KALPA

CPCRI Newsletter

Volume 37 No. 4 October–December, 2018

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

From the Director's Desk

Impact of rainfall induced natural calamity on plantation sector of Kerala

Kerala was battered by unprecedented torrential rain, followed by flooding during August 2018. The unleashed wrath of nature had created havoc across the state and seriously impacted the state's economy across all sectors. The impact of the flood was particularly severe on the agricultural sector in Kerala. The state received 2346.6 mm of rainfall during this period as against the normal value of 1649.5 mm. This was one of the worst natural disasters in the state's history, claiming about 483 human lives and affecting 775 villages, while nearly half million people remain sheltered in more than 1500 relief camps across the state. It has been estimated that more than one lakh people have been rendered homeless. The agricultural sector has borne the brunt of the damage inflicted by the monsoon in the state. The field crops like paddy and vegetables were among the crops most severely affected by the calamity. The plantation crop sector had also been adversely affected by outright physical damage and indirect loss due to lower output resulting from adverse crop growing conditions and increased biotic stress. In the case of plantation crops sector, the landslides had resulted in the loss of approximately 25,000 coconut palms, 20,000 arecanut palms and 80,000 cocoa trees in the state. The economic loss (lifetime) from the landslides would be ₹ 1025 million for the farming community. Flood related loss is of two types: One is crop loss and the other is yield loss. It was reported that around 3500 coconut palms and 40000 arecanut palms were lost due to flood. The economic loss (lifetime) in this regard was worked out to be ₹ 352.5 million. In coconut, immature nut fall was noticed in the hilly terrains of central districts (Kozhikode, Wayanad, Malappuram and Palakkad). The number of affected palms varied between 10% to 40%. Loss of juvenile coconut palms in the flood affected area was approximately 1,00,000 (including plants in the nursery). The yield loss was worked out to be 95.6 million nuts and in terms of economic loss, it would be ₹ 1434 million. The expected yield loss in arecanut would be 63,577 tonnes and with the prevailing market price, the economic loss would be then ₹ 15894.3 million.

Revival strategies for flood affected plantation crops

A. Soil health management

a) Accumulation of silt and lack of aeration resulted in rotting of roots, which can be revived by loosening soil in the flood affected plots.

b) Evaluation of soil nutrient status is required to correct nutrient deficiencies.

c) Increased soil acidity due to the flood can be corrected with amendments of lime/dolomite @ 500 kg/ha in horticultural crops.

d) The recommended dose of macro and micro nutrients along with organic manure should be applied to prevent yellowing and drying of the leaves of plantation and spice crops.

CONTENTS

e) Plant growth promoting Rhizobacteria and neem cake enriched *Trichoderma* needs to be applied for better root regeneration and arresting the root rot.

f) Cover crops like cowpea may be grown to improve the soil texture.

g) Restore the damaged soil and water conservation structures prior to the commencement of north-east monsoon.

B. Pest and disease management

a) The pathogenic inoculum of *Phytophthora* rots and blights may remain in the soil and plant debris and likely to cause epidemics in the ensuing season. This soil borne inoculum should be destroyed by using copper based fungicides or bioagents like *Trichoderma* or *Pseudomonas.*

b) Vascular streak dieback in epidemic proportions on cocoa in flood affected areas may be managed through sanitation coupled with systemic fungicides like propiconazole to contain the epidemics.

c) Severe incidences of shot hole borer in nutmeg, clove, cocoa and arecanut due to flood are reported, which can be managed by smearing the trunks with imidacloprid.

d) As there is an increase in temperature in many places after floods, the incidence of mealy bugs in cocoa, cassava and black pepper are likely to appear during summer and Preventive measures should be taken against such pests.

Fig. 1. Dislodged coconut palms due to flood

Fig. 2. Arecanut based cropping system: Aftermath of landslide

Spectrum

Qualitative improvement of cocoa

Biochemical analysis done in 20 Peruvian cocoa collections indicated DPPH antioxidant scavenging activity in the range of 62%-92%. It has been higher in the clone, VTLC-62K (ICS-96) which showed 92.37% followed by VTLC-213 (OC-77) and in the Trinitario type clones, VTLC-207 (T-85/799) and VTLC-72 (TF-20/90). The total phenol and procyanidin contents correlated with antioxidant activity significantly. These clones will be useful in qualitative improvement of cocoa.

Senthil Amudhan M., Suchithra M., and Elain Apshara S.

Occurrence of polyembryony in arecanut

Polyembryony has been noticed in arecanut varieties in Vittal nursery (Fig. 3&4). Mainly bi, tri and tetra seedlings per seed nut were noticed. In Mangala, only bi-seedlings per seed nut were documented, in case of Sumangala, Swarnamangala, Mohitnagar and Shatamangala bi and tri seedlings per seed nut could

Fig. 3. Sreemangala seed nuts with bi, tri and tetra-seedlings per seed nut

Fig. 4. Arecanut seed nuts with single, bi, tri and tetra-seedlings after removing from the polythene bag

be observed and in South Kanara Local variety tri seedlings per seed nut could be seen. Among the 95 bi-seedlings per seed nut observed in all arecanut varieties, the highest number of bi-seedlings per seed nut was observed in the variety Swarnamangala (34). Similarly, among the 20 tri-seedlings per seed nut identified from all the arecanut varieties, the highest number of tri-seedlings per seed nut was also observed in Swarnamangala (8).

Nagaraja N. R.

Albinos in *Areca catechu L.* (var. Shatamangala)

A large number of albino seedlings in Shatamangala variety was observed in the arecanut nursery at ICAR-CPCRI, Regional Station, Vittal (Fig. 5). This is the first report on the occurrence of large scale albino seedlings in arecanut. The albino seedlings, being unable to photosynthesize, gradually died, within a span of few weeks after germination. Preliminary analysis indicated considerable difference in the leaf nutrient status of albino and normal plants. The normal plant samples showed the deficiency of nitrogen, potassium, zinc and boron. At the same time albino plants showed 1.5-2.5 fold higher concentration of nutrients like nitrogen, phosphorus, potassium, magnesium, sulphur, iron, copper and zinc than the normal leaf samples (Table 1). The deficient elements in albino sample were nitrogen, calcium and boron. The assimilation of nutrients in the albino plants might be restricted due to the absence of chlorophyll and may lead to the accumulation of the nutrient elements in the plant tissues.

Table 1: Leaf nutrient content of normal and albino seedlings

Leaf type	N (%)	P (%)	K (%)	Ca (%)	Mg (%)	S (%)	Fe (ppm)	Mn (ppm)	Cu (ppm)	Zn (ppm)	B (ppm)
Normal	1.41	0.23	1.06	0.62	0.26	0.54	344.34	82.46	13.76	28.28	28.0
Albino	2.35	0.44	2.68	0.55	0.46	1.45	547.45	87.7	35.78	48.35	30.3

Fig. 5. Albino and normal seedlings of Shatamangala variety

Estimation of nuclear DNA content from leaf samples of both normal and albino seedlings, using flow cytometry was also carried out. No significant variation in the mean fluorescent channel units of albino seedlings could be noticed in comparison to normal seedlings and the similar 2C value was reported (Fig. 6). The results indicated that the albinism observed in seedling progenies of Shatamangala variety is not due to gross ploidy variations.

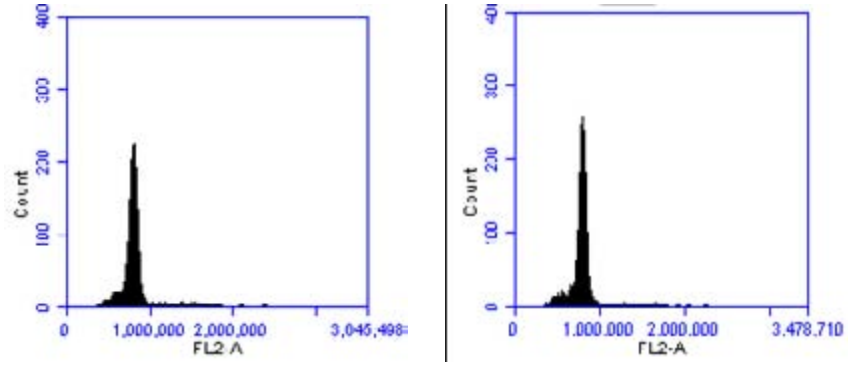

Fig. 6. Flow cytometric analysis of nuclear DNA content in Shatamangala, Normal seedlings (A) and Albino seedlings (B)

Nagaraja N. R., Ranjini T. N., Neenu S., Niral V. and Ravi Bhat

Effect of organic acids and blanching on the inhibition of browning in minimally processed tender coconut

The effect of different combinations of 12 anti-browning agents including acidulants reducing agents, complexing agents, chelating agents, aromatic carboxylic acids, inorganic salts, substituted resorcinol and blanching (100°C for 5 min and 98°C for 5min) on the inhibition of browning in minimally processed tender coconut during cold storage (5±1 °C) was studied. The physicochemical parameters namely, pH, total soluble solids, turbidity, total sugar, reducing sugar, acidity, polyphenol oxidase activity, and peroxidase activity were evaluated during the storage. Application of a combination of acidulants, chelating agents and resorcinols

were found to be better than blanching to prevent browning of minimally processed tender coconuts. With shrink wrapping and low temperature storage (5±1 °C), browning-free storage life of the minimally processed tender coconut was extended beyond 21 days with 10 min dipping in a solution containing the following combinations (a) 1% citric acid +1% ascorbic acid solution, (b) 1% oxalic acid + 1% 4-HR + 0.5% maltodextrin + 1% cinnamic acid, (c) 2.7% calcium chloride + 1% oxalic acid +0.5% ascorbic acid, and (d) 0.5% 4HR +0.5% ascorbic acid +0.2% calcium chloride +1% oxalic acid. Significant ($p<0.001$) inhibition in browning of minimally processed tender coconut was observed when treated with these four combinations.

Pandiselvan R., Manikantan M.R., Ramesh S.V., Murali Gopal, Shameena Beegum P.P. and Hebbar K.B.

Artificial neural network and multiple linear regression modeling of extrudates containing coconut milk residue

The study aimed for development and evaluation of prediction models using multiple linear regression (MLR) and artificial neural network (ANN) to predict the extrudates characteristics like expansion ratio, bulk density, water solubility and water absorption index, compression force and cutting strength. The significant variables that influence the response variables were selected from the mixture process design output and used for developing MLR equations using MATLAB's 'fitlm' function. A feed-forward single layer ANN was developed to train a model for predicting the properties of extrudates. The model performances were evaluated based on coefficient of determination (R^2) and the sum of squared error (SSE). The R^2 of MLR ranged between 0.34 and 0.84, and SSE ranged between 0.0009 and 292.51. Whereas the R^2 of ANN ranged between 0.41 and 0.94, and SSE ranged between 0.0001 and 214.81. Both models (MLR and ANN) were well suited for the prediction of water absorption index, and least suited for cutting strength. The performance of ANN was superior to the MLR, and can be used for future predictions of properties of extrudates.

Pandiselvam R., Manikantan M. R. and Shameena Beegum P.P.

Influence of variety and probe type on punching strength of tender coconut

A study was carried out to determine the effect of variety and probe type (flat and sharp) on punching strength of intact tender coconuts. Maximum punching force and the punching energy was measured using texture analyzer (TA-stable microsystems) at ICAR-DCR, Puttur (Fig. 7). The setting used in the texture analyzer for measuring punching strength was: pre-test speed, 2 mm/s; test speed, 1 mm/s; post-test speed, 10 mm/s; test distance, 4 mm; trigger type, auto; trigger force, 0.50 n; load cell; 750 kg. Four intact tender coconut varieties (AGT, KGD, GB, COD) with the same maturity were evaluated for punching strength at six different orientation (ridge top, ridge middle, ridge bottom, flat top, flat middle, and flat bottom). Significant variation in punching strength characteristics was observed among different tender coconut varieties. The results showed that varieties having higher fibre density had higher punching strength. It was observed that tender coconut bottom orientation required more punching strength followed by a middle and top orientation. The sharp probe required relatively less punching strength compared to a flat probe.

Fig. 7. Texture analyser test for punching energy requirement study

*Manikantan M.R., Pandiselvam R., Niral V., Balasubramanian D. *, Mathew A.C. and Shameena Beegum P.P.*

* ICAR-Directorate of Cashew Research, Puttur

Measurement of droplets size distribution profile of air blast sprayer

Droplets size distribution profile considered to be the most critical factor of agricultural sprays affecting spray drift, deposition on target, spray coverage and efficacy to control biological activity of insect/pests/fungi. Technical performance of the prototype was evaluated by studying the size of droplet delivered at eight different heights (325, 612, 899, 1186, 1473, 1760, 2265, and 2915 cm) using photo-sheet. The droplets size between 150 and 250 µm is recommended for best control of pest in crops. It was observed that increase in height does not have a significant difference in droplet size. The droplet sizes (VMD) of the spray observed at different heights are nearer to the recommended value of 150-250 µm. The study revealed that the highest percentage of coverage and number of deposits per unit area were measured at a height of 1473 cm. It was also observed that maximum spray deposition of 0.828 µm/cm^2 at 1186 m height.

Pandiselvam R., Mathew A.C. and Chowdappa P.

Isolation of novel entomopathogenic fungi, *Simplicillium sp* infecting rugose spiralling whitefly, *Aleurodicus rugioperculatus* Martin

The invasion of rugose spiraling whitefly (RSW), *Aleurodicus rugioperculatus* Martin (Hemiptera: Aleyrodidae) during 2016 gained wider attention in a short span of time due to its severity and rapid spread in all the coconut growing regions of the country. An entomopathogenic fungus was isolated from infected cadavers of RSW and identified as *Simplicillium sp.* (Cordycipitaceae: Hypocreales) based on morphological and molecular studies. Fungal cultures presented characteristics of a whitish colour colony with aerial mycelia on the upper surface, reverse cream to yellow pigment and conidia were oval to ellipsoidal in shape with globose head. Preliminary field trials indicate that the fungal conidial suspension was found virulent to all stages of RSW. This is the first record of *Simplicillium sp.* infecting rugose spiraling whitefly and has greater potential to be developed as myco-insecticide.

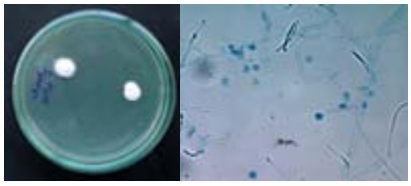

Fig. 8. Fungal colony growth on PDA

Fig. 9: Light microscopic view of *Simplicillium sp.*

Sujithra M., Prathibha V. H., Rajkumar and Vinayaka Hegde

First field occurrence of Bondar's Nesting Whitefly, *Paraleyrodes bondari* Peracchi on coconut from Kerala

Discovery of Bondar's nesting whitefly (BNW), *Paraleyrodes bondari* Peracchi was reported for the first time on coconut from Kerala. Adult BNW is less than 1.0 mm in size with conspicuous X-shaped oblique bands on the wings and constructs a unique woolly wax nest on the lower leaf surface. Eggs are short-stalked and laid in clusters. Nymphs are flat with fibreglass like strands on the dorsum. Stained puparium possesses one cephalic compound pore and six abdominal compound pores of which two are very much reduced as observed in all *Paraleyrodes* sp. These compound pores have flower-petal like splines. Male aedeagus possess two terminal apicolateral processes with dorsal and ventral horn like structures. Partial characterization of

Fig. 10. Bondar's Nesting Whiteflies on build in nest; coconut leaflet infested by Bondar's nesting whitefly; and stained puparium.

nucleotide sequences indicated 100% similarity with BNW from Florida (USA). Based on the morphological and molecular characterization, the new whitefly pest is identified as *Paraleyrodes bondari* Peracchi. Being polyphagous in nature, more than 25 susceptible hosts including banana, custard apple, citrus, avocado, ornamental *Ficus* spp. are reported from neo-tropical region without any economic damage recorded so far. More than 25 nested colonies are noticed from palm leaflets in all coconut varieties from Kayamkulam.

Josephrajkumar A., Chandrika Mohan, Merin Babu and Krishnakumar V.

Impact of the cyclone *Titli* in coastal Andhra Pradesh

A scientific team from ICAR-CPCRI under the leadership of Dr. P. Chowdappa, Director, ICAR-CPCRI visited the cyclone *Titli* affected regions of Andhra Pradesh during 22-26 October, 2018. The devastating cyclone *Titli* had taken a heavy toll on coconut palms by means of uprooting and dislodging about 11.7 lakh palms in the state. More than 95% coconut palms in the affected villages were either uprooted, broken at the bole region, trunk twisted and broken off if damaged by disease or any mechanical injury, extensive twisting of the crown with irrecoverable damage, crown congestion with the arrest of the emergence of spear leaf,

Fig. 11. Dislodged coconut palms due to the cyclone *Titli*

partially uprooted slanting palms. Actionable strategies on the need of planting materials, improved agro-techniques in palm health, crop pluralism approach in sustainable farming and innovative pest management solutions were evolved by the scientific team to combat such cyclonic storms in future.

Chowdappa P., Niral V., Subramanian P., Josephrajkumar A. and Chandran K.P.

Impact of the cyclone *Gaja* in coastal Tamil Nadu

The devastating cyclone *Gaja* had taken a heavy toll on coconut palms in Tami Nadu by means of uprooting and dislodging about 31 lakh palms in the state. A team of scientists from ICAR-CPCRI visited the *Gaja* cyclone affected regions of Tamil Nadu during 20-22 November, 2018 and surveyed the affected regions. Among the *Gaja* affected regions, coconut is predominantly cultivated in Thanjavur district and the loss incurred to the crop is also very high in the region. Juvenile palms were also twisted, became slanted by partial uprooting and crown twisted in many cases. Recommendations on the removal

Fig. 12. Scientists from ICAR-CPCRI interacting with the *Gaja* cyclone affected farmers of Tamil Nadu

Fig. 13. Cyclone affected tract in Thanjavur

of debris, caring of injured palms, raising of short duration pulses, vegetables, decentralized seedling production strategy, establishment of windbreak system, scientific rejuvenation, wider spacing, crop insurance and pest management strategies were suggested by the team.

Subramanian P., Josephrajkumar A. and Chowdappa P.

Important Events

Kisan Mela and Agri Expo-2018

A Mega Kisan Mela and Agri-Expo was organized during 10th – 11th November, 2018 at ICAR-CPCRI Research Centre, Kidu, Karnataka. Shri D.V. Sadananda Gowda, Hon'ble Union Minster of Statistics and Programme Implementation, inaugurated the event. Rajarshi Padmavibhooshana Dr. D. Veerendra Heggade, Dharmadhikari, Dharmasthala, was the chief guest. Smt. Meenakshi Shantigodu, President, Zilla Panchayat presided over the programme. Dr. P. Chowdappa, Director, ICAR-CPCRI, Kasaragod, welcomed the gathering. During the inaugural session, various technical publications were released namely ICAR-CPCRI Research Centre, Kidu, Arecanut (Kannada), Coconut (English), Coconut (Kannada) and Cocoa (Kannada). There were about 100 different exhibition stalls including a crop diversity fair arranged for the benefit of farmers.

Shri D.V. Sadananda Gowda, Hon'ble Union Minster of Statistics and Programme Implementation, inaugurating the Kisan Mela at Kidu

Vaiga 2018 and Krishi Unnati Mela

The institute took leadership in conducting the state level 'Krishi Unnati Mela' at Thrissur. The conference on Value Addition for Income Generation in Agriculture (VAIGA) and Krishi Unnati Mela was held at Tekkinkadu Maidan, Thrissur, Kerala during 27th – 30th December, 2018. Shri P. Sathasivam, Hon'ble Governor of Kerala inaugurated the programme on 27th December, 2018 by. President of the function Shri V. S. Sunil Kumar, Hon'ble Agriculture Minister of Kerala told that state government will give thrust to production, processing, value addition and marketing so as to sustain agriculture based livelihood and attract new entrepreneurs to the farm sector. Over 350 stalls showcased the technologies relating to agro-processing and value addition in diverse fields. Officials from various agencies covering ICAR Institutes, SAUs, Dept. of Agriculture, KVKs and NGOs participated in the event.

Shri P. Sathasivam, Hon'ble Governor of Kerala inaugurating Krishi Unnati Mela at Thrissur

An Innovators Meet and Agri-Exhibition

Shri P. Sathasivam, Hon'ble Governor of Kerala inaugurated the 'Innovators' Meet' at ICAR-CPCRI, Kasaragod, Kerala on 6th October, 2018. He also inaugurated the exhibitions of innovators during the occasion. Ten successful incubatees were honoured by the Hon'ble Governor during the occasion. Shri N. A. Nellikunnu, MLA, Kasaragod presided over the programme. Dr. Raju Narayana Swamy, IAS, Chairman, CDB, Kochi has offered felicitation speech. Exchange of MoA was done between ICAR-CPCRI for Startup Green with Kerala Startup Mission, GoK, Thiruvananthapuram.

Shri P. Sathasivam, Hon'ble Governor of Kerala, inaugurating Innovators' Meet at ICAR-CPCRI, Kasaragod

World Soil Day celebration and soil health card distribution

World Soil Day was celebrated on 5th December, 2018 at ICAR-CPCRI, Kasaragod with this year's theme "Be the Solution to Soil Pollution". The campaign aimed to raise awareness regarding soil pollution and call people to stop soil pollution. Shri A.A. Jaleel, Mogral Puthur Grama Panchayat President, inaugurated the World Soil Day celebration at a function jointly organized by ICAR- CPCRI and KVK, Kasaragod. On this occasion Shri A.A. Jaleel distributed the soil health cards to selected farmers from Kasaragod district. Dr. Ravi Bhat, Director in-charge presided over the inaugural function.

World Soil Day celebrations were organized by the ICAR Krishi Vigyan Kendra –Alappuzha in association with department of agricultural development and farmers' welfare at Edathwa co-op. bank auditorium in Champakulam Block on 5th December, 2018. Smt. Binu Issac Raju, Member, Alappuzha district panchayath inaugurated the programme and distributed soil health cards to 100 farmers. Technical sessions on 'Post flood soil health management and good agricultural practices for sustainable crop production' and 'ICM in paddy and coconut' were conducted on the day.

Shri A.A. Jaleel, President, Mogral Puthur Grama Panchayat inaugurating the World Soil Day at ICAR-CPCRI, Kasaragod

Soil health cards distribution on World Soil Day at Champakulam, Alappuzha

Green Kalpa Chat

Towards creating awareness on business opportunities in agri-sector an interaction series - 'Green Kalpa Chat' has been initiated by the the Agri Business Incubation Centre in collaboration with Kerala Startup Mission. It was conducted on 24 November 2019, in which Mr. Mahesh Bhat, Sree Kalpa Industries, Kumbla interacted with entrepreneurs. Dr. P. Chowdappa, Director, presided over the programme, Shri Sawad Nullipadi, KSUM coordinator was the chief guest and Dr. K. Muralidharan, Acting Head of the Division of Social Science convened the programme.

Human Resources Development

Training attended

Name & Designation	Name of the programme	Place & Date
Dr. Anitha Karun, Head (Div. Crop Improvement), Dr. K.B. Hebbar, Head (Div. PB & PHT), Dr. Ravi Bhat, Head (Div. Crop Production), Dr. Vinayaka Hegde, Head (Div. Crop Protection), Mr. Sebastian George, CTO, Mrs. Sreelatha K., ACTO (Hindi), Mr. Neil Vincer, Mr. Krishna Naik, Mr. T.E. Janardhanan, AO, Mr. Pradeep Kumar Vasu, Mrs. Reetha, AAOs, Mrs. Girija Chandran, Mrs. K. Narayani,	Training in GeM	ICAR-CPCRI, Kasaragod 8th October, 2018

Mrs. Sulochana Nair, Private Secretaries, Mr. Thomas, P.M., Mrs. Rupa Manikandan, Mr. K. Haridasan, Mr. Narayana Naik P., Mr. T.N. Vidhyadharan, Mrs. Sheenakumari K.T.K., Assistants Mrs. Mary A.J., Mrs. Preethi, K., Mr. Paulson Sam George, Mr. N. Udayakumar, UDC, Mr. Ratan Singh, Mr. Umesh K.R., Mr. Dinesh, Mr. Jayarajan V., Mr. Lakshminarayan V., Mr. Pramod Kumar, Mr. Gangadharan, T.K., Mr. Pramod Kumar, LDCs		
Mr. Ram Avtar Parashar, Sr. Fin. and Accounts Officer	MDP on Administrative & Financial Management for DS/CAO/CFAO/SAO/US/ SFAO	ICAR-Headquarters, New Delhi 9th – 12th October, 2018
Dr. Jeena Mathew, Scientist (Soil Science)	Integrated Nutrient Management and Nutrient Budgeting through advanced models to improve crop productivity	ICAR-IISWC, RC, Udagamandalam 22nd – 26th October, 2018
Mr. K.K. Sreedharan, Mr. Omanakuttan, Mr. C. Sundaran, Mr. K. N. Sajeev, Mr. K.P. Ibrahim, Mr. A.T. Harikuttan, Mr. C.R. Babu, Mr. Justine Jayaraj Das, Mr. Ancil Parera, Mr.N. Reghu, Smt. N. Suma, Smt. Leena, Mr. Rajesh S., Mr. Rajesh R. and Mr. Ajith M., SSSs	Orientation Training Programme for Skilled Support Staff	CPCRI, RS, Kayamkulam 29th – 31st October, 2018
Dr. A.C. Mathew, Pr. Scientist (Soil & Water Conservation Engineering)	Training Workshop for Vigilance Officers of ICAR Institutes	NAARM Hyderabad 31st October, 2018 to 1st November, 2018
Mr. Arunji G., Technical Assistant (Library)	Basic/Advanced Workshop on KOHA Software at C.H. Mohammed Koya Library, Department of Library and Information Science	University of Calicut 14th – 15th November, 2018
Dr. S. Paulraj, Scientist (Microbiology)	Recent Trends in Plant Microbe Interactions	TNAU, Coimbatore 27th November – 17th December, 2018
Dr. Thavapraks Pandian, Scientist (Plant Pathology)	ICAR sponsored Winter School on Recent Advances in Diagnosis and Management of emerging diseases of field crops horticultural and medicinal plants	College of Agriculture, Dharward 7th – 27th December, 2018
Mr. Neil Vincer, AAO	Refresher course on Administration and Finance Management for section officers/AAOs/AFAOs/ Assistants of ICAR HQ/ Institute	ICAR-NIASM, Baramati 10th – 14th December, 2018

Awards/ recognition

Dr. H.P. Maheswarappa, Project Coordinator (Palms), ICAR-CPCRI, Kasaragod has been recognized as Fellow of Indian Society of Agronomy, New Delhi on the occasion of 21st Biennial National Symposium at MPUAT, Udaipur, Rajasthan on 24th October, 2018 for his outstanding contribution in the field of Agronomy in Plantation Crops. The certificate was presented by Dr. Ramesh Chand,

Dr. H.P. Maheswarappa, Project Coordinator (Palms) awarded ISA fellowship at Udaipur

Member, Niti Ayog, Govt. of India.

Dr. Nagaraja N. R., Scientist (Plant Breeding) received 'Young Scientist Travel Grant and Accommodation Fellowship' from AFITA (Asia-Pacific Federation for Information Technology)/WCCA (World Congress on Computers in Agriculture) for attending International Conference AFITA/ WCCA 2018 on 'Research Frontiers in Precision Agriculture' at IIT Bombay, Mumbai during 24th to 26th October 2018.

Publications

Anok Uchoi, Shoba, N., Balakrishnan, S., Gopal, N.O. and Uma, D. 2018. Impact of canopy management on flowering and yield attributes of cocoa (*Theobroma cacao* L.) under tropical condition of Tamil Nadu. *International Journal of Chemical Studies*, **6** (5): 629-633.

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Transfer of Technology

On campus training programme

Hands on Training on 'Soil testing and fertilizer recommendations' was conducted at ICAR-CPCRI, Kasaragod during 17th – 21st December, 2018. A group of 20 trainees comprising of agricultural officers, soil chemists and technical staffs of the department of agriculture, Kerala participated in this training programme which was sponsored by the department of agriculture.

Women participatory mass production of Entomopathogenic Nematodes (EPN)

For the promotion of EPN utilization for better plant health management in plantation crops, ICAR – CPCRI on 20th August, 2018 conducted training for women entrepreneurs on mass production of EPN. Total 15 women from the krishibhavan, Nileshwar block panchyath, participated in the programme.

Trainees of 'mass production of EPN' with resource persons

Two training programmes on 'Post harvest technology in coconut' for 20 farmers from Shivanagari district, Tamil Nadu, and 31 Extension Officials from Tamil Nadu were conducted during 3rd–5th October, 2018 and 29th–31st October, 2018 at ICAR-CPCRI, Kasaragod.

A training on 'Skill up gradation and market ready training on Kera Probio production' for the members of Kalpakam-Kera Probio production unit, Pathiyoor, under Farmer FIRST project was conducted at ICAR-CPCRI, Regional Station, Kayamkulam during 4th–6th October, 2018.

A training programme on cocoa cultivation and processing technique funded by DCCD, Kochi was conducted at ICAR-CPCRI, RC, Kahikuchi during 22nd–24th October, 2018. Fifty farmers from Lakhimpur, Kokrajhar, Tinsukia, Goalpara, Baksa and Kamrup districts of Assam participated in the programme.

An orientation training programme for the Skilled Support Staff was conducted at ICAR-CPCRI, RS, Kayamkulam during 29th–31st October 2018. Fifteen Skilled Support Staff of the station have attended in the three day training programme.

A master trainees training was organized for six farmers from Kottayam grama panchayat, Koothuparambu Taluk, Kannur district at ICAR- CPCRI, Kasaragod on 13th November, 2018.

Theory and practice sessions on 'Participatory Rural Appraisal (PRA) techniques/methods' handled for Subject Matter Specialists of ICAR-Krishi Vigyan Kendra, Lakshadweep, on 30th November, 2018 at ICAR-CPCRI, Regional Station, Kayamkulam.

A training programme on 'Hybridization techniques and palm health management in coconut' was conducted for 24 selected farmers from southern districts of Kerala at ICAR-CPCRI Regional Station, Kayamkulam during 10th–12th December, 2018.

Training for Skilled Support Staff at ICAR-CPCRI, RS, Kayamkulam

An on farm training programme on "Crop diversification in plantation garden with spices" was organized on 28th December, 2018 at ICAR-CPCRI, Research Centre, Mohitnagar. A total of 20 farmers of Chenga Busty, Mirik block of Darjeeling district attended the training programme.

Training and demonstration of 'Role of farm mechanization in enhancing agricultural production' to 464 farmers from Nalbari, Baksa, Goalpara and Kamrup districts of Assam was conducted at ICAR-CPCRI, RC, Kahikuchi.

Training for RAWE students

Rural Agricultural Work Experience (RAWE) programme was conducted for 12 BSc (Ag.) students of college of agriculture, Padannakkad, at ICAR-CPCRI, Kasaragod during 26th – 31thOctober 2018 (Coordintors-Dr. C. Thamban and Dr. Jayasekhar. S.). Another RAWE programme for 20 B.Sc.(Ag.) students from college of agriculture, Vellayani was conducted at ICAR-CPCRI, Regional Station, Kayamkulam during 12th–17thNovember, 2018.

Participants of 'Hybridization techniques and palm health management in coconut' with resource persons

Farm mechanization demonstration stall at state level farmer fair at Kahikuchi

RAWE students at ICAR-CPCRI, RS, Kayamkulam with experts

Off campus programme

District level seminar of 'Cocoa production and processing technology' was organised at cocoa farm of Shri Vishwanatha Rao at Ajjavara, Sullia on 15th December 2018. Mrs. Rajarajeshwari Kainthaje, Chocolatier, was the chief guest. 157 farmers participated in the programme.

A skill development training programme on health management in coconut was conducted for 60 farmers at Kadakampally krishi bhavan on 4th October, 2018.

An awareness programme on 'Bio-

Demonstration of cocoa pruning at the farmers plot in Ajjavara, Sullia

suppression of rugose spiralling whitefly infesting coconut' for 50 farmers was conducted at PA college auditorium, Pollachi on 5th October, 2018.

A training program on 'Integrated nutrient management with special emphasis to micro nutrients' conducted in Pathiyoor Panchayat from 5th–7th October, 2018 in NSS auditorium, Ramapuram. A total of 63 coconut farmers participated in the programme.

A training programme on 'Mechanization in small farms for rural youth' conducted at Pathiyoor during 15th–17th October, 2018.

A training cum group discussion was organized on 8th November, 2018 at Bharanikkavu block panchayath for 42 participants, at block panchayath auditorium.

A training on 'Leadership development' was conducted on 2nd November, 2018 at Kelakam, Kannur in collaboration with Department of Agriculture, Government of Kerala.

Training programme and field visits were organized by ICAR-CPCRI, Regional Station, Kayamkulam for 42 farmers of Chunakkara panchayath on 9th November, 2018 on participatory survey methodologies and bio-priming techniques.

A training programme was organized on 16th November, 2018 on 'Scientific arecanut cultivation with special emphasis on management of basal stem rot of arecanut' for 69 farmers at Kajaldighi, Maynaguri, Jalpaiguri.

Training on 'Profitable egg production techniques as an enterprise for branding and marketing' conducted for 84 farmers on 1st December, 18 at Pathiyoor service cooperative bank auditorium as a major component of the livestock based module of Farmer FIRST programme.

Training on mother palm selection at Bharanikkavu

Leadership development programme at Kelakam, Kannur

A training was conducted on 'New trends in coconut farming and pest and disease management' on 7th December, 2018 at zonal office hall, Tripunithura Muncipality, Ernakulam.

Workshop and brain storming session on 'Participatory skill enhancement in field survey, documentation for area wide community adoption of plant protection of coconut gardens' organized in Vallikunnam grama panchayath for Coconut Producers Societies (CPS), VHSE (Ag.) students and coconut climbers on 12th December, 2018 in the Panchayath Hall.

Training on 'Scientific mushroom cultivation as an income generating vocation' was conducted for 39 participants of FFP panchayath on 13th December, 2018 in the PHC Hall, Pathiyoor.

Farmers - Scientist interaction programme at Ishwaramangala

A training programme on 'Crop management in coconut' was organized under Kera Gramam project at krishi bhavan, Kayyur - Cheemeni, Kasaragod district and another training programme on 'Integrated crop management in coconut' was conducted at Paivalike krishi bhavan, Manjeshwar block on 17th December, 2018 in connection with Kisan Goshthi.

A training programme on 'Multispecies cropping system and health management in arecanut ' with emphasis on root grub management using entomopathogenic nematodes was held on December 18, 2018 at the Ishwarmangala, Dakshina Kannada district of Karnataka under MIDH scheme of DASD, Kozhikode.

A training on 'Ecological engineering aspects in organic farming' was conducted on 22nd December, 2018 at Cherunniyoor panchayath.

Training programmes conducted under the project 'Technology support for farmers on plant protection of coconut'

Topic	Venue	Date	No. of participants
Health management in coconut	Kumbalam, Ernakulam District	14th November, 2018	200
Scientific coconut cultivation and crop protection	Nattukal, Palakkad District	16th November, 2018	80
Scientific coconut cultivation and crop protection	Ananganadi, Palakkad District	18th November, 2018	22
Farmer Field School	Choornikkara, Ernakulam District	21st November, 2018	28
Exposure visit of farmers from Kottayam	ICAR-CPCRI, Kayamkulam	28th November, 2018	39
Farmer Field School	Kunnatheri, Aluva, Ernakulam District	29th November, 2018	20
Integrated pest and disease management of coconut	Aryad, Alappuzha District	3rd December, 2018	29
Workshop on method demonstration of IPM of coconut	Kumbalam, Ernakulam District	4th December, 2018	50
Farmer Field School	Ennakkad, Alappuzha District	5th December, 2018	36
Farmer Field School	Kottampallil, Kollam District	7th December, 2018	29
Farmer Field School	Kottampallil, Kollam District	21st December, 2018	28
Farmer Field School	Choornikkara, Ernakulam District	22nd December, 2018	14
Farmer Field School	Chettikulangara, Alappuzha District	26th December, 2018	25
Farmer Field School	Changanassery, Kottayam District	28th December, 2018	30
Farmer Field School	Kottampallil, Kollam District	28th December, 2018	30

Training for agricultural officers

A training programme on 'Plant health management in coconut based cropping system' for 35 agricultural officers of Kozhikode district was conducted at ICAR-IISR, Kozhikkode on 3 October, 2018. Dr. C. Thamban and Dr. Chandrika Mohan, Dr. V.H. Prathibha and Dr. Rajkumar, were functioned as resource persons and handled sessions on scientific coconut cultivation and pest and disease management of coconut.

A training programme on 'Plant health management in coconut based cropping system' for 32 agricultural officers of Malappuram district was conducted at KVK, Malappuram, Thavanoor on 4th October, 2018.

ATMA inter-state training programmes

Programme	Beneficiaries	No. of participants	Venue and date
Coconut production technologies	SSEPERS, ATMA, Kadayanallur block, Tamil Nadu	20 farmers from Gudallur district	ICAR-CPCRI, Kasaragod 8-11 October 2018
Crop management in coconut	SSEPERS, ATMA, Kotagiri district, Tamil Nadu	20 farmers from Kotagiri district	ICAR-CPCRI, Kasaragod 11-12 October 2018
Integrated crop management and value addition in coconut	SSEPERS, ATMA project, Puthukottai district, Tamil Nadu	20 farmers from Puthukottai district	ICAR-CPCRI, Kasaragod 13-17 November 2018
Neera production technology	SSEPERS, ATMA project Thirunelveli district, Tamil Nadu	20 farmers from Thirunelveli district	ICAR-CPCRI, Kasaragod 28-30 November 2018
Coconut production technology	AD Agri., Sullia Taluk, Karnataka	28 farmers from Sullia	ICAR-CPCRI, Kasaragod 12 December 2018
Coconut production technology	SSEPERS, ATMA Vellore district, Tamil Nadu	22 farmers from Vellore	ICAR-CPCRI, Kasaragod 13-14 December 2018
Coconut production technology	ATMA, Palakkad	70 farmers from Palakkad district	ICAR-CPCRI, Kasaragod 10 December 2018
Neera and its value added products	ATMA, Erode	22 farmers from Erode district, Tamil Nadu	ICAR-CPCRI, Kasaragod 17-19 December 2018
Neera production technology	ATMA scheme, Dindigul	20 farmers from Dindigul, Tamil Nadu	ICAR- CPCRI, Kasaragod 14 December 2018
Integrated pest and disease management and value addition in coconut	ATMA, Uttara Kannada district	13 farmers from Joida, Uttara Kannada district	ICAR- CPCRI, Kasaragod 19 December 2018

Interface programmes

Concurrent with the Kisan Mela and Agri-Expo 2018, on 10th November, 2018, two interface programmes were conducted at ICAR-CPCRI, RC, Kidu. 'Biodiversity conservation and crop diversity fair' was organized to sensitize the student community, rural youth and farmers. Another interface programme 'Value addition and Entrepreneurship development in plantation crops' mainly highlighted the importance of post harvest operations and value addition of plantation crops. Subsequently, on 11th November, 2018, three interface programmes were conducted. The importance of soil and water conservation technologies in plantation crops and technologies available for the same in sloppy terrains in West Coast regions was explained. The potential benefits of 'crop production and protection technologies of plantation crops', was the major theme in another interface programme. The importance of 'quality planting materials' for the successful cultivation of the perennial plantation crops like coconut, arecanut and cocoa were explained in the third interface programme. A total of 5000 farmers participated in these five interface programmes.

Participation in exhibitions

Sl. No	Name	Date	Place
1	Krishi Mela 2018	12th-15th October 2018	UAHS, Shivamogga, Karnataka
2	Agri fest Organized by ICAR	16th-17th October 2018	NASC complex, New Delhi
3	Kisan Mela and Agri Expo-2018	10th- 11th November 2018	ICAR-CPCRI, Research Center, Kidu
4	Karshika Mela organized by Mathubhumi	15th-21st November 2018	Punalur, Kollam
5	Karshikamela 2018 organized by Vadakara CPC	8th-15th December 2018	Vadakara town hall, Kozhikode
6	State level farmers fair on doubling farmers income - Assam	16th-17th December, 2018	ICAR-ATARI, Guwahati
7	VAIGA 2018	27th-30th December 2018	Thekkinkadu Maidan, Thissur

Radio talks

Dr. H.P. Maheswarappa, Project coordinator (Palms), given an interview in Kisan Vani programme on "Improved management practices for oil palm" (broadcast from AIR, Mangaluru on 10th December, 2018).

Dr. P. Muralidharan, Head, KVK-Alappuzha had given a talk on 'Post flood soil health management' in Farm and Home Programme of All India Radio (broadcast on 3rd October, 2018).

Dr. S. Leena delivered a radio talk on 'Management of banana pests using Entomo Pathogenic Nematodes' (broadcast from AIR, Kannur on 3rdDecember, 2018).

Dr. K. Sajnanath, SMS (Soil Science) attended an interview on 'Importance of Boron in coconut for improving productivity and disease resistance' in Farm and Home Programme of All India Radio (broadcast on 19thOctober, 2018).

Smt. Lekha G, SMS (Plant Pathology) attended an interview on 'Organic pest management in vegetables' in Farm and Home Programme of All India Radio (broadcast on 22ndDecember, 2018).

Smt. Jissy George, SMS (Home Science) attended an interview on 'Medicinal values and value added products of papaya' in Farm and Home Programme of All India Radio (broadcast on 30thDecember, 2018).

TV Programme

Documentary on 'Foundation stone laying ceremony of APTIC building' telecasted on 3rd December, 2018 in Krishidarshan programme of DD Malayalam. Another documentary on "KVK trained entrepreneurs successful in value addition" telecasted on 11thDecember, 2018 in Krishi darshan programme of DD Malayalam.

Mera Gaon - Mera Gaurav

Sensitization programme was held in each panchayat under Farmer First Project during 7th - 9th November, 2018 and action plan fine-tuned in consultation with the respective agricultural officers in each panchayat and people's representatives. Farmers were encouraged on the benefits and sustainability of organic farming. Secondary agriculture focusing on value addition in coconut and jack were emphasized for enhancing the profitability.

Awareness campaign on soil sampling in MGMG area

Six training programmes were conducted at Nahira and Bongara villages, Kamrup (Rural) district of Assam on arecanut based cropping system.

Commercialization of Technology

During October to December, 2018, two technologies were commercialised by the institute through MoA as per the details given below. An amount of ₹ 1,40,000 have been collected as technology transfer fees.

Sl. No.	Technology	Date of licensing	Transfer fees Rs.	Details of entrepreneurs
1	Technical knowhow of production of virgin coconut oil (VCO)	06-10-2018	40,000	M/s Epione Agro foods Private, Nonavinakere, Tiptur, Karnataka – 572201
2	Collection of fresh and hygienic Kalparasa and production of natural coconut sugar	06-12-2018	1,00,000	M/s Dindigul Coconut Producer Company Ltd., Gandhi Nagar, Batlagundu, Dindigul District, Tamil Nadu – 624202
		Total	**1,40,000**	

KVK Kasaragod

KVK, Kasaragod organized 23 training programmes (16 on campus and 7 off campus programmes) for the benefit of 387 participants comprising farmers, rural youth, self help groups, and students. This includes two RAWE programmes organized for 25 B.Sc. (Agrl) students of college of agriculture, Padannakkad and college of horticulture, Vellanikkara and two on job training programmes given to 58 students comprising of two batches from Government Vocational Higher Secondary School, Karadka.

Type of training	No. of training	Male	Female	Total
On Campus	16	137	145	282
Off Campus	07	63	42	105
Total	23	200	187	387

On Farm Trials

Two on farm trials on 'Eco friendly management of rhinoceros beetles in coconut' and 'Varietal evaluation of dwarf varieties of coconut' are going on in three plots each at Mangalpadi and West Eleri panchayaths.

Frontline Demonstrations

Frontline demonstrations on high yielding variety of fodder, Sampoorna (5 ha, at Paivalike and Kuttikkol), marigold variety, Pusa Narangi (0.4 ha at Ajanur), HYV and disease tolerant variety of pepper, Thevam (3 ha at Bellal and Pullur Periye) and Management of yellowing and wilting in pepper (2 ha at Kunjar), demonstration of horsegram (2 ha, Puthige), demonstration of grafted vegetables (10 units, Vidyanagar), mechanization in rice (4 ha in Kolavayal) and demonstration of water recharging systems in open wells and tube wells (2 units, Kasaragod) are being demonstrated. Further, demonstrations on pulses, green gram and horsegram were initiated at Ajanur and Pullur – Periye panchayaths in an area of 4 ha.

Field Day: A Field Day was organized at Chengala panchayath on 24 October, 2018 in connection with a FLD on introduction of HYV of Paddy, Shreyas. The programme was inaugurated by Smt. Shahina Salim, President, Chengala panchayath and attended by local self government officials, agriculture department officials and farmers.

Scientific Advisory Committee meeting of KVK: Scientific Advisory Committee meeting of KVK was conducted on 17th December, 2018 under the chairmanship of Dr. P. Chowdappa, Director, ICAR-CPCRI. Dr. D.V.S. Reddy, Principal Scientist, ATARI and 21 members representing various line departments and farmer representatives attended the meeting and had lively discussions on ongoing programmes.

Celebration of Kisan Diwas: Kisan Diwas was celebrated on 23rd December, 2018 at Kumbla panchayath by organizing awareness programmes on 'Wealth from Waste'. The programmes comprised management of household waste and farm waste towards high value compost. Around 50 farmers and farm women attended the programme.

Success Story

Bioplus Madikai

Shri Krishnan, Sopanam, Kanhirapoil, Madikkai Panchayath is a gulf returnee who has been engaged in agricultural activities at native place. He approached KVK and discussed with officials regarding various agricultural enterprises that require only low capital investment and at the same time beneficial to farming community. Among the various enterprises suggested, he was interested in the manufacture of organic manures. Kasaragod, in spite of declared as organic district, lacks organic manure production units. Subsequently, in collaboration with Madikkai grama panchayath and Kera Gramam project of agricultural department, an organic manure unit named 'Bioplus Madikkai' was established by a group of farmers under the leadership of Shri Krishnan. The unit was inaugurated by Shri P. Karunakaran, Hon'ble MP Kasaragod on 6th July, 2018. This manure, which is a mixture of coir pith, farm yard manure, ash/burnt paddy husk, neem cake, dolomite, rajphos and fish meal is of high quality as evidenced from the test results. The product is marketed in 5kg, 10kg and 40kg packets. Madikai service co-operative bank extends help in marketing the product. So far, they have manufactured and marketed around 200 tonnes. This unit gives employment to eight women and two men.

KVK, Alappuzha

District level seminar on 'Scientific cultivation and value addition of coconut'

ICAR-KVK–Alappuzha and CDB, Kochi jointly organized a district level seminar 'Scientific cultivation and value addition of coconut' on 10th October, 2018 at district panchayath hall, Alappuzha for selected progressive coconut farmers of the Alappuzha district. Shri G. Venugopal, president, district panchayath inaugurated the programme. Shri P.R. Muralidharan, Member, CDB, presided over the function.

Inauguration of the district level seminar on coconut cultivation at Alappuzha

Mahila Kisan Diwas

ICAR-KVK, Alappuzha celebrated 'Mahila Kisan Diwas' on 15th October 2018 with the participation of about 100 women farmers of Alappuzha district. Adv. U. Prathibha, MLA, Kayamkulam was the chief guest of the programme. Highlight of the programme was a contest for preparation of snacks from raw/ripe banana in which 23 women farmers participated. Five women farmers who have made significant achievements in different fields were honored with memento and certificate on the occasion. An exhibition of value added products of women entrepreneurs was also arranged on the occasion.

Adv. U. Prathibha, MLA honoring farmers on Mahila Kisan Diwas

Harvest festival of upland paddy cultivation at Vallikunnam panchayath

Harvest festival of FLD on upland paddy cultivation using modified drum seeder

ICAR-KVK-Alappuzha organized the field day of FLD programme on 'upland paddy cultivation using modified drum seeder' implemented at Vallikunnam and Thamarakulam panchayaths involving 20 farmers on 25th October, 2018. Smt. Viji Prasad, Vice President, Vallikunnam panchayath inaugurated the harvest festival. Farmers opined that the sowing of paddy seeds using modified drum seeder reduced the quantity of seeds and hence economical.

Launching of FLD on 'Nutrition Garden' in Anganwadis

Launching of the FLD on 'Nutrition Garden' in 27 Anganwadis of Thamarakkulam Panchayath was organized on 5th November 2018. The programme was inaugurated by Smt. V. Geetha, President, Thamarakkulam grama panchayath by handing over the vegetable seedlings to Smt. Meena Kumari, pre-primary teacher.

Foundation stone-laying ceremony of Agro-Processing Training cum Incubation Centre

Department of agricultural development and farmers' welfare, govt. of Kerala has sanctioned an Agro-Processing Training cum Incubation Centre (APTIC) at a cost of Rs.73 lakhs to ICAR-KVK, Alappuzha. The foundation stone for the centre

Adv. V.S. Sunil Kumar inaugurating the foundation stone laying ceremony of APTIC building

was laid by Adv. V.S Sunil Kumar, Hon'ble Minister for Agriculture, govt. of Kerala on 23rd November 2018. The meeting was presided over by Adv. U. Prathibha, MLA Kayamkulam. Dr. P. Chowdappa, Director, ICAR-CPCRI, Kasaragod and Dr. M.J. Chandre Gowda, Director, ICAR-ATARI, Bangalore offered felicitations in the inaugural session.

Harvest festival of the FLD on "Cage culture of Pearl spot fish"

Harvest festival of the Pearl spot fish (*Etroplus surentesis*) which were reared in cage system as a Front Line Demonstration (FLD) of Krishi Vigyan Kendra – Alappuzha in Arattupuzha Panchayath was conducted on 1st December 2018. The demonstration was taken up by a group of five farmers.

Training programmes

Forty nine training programmes were organized benefitting a total number of 1314 farmers/rural youths. The details of the training programmes were as follows:

Training	No. of Programmes	Participants		
		Men	Women	Total
On campus	9	81	166	247
Off campus	29	295	420	715
Sponsored	1	7	18	25
Extn. Officials (sponsored)	1	9	18	27
On Job training to VHSE students	9	149	151	300
Total	**49**	**541**	**773**	**1314**

Extension activities

Help line service (calls attended and responded) – 712 nos; Agroclinic – 146; Soil testing campaign – 6 nos; Animal Health camp –2; Exhibition –2; Seminar – 5.

Dr. P. Muralidharan handled sessions on "Scientific coconut cultivation for enhancing productivity and income" in district level seminars organized by KVK-Kottayam on 12thOctober, 2018, KVK-Thrissur on 7thNovember, 2018 and KVK-Malappuram on 13thDecember, 2018.

Exhibitions

Onattukara Farmers Fest

ICAR-KVK-Alappuzha, participated in the exhibition as part of the 'Onattukara Fest' organized by the Association of Onattukara Farmers' Clubs at VVHSS ground, Charummoodu during 22nd-25th December, 2018.

Participation in national seminars/symposia/conferences/workshops

Name & designation	Title	Place and date
Dr. Jayasekhar S., Sr. Scientist	National conference on 'Kerala Ecology and Society'	EKNM Government College, Elerithattu, Kasaragod 4th – 5th October, 2018.
Dr. M.R. Manikantan, Pr. Scientist and Dr. R. Pandiselvam, Scientist	International conference on 'radiation biology'	Mangaluru 4th to 6thOctober, 2018
Dr. A. Josephrajkumar, Pr. Scientist	National seminar on 'climate change, habitat destruction and emergence of insect pests and vectors'	Department of Zoology, University College, Thiruvananthapuram 11th October, 2018

Dr. Jeena Mathew, Scientist	Workshop on 'Integrated Nutrient Management and nutrient budgeting through advanced models to improve crop productivity'	ICAR- Indian Institute of Soil and Water Conservation, Research Centre, Ooty 22nd to 26th October 2018
Dr. Nagaraja, N. R., Scientist	International conference AFITA/ WCCA 2018 on 'Research Frontiers in Precision Agriculture'	IIT Bombay, Mumbai 24th to 26th October 2018
Dr. Nagaraja, N. R., Scientist	International conference on 'Global Research Initiatives for Sustainable Agriculture and Allied Sciences' (GRISAAS-2018)	Rajasthan Agricultural Research Institute (RARI), Durgapura, Jaipur, Rajasthan 28th to 30th October 2018
Dr. Indhuja S., Scientist	International conference on 'Microbiome Research – 2018'	National Centre for Microbial Resources, Pune, Maharashtra 19th to 22nd November, 2018.
Dr. Jayasekhar S, Sr. Scientist	Workshop for nodal officers on 'ICAR-Research data repository'	NASC, New Delhi 4th to 5th December 2018.
Dr. Arun Kumar Sit, Pr. Scientist	3rd Regional science and technology congress, 2018 (Northern Region)	Govt. Engineering College, Jalpaiguri 12th December, 2018
Dr. V. Krishnakumar, Head, RS, Kayamkulam	XI SAC meeting	KVK, Kottayam 13thDecember, 2018
Dr. Ramesh S.V. , Scientist	National Conference for Virgin Coconut Oil manufacturers	CSIR-Central Food Technological Research Institute (CSIR-CFTRI), Mysuru 26thDecember, 2018
D. K Muralidharan, Head, Div. of Social Sciences, Dr. A. Joseph Rajkumar, Dr. Regi J. Thomas, Pr. Scientists	International Conference on 'Agro-processing and Value Addition' (VAIGA) cum Krishi Unnati Mela	Thrissur 28th December, 2018

New Projects

Project on 'Participatory rejuvenation and refinement of CBFS models for food security and income' initiated in three panchayaths of Bharanikkavu Block during December 2018. Dr. P. Anithakumar, Pr. Scientist (Ag. Extension) is the principal investigator of the project.

Celebration

Hindi Chetana Maas

Valedictory function of Hindi Chethana Mas celebration was conducted on 15th Oct. 2018 under the chairmanship of Dr. Ravi Bhat, Acting Director ICAR-CPCRI, Kasaragod. He encouraged all employees to maximise the use of Hindi in the day to day official work. Smt Geetha Rani, Post Graduate Teacher (Hindi) Kendriya Vidyalaya No. 2, Kasaragod was the chief guest of the function.

Vigilance Awareness Week

Vigilance Awareness Week - 2018 was observed at ICAR-CPCRI, Regional Station, Kayamkulam from 29th October 2018 to 3rd November 2018. On 29th October, 2018 a brief on the celebrations of 'Vigilance Awareness Week in Government Establishments' was delivered by

Shri K. Damodaran, Deputy Supdt. of Police (Vigilance), Kasaragod, delivering Vigilance Awareness lecture at ICAR-CPCRI, Kasaragod on 7th November, 2018

Dr. V. Krishnakumar, Acting Head followed by the pledge by staff. The Valedictory Function was held on 3rdNovember, 2018.

Vigilance Awareness Week was observed at ICAR-CPCRI, Research Centre, Mohitnagar celebrated. The programme was started with oath taking ceremony. Banners were displayed and an awareness programme was organized at the centre.

Communal Harmony week

ICAR-CPCRI, Research Centre, Mohitnagar observed Communal Harmony programme on 19th Nov-25th Nov. 2018. Oath taking, collection of fund was made.

Women Cell Activities

Two meetings and two farewell parties were organized by Women Cell with respect to superannuation of Mrs. Lucy D'Souza, Asst. Administrative Officer and Dr. K.K. Sajini, Chief Technical Officer who retired from service on 31 October, 2018 and 30 November, 2018 respectively.

Women's Cell members with Mrs. Luisy D'Souza at Kasaragod

Women's Cell members with Dr. K.K. Sajini at Kasaragod

Other Information

Diploma in Agricultural Extension Services for Input Dealers (DAESI)

A one year diploma programme in agricultural extension services for input dealers (DAESI) programme of Alappuzha district wsa initiated with ICAR-CPCRI,Regional Station, Kayamkulam as the nodal training institute in collaboration with Agriculture Technology Management Agency (ATMA), Alappuzha, State Agricultural Management and Extension Training Institute (SAMETI) and National Institute of Agricultural Extension Management (MANAGE). The programme was inaugurated by Shri K.K. Anilkumar, Municipal Councillor, Kayamkulam on 23rd October, 2018 at ICAI-CPCRI, Regional Station, Kayamkulam.

Students and coordinators of DAESI at ICAR CPCRI, Regional Station, Kayamkulam

Swachhata Pakhwada

ICAR-CPCRI at its Regional Station organized all events as envisaged in the *Swachh Bharat Pakhwada* during December 16-31, 2018. A clean and green farming training session was handled by Dr. A. Abdul Haris, Pr. Scientist in Velanchira and Kopareth villages. A mega sanitation campaign was launched at Krishnapuram archaeological palace cum museum sensitizing the rural people as well as visiting tourists about the mission of cleanliness. As part of *Kisan Diwas*,

farmers were empowered on the concept of "Waste to Wealth" by bio-composting and "Organic coconut production strategies" in Farmer FIRST project area. Door to door campaigning on plastic abuse was highlighted. Quarters inhabitants were provided with bins for efficient collection and recycling of solid and liquid wastes.

Swachh Hi Sewa activities at ICAR-CPCRI Regional Station Kayamkulam were taken up during 15th September, 2018 to 2nd October, 2018. Altogether 10 activities were conducted.

Swachhta Pakhwada was celebrated by ICAR-KVK-Alappuzha along with ICAR-CPCRI (RS), Kayamkulam during 16th-31st December with various programmes like awareness programme on wealth from waste, recycling of bio wastes from homesteads, cleaning of public and tourist spots etc.

ICAR-CPCRI, Research Centre, Mohitnagar observed Swachhta Hi Sewa Campaign 2018 from 15th September to 2nd October, 2018 with various activities like cleaning at nearby school, public roads, public places, rally with villagers. Sachhwata Pakhawada was observed in the centre from 16 to 31 December, 2018. Awareness on Swacchata in nearby villages, digging of compost pits for disposal of wastes, inclusion of villagers for cleaning of roads and public places were some of the activities during this programme. ICAR- CPCRI, Research Centre, Kahikuchi also observed Swachhta Pakhwada from 16th-31st December 2018.

Swacch Bharat campaign at Krishnapuram Palace

Science orientation training under 'Gifted Children programme'

ICAR-CPCRI, Regional Station, Kayamkulam organized a science orientation cum training programme for students from Mavelikkara Education District under the 'Gifted Children Programme' of Government of Kerala on 3rd November, 2018. The programme included technical sessions followed by quiz competition as well as field and laboratory visits.

The farm pond of the Regional Station, Kayamkulam was fully netted to prevent bird entry and subsequent predation of released fingerlings. More than 150 fingerlings of tilapia, grass carp, red belly were released on 15thNovember, 2018 as part of method demonstration of doubling income strategy in low lying areas of Kuttanad.

Infrastructure development

Hi tech green house with fan and pad cooling system (240 sq.m.) was established with funding from Directorate of Cashewnut and Cocoa Development (DCCD), Kochi at ICAR-CPCRI, RS, Vittal for production of quality planting material of cocoa.

The farm pond of the Regional Station, Kayamkulam was fully netted to prevent bird entry and subsequent predation of released fingerlings. More than 150 fingerlings of tilapia, grass carp, red belly were released on 15th November, 2018 as part of method demonstration of doubling income strategy in low lying areas of Kuttanad.

Cocoa model nursery- Hi tech green house at Vittal

Fingerling release in CPCRI Kayamkulam pond

Personalia

APPOINTMENTS

Name of the staff	Designation	Place	w.e.f.
Dr. Ajeeth Singh	Scientist (Pl. Biochem.)	ICAR-CPCRI, Kasaragod	10.10.2018
Shri Bisun Bhaskar	Technical Assistant (Lab.)	ICAR-CPCRI, RS, Vittal	01.10.2018
Shri Arunji G.	Technical Assistant (Lib.)	ICAR-CPCRI, Kasaragod	04.10.2018
Smt. Asha K. Chandran	Technical Assistant (Field/Farm)	ICAR-CPCRI, RS, Kayamkulam	04.10.2018
Shri Nirmal Kumar B.J.	Technical Assistant (Field/Farm)	ICAR-CPCRI, RS, Vittal	22.10.2018
Shri Kamal Kumar V.	Technical Assistant (Field/Farm)	ICAR-CPCRI, RC, Kidu	07.12.2018
Shri Anoop Kumar P.P.	Technical Assistant (Field/Farm)	ICAR-CPCRI, RC, Kidu	07.12.2018

TRANSFER

Name of the staff	From (Place)	To (Place)	w.e.f.
Shri Prakash Burman	Senior Technician ICAR-CPCRI RC, Kahikuchi	ICAR-CPCRI RS, Vittal	03.10.2018

RETIREMENT

Name of the staff	Designation	Place	Date
Smt. Luisy D' Souza	AAO	ICAR-CPCRI, Kasaragod	31.10.2018
Dr. (Mrs.) K.K. Sajini	CTO	ICAR-CPCRI, Kasaragod	30.11.2018
Shri K. Kunhikannan	SSS	ICAR-CPCRI, Kasaragod	30.11.2018
Shri K. T. Unni	PA	ICAR-CPCRI, Kasaragod	05.12.2018
Shri E.R. Asokan	Technical Officer (Photography)	ICAR-CPCRI, RS, Kayamkulam	31.12.2018
Shri Jagadish Roy Burman	Sr. Technical Assistant	ICAR-CPCRI, RC, Mohitnagar	31.12.2018
Shri P.K. Krishnan Kutty	T-1-3(JTA)	ICAR-CPCRI, Kasaragod	31.12.2018

Agrisearch with a human touch

Front cover photo: Shri D.V. Sadananda Gowda, Hon'ble Union Minster of Statistics and Programme Implementation, Rajarshi Padmavibhooshana Dr. D. Veerendra Hegde, Dharmadhikari, Dharmasthala, Shri S. Angara, MLA Sullia and Dr. M. Ariz Ahmed, IAS, MD, National Horticultural Board, New Delhi along with Dr. P. Chowdappa, Director at International Coconut Genebank for South Asia and Middle East, ICAR-CPCRI, Research Centre, Kidu, Karnataka

Published by: Dr. Anitha Karun, Acting Director
Compiled and edited by: Dr. S. Jayasekhar, Shri H. Muralikrishna and Dr. Anitha Karun
Photo credits: Shri K. Shyama Prasad and Shri E.R. Asokan
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Printed at: Print Express, Kaloor, Kochi – 682017, Ph: 0484-2531336