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ICAR-CENTRAL PLANTATION CROPS RESEARCH INSTITUTE

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Director's Desk

Fifty Years of Coordinated Research

The unwavering determination of the nation in the 1960s to become self reliant in food production led to the birth of one of the most successful research initiatives of the Indian Council of Agriculture Research - the All India Coordinated Research Programme (AICRP). It primarily focuses on assessing the suitability and adaptability of technologies in different agro-ecological regions of the country. The Golden Jubilee of AICRP on Palms was celebrated along with the 31st Annual Group Meeting held at ICAR-CPCRI during 16-18 September 2022. All former Project Coordinators were honoured during the occasion.

At present, AICRP on Palms has 28 centers: 15 on coconut, six on oil palm, four each on arecanut and palmyrah, and seven on cocoa. These centres are located in different agro-climatic zones, supporting the improvement, production, protection, and post-harvest processing of these crops. Fifty years of research programmes conducted through AICRP on Palms generated many technologies through an interdisciplinary approach and evaluated the suitability, adoptability, and transferability of the technologies for different ecological zones. Some of the salient achievements reported under the AICRP on Palms are:

- Fifteen high yielding varieties and eight hybrids in coconut,
- Three *tenera* oil palm hybrids,
- Five arecanut varieties,
- Production of 9.67 lakh coconut seedlings from the nucleus seed gardens established in different centers,
- Agro-techniques to increase input use efficiency such as drip fertigation for coconut and oil palm,
- Palm based cropping system models suitable for different regions,
- Integrated management of pests and diseases as well as supply of parasitoids and biocontrol agents to farmers,
- Post harvest value addition in Palmyra like 'neera', package tender fruit (nungu), jaggery etc.

Besides, the centers are also significantly contributing to the dissemination of technologies through training programmes, frontline demonstrations and mass media.

The impact of AICRP on Palms is unequivocal, but at the same time, it needs to be redefined to enhance its knowledge base with the right mix of applied and adaptive research.

Anitha Karun

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SPECTRUM

High yielding Cocoa Clones

A Malaysian Forastero, I-14, is identified as promising with 2-3.5 kg dry bean yield/tree/year. Pod yield ranged from 50-65/tree in an optimal canopy of 15-18 m² under both arecanut and coconut in Karnataka and Kerala. Having green to yellow, smooth pods weighing 380-400 g comprised of 41-43 beans/pod with a single bean weight of 1.0-1.2 g, 13% shelling, 85% nib recovery and 50% fat. Exhibited field tolerance to black pod rot, tea mosquito bug, mealy bugs, marginal management and water limited conditions. Better combiner for hybrid development and suitable for high density cropping models.

A Trinitario hybrid between I-14 x I-56 is found to be promising with 2-3.5 kg dry bean



High yielding Forastero - I-14



Trinitario hybrid - I-14 x I-56

yield/tree/year. Pod yield ranged from 60-65/tree in a canopy of 18-20 m² under arecanut and coconut in Karnataka. Having red to orange smooth pods weighing 350-380 g with 40-42 beans with a single bean weight of 1.0-1.15 g, 15% shelling, 85% nib recovery and 50% fat. Exhibited field

tolerance to black pod rot, tea mosquito bug and mealy bugs. Suitable for high density planting under arecanut and coconut with recommended fertilizer and irrigation schedules.

S. Elain Apshara

Kalpa Vajra coconut variety recommended for release

Kalpa Vajra variety of coconut was produced by crossing between high yielding and root (wilt) disease-free



High yielding Kalpa Vajra coconut selection

West Coast Tall (WCT) palms. The parental palms for crossing were selected from farmer's plots located in 'hotspots' of root (wilt) disease after serological testing. Kalpa Vajra was recommended by AICRP (Palms) Annual Group Meeting held during 16-18 September 2022. The four years average yield of Kalpa Vajra was 80nuts/palm/year. The disease-free palms gave on an average 158 nuts/palm/year and the disease affected palms gave an average yield of 65

nuts/palm/year. In a population of 390 *Kalpa Vajra* planted in DSP Farm, CDB, Neriamangalam during 1996-98, only 20% affected by root(wilt) disease till date. Another population of 50 *Kalpa Vajra* palms in the plot of Sri P.J. Joseph, Purapuzha, Thodupuzha, Idukki District, recorded on an average 135 nuts/palm/year. *Kalpa Vajra* palms in farmers' gardens were also observed to be less affected by the disease.

Regi J. Thomas, M.Shareefa, Merin Babu, M.K. Rajesh, Anitha Karun

Mushroom foraging in coconut gardens warrants caution

Coconut gardens enriched with organic biomass often hosts a variety of mushrooms such as *Agaricus*, *Termitomyces*, *Macrocybe*, *Trametes*, *Leucocoprinus*, *Volvariella*, *Polyporus*, *Ganoderma* etc., especially during monsoon. During the May-July, 2022, *Chlorophyllum molybdites* has shown frequent occurrence in coconut gardens. Fresh bloom with white, soft, fleshy and globose caps of this mushroom can tempt and offer an easy pick for mushroom foragers for culinary relishments, but it is the common agent of mycetismus (mushroom poisoning). Commonly

known as the 'green gill' or 'false parasol', it is often confused with similar-looking edible parasol mushrooms of *Lepiota* or *Macrolepiota* sp.

Chlorophyllum molybdites is a saprophytic mushroom occurring either singly or in clusters. This was spotted in a richly manured coconut basin mulched with coconut leaf fronds. *Pileus* was 12.5-19.5 cm in diameter with white, soft fleshy, plano-convex (globose in bud) shape with slight umbo and non-striate margin. Surface had patches of recurved squamules. *Lamellae* was white-

concolorous (grey-olive brown while aging), free/remote from stipe and serrate margin. Lamellulae were spaced ≥ 1 mm apart and were of 4-6 lengths. Stipe was central and cylindrical (11-22×1.2-1.5cm) with bulbous base with white fibrillose surface and double-edged annulus. Spore print was pale green in colour.

Chlorophyllum molybdites can be recognized by the large white, scaly pileus and green tinge on the gills of the mature fruiting body. This belongs to poisonous mushrooms classified under group-VII, the gastro intestinal irritants. Toxicity is caused by a

thermolabile compound which is usually destroyed when the mushroom is cooked at 70°C for 30 min. Though not fatally poisonous, it is the frequent

cause of mushroom poisoning in Kerala. Hence, wild mushroom collection for meal should be done with extreme caution and require

careful examination as many of the best-known edibles have a few poisonous look-alikes.

Indhuja, S., Merin Babu, Nihad, K. and Alka Gupta

Molecular characterization of bacterial symbionts associated with native EPN isolates

The bacterial symbionts of four local EPN isolates namely, *Steinernema hermaphroditum* (CPCRIS0905 & CPCRIS2101), *Steinernema* sp. (CPCRIS0804 & CPCRISB25) were isolated from the infective juveniles using NBTA medium. The bacteria isolated from these steinernematids on NBTA agar medium exhibited the

typical colony morphology of *Xenorhabdus* spp. Gram staining of the symbiotic bacteria resulted in pink/red colour bacterial cells, thus each isolate is confirmed to be Gram negative. Genomic DNA was isolated from the bacterial symbionts, 16S rRNA gene region was sequenced and phylogenetic tree was constructed for the

identification of the bacterial isolates. Analysis of 16SrRNA sequences revealed genetic relatedness of CPCRIS0905, CPCRIS2101, CPCRIS0804, and CPCRISB25 to *Xenorhabdus griffinae* with 99.71%, 99.86%, 98.99%, and 98.92% identity respectively.

Anes, K.M., Merin Babu, Tinkle K. Johnachan and A. Josephraj Kumar

Cytological and anatomical studies on abnormal twin coconut seedlings

An abnormal twin coconut seedling was observed by a farmer (Mr. Abe Jacob, Deputy Editor-CDB, Poomkudy House, Monipally, Kottayam District). A team from ICAR-CPCRI Regional Station, Kayamkulam visited his plot and took leaf and root samples from the twin seedlings for DNA and cytological studies. Various morphological and

microscopic growth parameters were recorded from the twin coconut seedlings. The results are presented below. From the results of cytological and anatomical studies it is evident that one

of the twin seedlings is haploid and

Parameters	Seedling 1	Seedling 2
Height (cm)	112	58
Collar girth (cm)	11.5	6.1
No. of leaves	9	6
Length of stomata (µm)	21.02	15.36
Breadth of stomata (µm)	17.32	9.85

other one is diploid.

Regi J. Thomas, M. Shareefa and Mayalekshmi

SUCCESS STORIES

Production of bio-control agents by FPOs for eco-friendly management of pest and diseases in palms

ICAR - CPCRI scientists participated in the Farmers - Scientist interface meeting organized by the 'Kaaniyoor Savanoor Farmers producer Company Limited' in collaboration with Savanoor agri cooperative society and ICAR - CPCRI at Savanoor village of Dakshina Kannada district of Karnataka on 19 September 2022. Further, Dr. Rajkumar and Dr. Prathibha V. H., Scientist delivered lecture cum demonstration on production protocols of

Entomopathogenic nematode (EPN) and *Trichoderma harzianum* at local level for the distribution of fresh bio-control materials to the needy farmers in the region for eco-friendly management of pest and disease in coconut and arecanut based cropping system. Dr. Nagraj N. R., Scientist delivered lecture on Arecanut crop management practices and improved varieties.

Smt. Asha Rai, the beneficiary of CPCRI technology has given feedback

about her effort made in successful establishment of *Trichoderma* production unit at Savanoor village after undergoing training at ICAR - CPCRI. She produced more than 100 kg (Rs. 10,000) *Trichoderma* and distributed to the Deejay coconut farm, Goa and surrounding farmers other than her own farm use. More than 110 farmers have participated and benefited from the programme.

Establishment of coconut nursery for income generation for TSP beneficiaries of Odisha

The TSP beneficiaries of Odisha (Radhakrishnapur, Bhagabanpur, Bhaapur, Dhenkanal Rajaathagarh villages etc.) were benefitted financially with the establishment of their own coconut nursery. Each beneficiary had received 2000 coconut seed nuts from ICAR - CPCRI, Kasaragod under Tribal Sub Plan. The

Kalpabrukha foundation helped to identify the beneficiaries. The raised coconut seedlings from these nurseries were procured by NGOs by paying spot cash for planting in their project areas. Beneficiaries are financially benefitted by this scheme and now many are interested to germinate more seed nuts to start their own coconut

nursery activities. More villages are showing interest for to raise their own nursery. Detailed conversion with tribal farmers can be refer <https://twitter.com/Murali69526/status/1574705299432542209>



Germinated coconut seed nuts in TSP beneficiary sites at Odisha



Tribal women beneficiary raised their own nursery

IMPORTANT EVENTS

94th ICAR-Foundation Day

ICAR Foundation Day and Award Ceremony programme held in New Delhi and the interaction of Hon. Minister of Agriculture and Farmers' Welfare, Sri. N.S. Tomar with farmers across the country was webcasted in all units of ICAR-CPCRI.

At ICAR-CPCRI, Regional Station, Kayamkulam '94th ICAR-Foundation Day' was celebrated with two programmes: (i) Commemorative bicentenary lecture on Gregor Johann Mendel and (ii) Workshop on Advanced Microscopic Techniques.

Dr Anitha Karun, Director, ICAR-CPCRI, Kasaragod inaugurated the Bicentenary lecture. She mentioned about how the systematic experimentation on pea plants through application of mathematics made the law of inheritance discovered by Gregor Mendel which has now developed to gene editing technology. She also outlined the stellar

performance of ICAR in agricultural research, education and extension making the nation from ship to mouth in to silo to ship economy.

Dr P. Anithakumari, Acting Head, offered welcome to the participants, mentioned that it is a rare coincidence that Azadi ka Amrit Mahotsav coincided with the Kalpa Vajra (Platinum jubilee) of the Regional Station: It was on 24 April 1947 the Foundation stone was laid by His Highness Marthanda Varma BA, Elayaraja of Princely State of Travancore.

Dr Joseph Job, Vice-Principal, St. Berchman's College, Changanacherry delivered the commemorative bicentenary lecture on Gregor Johann Mendel. He traced the history of Mendel's work and narrated in a very lucid manner. Besides hybridization work, his passion towards meteorology, bee-keeping, etc. was

lauded from every sphere of life, he opined.

Dr. Regi J. Thomas, Principal Scientist proposed the vote of thanks.

Sri C.V. Ajithkumar, CEO, M/s InBiotek, Kochi highlighted on the fundamentals of microscopes and highlighting various features. Sri Jayakumar, Service Director, Inbiotek and Mr. Anandhan, Service Engineer also extended the practical sessions and empowered the participants. A brief presentation on the Application of Microscopy in Coconut Research was made by Dr. A. Joseph Rajkumar, Principal Scientist. About 100 participants attended the workshop.

ICAR Foundation Day was celebrated in a befitting manner on 16 July by the KVK with the participation of many women farmers. Dr. P. Muralidharan, Head, KVK highlighted the important roles carried out by the ICAR to the nation and various achievements.

Special Postal Cover and Postal Stamp released commemorating 75-years of ICAR-CPCRI, Regional Station, Kayamkulam

ICAR-CPCRI, Regional Station, Kayamkulam commemorated 75 years as Kalpa Vajra Platinum Jubilee celebrating it with the release of a Special Postal Cover and My Stamp on 12 August 2022.

Shri P. Prasad, Hon'ble Minister for Agriculture, Government of Kerala inaugurated the programme. Smt. Sheuli Burman, IPoS, Chief Post Master General, Kerala Circle released the special postal cover and stamp by handing it over to the Hon'ble Minister

for Agriculture, Kerala. The programme was chaired by Adv. U. Prathibha, Hon'ble MLA, Kayamkulam.

A philately exhibition was organized on the occasion that attracted more than 2000 students.



Smt. Sheuli Burman, IPoS, Chief Post Master General, Kerala Circle releasing the special postal cover & My Stamp and handing it over to Shri P. Prasad, Hon'ble Minister for Agriculture, Kerala



A view of philately exhibition on agriculture related stamps

World Coconut Day 2022

Smt. R. Swagat Bhandari IAS, District Collector inaugurated the World Coconut Day programme at ICAR-CPCRI, Kasaragod on 2 September 2022. She appreciated the programmes conducted by ICAR- CPCRI in various aspects of coconut research and remarked that research outcomes would only become useful when they get translated into useful products. The MoU for technology transfer of Kalparasa® to Hallikere Coconut

Producer Organisation, MTA for bioagents research to NITK, Surathkal and Bean to bite chocolate MoA for incubation to Shri Abhilash, Kasaragod were signed.

Smt. Meenarani, District Welfare Officer was also attended the programme and distributed certificates to trainees on computer applications conducted under SCSP.

Shri Deepu Krishnan P.R., Asst. Manager, Kerala Start Up Mission

offered felicitations. Dr. K. Muralidharan, Head (Acting), delivered the key note address. About 200 stakeholders participated in the celebration.

At ICAR-CPCRI, Regional station, Kayamkulam seminar on 'Gowing coconut for a better future and life' was conducted. In-house competitions including coconut crafts, cookery video competitions, extempore etc. were conducted.

Golden Jubilee and XXXI Annual Group Meet of All India Co-Ordinated Research Project on Palms

The 31st Annual Group Meeting of All India Co-ordinated Research Project on Palms was conducted at Central Plantation Crops Research Institute, Kasaragod during 16-18 September 2022, which coincided with the Golden Jubilee Year of AICRP (Palms). The meeting was inaugurated on 16 September 2022 by Dr. V.

Geethalakshmi, Vice Chancellor, Tamil Nadu Agricultural University, Coimbatore. The former Project Coordinators Dr. P. Rethinam, Former Executive Director, ICC (APCC), Jakarta, Dr. S. Arulraj, Former Director, IOPR, Pedavegi, Dr. H. Hameed Khan Former Project Coordinator of AICRP (Palms) and Dr.

H.P. Maheswarappa, Director of Research, UHS, Bagalkot were the Guests of honour. Dr. R.K. Mathur, Director, IOPR, Pedavegi, Dr. V.S. Korikanthimath, Former Director, ICAR Research Complex for Goa and Dr. P. Chowdappa, Former Director, ICAR – CPCRI Kasaragod, were also participated in the inaugural session.

At present AICRP on Palms have five mandate crops - Coconut, Oil palm,



Dr. V. Geethalakshmi, Vice Chancellor, TNAU, Coimbatore, delivering inaugural address

Palmyrah, Arecanut and Cocoa distributed across 28 AICRP centres of 14 States, 13 State Agricultural Universities, 4 ICAR institutes and one Central Agricultural University.

Dr. Anitha Karun, Director, CPCRI and Project Co-ordinator (Acting),

AICRP (Palms) in the Presidential Address extended profuse gratitude to the entire palm scientists for the achievements of AICRP (Palms). Dr. Ravi Bhat, Acting Head (Crop Production) ICAR- CPCRI, Kasaragod welcomed the gathering and Dr. P. Subramanian, Principal Scientist (Agronomy), CPCRI, Kasaragod proposed vote of thanks. About 100 participants from across different AICRP centres of the nation attended the Annual Group Meet. Navsari Centre, Gujarat received the Best AICRP (Palms) Centre Award for the year 2021. Bouquet of publications in terms of Technical Bulletins, booklets and folders prepared by the palm scientists were released in the event. The inaugural session was followed by technical sessions on Genetic

Resources and Crop Improvement, Crop Production, Crop Protection and Post-Harvest Technology.

During the meeting three coconut varieties were recommended for release.

Dweep Haritha - Dwarf tender nut variety with green coloured fruits for cultivation in Andaman and Nicobar Islands and Kerala

Dweep Sona - Dwarf tender nut variety with yellow coloured fruits for cultivation in Andaman and Nicobar Islands and Kerala

Kalpa Vajra (WCT x WCT) Hybrid - The WCT X WCT progenies are superior in terms of higher yield (80.1 nuts/palm/year) and have recorded less root (wilt) disease incidence (<20%) as compared to WCT (OP) and WCT (Self) progenies.

Kalpa Sangamam — An assemblage of 75 years of service to coconut community

ICAR-CPCRI Regional Station, Kayamkulam organized Kalpa Sangamam- a grand communion of staff and officers reminiscing 75 years of service to coconut community. Celebrating the legacy of 75 years, Kalpa Sangamam was organized on 20 September 2022, wherein an assemblage of about 250 ICAR family members including staff, officers and scientists who had served this Institute converged and shared the past. This communion is unique and first of its

kind in the history of any ICAR Institute.

Royal prince His Highness Avittam Thirunal Aditya Varma inaugurated the Kalpa Sangamam by lighting the Kalpa deepam. Earlier he was given a rousing reception in a traditional style of flower carpeting and lamps carried by women. Dr. K. Muralidhran, Acting Director (i/c) presided over the function. Former Directors of ICAR-CPCRI Dr. K.U.K. Nampoothiri, Dr. George V. Thomas, former

Heads/Acting Heads of the Regional Station Dr. V.K. Koshy, Dr. C.P.R. Nair Dr. P.M. Jacob, Dr. Mathew George. Dr. V. Krishnakumar, Dr. S. Kalavathi and former Heads of Division Dr. R.D. Iyer, Dr. Chandramohan and other distinguished former scientists, technical and administration personal, skilled supporting staff and family members of departed colleagues glorified the occasion by their elegant presence.



His Highness Avittam Thirunal Aditya Varma delivering inaugural address



Participants of Kalpa Sangamam at ICAR-CPCRI, RS, Kayamkulam

Review of Second Sub-Committee of Parliamentary Committee on Official language

Dr. P. Anithakumari, Acting Head presented the use and promotion of Hindi at ICAR-CPCRI, Regional Station, Kayamkulam before the

Hon'ble Second Sub-Committee of Parliamentary Committee on Official language at Thiruvananthapuram on 27 September 2022. The committee

appreciated the activities done at Kayamkulam Regional Station and put forward valuable suggestions for improving the use of official language

in day-to-day office proceedings. Dr. Anitha Karun, Acting Director, ICAR-

CPCRI, Mr. G.S. Hareesh Nair, CAO (Sr. Grade), Dr. K.M. Anes, Scientist

attended the review meeting held at Thiruvananthapuram.

Plant Health Management in Arecanut

Training cum interface programme on 'Plant health management in arecanut' was organized at ICAR-CPCRI, Regional Station, Vittal on 27 August 2022. The program was inaugurated by Shri Mahesh Puchchappady, Secretary, All India Arecanut Growers Association. The inaugural session was presided over by Dr. Ravi Bhat, Head, Crop Production Division, ICAR- CPCRI.

Farmers shared their experience on phytosanitation using CFT pole, underground drainage system,

Scientist - Farmer interface program was coordinated by Dr. C. Thamban. management of root grub and inflorescence die back disease of arecanut.

Dr. C.T. Jose was felicitated by the farmers in view of his retirement from ICAR service on 31 August 2022 and for his contribution to arecanut and cocoa research. Sri Shri Padre, Executive Editor, Adike Patrike, Shri Santhosh Kuthamotte, President, Primary Credit Cooperative Society, Arabthodu-Thodikana, Shri Pradeep

D'Souza, SADH, Bantwal were the guests graced the occasion. More than 110 farmers attended the training program.



A view of the dignitaries attending the interface programme at ICAR-CPCRI, RS, Vittal

Research Advisory Committee Meeting

The 24th Research Advisory Committee meeting was held on 4 July 2022 at ICAR-CPCRI, Kasaragod. Following members attended the meeting.

1. Dr. S. P. Ghosh, Former DDG (Hort.), ICAR, New Delhi, Chairman
2. Prof. B. S. Hansra, Former ADG (Extn.), ICAR, New Delhi
3. Dr. K.V. Ramana, Former ADG (Plantations), ICAR, New Delhi
4. Dr. V. Abraham, Former Director, ICAR-NBAIR, Bengaluru
5. Dr. K.V. Bhat, Emeritus Scientist, ICAR, New Delhi
6. Dr. Anitha Karun, Director (Acting), ICAR-CPCRI
7. Shri Suresh Kumar Shetty, Farmer Member

8. Shri K. Sadananda Shetty, Farmer Member and
9. Dr. Ravi Bhat, Head, Division of Crop Production, ICAR-CPCRI, Member Secretary, RAC.

Dr. Anitha Karun, Director, presented salient achievements of the Institute under the various research programmes and the major advancements at the Institute. This was followed by presentation of progress of



Dr. S.P. Ghosh, Chairman, RAC addressing the participants

research by seven programme leaders and heads of KVK. The members of RAC had a field visit on 5th July 2022 to monitor ground level activities.

Based on the presentations and the existing farm level challenges, RAC has recommended, upscaling of tissue culture in coconut and arecanut for mass production, utilization of exotic germplasm for applied breeding, evaluation of multi-tier cropping system model with coconut in east coast and north eastern states, revalidation of disease and pest forewarning models, characterization of bioactive ingredient in value added products, and disseminate pro-poor technologies on IT platforms.

Institute Research Committee Meeting

The 50th Annual Institute Research Committee Meeting of the ICAR-Central Plantation Crops Research Institute, Kasaragod was held at ICAR-CPCRI Kasaragod during 25th – 29th July 2022. The progress of research programmes and achievements under the ongoing projects under crop improvement, biotechnology, crop production, integrated disease management, integrated pest

management, physiology & biochemistry, value chain management and social sciences including transfer of technologies were presented by the respective Principal Investigators. During the meeting, all the ongoing research projects (including externally funded projects) under seven research programmes were discussed in detail

and the technical programme for the year 2022–23 was finalized.



Dr. K.M. Sreekumar, Professor & Head, Padannakkad delivering plenary lecture of IRC meeting

Meeting on Fixation of the Minimum Import Price of arecanut

On August 17, 2022, a multi-stakeholder consultative meeting was held at ICAR-CPCRI Kasaragod, chaired by Dr Anitha Karun, Director, ICAR-CPCRI Kasaragod, to suggest the minimum import price of arecanut. Officials from the CAMPCO, Ltd., Mangaluru, DASD, Kozhikode and scientists from ICAR-CPCRI, Kasaragod interacted to gather various aspects of trade related matters of arecanut.

Taking into consideration the cost of production per kg of chali in this case would be Rs. 280/-, it was suggested that the minimum Import Price should be pegged above Rs. 350 per kilogram for chali. Adequate trade policy measures and the enforcement of strict trade barriers based on food safety are necessary safeguard the remunerative prices in the domestic sector were also suggested.



A view of the programme of multi-stakeholder consultative meeting

Training programme impact assessment for technology refinement

A training programme on 'Statistical & socio economic methods and impact assessment for technology refinement in agriculture' was conducted for the benefit of Subject Matter Specialists of KVKs under ATARI, Bengaluru during 11-12 August 2022 at ICAR-CPCRI Kasaragod. Dr. Anitha Karun, Director (Act.), ICAR- CPCRI Kasaragod inaugurated the programme in which Dr. B.T. Rayudu, Principal

Scientist, ATARI, Bengaluru was the guest of honour. Dr. CT Jose, Head ICAR- CPCRI RS Vittal, was felicitated during the function.



Dr. B.T. Rayudu, Principal Scientist, ATARI, Bengaluru, addressing the participants

Training programme focussed on giving exposure to basic statistical techniques and software, along with economic tools and impact assessment. Valedictory function was presided over by Dr. K. Muralidharan, Head, Social Sciences. 51 participants from 38 KVKs participated in the programme.

PUBLICATIONS

Research Articles

Adivappar, N., Amulya, R.N., Satish, K.M. and Nagaraja, N.R. 2022. Genetic relationship and diversity analysis in arecanut (*Areca catechu* L.) genotypes using molecular markers. *Agricultural Science Digest*. DOI: 10.18805/ag.D-5283.

George V. Thomas, P. Subramanian, Murali Gopal, Alka Gupta and S. R. Prabhu. 2022. Unraveling the potential of belowground and aboveground biodiversity for sustainable management of the health of plantation crop soils in coastal agro-ecosystem. In *Transforming Coastal Zone for Sustainable Food and Income Security*. Eds. T. D. Lama, Dhiman Burman, Uttam Kumar Mandal, Sukanta Kumar Sarangi, H. S. Sen, pp. 634-645. Springer Nature Switzerland AG. ISBN 978-3-030-95617-2.

Murali Gopal, Alka Gupta, V. Arunachalam, H.P. Maheswarappa, George V. Thomas and P.M. Jacob. 2022. Autochthonous nutrient recycling

driven by soil microbiota could be sustaining high coconut productivity in Lakshadweep Islands sans external fertilizer application. *World Journal of Microbiology and Biotechnology*. **38**: 213.

Nagaraja, N.R., Ananda, K.S. and Rajesh, M.K. 2022. Genetic variation among varieties, wild species and related genera of arecanut (*Areca catechu* L.) as revealed by microsatellite markers. *International Journal of Plant & Soil Science*. **34**(22): 846-855. DOI: 10.9734/IJPSS/2022/v34i2231442

Priya George, Alka Gupta, Murali Gopal, Litty Thomas and George V. Thomas. 2022. Indigenous rhizobacteria possessing abiotic stress tolerant traits promote vigorous growth of coconut seedlings via increased nutrient uptake and positive plant-microbe feedback. *Proc. Indian Natl. Sci. Acad.* **88**: 64-79.

Rajkumar, Sujithra, M. and Subaharan, K. 2022. Field evaluation of

entomopathogenic nematodes (EPNs) for sustainable management of white grub, *Leucopholis coneophora* Burm. in coconut. *Indian Journal of Nematology*, **52**(1)1-6.

Shareefa, M., Thomas, R.J., Sreelekshmi, J.S. and Anitha, K. 2022. Occurrence of *in vitro* flowering in coconut (*Cocos nucifera* L.). *Journal of Horticultural Sciences* **17**(1): 255-259.

Workshop/Seminar/Symposia/ Webinars publications

Josephraj Kumar, A., Anes, K.M., Merin Babu, Prathibha, P.S., Sajan, J.V. and Hegde, V. 2022. Exotic whiteflies in coconut system from India-Decoding to Diminution. In: *First International IPM Symposium on Coconut-Implementing IPM to sustainability, Protect Coconut, Producers and Industry*, held at ICC, Jakarta 23-26 August, 2022.

Prathibha, P. S., Sajan, J.V., Subaharan, K. and Patil, J. 2022. Natural enemy complex associated with palm white grubs

- Leucopholis* spp. (Scarabaeidae: Coleoptera). In: *First International Symposium on Coconut IPM- 2022*, 23-26 August 2022 at Jakarta, Indonesia.
- Rajkumar, Suithra M., Surekha, Joseph Rajkumar and Vinayaka Hegde 2022. Integrated eco-friendly management of white grub in coconut palms using entomopathogenic nematodes. E-First International Symposium on Coconut IPM from 23 -26th August at Jakarata, Indonesia. p201.
- Sujithra M., Rajkumar M. and Vinayaka Hegde 2022. Synergistic effect of *Metarhizium anisopliae* and *Steinernema carpocpsae* against rhinoceros beetle, *Oryctes rhinoceros* L.(Coleoptera : Scarabaeidae). E- First International Symposium on Coconut IPM from 23 -26th August at Jakarata, Indonesia. p196.
- Thamban, C., Anithakumari, P. and Thomas, R. J. 2022. My meeting notes. In: National Mentoring Workshop on Strengthening Farmer Producer Organizations - 12 August 2022. ICAR-Central Plantation Crops Research Institute. AESA Meeting Note 112.
- ### Book Chapters
- Chandrika Mohan, Josephraj Kumar, A., Prathibha, P.S., Sujithra, M., Sajan, J.V. and Anes. K.M. 2022. Pests and their management in coconut. In: *Trends in Horticultural Entomology*. (eds) Mani, M. Springer, Singapore. https://doi.org/10.1007/978-981-19-0343-4_60 pp 1411-1439
- Chandrika Mohan, Josephraj Kumar, A., Thube, S.H., Saneera, E.K., Mani, M. 2022. Pests and their management in cocoa. In: *Trends in Horticultural Entomology*. (eds) Mani, M. Springer, Singapore. https://doi.org/10.1007/978-981-19-0343-4_61 pp 1441-1455
- Chandrika Mohan, Josephraj Kumar A., Thube, S.H., Saneera, E.K. and Rajkumar. 2022. Pests and their management in arecanut. In: *Trends in Horticultural Entomology* (eds) Mani, M. Springer, Singapore. https://doi.org/10.1007/978-981-19-0343-4_66 pp 1529-1544,
- Josephraj Kumar, A., Mani, M., Anes, K.M. and Chandrika Mohan. 2022. Ecological engineering in pest management in horticultural and agricultural crops. In: *Trends in Horticultural Entomology*. (eds) Mani, M. Springer, Singapore. https://doi.org/10.1007/978-981-19-0343-4_4 pp 123-155
- Josephraj Kumar, A., Thomas, R.J., Shareefa, M., Mayalekshmi, Indhuja, S., Anes, K. M., Sajan, J.V. and Merin Babu. 2022. Application of microscopy in coconut research. In: *Proc. workshop on 'Commemorating Mendel and Comprehending Microscopy (CMMC)'* (Eds. Thomas, R.J. , Josephraj Kumar, A., Anes, K. M., Indhuja, S., Shareefa, M., Merin Babu, Sajan, J.V. and Anithakumari, P.). ICAR-CPCRI, Regional Station, Kayamkulam, pp.23-30.
- Thomas, R.J. and Josephraj Kumar, A. 2022. Pollination Services in Coconut Plantations. In: *Ecosystem Services Analysis: Concepts and applications in diversified coconut and arecanut gardens* (eds.) Arunachalam, V., Paramesha, V., Uthappa, A.R. and Parveen Kumar, ICAR-CCARI, Old Goa, (ISBN: 978-81-956638-2-8) pp: 161-182.
- ### Popular articles
- Anithakumari, P. and Jithin Shaju 2022. Integration of farm components – The beauty of coconut homesteads. *Indian Coconut Journal* **65**(2):10-16.
- Anithakumari, P. 2022. Coconut oil soap: Knowledge snippets (In Malayalam). *Indian Naliker Journal* **14**(7):24-25.
- Bijila.P.V., Rajeev.M.S. and Muralidharan.P. 2020. Bush pepper for income and ornamental purpose: *Karshakan*. **30**(6): 63-65.
- Jeena Mathew and Haris, A. A. 2022. Soil test based Nutrient management for better coconut productivity. *Indian Coconut Journal*. **65**(2):19-21.
- Jissy George., Muralidharan, P. and Ijaz, M. 2022. Value added products from Rambhutan and Dragon fruit. *Krishiyankanam* **5**(3): 21.
- Josephraj Kumar A., Merin Babu, Sajan, J.V., Anes, K.M., Prathibha, P.S., Thomas, R. J. and Hegde, V. 2022. Strengthening quarantine and incursion management of invasive pests on coconut. *Indian Coconut Journal* **65**(2): 22-28.
- Josephraj Kumar, A., Nafeesa, M., Nimisha Mathews, Remya, J.S. and Murugan, M. 2022. Spotted Grasshopper, a threat to high range plantations (In Malayalam). *Kerala Karshakan* **67**(11): 57-59.
- Merin Babu, Josephraj Kumar, A., Anes, K.M., Thangeswari, S., Surulirajan, M. and Hegde, V. 2022. Re-emergence of lethal wilt disease in east coast regions of Tamil Nadu. *Indian Coconut Journal* **65**(2): 16-18.
- Priya, U.K., Neenu, S., Bhavishya., Jose, C.T. and Elain Apshara, S. 2022. The necessity of soil testing in Plantation crops. *Karshakan* (In Malayalam). Volume 30(8):44-45.
- Sajan, J.V., Prathibha, P.S., Diwakar, Y. and Josephraj Kumar, A. 2022. New distributional record of palm whitefly, *Aleurotrachelus atratus* Hempel in Kerala, India. *Indian Coconut Journal* **65**(1): 10-12.
- Sivakumar.T. and Radhika, N.S. 2022. Pests and diseases of turmeric. *Karshakan*. 30(9):44-46.
- Thamban, C., K. Samsudeen and Regi Jacob Thomas. 2022. Enhancing planting material production in coconut through decentralized community nurseries-Successful experiences of Farmer Producer Organizations. *Indian Coconut Journal*. **65** (1): 21-26.
- Thamban, C., Subramanian, P., and Joseph Rajkumar. 2022. Cultivation practices for coconut - August. *Indian Coconut Journal*. **65** (1): 31-36.
- Thamban, C., Subramanian, P., and Joseph Rajkumar. 2022. Thengin thottathil August masathe krishippanikal (in Malayalam). *Indian Naliker Journal*. **14** (7):32-35.
- Thamban, C., Subramanian, P., and Joseph Rajkumar. 2022. Cultivation practices for coconut - September. *Indian Coconut Journal*. **65** (2): 34-36.
- Thamban, C., Subramanian, P., and Joseph Rajkumar. 2022. Thengin

thottathil September masathe krishippanikal (in Malayalam). *Indian Naliker Journal*. **14** (8):34-35.

Thamban, C., Subramanian, P., and Joseph Rajkumar. 2022. Cultivation practices in coconut garden -October. *Indian Coconut Journal*. **65** (3): 33-36.

Thamban, C., Subramanian, P., and Joseph Rajkumar. 2022. Thengin thottathil October masathe krishippanikal (in Malayalam). *Indian Naliker Journal*. **14** (9):34-36.

Thomas, S., Haris, A. A. and Josephraj Kumar, A. 2022. Coreid bug damage and management in coconut (In Malayalam). *Indian Naliker Journal* **14**(8): 14-15.

Extension folders

Josephraj Kumar, A., Thomas, R.J., Merin Babu, Anes, K.M., Sajan, J.V., Shareefa, M., Indhuja, S., Anithakumari, P. and Anitha Karun. 2022. Good Management Practices for Pests and Diseases in Coconut. Extension Folder, ICAR-CPCRI, Regional Station, Kayamkulam

Pandiselvam R, Prithviraj V., Manikantan MR, Beegum PPS, Ramesh SV, Kothakota A, Mathew A.C., Hebbar K.B., Maerescu C.M., Criste F.L., Socol C.T. 2022. Dynamics of biochemical attributes and enzymatic activities of pasteurized and bio-preserved tender coconut water during storage. *Frontiers in Nutrition* 9:977655. doi: 10.3389/fnut.2022.977655.

Ramesh S.V., Rose Mary, Shameena Beegum P.P., Pandiselvam R., Sugatha P., Neenu S., Shil S., Nirali V., Manikantan M.R., Lokesh A.N., Shivashankara K.S., Hebbar K.B. 2022. Physicochemical characterization and fatty acid profiles of testa oils from various coconut (*Cocosnucifera* L.) genotypes. *Journal of the Science of Food and Agriculture*. <https://doi.org/10.1002/jsfa.12150>.

Books/ Proceedings

Thomas, R.J., Josephraj Kumar, A., Anes, K.M., Indhuja, S., Shareefa. M., Merin Babu, Sajan, J.V. and Anithakumari, P. 2022. Commemorating Mendel and Comprehending Microscopy (CMMC)-Workshop Proceedings, ICAR-CPCRI, Regional Station, Kayamkulam, 34p.

TRANSFER OF TECHNOLOGY

Online training programme on coconut disease management

An online training programme for extension personnel on 'Integrated management of new fungal disease in coconut gardens of Northern Kerala' was organized on 1st July 2022 in collaboration with Department of Agriculture. Dr Anitha Karun, Director CPCRI inaugurated the

training programme. 30 extension personnel from various Krishi Bhavans of Kasaragod district participated in the training programme.

Training-cum-Workshop on Coconut Based Enterprises

A Training-cum-Workshop on Coconut Based Enterprises was conducted on 7 July 2022 at CPCRI Kasaragod in collaboration with District Industries Centre, Kasaragod. Shri Athul Swaminath, Revenue Divisional officer and Sub Divisional

Magistrate, Kasaragod inaugurated the programme. Dr. Anitha Karun, Director presided over the inaugural function. Mr. Sajith Kumar, General manager DIC Kasaragod gave introductory remarks. Dr. Thamban C. Principal Scientist and Coordinator

welcomed the gathering. 40 interns from the Local Self Governments under the programme '2022-Year of Entrepreneurship' being implemented by Government of Kerala participated.

Workshop on Technologies for Eco-friendly and Sustainable Agriculture'

A Workshop on technologies for eco-friendly and sustainable agriculture' was organized at CPCRI Kasaragod in collaboration with Mathrubhumi Daily on 30 July 2022. Dr Anitha Karun

inaugurated the workshop and also distributed coconut seedlings for demonstration and maintenance through the SEED programme in selected schools.



Distribution of seedlings

Training on coconut production technology

A training programme for farmers on 'Coconut production technology' was organized at CPCRI Kasaragod on 3rd

August 2022 in collaboration with Krishi Bhavan Mavoor, Kozhikode

district. 40 farmers participated in the training programme.

Training programme on Sustainable Coconut Production Technologies

A training programme for farmers in collaboration with Gandhi Smaraka Seva Kendram, Karadka on

Sustainable Coconut Production Technologies was conducted at CPCRI Kasaragod on 31 August 2022. Dr

Anitha Karun, Director inaugurated the training programme.

Training programme for farmers on Production and value addition technologies for coconut

A training programme for farmers on 'Production and value addition technologies for coconut' was

conducted at CPCRI Kasaragod on 29 September 2022 in collaboration with Karshakasangam Irriyanni Village

Committee. Dr. Anitha Karun, Director CPCRI inaugurated the programme.

Mentoring Workshop on Strengthening FPOs

A Mentoring Workshop for Strengthening FPOs sponsored by NABARD was convened by ICAR-CPCRI, Regional Station, Kayamkulam on 12 August 2022. Shri G. Gopakumaran Nair, Chief General Manager, NABARD inaugurated the workshop. He also launched the rotary

pressed coconut oil branded as 'Grow Me Green' developed by Odanadu Farmer Producers Company, Pathiyoor. Shri S. Premkumar, General Manager, Canara Bank and Convener, SLBC inaugurated the FPO exhibition. The technical session was moderated by Dr. Jiju P. Alex, Member, Kerala

State Planning Board and Dr. C. Thamban, Principal Scientist, ICAR-CPCRI, Kasaragod and six expert speakers shared their experiences. More than 350 farmers representing about 75 FPOs all over the Kerala and Tamil Nadu participated.

Field day cum farmers training on management of palm invasive whiteflies

Field day – cum – farmers training programme on management of palm invasive whitefly complex using entomopathogenic fungi, *Simplicillium lanosoniveum* and other IPM approaches was conducted at St. BASBS, Bela on 21 September 2022. Shri. Abbas, Vice President, Badiadka Gram Panchayath, Kasaragod inaugurated the training programme. The programme was presided over by Sis. Marcillene, Principal, St. BASBS, Bela.

Dr. Vinayaka Hegde, Head, Crop Protection Dr. Rajkumar, Scientist, (Nematology) and Dr. Prathibha V H, Scientist (Pathology) were the resource persons. Dr. M. Sujithra, Scientist (Entomology) demonstrated the field application of *Simplicillium lanosoniveum* (liquid formulation) for whitefly management. Besides, installing yellow sticky traps around palm trunks and release of parasitoids were also demonstrated. An exhibition stall displaying all crop protection technologies was also arranged to create awareness among the coconut and arecanut growing farmers attended the programme.

Entrepreneurship development training on mushroom cultivation

Mushroom training was conducted under the Entrepreneurship Development Series of Farmer FIRST Programme on 17 August 2022 at Devikulangara Panchayath (Alappuzha District). A total of 23 farmers attended the training programme. Smt. Leena Rani, Managing Director, Keeya's Mushy Town handled the sessions on mushroom cultivation.

Entrepreneurship training on honey bee rearing

One day training programme was conducted for farmers of Devikulangara Panchayath (Alappuzha District) as a part of Entrepreneurship Training Series on 15 September 2022. Thirty farmers from various wards of Devikulangara Panchayath attended the programme

Groundnut harvest festival

was organized on 21 September 2022 at Ward-7 of Devikulangara Panchayath. The programme was inaugurated by Sri. Pavanathan, President, Devikulangara Grama Panchayath and Dr.P. Anithakumari, Acting Head & PI (FFP), ICAR-CPCRI Regional Station, Kayamkulam interacted with the women group farmers on their experience and income realized as an intercrop in coconut gardens. Ten acres of land was brought under groundnut cultivation planted with variety G2-52, released from UAS, Dharwad, under the Farmer FIRST Programme during the year 2022-23.

Farmers Shop of Odanadu Farmer Producer Company (OFPC) was launched as the market outlet for the farming community for procurement and sale of farm produce. Smt.L.Usha, President, Pathiyoor Panchayath inaugurated the function. The first sale of coconut oil from the farmers shop was done by Dr. K. Muralidharan,

Acting Head, Division of Social Sciences, ICAR-CPCRI.

Diagnostic field visit

A diagnostic field visit by the multi-disciplinary team of scientists from CPCRI comprising of Dr P Subramanian, Dr Thamban C, Dr Joseph Rajkumar and Dr Merin Babu

was conducted on 9 July 2022 to coconut gardens suspected to be affected by root (wilt) disease in different localities of Perumatti gramapanchayat in Palakkad district.

The team also held a discussion with Shri Krishnankutty, Hon'ble Minister for Electricity, Government of Kerala on various strategies for managing the disease affected coconut gardens.

Radio talks/ TV programme broadcast

Dr. Thamban C., Principal Scientist (Agrl. Extension) presented the live phone-in-radio programme on 'Planting and aftercare of coconut' which was broadcast on 29th July 2022 through All India Radio Kannur.

Dr. Thamban C., Principal Scientist (Agrl. Extension) presented a talk on 'World coconut Day 2022- Theme and strategies for sustainable coconut

development' which was broadcast on 2nd September 2022 through All India Radio Kannur.

Dr. A. Joseph Rajkumar, Principal Scientist message on pest management in coconut was broadcasted through *Vayalum veedum* (AIR) programme on 02 September 2022.

Dr. Regi Jacob Thomas, Principal Scientist delivered a message on

'Theme and relevance of World Coconut Day-2022' which was broadcasted through *Vayalum veedum* (AIR) programme on 2 September 2022.

Six radio programs of FFP on Success stories and sharing impact on technology adoption and income improvement by participating farmers, women farmers groups and FPO.

Exposure Visit

Visits were organized at ICAR-CPCRI, Regional Station, Vittal on 28 September 2022 for 13 Teachers from Cascia School, Mangaluru, Dakshina Kannada Dt., Karnataka and another on 30 September 2022 for 3 farmers from Wayanad, Kerala.

Exposure visit-cum-training programme under RAWE

An Exposure visit-cum-training programme for final year B. Sc. (Agri.) students from College of Agriculture, Padannakkad, Kerala Agricultural

University under RAWE programme was conducted on 13rd September 2022.

Mera Gaon – Mera Gaurav

Training and interface on arecanut farming at Kaniyoor

Mera Gaon-Mera Gaurav programmes were carried out at Kaniyoor, D.K., Karnataka, by ICAR-CPCRI in collaboration with the Kaniyoor-Savanoor Farmer Producer Organization, coordinated by Dr. N.R. Nagaraja, Scientist-SS, ICAR-CPCRI, Regional Station, Vittal.

On 19 September 2022, off-campus training was conducted on 'Advances in arecanut production and protection technologies'. The programme provided benefits to over 85 farmers.

Shri Ganesh Nidvannaya, President of the Savanoor Primary Agricultural Co-operative Society, formally inaugurated the training programme. Smt. Rajeevi V. Shetty, President of the Savanoor Grama Panchayat, presided over the programme. A session each on diseases and pests was handled by Dr. V. H. Prathibha, Scientist, and Dr. Rajkumar, Scientist, ICAR-CPCRI, Kasaragod.

On 22 September 2022, an interaction programme on 'Advances in arecanut

production and protection technologies' was held Shri Ananda Gowda Melmane, President of Charvaka Primary Agricultural Co-operative Society, Kaniyoor, inaugurated the interface programme. The programme was attended by 60 participants.

A total of 459 messages sent on farm advisory on arecanut and cocoa, 51 farmers benefited.



A view of the training programme

Tribal farmers training and distribution programme of coconut seedlings

In connection with first tribal Honorable President of India Smt. Draupadi Murmu oath taking ceremony, ICAR - CPCRI, Kasaragod organized Training programme on Coconut nursery management for the tribal farmer beneficiaries of selected villages of Cuttack district of Odisha under Tribal Sub Plan (TSP) scheme in collaboration with Kalpabrukhyha foundation, Odisha on 25 July 2022 at Village Radhakrishnapur. Dr. Govind

Acharya, Principle Scientist, ICAR - IIHR Odisha delivered lecture on coconut nursery management, bed preparation, seed nut selection, fertilizer and water conservation measures to followed for healthy and quality seedling production followed by field demonstration of coconut planting and seed nut sowing. At the end of the training programme distributed about 4000 coconut seedlings and 2000 seed nuts of West

Coast Tall (WCT) to the participants. Staff of Kalpabrukhyha foundation, elected members and scientist was present in the programme. The distributed seed nuts were raised in their available land space as own nursery for sale to earn financial income to their family and planting in their own farm. More than 150 farmers were benefitted from the programme.



View of Kalpabrukhyha foundation staff welcoming the gathering



View of tribal farmer participants



Dr. Govind Acharya, Principle Scientist delivering lecture on coconut nursery management and handing over coconut seedlings to the participated farmers



Tribal women received coconut seedlings



View of Coconut Seedlings and seed nuts carried to the tribal villages

Coconut seedlings distribution programme

About 600 coconut seedlings raised at nursery bed at Odisha were distributed

among the farmers in Jagatsinghpur area on 11 September 2022.



Distribution of coconut seedlings to tribal's

Scheduled Caste Sub Plan (SCSP)

Survey was conducted among Scheduled Caste families of Kandallloor, Chettikulangara and Krishnapuram panchayaths of Alappuzha District and 15 BPL families were selected from each location. The selected families were

supplied with poultry birds (10 numbers each) and cages aimed at nutritional and livelihood security. Conducted a meeting of the beneficiaries during August 2022. A training programme on 'Plant health management in Arecanut ecosystem'

on 27 August 2022 conducted at ICAR- CPCRI, RS, Vittal.

Training on 'Skill Development Program- Nursery Worker/ Owner' under SCSP started on 01 September 2022 at ICAR- CPCRI, RS, Vittal.



SCSP Nursery Training Vittal

In connection with the Prime minister Shri. Narendra Modi's birthday on 17 September 2022, ICAR - CPCRI organized SCSP beneficiaries meeting for "Focus discussion on the formation of Farmer Producer Organization (FPO)" for the honey bee farmers of scheduled caste community of Kasaragod district.

The meeting was inaugurated by Dr. Anitha Karun, Director ICAR - CPCRI

followed by discussion with SCSP beneficiaries on merits of formation of FPO and its guidelines lead by Shri P.R. Muralidharan, President BAMCO and Vice President of Sahakar Bharathi and Dr. Muralidharan K., Head (Social Science division) of ICAR - CPCRI. The participated farmers were provided 15 beehives each to 60 beneficiaries in the district and 10 kg



A view of the SCSP training programme at ICAR-CPCRI, Kasaragod

sugar for each maintaining bee colonies during off season.

Homestead organic vegetable cultivation initiated under SCSP of CPCRI

As part of the Scheduled Caste Sub Plan (SCSP) programme of ICAR- CPCRI, organic cultivation vegetables in homesteads of 1000 SC families in Kayamkulam Municipality was initiated by KVK-Alappuzha on 26 September 2022. Good quality seeds of five vegetable crops bought from ICAR-IIHR, Bengaluru were distributed to these families identified

by the municipal councilors. The programme was inaugurated by Adv. U. Prathibha, Hon. MLA, Kayamkulam and was attended by Smt. P. Sasikala, Municipal Chairperson, Sri. J.Adarsh, Municipal Vice chairperson, Smt. Regeena Jacob, Asst. Dir (Agri), and other councilors. Dr. P. Muralidharan, Head, KVK briefed on the proposed project

activities and ensured follow up technology support through training programmes and field visits. Sri. M.S.Rajeev and Smt. G. Lekha, SMSs oriented the farmers on homestead vegetable cultivation and coordinated the programme in which fifty farmers selected from different wards of the municipality attended.

Krishi Vigyan Kendra, Kasaragod

On-Farm Trials and Frontline Demonstrations

The ICAR-Krishi Vigyan Kendra, CPCRI, Kasaragod carried out two on farm trials for assessment of pepper

varieties suitable for mid and high ranges in Kasaragod and assessment of foam mat drying for fruit pulps during

July to September 2022. The KVK also initiated six frontline demonstrations viz., Demonstration of coconut milk

residue based pasta, Demonstration of drone technology in rice, Demonstration of short duration

cassava *var.* Shree Jaya in Kasaragod, Promotion of value added products from mussels ODOP programme, High

density planting in cashew and scientific dehydration techniques for locally available fruits and vegetables.

Trainings

The ICAR-KVK, Kasaragod carried out 15 on campus training programmes

and 9 off campus training programmes with a participation of 327 (152 men,

175 women) and 292 (51 men, 241 women) respectively.

Demonstration of drone technology

ICAR-Krishi Vigyan Kendra, CPCRI, Kasaragod conducted a Frontline Demonstration leaf application of Micronutrients in paddy using drone technology at Bambrana Padasekhrum in Kumbala Panchayath on 24 September 2022. The KAU Sampoorana micronutrient mixture was used which contains zinc, boron, copper, iron, manganese and molybdenum which are essential for crop growth, pest and disease

resistance and grain filling in paddy crop. By using drone micronutrients can be sprayed on leaf in an area of 5 acre in one hour with a cost of Rs. 940 per acre.

The programme was presided over by Smt. Thahira Yusuf, President, Kumbala Grama Panchayat and was inaugurated by Dr. Anitha Karun, Director, ICAR-CPCRI. The demonstration was attended by around 60 farmers.



Demonstration of drone for plant protection

Extension activities

Poshan Abhiyan and Tree Planting Campaign

The ICAR- Krishi Vigyan Kendra, CPCRI Kasaragod celebrated the “Poshan Abhiyan and Vriksharohan Karyakram” campaign on 17 September 2022 at KVK Kasaragod to commemorate the birth day of Shri Narendra Modiji, Hon'ble Prime Minister of India. Dr. Anitha Karun,

Director, ICAR-CPCRI inaugurated the event. A total of 47 farmers have participated in the function. IFFCO had facilitated the vegetable seeds for providing to 100 farmers. KVK Kasaragod provided Mango seedlings as part of Vriksharohan Karyakram to the farmers.



Dr. Anitha Karun, Director, distributing seedlings to farmers

Poshan Maah



Training session on nutritional security

As a part of Poshan Abhiyan, different training programmes like, nutrition education on nutraceutical food preparation, effective use of food sources in up scaling nutritional status and a class on Nutritional security for mothers and children's were

conducted. Also organized training on Nutrition and health for differently abled children at Mahatma Model School at Pullur-Periya Panchayath in which 20 mothers participated.

The ICAR-KVK, Kasaragod developed a special supplementary food named “Sampoorana Special Supplementary food” as a part of OFT Programme. The KVK distributed the supplementary food and biscuits made

up of this nutrimit to fifty differently abled children.

Jal Shakti

Two training programmes were carried out as part of the Jal Shakti Abhiyan on 29 September 2022

1. Climate change and improved practices- Kuttikol 31 farmers participated.
2. Training on agronomy practices in water shed-Paduppu 22 farmers participated.

Krishi Vigyan Kendra, Alappuzha

Launching of KVK action plan (2022-23) activities

In order to have a wide coverage of the action plan activities of 2022-23 and to create adequate awareness among the

stakeholders, a launching programme was organized by the KVK covering the operational villages Kandallur and

Muthukulam, selected for implementing various activities of the KVK viz. farmer participatory On

Farm Testing, Frontline Demonstrations, Training programmes, Extension activities and CFLD programmes during 2022-23. The launching programme on 27 August, 2022 was inaugurated by Adv. U. Prathibha, Hon. MLA, Kayamkulam at NSS Karayogam Hall, Kandallur. Critical inputs for selected interventions viz. Goatmin, Calf starter, Snow white breed ducklings, Kera probio, Nutri garden inputs/seedlings and Plant protection

inputs for FFS in vegetables were handed over to the partner farmers by the chief guest. Smt. Ambujakshi Teacher, President, Muthukulam Block Panchayath presided over the function. Smt. Prasanna Kumari Thayyil, President, Kandallur Grama panchayath released the KVK Newsletter for the period of April-June 2022. A short seminar on “Practical tips in vegetable cultivation” was conducted by the KVK resource persons. Sri. Suresh, Block Panchayath

member, Sri. Suresh Ramanamatam, Vice President, Grama panchayath, Smt. Suji, Chairperson, Standing committee, Smt. Rejeena Jacob, Asst. Director of Agriculture, and various people’s representatives, Officers of the Agricultural and Animal husbandry departments, Kudumbashree, Anganwadi teachers and Haritha karma sena members and about 250 farmers attended the programme.

Poshan Abhiyan cum tree planting campaign

‘Poshan Abhiyan cum tree planting campaign’ to mark the occasion of the 72 birthday of Hon. Prime Minister Sri. Narendra Modi was organized on 17 September, 2022 at Krishi Bhavan, Muthukulam. Smt. Jyothi Prabha, President, Muthukulam Grama Panchayath inaugurated the programme and handed over the vegetable seed packets and fruit plants to the women farmers. Sri. Lal

Malavika, Vice President, Muthukulam Grama Panchayath explained the importance of establishing Nutrigardens in each homestead. Smt. Sumitha Dileep, Grama Panchayath ward member, Smt. Najida, Agricultural Officer; and Shri Bibin Babu, IFFCO Alappuzha District Coordinator spoke in the function. Smt. Jissy George, SMS (Home Science), KVK detailed about

the importance of nutritional food and importance of nutri-garden and Dr. K. Sajnanath SMS (Soil Science), KVK explained how to establish the Nutrigardens in homesteads. More than 60 farm women from Muthukulam panchayath attended the programme. Vegetable seed packets and fruit plant seedlings were distributed to the participants.

Brainstorming cum capacity building programme

A Brainstorming session cum capacity building programme on “Sustainable management of mosaic disease in bitter gourd” was organized by the KVK on 28 September 22 against the background of commercial farmers in the district abandoning bitter gourd cultivation due the severity of the problem. Even though the KVK has conducted a FLD on “Integrated crop management in bitter gourd” by following all the recommended practices to address this issue during 2020-21, it could not be completely successful. Hence this attempt was made with the support of the Director of Research, Kerala Agricultural University involving all the possible stakeholders in the sector.

Experience sharing by selected commercial farmers, Extension officers from Dept. of Agriculture and VFPC, and SMS (Plant protection) from four neighboring district KVKs (Kottayam, Pathanamthitta, Kollam and Trivandrum) was the highlight of the session based on which the resource persons from KAU and ICAR-CPCRI had a detailed analysis of the situation and suggested technology options for management of the problem. A package of technologies with timeline and schedule was prepared for repeating the demonstration with the involvement of selected partner farmers. All the participants expressed their happiness and gratitude for

organizing such a rare event to address the technological challenge of greater concern for the vegetable farmers. Dr. M.H. Faizal, Prof and Head, Dept. of Entomology and Dr. N. S. Radhika, Assoc. Prof, Dept. of Plant Pathology, College of Agriculture, Vellayani, KAU; Dr. M. K. Dhanya, Asst. Prof (Pathology), RARS, Kumarakom, KAU; Dr. Joseph Rajkumar, Principal Scientist (Entomology) and Dr. Merin Babu, Senior Scientist (Pathology), ICAR-CPCRI, RS, Kayamkulam served as resource persons for the session. Dr. P. Muralidharan, Head, Dr.T.Sivakumar, SMS (Entomology) and Smt. G. Lekha, SMS (Pathology), KVK-Alappuzha coordinated the one day programme.

Training programmes

During the period organized 30 training programmes benefitting a total number of 1160 farmers/rural youths. The details of the training programmes were as follows:

Training	No. of Programmes	Participants		
		Men	Women	Total
On campus	17	343	418	761
Off campus	13	145	254	399
Total	30	488	672	1160

FFS on vegetable cultivation: A Farmers’ Field School (FFS) on pest

and nutrient management in vegetable cultivation is being conducted at

Thrikkunnappuzha panchayath in Alappuzha district with twenty farm

women participants during July-November 2022. The sessions are scheduled on every Monday at 2.30 pm at each farmer's plot on rotation and

facilitated by KVK subject matter specialist. Women members who were engaged in commercial vegetable cultivation were selected for the

programme with the active involvement of Krishi Bhavan and Panchayath.

COMMERCIALIZATION OF TECHNOLOGY

During the period from July to September 2022, ten numbers of technologies were commercialized by

the Institute to entrepreneurs through MoA as per the details given below, an

amount of Rs. 1,60,000 /- have been collected as technology transfer fees.

Sl. No.	Technology	Date of licensing	Transfer fees Rs.	Entrepreneurs details
1	Coconut sugar	14-07-2022	-	Council of Industrial Research, Anusandhan Bhawan, New Delhi - 110001
2	Trichoderma Coir Pith Cake	14-08-2022	5,000	Professor and Head, Communication Centre, Directorate of Extension, Mannuthy, Thrissur - 680651
3	Coconut Chips	16-08-2022	25,000	M/s Distinct origins Pvt. Ltd., Kamavarapukota Mandal, Tadikalapudi Village, West Godavari, Andhra Pradesh - 534452
4	Trichoderma Coir Pith Cake.	18-08-2022	5,000	The Programme Coordinator, Krishi Vigyan Kendra, Ambalavayal, Wayanad-673593, Kerala
5	Collection of fresh and hygienic Kalparasa and production of natural coconut sugar	02-09-2022	1,00,000	Hallikar Tattva Farmer Producer Company Limited, APMC Yard, Dhabbeggatta Road, Turuvekere, Tumkur District – 572227
6	<i>Bacillus megaterium</i> (<i>Priestia megaterium</i>) and <i>Bacillus subtilis</i>	02-09-2022	-	Bio-Concrete Lab, Department of Civil Engineering, National Institute of Technology Karnataka, Srinivasnagar PO, Surathkal, Mangalore, Karnataka 575025
7	Bean to Bite Chocolate	02-09-2022	-	M/s Ushas Food Products, P.O. Kudlu, Kasaragod – 671124, Kerala, India
8	<i>Metarhizium anisopliae</i> TMBMA1, <i>Metarhizium anisopliae</i> ABMA1, <i>Cordyceps javanica</i> CPCRICJ1 and <i>Beauveria bassiana</i> BBTMB1	08-09-2022	-	ICAR-Central Institute of Cotton Research, Nagpur
9	Preservation of carbonated tender coconut water	15-09-2022	25,000	Ms. Jasmine P., Chemmalappadi, Kerala Estate P.O., Malappuram - 676523
		Total	1,60,000	



Dr. Anitha Karun, Director handing over MoU to entrepreneurs from Distinct Origins Pvt. Ltd., A.P.

Human Resources Development

Awards

Dr. T. Sivakumar, SMS (Agril. Entomology), KVK-Alappuzha received the 'National Award for the best coconut extension personnel' instituted by Coconut Development

Board, Ministry of Agriculture and Farmers' Welfare, in the World Coconut Day function held at Kochi on September 2. The award comprising of cash prize, certificate and memento was bestowed to him on his meritorious extension work in

supporting the coconut farming community through various activities like FFS, demonstrations of technologies, trainings, publications etc.

Training attended

Name of personnel & Designation	Title of programme	Place and date
Dr. Vinayaka Hegde, Head (Acting), Dr. Josephraj Kumar, Dr. K.P. Chandran, Principal Scientists, Dr. R. Pandiselvam, Dr. Daliyamol, Dr. Selvamani, Dr. T. Madhu, Dr. Merin Babu, Dr. Thava Prakasa Pandian, Dr Bhavishya, and Dr Chaithra M., scientists.	Online program on Drones for Agricultural Development	MANAGE, Hyderabad 11-15, July 2022
Dr. Ravi Bhat, Head (Acting)	Online training Workshop on Response Surface Methodology	NAARM, Hyderabad 18-20, August 2022
Dr. Nagaraja, N. R. Scientist	Online Demo on STATCRAFT- A Statistical Data Analysis Software	ICAR-CPCRI, Kasaragod, Kerala 15 July 2022
Dr. K.M. Anes, Scientist	‘Massive Open Online Course on Farmer Producer Organizations (FPO)’.	BIRD, Lucknow 4 July 2022

PARTICIPATION IN SEMINARS/ SYMPOSIA/ CONFERENCES/ WORKSHOPS

Name and designation	Title	Place and date
Dr. S. Elain Apshara, Principal Scientist (Hort.)	Management options for <i>Helopeltis</i> in Cashew, Tea and Eucalyptus	ICAR-DCR, Puttur 23rd July 2022
Dr. S. Elain Apshara, Principal Scientist (Hort.)	Intellectual Property Rights Awareness Webinar Series	NIPAM, 1-5 Aug. 2022
Dr. A. Joseph Rajkumar, Pr. Scientist, Dr. Jilu V. Sajan, Scientist	Advanced Microscopic Workshop and delivered a talk on “Microscopy and Coconut Research”	ICAR-CPCRI, Regional Station, Kayamkulam 16 July 2022
Dr. A. Joseph Rajkumar, Pr. Scientist,	KDISC meeting on YIP programme	Secretariat Annexe, Thiruvananthapuram 20 July 2022
Dr. P. Anithakumari, Head (Acting)	Attended FFP annual review meeting and presented progress report and action plan for 2022-23	ATARI, Bengaluru 17-18 August 2022.
Dr. A. Joseph Rajkumar, Pr. Scientist and Dr. Rajkumar, Scientist	First International IPM conference (online)	ICC Jakarta during 23-25 August, 2022
Dr. Regi Jacob Thomas, Pr. Scientist	World Coconut Day-2022 & delivered lecture ‘Breeding for disease resistance and innovations in planting material production in coconut’	Dept of Spices & Plantation Crops, TNAU, Coimbatore on 2 September 2022
Dr. A. Joseph Rajkumar, Pr. Scientist	International Webinar on Growing coconut for prosperity	Coconut Research Station, Aliyarnagar, TNAU, on 2 September 2022
Dr. K.M. Anes, Scientist	International Workshop on Good Agricultural Practices in Coconut and World Coconut Day Celebration	Hotel Le Meridian, Kochi on 2 September 2022
Dr. A. Joseph Rajkumar, Pr. Scientist	Brainstorming session on Exploring the Researchable Issues in Agricultural Entomology	TNAU, Coimbatore on 14 September 2022
Dr. Anitha Karun, Director (Acting) & PC Palms I/c, Dr. Ravi Bhat, AICRP (Palms), Dr. K. Muralidharan, Dr. K. B. Hebbar, Dr. Vinayaka Hegde, Heads (Acting), Dr. Alka Gupta Dr. P. Subramanian, Dr. (Mrs.) V. Niral, Dr. K. Samsudeen, Dr. M.K. Rajesh, Dr. S. Elain Apshara, Dr. A. Joseph Rajkumar, Dr. M.R. Manikantan, Dr. K.P. Chandran, Principal Scientists, Dr. S.	Annual Group Meeting of AICRP (Palms)	Organized at ICAR-CPCRI, Kasaragod, Kerala during 16th to 18th September 2022

Jayasekhar, Dr. S. Paulraj, Dr. Neenu S., Sr. Scientist, Dr. V. Selvamani, Dr. Neema M., Mrs. Aparna Veluru, Dr. R. Sudha, Dr. S.V. Ramesh, Dr. Shameena Beegum, P.P., Dr. Prathibha P.S., Dr. Pratibha V.H., Dr. Rajkumar, Dr. Surekha, Dr. G. Panjavarlam, Dr. Nagaraja N.R., Dr. Sumitha S., Dr. M. Sujithra, Dr. Daliya Mol, Mr. Diwakar Y. and Mrs. Ranjini T.N., Scientists.		
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New Projects Sanctioned

S.No.	Projects Approved	Project Leaders	Outlay (Rs.)
1	Cocoa Seed Gardens/ Clonal Orchards- Establishment and Enrichment (RKVY- Karnataka)	Dr. S. Elain Apshara	55.00 lakhs
2	Establishment of Centre of Excellence of Biotechnology for Plantation Crops Breeding (RKVY- Karnataka)	Dr. Nagaraja N.R.	60.00 lakhs
3	Technology dissemination through demonstration-Horticulture based crop cafeteria for nutritional and livelihood security of marginal farmers (MIDH-SHM, Kerala)	Dr. K. Nihad	13.75 lakhs
4	Demonstration of Kalpa Vardhini as component of integrated nutrient management in coconut (CDB Kochi)	Dr. Jeena Mathew	25.00 lakhs

CELEBRATIONS

Independence Day

ICAR-CPCRI, Kasaragod celebrated 76th Independence Day of the nation. Dr. Anitha Karun, Director (Acting), hoisted the National Flag and delivered Independence Day address at Kasaragod on 15 August, 2022. As a part of 'Azadi ka Amrutha Mahotsav', a unique way of planting 75 coconut

seedlings of var. Kera Chandra was performed at the ICAR-CPCRI headquarters on Independence Day, the 15 August 2022. To commemorate the nation's 75 years of independence, Dr. Anitha Karun, Director (Acting) lead the staff members by planting of one seedling each by individuals

during the occasion. Independence Day was also celebrated in the Regional Stations at Kayamkulam, Vittal and Research Centres at Kahikuchi, Kidu and Mohitnagar in a befitting manner.



Dr. Anitha Karun, Director (Acting) planting Kera Chandra coconut seedling during Independence Day



A view of the plot during 'Azadi ka Amrutha Mahotsav' coconut seedling planting



Hindi fortnight programme at ICAR-CPCRI, Kasaragod

हिंदी सप्ताह समारोह भाकृअनुप- केंद्रीय रोपण फसल अनुसंधान संस्थान, क्षेत्रीय स्टेशन कायमकुलम में 15 से 22 सितंबर 2022 तक मनाया गया ।

भाकृअनुप- केंद्रीय रोपण फसल अनुसंधान संस्थान, क्षेत्रीय स्टेशन कायमकुलम में हिंदी सप्ताह मनाया गया

15.09.2022 को डॉ. अनिताकुमारी पी. (प्रमुख) द्वारा हिंदी सप्ताह समारोह का उद्घाटन किया गया । समारोह में वैज्ञानिक, तकनीकी और प्रशासनिक कर्मचारियों के लिए हिंदी गीत, हिंदी श्रुतलेख, हिंदी टंकन, हिंदी अनुवाद, टिप्पनी और आलेखन जैसी विभिन्न प्रतियोगिताओं का आयोजन किया गया और कुशल सहायक कर्मचारियों के लिए चित्र दिखाकर नाम बताना और हिंदी लिखावट प्रतियोगिता आयोजित की गई ।

हिंदी सप्ताह समापन समारोह का आयोजन 22.09.2022 को डॉ. अनिताकुमारी पी. की अध्यक्षता में किया गया । डॉ. इंदुलक्ष्मी, हिंदी व्याख्याता एमएसएम कॉलेज कायमकुलम मुख्य अतिथि रहीं । उन्होंने हमारे दैनिक जीवन में हिंदी के उपयोग का महत्व और हिंदी सप्ताह के उत्सव की आवश्यकता पर जोर दिया ।

सभी कर्मचारियों ने प्रतियोगिताओं में बहुत उत्सुकता से भाग लिए ।

PERSONALIA

PROMOTIONS

Name of the staff	From (designation)	To (designation)	w.e.f.
Sri K.N. Pankajakshan	Sr. Technical Asst. (Vehicles)	Technical Officer (Vehicles)	29.06.2021
Sri Gopinath Malakar	Sr. Technical Asst. (Vehicles)	Technical Officer (Vehicles)	29.06.2021
Sri A.K. Ramadas	Sr. Technical Asst. (Vehicles)	Technical Officer (Vehicles)	29.06.2021
Sri Jagadish Roy	Sr. Technical Asst. (Vehicles)	Technical Officer (Vehicles)	29.06.2021
Sri Dayanandan Unnithan	Sr. Technical Asst. (Vehicles)	Technical Officer (Vehicles)	29.06.2021
Sri V.Chandrasekhara Shetty	Sr. Technical Asst. (Vehicles)	Technical Officer (Vehicles)	29.06.2021
Sri AV Satheesh Kumar	Technical Asst. (Vehicles)	Sr. Technical Asst. (Vehicles)	21.09.2021
Sri B.Tharanath Naik	Technical Asst. (Vehicles)	Sr. Technical Asst. (Vehicles)	14.09.2021
Smt. Bijila P.V.	Sr. Technical Asst.	Technical Officer	04.02.2013
Sri Ansary K.M.	Sr. Technical Asst.	Technical Officer	11.01.2013
Smt. Prasanna Sarngan	PA	MACP Level 07 to 08	16.03.2022
Sri V.T. Unnikrishnan	SSS	MACP Level 03 to 04	13.02.2022
Sri A Gopala	SSS	MACP Level 03 to 04	19.02.2021
Sri Ibrahim	SSS	MACP Level 03 to 04	24.10.2021
Sri Sushanta Burman	SSS	MACP Level 01 to 02	08.03.2021
Sri Sudhakara	SSS	MACP Level 03 to 04	23.01.2022

PROMOTIONS

Name of the staff	From (designation)	To (designation)	w.e.f.
Sri Satya Brata Moharana	ICAR-CPCRI, Kasaragod	ICAR-NRRI, Cuttack	22.08.2022

RETIREMENTS

Name of the staff	Designation	Place	Date
Sri K.G. Bhageerath	AAO	ICAR-CPCRI, Regional Station, Kayamkulam	31.07.2022
Sri T.N. Vidyadharan	Assistant	ICAR-CPCRI, Kasaragod	31.07.2022
Smt. K. Shobha	CTO	ICAR-CPCRI, Kasaragod	31.07.2022
Sri A. Gopala	SSS	ICAR- CPCRI, Regional Station, Vittal	31.07.2022
Dr. C.T. Jose	Pr. Scientist	ICAR- CPCRI, Regional Station, Vittal	31.08.2022

Obituary

Sri. K.P. Udayabhanu, Technical Officer and Sri. Jinu Sivadasan, Senior Technical Assistant of ICAR- CPCRI, Regional Station, Kayamkulam, Kerala breathed their last on

15.09.2022 and 30.09.2022, respectively. Director and staff of ICAR- CPCRI pray the Almighty for the peace and tranquility to the two departed souls.



Shri K.P.
Udayabhanu



Shri Jinu
Sivadasan



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

Agriculture with a human touch



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