut" under the guidance of Dr. M.S. Kulkarni, Dean (PGS), University of Horticultural Sciences.

PG degree awarded

Shri H. Muralikrishna, Chief Technical Officer (Technical Information) ICAR-CPCRI, Kasaragod, has successfully completed MBA

(Marketing Management) and Smt. Arathi A.R., Stenographer, ICAR-CPCRI, Kasaragod, has successfully completed MBA (HRM) from Indira

Gandhi National Open University, New Delhi through distant education mode.



PERSONALIA

Appointments

Name of the staff	From (Place)	To (Place)	w.e.f.
Shri Premjith Antony	MDP on Priority Setting Monitoring & Evaluation(PME)	ICAR-CPCRI, Kasaragod	24.08.2019

Promotions

Name of the staff	From (Designation)	To (Designation)	w.e.f.
Dr S. Jayasekhar	Sr. Scientist (Agril. Economics) Level 12, ICAR-CPCRI, Kasaragod	Sr. Scientist (Agril. Economics) Level 13, ICAR-CPCRI, Kasaragod	05.09.2016
Dr. Indhuja S.	Scientist (Microbiology) Level 10, ICAR-CPCRI, RS, Kayamkulam	Scientist (Microbiology) Level 11, ICAR-CPCRI, RS, Kayamkulam	01.07.2018

Shri K.N. Sajeev	SSS, ICAR-CPCRI, Regional Station, Kayamkulam	LDC, ICAR-CPCRI, Regional Station, Kayamkulam	20.09.2019
Shri A. Mohana	SSS (Level III), ICAR-CPCRI, Kasaragod	SSS (Level IV), ICAR-CPCRI, Kasaragod	22.05.2017
Shri K. Keshava	SSS (Level III), ICAR-CPCRI, Kasaragod	SSS (Level IV), ICAR-CPCRI, Kasaragod	01.09.2007
Shri M.E. Sivan	SSS (Level III), ICAR-CPCRI, Regional Station, Kayamkulam	SSS (Level IV), ICAR-CPCRI, Regional Station, Kayamkulam	21.09.2017
Shri K.G. Suresh Babu	SSS (Level III), ICAR-CPCRI, Kasaragod	SSS (Level IV), ICAR-CPCRI, Kasaragod	09.05.2018
Shri M. Krishnankutty	SSS (Level II), ICAR-CPCRI, Kasaragod	SSS (Level III), ICAR-CPCRI, Kasaragod	23.09.2017
Dr. Leichombam Singhajit Singh	Scientist (SPM & AP) Level 10, ICAR-CPCRI, RC, Kahikuchi	Scientist (SPM & AP) Level 11, ICAR-CPCRI, RC, Kahikuchi	01.01.2018
Dr. Neema Mohammed	Scientist (SPM & AP) Level 10, ICAR-CPCRI, Kasaragod	Scientist (SPM & AP) Level 11, ICAR-CPCRI, Kasaragod	01.01.2018
Dr. Neenu S.	Scientist (Soil Science) ICAR-CPCRI, Kasaragod	Sr. Scientist (Soil Science) ICAR-CPCRI, Kasaragod	21.04.2018
Mrs. Surekha	Scientist (Agronomy) Level 10, ICAR-CPCRI, Kasaragod	Scientist (Agronomy) Level 11, ICAR-CPCRI, Kasaragod	23.01.2017

Transfer

Name of the staff	From (Place)	To (Place)	w.e.f.
Shri. T.J. Saji, UDC	ICAR-CPCRI, Regional Station, Kayamkulam	ICAR-CPCRI, Regional Station, Vittal	12.07.2019
Shri. Ashwin Regunath, UDC	ICAR-CPCRI, Regional Station, Vittal	ICAR-CPCRI, Kasaragod	15.07.2019

Retirement

Name	Designation	Place	Date
Shri Venkatramana	SSS	ICAR-CPCRI, RC, Kidu	31.07.2019
Shri S. Narayana	SSS	ICAR-CPCRI, RC, Kidu	31.08.2019
Dr. V. Krishnakumar	Acting Head & PS	ICAR-CPCRI, Regional Station, Kayamkulam	30.09.2019



TRANSFER OF TECHNOLOGY

Training Programmes

Training programme on 'Advances in coconut cultivation' for 70 farmers of Haritha Farmers Club, Kokkothamangalam, Cherthala was conducted on 2nd July, 2019. Dr. S. Kalavathi and Dr. A. Abdul Haris, Principal Scientist's handled the sessions.

Training on pre - and post-harvest equipments

An entrepreneurship development programme (EDP) on "pre - and post-harvest equipment" was

held at ICAR-CPCRI, Kasaragod during 13th and 14th August, 2019. Forty participants belonging to SC communities attend the programme. The trainees were given equipments like power tiller, mini tiller, sprayer, climbing device and tender coconut punch and cutter in the valedictory function. Smt. Meenarani, District Welfare Officer distributed items to the trainees. Dr. Anita Karun, Director, ICAR-CPCRI presided over the function. Dr. K. Muralidharan,

Nodal Officer, Scheduled Caste Sub Plan, coordinated the function.

Up-skilling on technological advances in coconut

A technological up-skilling programme on 'Scientific coconut farming' to Farmers from Karur, Tamil Nadu was conducted at ICAR-CPCRI, Kasaragod during 31st July to 1st August, 2019. Twenty farmers and two officials participated in the programme which was sponsored by the State

Department of Agriculture and Farmer's Welfare, Tamil Nadu.

A training on Arecanut and Coconut Based Cropping Systems and Management of Pests and Diseases on 24th September, 2019 organized by the ICAR-CPCRI, Research Centre, Kidu funded by Directorate of Arecanut and Spices Development, Kochi. Approximate 120 farmers participated in training programme from the nearby taluk like Kadaba, Sullya, Panja, Beltangady, etc.

Training on food processing technologies

A team of 20 women farmers from Virudhunagar, Tamil Nadu was empowered on Food Processing Technologies at ICAR-CPCRI, Regional Station, Kayamkulam

during 2nd to 4th September, 2019. The capacity building initiative was inaugurated by Dr. S. Kalavathi, Acting Head. In her address, she emphasized the usefulness of coconut in day to day life and outlined the health benefits of coconut oil used in Kerala cuisine.

Training programme on 'Post harvest management, Value addition of coconut crops & Micro irrigation management' was organized for the farmers from Mannargudi block, Thiruvavur district, Tamil Nadu during 23rd to 24th July, 2019 at ICAR-CPCRI, Kasaragod. An entrepreneurship development programme on 'Process of hybridization in coconut' was conducted during 2nd to 4th September 2019. Training programme on 'Neera - A mile

stone' was organized for 20 farmers from Alangayam Block, Vellore Dist, Tamil Nadu under ATMA scheme during 18th to 20th September, 2019 and another training programme on 'Neera a milestone' was conducted for 20 farmers of Vanut Block, Villupuram, Tamil Nadu during 23rd to 25th September, 2019.

An awareness cum training program on 'Cropping systems with medicinal plants' was organized at ICAR- CPCRI Regional Station Vittal on 13th August, 2019 by National Medicinal Plants Boards (NMPB) in collaboration with Kerala Forest Research Institute (KFRI) and ICAR-CPCRI Regional Station, Vittal. 100 farmers participated and benefitted from the program.



Training program on 'Cropping systems with medicinal plants' at ICAR-CPCRI, RS, Vittal

Off campus programmes

Seminar cum Demonstration on Advances in Palm Health Management

A Seminar cum Demonstration on 'Advances in Palm Health Management' was conducted at DSP Farm, Mandya, Karnataka on 10th July, 2019 by ICAR-CPCRI in collaboration with Coconut Development Board. The highlight of the programme was the new tractor-mounted air blast sprayer for coconut developed by ICAR-CPCRI in collaboration with M/S Aspee and financial assistance of Coconut Development Board. The sprayer was developed for the effective delivery of water on the under surface of palms leaflets for dislodging the invasive whiteflies and cleaning up the pest-laden leaf surface for the bio-suppression



Training programme on arecanut at Belthangady, Karnataka

of whiteflies. The demonstration of the sprayer was conducted in presence of Shri Shankar Narayana Reddy, Member, CDB, Kochi, and attended by about 100 farmers.

Training on pest and disease management and multi species cropping system in arecanut and coconut

Three training programmes for

farmers was organized at Kidu, Vittal and Belthangady villages on 24th, 25th and 26th September, 2019, respectively of Dakshina Kannada district of Karnataka with the support of Directorate of Arecanut and Spices Development (DASD), Kozhikode. These programmes highlighted the importance of intercropping, different cropping/ farming system and its scientific management in coconut and arecanut gardens in India to enhance the farmer income by efficient utilization of available natural resources. These trainings benefitting around 550 farmers in the district. A quiz and essay competition were conducted with the participation of farmers on 'Doubling the farmers income of farmers opinions. Dr. Ravi Bhat,

Head, Division of Crop Production, ICAR - CPCRI, Kasaragod, presided over the programme.

Farmer First Project (FFP)

A meeting of the promoters and farmers of the Farmer FIRST program (FFP) conducted on 8th July, 2019 at Community Hall, Pathiyoor Panchayath regarding the formation and activities to be taken up integrating the FFP interventions in six modules towards livelihood improvement through formation of Farmer Producer Organization (FPO). Dr. P. Anithakumari handled session on 'Role of FPOs in empowering farmers and doubling farm Income'. A total of 47 participants attended. Sri. V. Prabhakaran, President, Pathiyoor Panchayath inaugurated the meeting.

Training programme for the fish farmers of Farmer FIRST programme (FFP) was conducted on 28th September, 2019 for 34 farmers in the NRM module. The training was handled by Mrs. Manju, Technical Officer, Fisheries Department, Kerala.

Implementation of Scheduled Caste Sub Plan (SCSP) & Tribal Sub-plan (TSP)

As part of Scheduled Caste Sub Plan, ICAR-CPCRI, in collaboration with ITDA Paderu, conducted a training programme on 'Cashew Cultivation' on 15th July, 2019 in the MPDO Hall in Koyyur, Paderu, Andhra Pradesh, as part of TSP. Dr. Narasimhalu Murty, Associate Professor, HRS (Dr. YSRHU), Yenakupalayam and Mr. Prabhakara Rao, PHO, ITDA handled the training session. Later, 6250 cashew grafts were distributed benefiting 100 tribal farmers in the ITDA area. Mr. Prabhakara Rao, APO, ITDA inaugurated the distribution of planting materials. Dr. K. Muralidharan, Head (SS), presided



Scheduled Caste Sub Plan training programmes in Karnataka

over the function.

Farmers training programme on agronomic practices for juvenile coconut was held in MPDO hall in Koyyur on 16th July, 2019. It was organised in collaboration with ITDA Paderu, Visakhapatnam. Dr. K. Muralidharan, Nodal Officer, TSP and Mr. Prabhakara Rao, PHO, ITDA Paderu handled the session. The programme was attended by 70 farmers. Later they were provided with fertilizers required for the second year application. Assessment of seedlings required for gap filling was also made.

Regional Station, Vittal, Karnataka, in collaboration with Niduvalli Grama Panchayat, organized a three day training programme on 'Coconut tree climbing using climbing device' at Niduvalli Village, Niduvalli Grama Panchayat, Kadur Tk., Chikkamagaluru Dt., Karnataka during 4th to 6th July 2019. Dr. K. Muralidharan, Head, Division of Social Sciences and Nodal Officer, SCSP scheme inaugurated the training programme and delivered inaugural address and distributed climbing devices to trainees. Eight SC youths were trained under this programme and 9,400 coconut seed nuts were distributed to more than 80 scheduled caste beneficiaries of Niduvalli Grama Panchayat, Kadur Tk., Chikkamagaluru Dt., Karnataka during 10th and 11th July 2019.

An off campus training programme on "Scientific Arecanut cultivation and arecanut based cropping system for better livelihood" was organized on 18th July, 2019 at Harisava Mandir, Chawk Moulani, Malbazar block, Jalpaiguri. Sri Utpal Mandal, Asst. Director of Agriculture, malbazar block graced the training cum distribution programme. A total of 41 farmers



of Schedule cast community under BPL category attended the training programme. Another programme was organized on 19th July, 2019 at Belakoba, Rajganj Block, Jalpaiguri. A total of 50 farmers of Schedule cast community under BPL category attended the training programme. A programme was organized on 26th July, 2019 at Khairbari, Sadar block, Jalpaiguri. Sri Bikramjit Dhar, Asst. Director of Agriculture, Sadar block graced the training cum distribution programme. A total of 41 farmers of scheduled cast community under BPL category attended the training programme. Subsequent to the training programmes, planting materials of arecanut, black pepper and bay leaf was distributed.

An off farm training programme on Scientific Arecanut cultivation was conducted at Bunkunu village of Mirrik Block, Darjeeling on 13th August, 2019. A total of 26 farmers attended the training programme.

A training programme was conducted at Panchayet Samiti Hall, Kalchini, Alipurduar District for Community Resource Organisers on plantation crops. A total of 26 participants participated on the programme. Smt., Aruna Pariar, Sabhadhipati, Sri Prem lama, Siksha Karmadhaksha, Kalchini Panchayet Samiti and Sri Biswanath Sarkar, Asst. Director of Agriculture, Kalchini block graced the occasion.

Experts team visit to DSP Farm, CDB, Neriamangalam

An expert team comprising of Dr. Regi J. Thomas, Dr. A. Joseph Rajkumar, Principal Scientists and Dr. Merin Babu, Scientist visited DSP Farm, CDB, Neriamanglam on 17th July, 2019 and recommended strategies on farm development.

Production and distribution of quality planting material of dwarf / semi tall varieties

Kairali Nalikera Ulpadaka Sangam, Perumpanachy (Kottayam)

The inaugural function of sale of coconut seedlings from

Perumpanachy coconut nursery was held at Community Hall, Madappally on 7th August, 2019. The function was inaugurated by Smt. Laisamma Mulavana (President, Madappally Grama Panchayat).

Keragramam Apex Body, Thiruvappu (Kottayam)

The inaugural function of sale of coconut seedlings from Thiruvappu nursery was held at Thiruvappu on

5th September, 2019. The inaugural sale was done by Smt. Gowri (Agricultural Officer, Krishi Bhavan, Thiruvappu).

Kerasree, Thekkekara (Alappuzha)

The inaugural function of sale of coconut seedlings from Thekkekara coconut nursery was held at Pallarimangalam, Mavelikkara on 11th July, 2019. The welcome address and inaugural sale was done by Shri. K.K. Sahadevan

(President, Kerasree, Thekkekara).

Coconut Producer's Federation, Bharanicavu (Alappuzha)

The inaugural ceremony of coconut seedlings from Bharanicavu coconut nursery was held at Community Hall, Bharanicavu on 27th September, 2019. The function was inaugurated by Prof. V. Vasudevan (President, Bharanicavu Grama Panchayat).

Radio talks broadcast/TV programme telecast

Dr. Nagaraja, N. R., Scientist (Plant Breeding) presented a Radio talk in Kannada for Kisanvani programme of All India Radio, Mangalore which was broadcast on 1st August, 2019.

Dr. V. Krishnakumar, Acting Head, CPCRI, RS, Kayamkulam

participated in discussion on 'Naleekeravikasana council rooppekaranam phalapradamaano?' (In Malayalam) All India Radio, Thiruvananthapuram Date of Broadcast: 26th August, 2019.

Doordarshan programme

Live Phone-in-Programme on 'Scientific methods of coconut farming' in the Krishi Darshan Programme, Doordarshan Kendra, Thiruvananthapuram on 27th September, 2019.

Exhibitions

ICAR-CPCRI participated in the exhibition held in connection with the 91st ICAR Foundation Day, Award Ceremony and Farmer's Conclave, along with ICAR-KVK, Kasaragod and two incubatees of ICAR-CPCRI technologies (Ms. Pavithra and Dr. Sashidar Barla) on 16th July, 2019 at NAAS Complex, New Delhi. The Union Minister for Agriculture & Farmers Welfare, Narendra Singh Tomar inaugurated the exhibition stall. Various value added coconut products developed at ICAR-CPCRI such as virgin coconut oil, VCO capsule, coconut chips, coconut sugar, Kalpa Krunch, Frozen coconut delicacy, Kera Probio, Cocoa Probio, Keram, were showcased in the exhibition. About 700 people including farmers and scientists from different states across the country visited ICAR-CPCRI stall.

Participation in Exhibitions

Sl. No.	Name	Place	Date
1	Pan Malabar Round Table Concept organized by KSUM	UL Cyber Park, Kozhikode	12 th July, 2019
2	Exhibition organized in connection with CTCRI 56 th foundation day celebration	CTCRI, Trivandrum	27 th July, 2019
3	"Agripreneur 2019" organized by 'The Indus Entrepreneurs TiE Kerala'	Hotel Windsor Castle, Kottayam	31 st August, 2019
4	Exhibition organized in connection with 'World coconut day celebration 2019'	KAU, Thrissur	2 nd September, 2019
5	Udyam Samaagam Trade Fair, National Seminar & Workshop organized by MSME Udupi	Udupi	27 th & 28 th September, 2019

Mera Gaon - Mera Gaurav

A farmers training programme organized by Department of Agriculture, Sullia at Mera Gaon Mera Gaurav village Balpa (Addambailu), Sullia Tk., Dakshina Kannada Dt., Karnataka on 19th

July, 2019. More than 100 farmers participated in the training programme.

Training programme at Mera Gaon Mera Gaurav village Balpa (Addambailu), Sullia Tk., Dakshina

Kannada Dt.

A 'Samagra Krushi Abhiyana' organized by Department of Agriculture, Belthangady under the Mera Gaon Mera Gaurav village Kokkada (Nelyady), Belthangady

Tk., Dakshina Kannada Dt., Karnataka on 26th July, 2019. More than 100 farmers participated in the training programme.

Training programme at Mera Gaon Mera Gaurav village Kokkada (Nellyady), Belthangady Tk., Dakshina Kannada Dt.

Inauguration of Kera Nanma programme

As part of MGGM flagship programme, Kera Nanma programme was sanctioned by the Block Panchayat for the benefit of three panchayats, viz., Vallikunnam,



Training programme at Mera Gaon Mera Gaurav village Kokkada (Nellyady), Belthangady Tk., Dakshina Kannada Dt.

Chunakkara and Bharanikavu. Smt. Rajini Jayadev, President, Bharanikavu Block Panchayat inaugurated the programme conducted at Vallikunnam. Mrs. Indira Thankappan, President, Vallikunnam Panchayath and Smt. Raziya, Block Panchayath member attended the programme.

Training programme on 'Coconut production technology' was organized in connection with Kisan Gosti programme under ATMA scheme on 26th August, 2019 at Amarapadnuru village, Sullia Taluk, Dakshina Karnataka district.



Training programme at Mera Gaon Mera Gaurav village Balpa (Addambailu), Sullia Tk., Dakshina Kannada Dt.

ICAR-Krishi Vigyan Kendra, Kasaragod

Frontline Demonstrations

Initiated eight FLD programmes during the period. High yielding variety of paddy Pournami MO 23 was initiated in 10 farmers' fields at Karichery, Panayal village in an area of 5 ha. Demonstration of Hybrid cashew H 130 developed by NRC Cashew, Puthur was initiated in Sheni village of Enmakaje panchayat. High yielding variety of fodder grass Sampurna was initiated in Panayal village. Demonstration of drum seeder was initiated in a Padasekharam of Kolavayal and Zero till seed cum fertilizer drill for line sowing of paddy was demonstrated in Mogral Puthur and Kolavayal Padasekharams. Coconut milk based vegan paneer and peda, coconut vinegar as a natural food additive and VCO residue based protein rich muffins were demonstrated to SHG groups and entrepreneurs.

Training

During the period, 34 on campus training programmes and 3 off campus trainings were organised for the benefit of 492 participants

(353 M, 139 F) comprising of farmers, farm women, rural youth and members of self help groups. The programmes included 28 programmes to impart skill to unemployed rural youth in operation and maintenance of machinery for rice cultivation viz, power tiller, tractor, mat nursery preparation, transplanter and weeders. Also training on coconut byproducts, Mushroom and spawn production, value addition of seasonal fruits and spices, bee keeping etc were also carried out.

NASF workshop

A workshop was organized at CPCRI from 5th and 6th September, 2019 under the project 'Entrepreneurship development through farmer led innovations - A case study in plantation sector'. Documentation of farmer led innovations and ranking of 230 farmer innovations were carried out.

Launching of National Animal Disease Control Program

An awareness programme on animal diseases was organized in CPCRI Kasaragod on 11th

September, 2019 in connection with the national level Launching of National Animal Disease Control Programme for FMD and Brucellosis and promotion of artificial insemination. Shri N.A. Nellikkunnu, Hon'ble MLA of Kasaragod inaugurated the programme and Dr. Titto Joseph presided over the function. During the event a seminar and demonstration was carried out by Dr. P.A. Saikoya, veterinarian during which 42 farmers and 9 extension functionaries participated.

Orientation training for KVK Scientists

An orientation training was organized during 23rd - 27th of September, 2019 at CPCRI for the newly recruited scientists of KVK from Kerala and Karnataka. The event was inaugurated by Dr. Anitha Karun, Director, CPCRI and was presided over by Dr. Chandre Gowda, Director, ATARI, Bangalore. The programme was attended by 30 participants which include Senior Scientists and Heads, Assistant Professors from Universities and Subject Matter Specialists from ICAR KVKs.

ICAR-Krishi Vigyan Kendra, Alappuzha

Launching of activities of 2019-20

KVK has selected Thazhakkara, Chennithala and Chettikulangara panchayaths of Mavelikara block as the operational villages for implementing various activities of the KVK viz. farmer participatory On Farm Testing,



Inauguration of the launching programme

Frontline Demonstrations, Training programmes, Farmer Field School, Extension activities, PKVY and CFLD programmes during 2019-20. The launching programme of these activities was inaugurated by Sri. K. Reghuprasad, President, Mavelikkara Block Panchayath on 11th July, 2019 at District Agricultural Farm, Mankamkuzhi. KVK Newsletter (January-March 2019) and a pamphlet on 'Betelvine cultivation' were released on the occasion. Critical inputs for selected interventions viz. Multinutrient mix for vegetables 'Sampoorna', BV 380 layer chicks, IISR GBR-35 biocapsule for ginger, and seedlings for nutrition garden were handed over to partner farmers during the occasion. A Scientist - Farmer interface on 'Technologies for enhancing farmer's income' was also

conducted. About 125 farmers attended the programme.

Live webcasting of the address of the Prime Minister

Inaugural address of the Prime Minister on the "National Animal Diseases Control Programme" from Mathura, UP was webcasted on 11th September, 2019. The drive aimed at controlling livestock diseases, especially foot and mouth diseases and brucellosis in the next five years. In his address the PM pointed out that due to FMD outbreak the county loses revenue of around Rs.18000-20000 crores of rupees every year. Dr. Beena, Assistant Director of AH, Kayamkulam also was present on the occasion.

Face to Face programme

KVK in collaboration with Directorate of Extension, KAU and Dept. of Agricultural Development and Farmers' Welfare organized Farmer - Scientist Interface on 26th September, 2019 at Block Panchayath Hall, Mavelikkara. Dr. G. Suja, Head, ORARS, Dr. V. Mini,

Asst. Professor and Dr. Surendran, Assoc. Professor (from KAU), Dr. P. Muralidharan, Head, M.S. Rajeev, SMS, Jissy George, SMS, Dr.T. Sivakumar, SMS, G. Lekha, SMS, Dr.S. Ravi, SMS, Dr. K.Sajnanath, SMS and Dr. Anju K.A. Proj. Manager (from KVK), Smt. Reshmi, Asst. Director of Agriculture, Mavelikkara, Dr. Sindu, Sr. Veterinary. Surgeon, Mavelikkara and Dr. Aruna Murali BTM interacted with farmers across the table, theme wise to diagnose their field level problems and prescribed solutions. Directorate of Extension, KAU provided sample packets of bio-agents to the participants. Other technological inputs, publications, etc. were made available to farmers in the KVK outlet as part of the programme.



Farmers having face to face interaction with the scientists

Trainings/Meetings conducted

During the period organized 28 training programmes benefitting a total number of 703 farmers/rural youths. The details of the training programmes were as follows:

Training	No. of programmes	Participants		
		Men	Women	Total
On campus	8	152	100	252
Off campus	19	250	194	444
Vocation	1	3	4	7
Total	28	405	298	703



TECHNOLOGY COMMERCIALIZATION

During the period from July to September, 2019, six technologies were commercialised by the Institute to seven different entrepreneurs and a KVK through MoA as per the details given below, an amount of Rs. 1,65,000/- have been collected as technology transfer fees.

Sl. No.	Name of technology	Date of transfer	Amount	Name of Licensee
1	Matured coconut water based value added products	23-07-2019	15,000	M/s Dinesh Foods, Dinesh Bhavan, Payyambalam, Kannur – 670001, Kerala
		19-09-2019	15,000	Mrs. S. Radhamani, M/s Poorna Sweets, Blue 301, Parsn Colours Apts, Nanjunda Puram Road, Coimbatore – 641 036, Tamil Nadu, India

2	Machineries for Coconut Shell Removing Machine, Coconut Pulveriser, Double Screw Coconut Milk Expeller)	19-08-2019	45,000	M/s Oscar Indus, # 1962, Opp. Stock Exchange, Trichy Road, Coimbatore – 641 005, Tamil Nadu, India
3	Entomopathogenic nematode aqua formulation	29-08-2019	25,000	Senior Scientist and Head, Krishi Vigyan Kendra, Brahmavar – 576213, Karnataka
4	Technical knowhow of production of virgin coconut oil (VCO)	19-09-2019	40,000	M/s Yeshua Enerprises, Near Hawa Mahal Bus Stop, Janakpur, Rangat, Middle Andaman, Andaman & Nicobar Islands, PIN – 744 205 having administrative office at No.1, M.J. Sargunam Colony, Avarampalayam, Coimbatore – 641 006, India
5	Coconut Chips	25-09-2019	25,000	Mr. Ravikumar Mangukiya, (M/s Swara Natural Food Products), Sai Krishna Industrial Estate, Umara Village, Surat – 394130, Gujarat, India



Dr. Anitha Karun, Director (Actg.), ICAR-CPCRI exchanging memorandum of agreement with Head, KVK, Brahmavar



PARTICIPATION IN SEMINARS/SYMPOSIA/CONFERENCES/WORKSHOPS

Name & designation	Title	Place and date
Dr. Vinayaka Hegde Acting Head (Crop Protection), Dr. V. H. Prathibha and Dr. M. Sujithra, Scientist, ICAR-CPCRI, Kasaragod	International Conference on Plant Protection in Horticulture: Advances and Challenges	ICAR-IIHR, Bengaluru 24 th to 27 th July, 2019
Dr. R. Pandiselvam, Scientist, ICAR-CPCRI, Kasaragod	International conference on Functional foods and Nutraceuticals held at Bannari Amma Institute of Technology.	Sathyamangalam 2 nd to 3 rd August, 2019.
Dr. V. Krishnakumar, Dr. C. Thamban, Dr. P. Subramanian, Dr. S. Kalavathi, Dr. Chandrika Mohan, Dr. P. Anithakumari, Dr. A. Abdul Haris, Dr. A. Joseph Rajkumar, Principal Scientists, Dr. P. Muralidharan, Dr. Merin Babu, Dr. M. Shareefa, Dr. K. Nihad, Dr. Jeena Mathew, Dr. K.M. Anes and Dr. S. Indhuja Scientists,	Workshop cum National Seminar on 'Climate, Flood and Folklore'	ICAR-CPCRI, Regional Station, Kayamkulam 22 nd to 23 rd August, 2019
Dr. A. Joseph Rajkumar, Principal Scientist	Brainstorming session on 'Development of IPDM package for emerging pests and diseases in coconut'	TNAU, Coimbatore 19 th September, 2019
Dr. K. Muralidharan, Acting Head (Social Sciences), Dr. KB Hebbar, Acting Head (PB&PHT), Dr. Ravi Bhat, Acting Head (Crop Production), Dr. Vinayaka Hegde, Acting Head (Crop Protection), Dr. Alka Gupta, Principal Scientist, Dr. Murali Gopal, Principal Scientist, Dr. P. Subramanian, Principal Scientist, ICAR-CPCRI Kasaragod,	One Day Workshop on Organic Farming in Plantation Crops- Present Status and future perspectives	Regional Station Kayamkulam 20 th September, 2019



CELEBRATION

Independence Day

The Institute has celebrated 73rd Independence Day of our nation. Dr. Anitha Karun, Director (Actg.) hoisted the National Flag and delivered Independence Day address at Kasaragod on 15th August, 2019. Independence Day was also celebrated in the Regional Stations at Kayamkulam, Vittal and Research Centres at Kahikuchi, Kidu and Mohitnagar.



Dr. Anitha Karun, Director (Actg.), ICAR-CPCRI delivering the Independence Day speech

Sadhbhavana Diwas

Sadhbhavana Diwas was celebrated on 20th August, 2019 in memory of our late Prime Minister Rajiv Gandhi and all staff members pledged both in Hindi and English to practice unity and harmony in work place and in the country.

Hindi Chetana Mas

The inaugural programme of Hindi Chetana mas has been organised on 16th September, 2019, under the chairmanship of Dr. Anitha Karun, Director (Actg.), ICAR-CPCRI, Kasaragod. Smt. Seema Chandran, Assistant Professor (Hindi and Comparative Literature), Central University of Kerala was the chief guest, who inaugurated the programme and spoke on the occasion.

Hindi week was celebrated at ICAR-CPCRI, Regional Station, Kayamkulam during 21st to 27th September, 2019. Various competitions to improve skill in Hindi language was conducted for staff members. The valedictory ceremony of Hindi week celebrations was held on 27th September, 2019. The chief guest of the function was Shri. B.K.V. Krishna, General Manager, NTPC, Kayamkulam.

At Vittal, Hindi Week celebrated from 13th September, 2019 to 21st September, 2019 along with TOLIC members. During Hindi week different competitions like Hindi translation, memory test, Antakshari and quiz was conducted for staff members and school students. The closing function of the TOLIC was held at ICAR-CPCRI Regional Station, Vittal. Puttur TOLIC President and the Director (Actg.) ICAR-DCR Puttur Dr. Gangadhar Nayak presided over the function.



Hindi Week celebration at ICAR-CPCRI, Regional Station, Vittal

"Hindi Saptah" Celebrations was conducted in ICAR-CPCRI, Research Centre, Kidu from the 24th September, 2019 to 30th September, 2019. Inaugural function of Hindi Saptah was conducted on 24th September, 2019 under the chairmanship of Dr. Khadke Ganesh Navanath,

Scientist, Research centre, Kidu and as a Chief Guest of Shri. Ramesh P, Asst. Teacher, Hindi Subject from the Govt. High School, Yedamangala, Puttur. Various competitions for school children were also conducted.



Singing competition in Hindi for school children as a part of Hindi Week at Kidu

Hindi Week was celebrated from 14th to 20th September, 2019 at ICAR-CPCRI, RC, Mohitnagar. Hindi Teacher of KV, BSF, camp Raninagar was invited for Hindi teaching to the staff. Different competitions were also organized among the staff. Chief Branch Manager, and Personal Manager of SBI, Jalpaiguri were the invitee for the felicitation programme. Prizes were distributed among the winners by the Guests.

World Nature Conservation Day

As part of Swachh Bharat Abhiyan, ICAR-CPCRI, Regional Station Kayamkulam organized a one day Seminar for school students on the theme 'Save Nature through Cleanliness and Scientific Waste Management' to observe 'World Nature Conservation Day - 2019' on 27th July, 2019. Dr. S. Kalavathi, Head (i/c) inaugurated the function. A total of 60 selected school students from seventeen schools attended the event.

SUCCESS STORY

Participatory quality planting material production in coconut

A project on 'Production of coconut seedlings with high yield potential' funded by Alappuzha District Panchayath with a financial outlay of ₹ 20 lakhs was sanctioned during 2017-18 to ICAR-CPCRI, Regional Station, Kayamkulam. The objective of the project was production of quality planting materials of coconut in a decentralized manner. Training programmes on 'Hybridization and nursery management technique in coconut' for five days duration was conducted for members nominated by Coconut Producers Society/NGO's during November

2017 and February 2018. A total of 36 farmers representing 10 organizations participated in the training programme. Five farmers groups viz., Peringala Coconut Producers' Society, Agro Service Center, Muthukulam, Samrudhi Nalikeru Ulpadaka Samithi, Chingoli, Samabhavana Samskari Vedi, Harippad and Punnappa Ksheerolpadaka Sahakarana Sangam, established coconut nursery with technical support from ICAR-CPCRI.

Members from the selected groups surveyed and identified disease-free and high yielding mother palms in their locality with technical support of ICAR-CPCRI and the

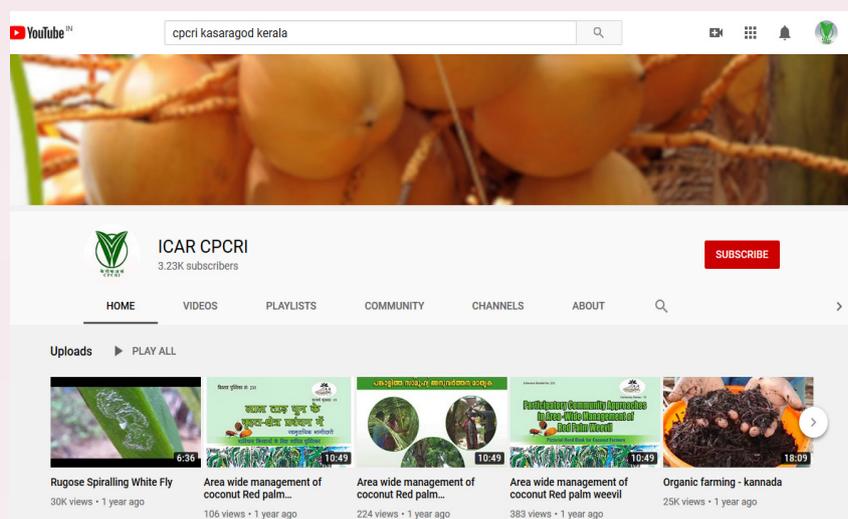
disease-free status of the mother palms was further confirmed by ELISA test. These organizations collected seed nuts from the selected mother palms and raised coconut nursery in their own plots. The team from ICAR-CPCRI also carried out routine visits to the decentralized coconut nurseries. In addition, artificial pollination was also done on selected CGD palms located in farmers' field. One year after sowing, first batch of 4500 quality coconut seedlings (CGD - 3400, COD- 550 and WCT -550) with proper labeling was handed over to District Panchayat and subsequently distributed among farmers through 36 Krishi Bhavans of Alappuzha District.

Institute Management Committee

The Institute Management Committee (IMC) meeting for the year 2019-20 was held at ICAR-CPCRI, Kasaragod on 21st September 2019 under the Chairmanship of Dr. Anitha Karun, Acting Director, Dr. W. S. Dhillon, Assistant Director General (HS II), ICAR, New Delhi, Dr. A. Ishwara Bhat, Principal Scientist, ICAR-IISR, Kozhikode and Dr. T. Magesh Kumar, Principal Scientist, ICAR-CTCRI, Thruvananthapuram were present. Shri Ram Avatar Parashar, SFAO attended the meeting as a special invitee. Shri Hareesh Nair, CAO, ICAR-CPCRI, Kasaragod was the Member Secretary.



ICAR-CPCRI on YouTube



<https://www.youtube.com/channel/UCWcuAg6DZVT7O9IM6luVTdg>



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