



KALPA

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FROM THE DIRECTOR'S DESK

Resilience amidst adversity: In life and farming

The new financial year started with the utmost satisfaction that the Institute could achieve its financial targets. With the reduced number of Covid-19 cases in the country, activities of the Institute were in full swing with the increased number of visits by farmers and other stakeholders for availing training and other services. Meanwhile, all staff of the Institute also completed the two doses of Covid-19 vaccination by the end of April 2021.

Then came the second wave of Covid-19 in May that did once again disrupt all Institute activities. Following the lockdown announced in different parts of the country, office functioning was restricted in the Headquarters and other units. This period also left with very sad memories for the loss of many ICAR employees, working and retired. But the silver line is that the nation bounced back astonishingly with improving facilities on a war foot manner. Many ICAR institutes, including ICAR-CPCRI, were also equipped with oxygen cylinders for emergency use.

The agonies caused by the pandemic are further aggravated by the incidence of natural calamities resulting in an irreversible loss in agriculture which had affected the livelihood of many. During 14-17 May 2021, the cyclone Tauktae, reported to be the fifth strongest storm since 1998 on the western coast, caused the loss of over 91 lives, and many coconut plantations got destroyed in Lakshadweep Islands and in Gujarat. The Institute is interacting

with other stakeholders to formulate strategies for new planting in coastal areas, debris removal, and providing livelihood support for the affected farmers.

One of the flagship programmes of the Union Government is the formation of 10,000 Farmer Producer Organizations (FPO) to empower farmers for better trade and value addition. The Institute is one among the four ICAR institutes identified as Community Based Business Organization (CBBO) for forming two FPOs in the Thrissur district under the Cooperative Societies Act with National Cooperative Development Corporation as implementing agencies. Coherently, the Institute organized a webinar, 'Ease of doing agribusiness through empowered FPOs'.

The 23rd Research Advisory Committee under the chairmanship of Dr. S.P. Ghosh, Former DDG (Hort. Sci.), ICAR, on 11 June 2021 through videoconferencing recommended to strengthen or revamp programmes in the following areas: (i) identification and validation of molecular markers in the mandate crops; (ii) improvement of disease diagnostics, especially for root (wilt) disease in coconut and yellow leaf disease in arecanut and also to develop efficient microbial consortium for improving plant health; (iii) evaluation of newly released varieties for performance under coconut based cropping systems; (iv) inclusive action research on coconut and arecanut value chain and studies on adoption and impact of technologies.

Another review on Institute activities completed in this period is the 'the Third Party evaluation'. The

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agency has considered the research achievements of the Institute holistically for recent years and observed that the efforts of the Institute on developing cropping system models and creating awareness among farmers contribute 72,600 million rupees to the nation's GAV. The agency also mentioned certain research gaps as (i) supply gap in planting material; (ii) slow pace of variety development; (iii) low level of adoption of

plant protection measures; (iv) inadequate farm mechanization & secondary agriculture; and (v) climate change issues. These aspects are being incorporated in our future activities and reflected in the Standing Finance Committee document for 2021-2026.

We are passing through the tough times where obstacles are emerging and proliferating in our 'life and farming', which are inseparable in a country like India. Foreseeing

these inevitable challenges, our leaders have already set the table to confront and conquer any such adversities. We have the most robust institutionalized research and development system to address the competing and complex objectives of multiple stakeholders. Together, we are certain to tackle the obstacles and steer the farming sector towards sustainable progress.

Dr. Anitha Karun

SPECTRUM

Notification of new coconut and arecanut varieties

Two improved varieties, one each of coconut and arecanut, released by the Central Sub-committee on Crop Standards, Notification and Release of variety, were notified, vide: Notification in the Official Gazette by Ministry of Agriculture and Farmers Welfare (Department of Agriculture, Cooperation and Farmers Welfare) S.O. 1480(E) dated April 1, 2021.

Kalpa Ratna - A multi-purpose coconut variety suitable for tender nut, copra and inflorescence sap production, released for cultivation by the Central Seed Committee and notified for the

states of Kerala, Karnataka and Tamil Nadu (Fig. 1).

Shatamangala - An arecanut variety suitable for dry kernel (chali) and tender nut processing was released for cultivation by



Fig. 1. High yielding Kalpa Ratna variety of coconut

the Central Seed Committee and notified for Karnataka, North Bengal and Gujarat (Fig. 2).



Fig. 2. Abundantly yielding Shatamangala variety of arecanut

Niral, V.

Abundant harvest potential of Kalpa Sankara hybrid from root (wilt) disease tracts

With ecological intensification and adoption of good agricultural practices, Kalpa Sankara coconut hybrid, released as root (wilt) disease tolerant variety, recorded an average yield of 171 tendernuts/palm/year. The palms were planted during 2012 and the yield recorded was the five years average yield from 39 palms. Such systematic maintenance with split application of macro and micronutrients at monthly interval could double the yield potential

of Kalpa Sankara hybrid. This enables abundant tendernut yield from the hybrid coconut harvested in 25 days interval and is one of highest yield reported from coconut in root (wilt) disease tract. In addition, crop pluralism with intercrops such as nutmeg, rambutan, banana, jack, arrow root, turmeric, etc. aligned with ecological bio-engineering principle subdued the pest incidence by 2-3 folds through stimulo-deterrancy. Currently,

only 5.1% palms are diseased in the garden yielding less than 100 nuts/palm/year. About 7.1% nut yield enhancement could also be realized after the installation of five beehives in the garden. Doubling farmer's income with ecological integrity is the hallmark success of this inclusive farming technology.

Josephraj Kumar, A., Chandrika Mohan, Anes, K.M., and Thomas, R.J.

A rare coconut palm from Kalanad, Kasaragod

A coconut palm showing direct formation of shoots from inflorescence was observed at Kalanad, Kasaragod, Kerala (12°27'38.1N; 75°01'32.8). No fruit development was observed in the inflorescences of this unique palm. All the inflorescences, emerging from the leaf axils, were observed to convert into vegetative shoots, resembling seedlings, with only a single shoot emerging from an inflorescence.

These shoot-like structures were found to remain attached to the



Fig. 3. Abnormal sprouting of coconut seedlings directly on inflorescence

palm for more than a year, in the leaf axils, till the senescence of the respective leaves (Fig. 3). Studies on the this rare palm, showing natural conversion of reproductive (inflorescence) tissue to vegetative tissue, are likely to offer leads for inducing direct organogenesis for application in mass multiplication of coconut through tissue culture.

Niral, V.

Biochemical characterization of pink husked coconut types

Biochemical characterization of tendernut water from pink husked coconut types identified from Guam Tall population planted at ICAR-CPCRI, Regional Station, Kayamkulam revealed that a significantly higher total phenol content in the tender nut water of pink husked types as compared to control. Significantly higher protein content of 86 mg/100 ml was noted in pink husked type as compared to normal husked type with 58.7 mg/100ml indicating nutritional superiority. The antioxidant activity of tendernut water from pink husked type was evaluated by DPPH assay. Present studies revealed

higher scavenging activity based on DPPH assay with pink husked recording IC_{50} value of $266.67\mu\text{g/ml}$ as compared to normal type with IC_{50} value of $358.27\mu\text{g/ml}$. Similarly the Phosphomolybdate assay also revealed higher free radical scavenging activity of pink husked type based on IC_{50} value of $415.17\mu\text{g/ml}$ compared to $637.9\mu\text{g/ml}$ observed in normal husked type. Significantly higher content of anthocyanin ($25.97\text{mg}/100\text{g}$) was noted in the exocarp of pink husked types and it was negligible in normal husked type ($1.464\text{mg}/100\text{g}$) (Fig. 4).

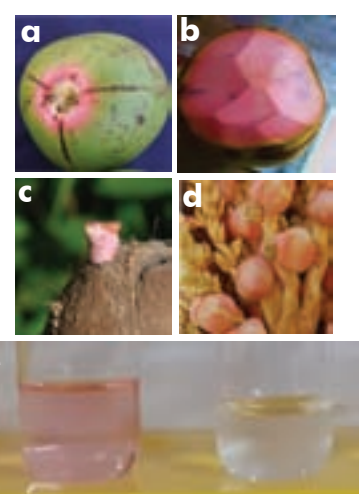


Fig. 4. Pink husked coconut (a) Pink husked tendernut, (b) husk colour, (c) pink plumule, (d) pinkish inflorescence, (e) pink tendernut water in comparison with normal tendernut

Thomas, R. J., Shareefa, M. Harsha, H. and Anitha Karun

Studies in chlorophyll deficit seedlings of arecanut

Collected 20 seednuts of Shatamangala variety, washed with clean water and were sown in the silica sand bed. The silica sand bed was lined with polythene sheet to avoid penetration of roots into the soil and 6 holes are made in the polythene sheet for drainage (Fig. 5 & 6). Daily irrigated with distilled water. Out of 20 seednuts sown, 13 seednuts were germinated and among them 2 were chlorophyll deficit (albinos) (Fig. 7). After the germination they were provided with nutrient solution which contained all the essential



Fig. 5. Seednuts sown in silica sand bed



Fig. 6. Germination of seednuts



Fig. 7. Albino seedlings showing decaying symptoms

nutrients. The concentration of the nutrient solution provided was 50 per cent of the modified Hoagland nutrient solution. Modified Hoagland nutrient solution was applied twice in a week at the rate of 0.5 litre per application. After

142 days from germination the albino seedlings started decaying and the plants were completely decayed and died 169 days after germination.

Nagaraja, N.R. and Thanuja, G.



Estimation of arecoline content from dry kernels of arecanut DUS reference/example varieties

Estimated arecoline content from dry kernels of sixteen arecanut DUS reference/ example varieties, namely Mangala, Sumangala, Sreemangala, Mohitnagar, Swarnamangala, Kahikuchi, Madhuramangala, Nalbari, Shatamangala, VTLAH-1, VTLAH-2, Hirehalli Dwarf, S.K. Local, Thirthahalli, Sagar and Sirsi. Lowest arecoline content was recorded from the dry kernel of Sumangala with arecoline content of 796.10 µg/gm followed by Sagar (799.80 µg/gm), Kahikuchi (806.42 µg/gm),

Swarnamangala (808.53 µg/gm), Shatamangala (813.48 µg/gm), Mangala (838.17 µg/gm), S.K. Local (846.68 µg/gm) etc. Highest arecoline content was observed in

the dry kernel of Hirehalli Dwarf with arecoline content of 1295.63 µg/gm, followed by Mohitnagar (1264.52 µg/gm), VTLAH-2 (1217.68 µg/gm) etc. (Fig. 8).



Fig. 8. Arecoline content in dry kernels of different arecanut varieties

Nagaraja, N.R.

Abnormality in arecanut inflorescence

Abnormal inflorescence with fasciated spike in a Hirehalli Dwarf x Mangala hybrid palm has been identified at ICAR-CPCRI, Regional Station, Vittal, Karnataka. This abnormal spikelet

has fan or finger like structure at the tip (Fig. 9).

Fig. 9. Inflorescence abnormality in HD x Mangala hybrid palm



Nagaraja, N.R. and Shahala, M.I.

Mycobiome of 'Kalparasa'

A metagenomic analysis of the fungal diversity of 'Kalparasa' was carried out to detect the key fungal taxa as the culture-dependent study indicated presence of good numbers of yeasts which were primarily driving the shift in pH and alcohol content of 'Kalparasa'. High-throughput amplicon sequencing of the highly variable ITS1 sequence situated between the small subunit-coding sequence and the 5.8S-coding sequence of the fungal ribosomal operon was performed using the fungus-specific primers ITS1F combined with ITS2.

The results revealed the mycobiome of 'Kalparasa' to be represented by 9 classes, 11 orders, 25 families, 31 genera and 40 species of fungi. However, it was dominated by a single phylum : Ascomycota, known for its economic usefulness as provider

of food, medicines and chemical products. Under Ascomycota and class Sachharomycetaceae, both *Sachharomyces* and non-*Sachharomyces* budding yeasts were observed, the former accounting for more than 50% and represented largely by *Sachharomyces cerevisiae*. Among non-*Sachharomyces* yeasts, *Hanseniaspora guilliermondii* was the most abundant followed by *Lachancea fermentii* (Fig. 10).

Saccharomyces, *Hanseniaspora* and *Lachancea*, the important yeast genera present in the 'Kalparasa', are also found in fermented foods such as kombucha, Japanese miso, sauerkraut and some fruits/plants. While the *Sachharomyces cerevisiae* is majoritively responsible for alcoholic fermentation, the growth of non-*Sachharomyces* yeasts results in metabolic products such as terpenoids, esters, higher

alcohols, glycerol, acetaldehyde, lactic acid, acetic acid and succinic acid bringing out specific flavours. 'Kalparasa', being a source of non-*Sachharomyces* yeasts imparting flavor complexities, isolation and development of some of these indigenous yeasts can be exploited for commercial production of fermented foods/ beverages with enhanced flavor and aroma profiles.

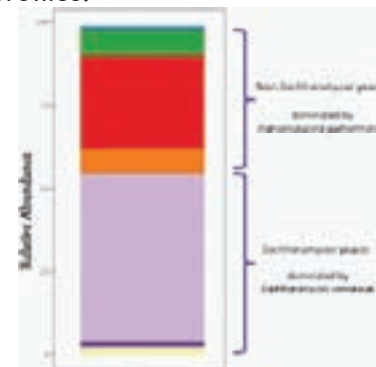


Fig. 10. Taxonomic distribution of fungi in Kalparasa

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

Cocoa Pod Husk Biochar- an excellent source of Potassium

Cocoa pod husk biochar (CPHB, Fig.11), prepared in CIAE-developed kiln, was analyzed for its nutrient properties. CPHB was found to have >10 pH and total potassium content of 10-11%. It contained good amount of water-soluble as well as exchangeable potassium; the former accounted for around 6.5% which was about 60% of the total potassium content and the latter was around 7.5% which accounted for about 70% of the total potassium present in CPHB. The water-soluble and exchangeable potassium are the main sources of available

potassium in soil and hence, CPHB can be used as an amendment to improve soil potassium.

The total Ca content of the CPHB was around 22 g/kg, 45% of which was water soluble as well as exchangeable form. The total Mg content was 13 g/kg, 23% of which was water soluble. CPHB's high ash content (36%) and CEC value indicated its liming potential and increased nutrient retention in soil, respectively. This nutrient-rich CPHB, therefore, has higher agronomic value than coconut biomass biochars for fertilization

and enhancing quality of poor tropical acidic soils with low organic matter and low CEC and is an ideal input for incorporation in coconut based cropping systems.



Neenu, S., Murali Gopal, Alka Gupta and Elain Apshara, S.

Development of Bordeaux formulations against *Phytophthora*

Bordeaux mixture (1%) with neutral pH has been the propitious recommendation for the management of *Phytophthora* species (*P. meadii*, and *P. palmivora*) infecting arecanut and coconut, and cocoa. Though Bordeaux mixture is effective as prophylactic treatment, farmers face difficulty in its correct preparation with pH 7 and improper preparation and application makes it ineffective. Thus, an attempt was made to prepare Bordeaux paste and solid formulations (Fig. 12) in seven different combinations with neutral pH (7.0). Efficacy of these formulations was tested against *P. palmivora* and *P. meadii* under *in vitro* condition from the day



Fig. 12. Bordeaux mixture paste and solid formulations

of preparation to 60 days and observations were recorded at alternated days. Results revealed that 100% inhibition in colony growth rate and sporangial production in both *P. palmivora* and *P. meadii* in all the combinations of paste and solid formulations as compare to control (8.5 to 9 cm colony growth on 7th day and sporangia production on 12th day) till sixty days after preparation (Fig. 13).

Further testing of these formulations will be continued until their efficacy declines.

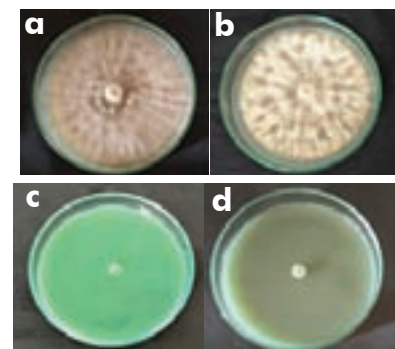


Fig. 13. Colony growth of *P. palmivora* and *P. meadii* (a&b) in control and treatments (c&d)

Prathibha V.H., Vinayaka Hegde and Daliyamol

Development of *T. harzianum* (CPTD28) formulation with enhanced shelf life and supply of nucleus culture

Trichoderma harzianum (CPTD28) is a potential native isolate found very effective in the management of major fungal diseases of coconut and cocoa and in addition it also possesses growth promotion activity. In order to enhance shelf life of *T. harzianum* four types of farmer friendly and cost effective bio formulations were tested (Fig.

14). Significant increase in colony forming units (cfu/g) was recorded in all the formulations from 32 to 90 but the highest cfu/g (90×10^{-8}) in areca based formulation and this could be used for maintenance and supply of nucleus culture. Also recorded increased trend in cfu/g even after four months of storage in all four formulations.



Fig. 14. *Trichoderma harzianum* formulations

Prathibha V.H., Daliyamol and Vinayaka Hegde



Identification of an effective isolate of *Trichoderma harzianum* ACT1 for the management of arecanut basal stem rot disease

A total of 117 *Trichoderma* isolates were obtained from the soil samples collected from the rhizosphere of arecanut in major arecanut growing areas (Coastal Karnataka, Maidan and Malnad). Based on growth characteristics and spore morphology, 38 isolates were selected for evaluating antagonistic activity against the arecanut basal stem rot pathogen, *Ganoderma lucidum*. Antagonistic assay resulted in the identification of three effective *Trichoderma harzianum* isolates i.e., ACT1, APT38 and AT56 with 86.7%, 83.3% and 84.4% inhibition of pathogen respectively. All the

isolates showed rapid growth with a mean colony growth rate of 3 cm day⁻¹. Growth promotion activity of six isolates studied under net house condition recorded significantly higher total biomass in arecanut seedlings treated with *T. harzianum*

ACT1 (48.7 g) as compared to control (45.5 g). Holistically, *T. harzianum* strain ACT1 was found to be promising with respect to antagonistic activity, mean growth rate and total biomass production (Fig. 15).

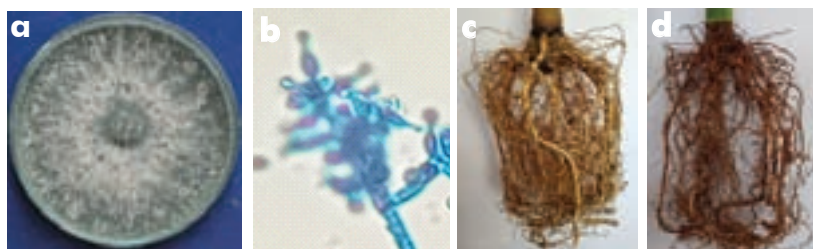


Fig. 15. *Trichoderma harzianum* ACT1 (a) Cultural characteristics (b) Conidiophores bearing conidia (c) Root biomass in control (d) ACT1 treated plants

Thava Prakasa Pandian, R., Shivaji Hausrao Thube, Bhavishya, Chaithra, M., Vinayaka Hegde

Identification of Propiconazole 25% EC as an alternative fungicide for the management of arecanut inflorescence dieback disease

Pooled analysis of the field data collected during three consecutive years (2018-2020) recorded significantly lower disease incidence in 0.2% Carbendazim 25% EC + Flusilazole 12.5% SC (5.79 %), and 0.3% Propiconazole 25% EC (7.94%) treated palms. Recently, the Government of India banned fungicides like

Carbendazim, Mancozeb and Zineb. In this context, Propiconazole 25% EC (0.3 %) was demonstrated on a wider scale in ICAR-CPCRI RS, Vittal during 2021. Percent disease incidence was recorded 10.31 in Propiconazole 25% EC sprayed plots in comparison with Mancozeb 75% WP (18.2) and non-sprayed plots (21.34). Hence,

Propiconazole 25% EC (0.3%) would be recommended as an alternative fungicide to arecanut inflorescence dieback disease.

Thava Prakasa Pandian R., Shivaji Hausrao Thube, Chaithra, M., Pratibha V.H., Vinayaka Hegde

In vitro suppression of *Ganoderma* wilt pathogen using coconut-based organics

Various products obtained after recycling of coconut biomass such as Kalpa Organic Gold, Kalpa Vermiwash and Kalpa Soil Care were evaluated *in vitro* against *Ganoderma lucidum*, causal organism of Thanjavur wilt or basal stem rot disease in coconut palm. Results revealed that when Kalpa Organic Gold (extracted in twice the volume of water in the form of compost 'tea') was used as an amendment in growth medium @ 20% (v/v), it completely inhibited the pathogen (Fig.16). In contrast to this, Kalpa Vermiwash and Kalpa Soil Care (extract prepared in twice the volume of water) inhibited *G. lucidum* at higher concentrations (v/v) of 50% and 75%, respectively. Sterilized Kalpa Vermiwash and

Kalpa Organic Gold extract were also found to have inhibiting effect on *G. lucidum*. The compatibility of Kalpa Organic Gold and Kalpa Vermiwash with *Trichoderma harzianum*, the potential bioagent recommended for the biological management of disease in field, was also tested. Both were found to be compatible; in fact,

Trichoderma fortified in Kalpa Vermiwash produced maximum number of colonies suggesting greater compatibility between them (Fig. 17). The results indicate possible pathogen suppressiveness and potential inclusion of Kalpa Organic Gold and Kalpa Vermiwash soil application as part of disease control strategy for *G. lucidum*.



Fig.16. *G. lucidum* (left) and its growth inhibition by Kalpa Organic Gold (middle) and Kalpa Vermiwash (right)



Fig. 17. Growth enhancement of *T. harzianum* by Kalpa Vermiwash (right)

Daliyamol, Alka Gupta, VH Prathibha, Murali Gopal and Vinayaka Hegde

Occurrences of leaf base rot in coconut

Leaf base rot was observed in two farmer's gardens at Kasaragod district of Kerala. Symptoms were characterized as dark brown color discoloration near the base of the petiole and also in cross sectioned tissue which leads to drying of coconut leaf from base to tip (Fig. 18). The fungal pathogens



Dark brown discoloration
Fig. 18. Symptoms of Leaf base rot

were consistently isolated and colonies were initially whitish grey in color and later turned to dark grey color with dense aerial mycelium. Recorded oval shaped, hyaline conidia originated from cylindrical shaped conidiogenous cells and later turned to brown color with single septa and

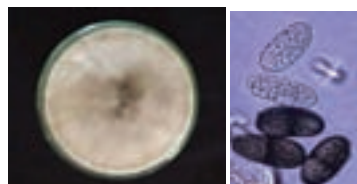


Fig. 19. Colony (a) and conidia (b) of *Lasiodiplodia theobromae*

longitudinal striations (Fig. 19). The associated fungus was identified as *Lasiodiplodia theobromae* based on morphological characters and by sequencing ITS region. The disease is under check by removal of infected leaves and spraying with 0.2% Hexaconazole 5EC.

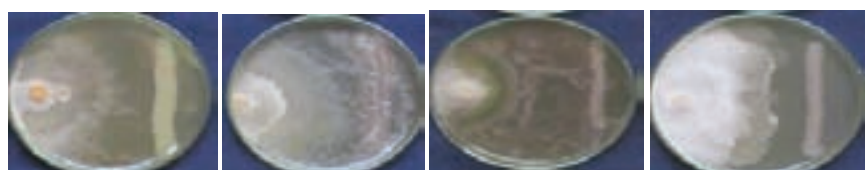
Prathibha V.H., Daliyamol and Vinayaka Hegde

Identification of novel antagonistic bacteria against *Phytophthora palmivora* infecting cocoa

Black pod rot of cocoa caused by *Phytophthora palmivora* is established as a major disease across the globe. In view of identifying the sustainable

strategy to manage this disease, an attempt was made to isolate novel antagonistic bacteria from plants (cocoa) and rhizosphere soil. The two genus of antagonistic

bacteria viz., *Bacillus* (*Bacillus megaterium*, *B. licheniformis* and *Bacillus* spp.) and *Rhizobium* spp. are found potent with >50% mycelial inhibition of *P. palmivora* (Fig. 20). Efficacy of these isolates will be further evaluated in field condition against black pod rot of cocoa.



Bacillus spp. *B. megaterium* *Rhizobium* spp.S8 *B. licheniformis* PALEB3

Fig. 20. Isolates culture of antagonistic bacteria

Chaithra, M., Thava Prakasa Pandian R., Shivaji H. Thube, Elain Apshara, S., Hegde V., Priya UK. and Bhavishya

Identification of novel entomopathogenic fungi *Cordyceps javanica* for management of tea mosquito bug (TMB) *Helopeltis* sp. in cocoa

Naturally infected wasp (adult) with fungal growth on the body were collected from arecanut gardens located in Moodubidre, Dakshina Kannada district of Karnataka. Pure culture of the fungus was isolated on potato dextrose agar (PDA) media. Cultural and microscopic characteristics were

recorded for fungal identification. PCR amplification of internal transcribed spacer (ITS) gene confirmed the identity of fungus as *Cordyceps javanica* (Fig.21). The nucleotide sequences of *Cordyceps javanica* strain (CPCRICJ1) generated in the present study have been deposited in GenBank with

accession numbers; MZ396583 and MZ396584.

In vitro efficacy of *Cordyceps javanica* against laboratory reared TMB confirmed 100 per cent mortality of subjected adults after 72 h of inoculation. Koch postulate was confirmed by re-isolation of *C. javanica* from the dead cadaver (Fig. 22).



Fig. 21. (a) Naturally infected adult wasp (b) Culture plate of *C. javanica* and (c) . Spores of *C. javanica*



Fig. 22. (a) Naturally infected adult wasp (b) Culture plate of *C. javanica* and (c) . Spores of *C. javanica*
Shivaji Hausrao Thube; R. Thava Prakasa Pandian, Chaithra, M.



Sporadic outbreak of lepidopteran insect pest, *Coconympha iriarcha* Meyrick, 1931 (Gelechiidae: Lepidoptera) on coconut

A sporadic outbreak of microlepidopteran insect pest, *Coconympha iriarcha* (Gelechiidae: Lepidoptera) was noticed in association with black headed caterpillar, *Opisina arenosella* infested coconut gardens at Kasaragod, Kerala during 2020. Larvae were found scraping and feeding on the green matter and in severe cases, a complete leaf skeletonization was noticed. On an average, 3 to 20 larvae per leaf were recorded per leaflet. Larvae, pale yellowish cream colour with two red dorsal lines running from head to abdominal end with yellowish head. Larval period - 7 - 12 days and pupa was obdect pupa with 6 –



Fig. 24. a. Larva b. Pupa c. Adult

7 days. **Head:** ocelli absent. Silvery yellowish rough scales on vertex and frons; Labial palpus long, three segmented. **Thorax:** Thorax silvery brownish color interspersed with yellowish scale. **Wings:** wingspan 10–11 mm in female and 8-9 mm in male, half of the forewing olive-green interspersed with small grey scales with a metallic-blue patch extending along the basal third of the costa, a silvery-white straight median transverse line, followed by a metallic-blue streak, the area beyond this wholly black with a coppery-purple-metallic fascia just before the termen, silvery white scales all along the apical margin; hindwings are dark fuscous, with the basal half rather lighter. **Abdomen:** first three segments are clothed with metallic blueish interspersed with olive green colored scales, remaining abdomen covered by metallic bluish gray scales and anal tuft

metallic blue scales (Fig. 23 & 24). The adult specimens were identified by Shashank P, IARI and deposited at National Pusa Collection (NPC), Division of Entomology, ICAR-IARI, New Delhi.



Fig. 23. *Coconympha iriarcha* Meyrick 1. Male adult, 2. Female adult, 3. Labial palpi, 4. Male genitalia, 5. Aediasus, 6. Female genitalia, Bursa copulatrix

Sujithra M and Rajkumar

SUCCESS STORY

De-husking Machine for Arecanut

Arecanut is widely grown in Mizoram and heavily consumer by north eastern people of India and its adjacent countries (like Myanmar and Bhutan) by means of chewing. The main earning method of many local people is cultivation of arecanut and its processing. Most of the farmers sell it as raw arecanut. Vendors usually sell the products after de-husking and polishing them. The traditional method of de-husking arecanut is quite challenging, time consuming and laborious.

The traditional method is manually de-husking the nuts with a sharp tool which totally depends on the skill of the personal. But this method can render hand injury. To break the monotonous process of de-husking and polishing, Mr. Lalbiakzuala Ralte (61 years old),

an inhabitant of Aizawl, Mizoram and whose educational level is B.A. (Pass) and occupationally a farmer has invented a modern de-husking machine for arecanut with the collaboration of other farmers.

For avoiding the time-consuming traditional method, the innovators undertook a research on this from their own pockets. The salient



The traditional method of de-husking arecanut in Mizoram

features of the improved machine are as follows:

- Any size of small nuts can be de-husked, especially for arecanut
- The design works on the principle of scraping the husk on a rotating four blades.
- The blades are mounted in a particular pattern so that they can rotate
- It operates on an electric motor of power capacity with 150 watts
- It consumes 2.8 unit electricity per hour and peel 500 nuts per hour
- Feeding rate is 40 raw nuts for each operation at a time.
- Weight- 7kg and floor space requirement- 1ft x 1 ft.

Overall this machine abolished the traditional monotonous and risky work of cleaning arecanut and brings about an enjoyable and

risk free method for the task. Even young children, elder people, women, and disabled persons can operate this machine and make earning, though it has no intention for breaking the child labour lanes (1986). The machine

has been sold more than 100 nos. till date across various parts of Mizoram and other states of India. The machine is eco-friendly, gender friendly and generates self employment of a large number of unemployed people.



Arecanut De-husking Machine invented by Mr. Lalbiakzuala Ralte

A silent revolution in value addition of banana

Hon. Prime Minister of India in his "Mann Ki Bath" on 25th July, 21 appreciated the efforts of the farming communities and homemakers in Uttara Kannada and Dakshina Kannada districts in Karnataka for igniting a culinary change by utilizing banana flour, in these difficult times of COVID pandemic, especially when the restriction brought in due to lockdowns and glut in the market prevent the banana farmers from realizing a decent price. He mentioned it as a typical example of value addition of agricultural produce for enhancing income and home level nutritional security.

The whole movement started when Ms. Nayana Anand from Tumkur contacted Smt. Jissy George, SMS (Home Science) of the ICAR-KVK-Alappuzha for the details of technology for the preparation of banana flour with the help of Sri. Shree Padre of Adike

Patrike, a farm based journal. The technology and practical tips were conveyed through whatsapp voice clippings and messages. She then turned a bunch of plantain into sweets and savouries for a week, posting pictures of her experiments and, thus, creating a buzz in Any Time Vegetable (ATV), a WhatsApp group composed predominantly of farmers in Uttara Kannada which went viral and initiated the silent revolution. The easy process of converting raw banana of any variety into flour, without any fancy equipment or heavy investment except a drier, attracted the fancies of many in the group and became trending when the home makers prepared different delicacies out of this flour and publicized. Sensing the potential of the activity, Mr. Padre got in touch with the Central Processing facility at Kotegadde, near Thirthahalli, established by the Vanilla Growers' Association. He persuaded them to process

banana flour and 50 kg, made from local varieties, were distributed to homes. Families across Thirthahalli then took up the challenge and unleashed a culinary fiesta with banana flour.

On hearing the news of this revolution, Dr. Uma Subbaraya, Director, ICAR-National Research Centre for Banana at Tiruchirapilly sent a congratulatory message and offered all support to these enterprising women. Thus a small spark from ICAR-KVK-Alappuzha has ignited the entrepreneurial imaginations of many in the far away districts of Karnataka leading to a silent revolution in value addition of banana.



Banana flour production in Karnataka

IMPORTANT EVENTS

Research Advisory Committee (RAC) Meeting

The 23rd RAC meeting was held through videoconferencing mode on 11th June 2021 at ICAR-CPCRI Kasaragod. Dr. S.P. Ghosh, former DDG (Hort.), ICAR was the chairman RAC, joined the meeting from The Netherlands. Dr. Abraham Verghese, Former Director, NBAIR, Bengaluru, Dr. B.S. Hansra, Former ADG (Extension), Noida, Uttara Pradesh, Dr. K.V. Bhat, Former Principal Scientist, ICAR-NBPGR, New Delhi and Dr. B.K. Pandey, Principal Scientist,

ICAR (Nominee of ADG (HS-II)), were present during the online RAC meeting. Dr. Anitha Karun, Director (Acting) presented various activities and achievements made by the Institute in the R&D sector. Dr. Ravi Bhat, Principal Scientist, Member Secretary, RAC and Dr. H.P. Maheswarappa, Project Coordinator (Palms), Heads of Divisions, programme leaders and other scientists of ICAR-CPCRI attended the meeting from different locations online. Project leaders

from the Institute have presented their achievements online. It was followed by discussions and recommendations.



Dr. Anitha Karun, Director (Acting), ICAR-CPCRI, Kasaragod presenting research highlights of the Institute



Institute Research Committee (IRC) Meeting

The 49th IRC meeting was held during 22nd - 25th June 2021 through videoconferencing mode under the chairmanship of Dr. Anitha Karun, Director (Acting), ICAR-CPCRI, Kasaragod at ICAR-CPCRI, Kasaragod. She inaugurated the meeting with her opening remarks. Presentation of work done report on various projects under ICAR-CPCRI including externally funded projects was made by the scientists.

The Plenary Session of IRC was held on 25th June 2021. Dr. V. Venkata Subramanian, Director, ICAR-ATARI, Bengaluru was the chief guest on the occasion. The Directors of ICAR-IIOP and ICAR-IISR, Kozhikode have also participated in the Plenary Session. Dr Venkatesh Hubballi, Director, DCCD, Shri Prabhakar Rao, Project Director, ITDP, Vizag, A.P., Shri Krishna Kanta Bora, Organizing Secretary, Bharatiya Kisan Sangh, Assam, Joint Director, of Horticulture, Mizoram,

Shri Suresh Kumar Shetty and Shri Sadananda Shetty, IMC Members of the institute and progressive farmers from Kasaragod, Dakshina Kannada and Mizoram have also participated. The session was started with the welcome address of Dr Anitha Karun, Director, ICAR-CPCRI, Kasaragod and ended with vote of thanks from Dr. K. Samsudeen, Principal Scientist and Member Secretary, IRC.

HUMAN RESOURCES DEVELOPMENT

Participation in training programmes

Name & designation	Title of the programme	Organizer & Date
Dr. K B Hebbar, Principal Scientist & Head (Acting), Division of PB & PHT	Virtual training programme for the BUREAU OF INDIAN STANDARDS Technical Committee members	Food and Agriculture Department, BIS 24th to 25th May, 2021

Awards

Dr. Rajkumar, Scientist has been awarded the best poster presentation for research article on 'Management of root-knot nematode, *Meloidogyne incognita* infecting turmeric (*Curcuma longa* L.) under coconut cropping system presented in *International symposium on spices and aromatic crops (SYMSAC-X)* at ICAR – IISR, Kozhikode, Kerala during February 09-12, 2021.

Dr. J S Pruthi award for the best research paper' published in 2018 by Indian Society of Spices, ICAR-IISR, Kozhikode, Kerala has been conferred to Dr. R. Thava Prakasa Pandian, Scientist, ICAR-CPCRI, Regional Station, Vittal.

'Best Oral presentation award' for the research work presented in the National e-Conference (Plant Health and

Food Security: Challenges and Opportunities) conducted by Indian Phytopathological Society, ICAR-IARI, New Delhi (25-27 March 2021). has been conferred to Dr. R. Thava Prakasa Pandian, Scientist, ICAR-CPCRI, Regional Station, Vittal.

PUBLICATIONS

Research Paper

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- Popular articles**
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New Project Sanctioned

A new project entitled "Formulation development of entomopathogenic fungus *Simplicillium* sp. and its utilization in the management of coconut invasive whiteflies" was sanctioned with budget of Rs. 17.82 lakhs funding from CDB, Kochi for a period of two years from January 2021 – December 2022. Dr. M. Sujithra, Scientist (Agrl. Entomology) as the P. I of the project.

New projects/ initiatives

Demonstration of Pragathy Variety of Turmeric and Mahima variety of Ginger were initiated in 11 farmers' plots from KVK, Alappuzha. A total of 650 kg of turmeric and 300 kg of ginger seed material was supplied to farmers.

OTHER INFORMATION

Vaccination Against Covid-19

A Vaccination Camp was arranged at ICAR-CPCRI, Kasaragod for its staff for 2nd dose of the vaccine against Covid-19 during 20-21 June 2021. It was arranged from the Community Health Centre, Mogral Puttur.



Director inaugurating the vaccination camp

TRANSFER OF TECHNOLOGY

On campus farmers training

Organized two days farmers' trainings under 'Entrepreneurship Development Programme (EDP) on coconut cultivation' and scientist – farmers interaction from 8 March 2021 to 9 March 2021 for the benefit of the Gujarat farmers. The objective of this programme was to impart knowledge and create awareness about improved coconut cultivation practices, different coconut cropping system models, integrated nutrient management, drip irrigation layout, fertigation techniques, crop protection techniques, biological management of insect pests using entomopathogenic nematodes (EPN) and high yielding coconut varieties/ hybrids/tender nut varieties which are suitable for farmers of Gujarat to enhance their farm income. The training programme was coordinated by Smt. Surekha and Mr. Bhavishya.

The ICAR – CPCRI has taken various initiatives for reaching out the EPN technology to the farmers by conducting various awareness training programmes on 'Integrated pest and disease management in coconut and



Gujarat farmers along with experts from ICAR-CPCRI Kasaragod

arecanut', field diagnostic visits and conducting demonstrations in farmer fields. To make available EPNs at farmers door step in village levels, ICAR - CPCRI has transferred 'Kalpa EPN (CPCRI-SC1)' liquid formulation production technology to the progressive farmer's group/ entrepreneurs and provided them skilled training on mass production of entomopathogenic nematode (EPN) and hosts insect *Galleria mellonella* to the farmers from Chikkamagaluru district of Karnataka on 06 April 2021. Total 600 Kalpa EPN units were

distributed to the farmers during this period. The main objective of the skilled training is to make farmers self reliant (Atmanirbhar).



Coconut farmers collecting Kalpa EPN units from ATIC sale point

Off-campus training programme

Organized three days training programme on "Production of

Trichoderma formulations: talc and coir pith cake to Sree Krishna Agro Industries, Ananthapura,

Kasaragod during 21-23 April 2021.

Frontline demonstrations

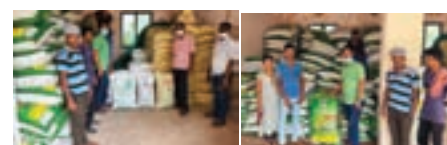
Demonstration of Kalpa EPN (CPCRI – SC1) application for the management of white grub in arecanut and coconut to the visiting farmers of Chikmaglore, district of Karnataka on 29 June 2021 and to the farmers from Manjeshwar Taluk of Kasaragod on 28.04.2021 for the management of vegetable insect pests.

Inputs and plant protection items like neem cake, rock phosphate, copper sulphate and lime were supplied to beneficiary for establishing demonstration plots on arecanut based multispecies

cropping system. Technical advice on cultivation of arecanut, cocoa, nutmeg, black pepper and banana was also provided to beneficiaries. Carried out seasonal operations in the demo plots.



Shri Shridhara Karnath a organic farmer and Swamiji Mangala Swarup from Manjeshwar Taluk Kasaragod



Inputs and plant protection measures supplied to beneficiary farmer of Punacha village, Karnataka



Inputs and plant protection measures supplied to beneficiary farmer of Bannur village, Karnataka



Radio talks/ TV programme broadcast

Dr. A. Joseph Rajkumar, Pr. Scientist delivered a talk on 'Pest management in coconut' (Vayalum vedum) re-broadcasted by All

India Radio, Thiruvananthapuram on 17-05-2021.

Dr. S. Kalavathi, Acting Head delivered a talk on 'Pre-monsoon

advisory services for coconut farmers' (Interview) by All India Radio, Thiruvananthapuram on 03-06-2021.

Online Trainings / Online Meetings conducted

Resource person	Title of lecture	Programme	Place & date
Dr. A. Joseph Rajkumar, Principal Scientist	'Invasive Alien Species on Plantation Crops in Kerala with special emphasis on Coconut'	Webinar series on Plant Protection Issues in Kerala by CIPMC, Kochi	ICAR-CPCRI, Regional Station, Kayamkulam 04-05-2021

Farmer-Scientist interaction

Farmer - Scientist interactive series was organized at ICAR-CPCRI, Regional Station Kayamkulam through Zoom meeting on every Monday, Wednesday and Friday from 21st May to 11th June 2021. Dr. S. Kalavathi, Dr. A. Joseph Rajkumar, Dr. Anes, K.M. and Dr. G. Rajeev interacted with more

than 250 farmers through mobile and Whatsapp on various aspects of coconut cultivation.

Another Farmer-Scientist interaction meet with coconut growers was organized by IISR-KVK Peruvanamozhi and ICAR-CPCRI, Kasaragod in virtual mode on 15-06-2021. Dr. C. Thamban, Dr. P. Subramanian and Dr. A. Joseph

Rajkumar, Principal Scientists were the experts during the interaction meet. More than 80 farmers interacted through online platform in which all facets of coconut including pedigree, production, protection and processing were discussed and remedial measures were suggested to all queries raised.

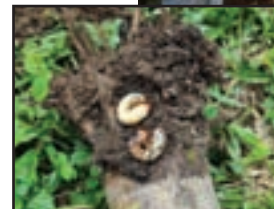
Arecanut root grub pest diagnostic field visit

The field diagnostic visit by Dr. Rajkumar found a severe attack of root grub pest (*Leucopholis* sp.) on arecanut in Sullia, Karkala and Puttur taluk of Karnataka with root grub incidence of 28 - 37% in the palms (3 - 5 year age) with 60 - 77% of root damage and affected palm basin. These were identified as 1 - 4 late instar grubs. Single grub damage is sufficient to kill the young arecanut palms. Similarly in Puttur Taluk the root grub affected palms were showing more than 50 % yellowing with 3 - 15 grubs /palms with yield loss of 83.33% (0.5 kg from 3.0kg dry nuts per palm). The incidence of the root grubs in the gardens

were from the last 6 - 8 years. During the visits farmers were made aware about management of root grubs using entomopathogenic nematodes (EPN) and its successful demonstration in the farmer's field for controlling the pest and distributed 295 units of Kalpa EPN liquid formulation.

Mera Gaon - Mera Gaurav

Under MGMG, agricultural issues faced by the farmers of the three adopted villages (namely Pradhanpara, Southmatiali and Kudipara) were solved over virtual/online mode/ phone calls/ SMS.



Root grub affected palms showing yellowing, Inset: Dead young palm severely damaged by root grubs found complete loss of roots

ICAR - Krishi Vigyan Kendra, Kasaragod

Local Mango Varietal Orchard

As part of Bharat ka Amrut Mahotsav, ICAR-KVK, Kasaragod organised a programme named

'Nattumavin Thottam' (Orchard of local varieties of mango). In this programme, KVK distributed about 800 mango seedlings of

local variety at Padannakkad, Nileswaram and Kuttikol.

Entrepreneurship Development Programme

Bulk processing of pineapple for squash production: Around 50 kgs of Pineapple was processed

by 5 women entrepreneurs at the Model Agro Processing Lab during second week of April 2021. The

prepared pineapple squash were marketed by the entrepreneurs.

Anaemia Awareness Week

As a part of Anaemia Awareness week which is from April 12th to April 17th, 3 awareness programmes were conducted online in collaboration with ICDS, Manjeshwar on the topic 'Prevention of Anaemia'. The target group was a team of adolescent boys and Girls between 13- 16 years of age who were Ambassadors of the programme Campaign 12 intended for

creating awareness on prevention of anaemia among peer groups and community. The participants identified covered 4 panchayaths - Vorkady, Paivalike, Manjeshwar and Meenja with a participation of 46 males and 130 females.

During the week, 2 other Anaemia awareness programmes under CAMPAIGN 12 programme were conducted for Anganwadi teachers / supervisors on 'Prevention

of Anaemia' with an objective of equipping them with the latest knowledge on the cause, government interventions, dietary guidelines and technical know-how to address anaemia and educate the same to vulnerable groups through Anganwadi programmes. The target participants were coordinated by CDPO, ICDS, Manjeshwar wherein 110 females participated.

Programmes in Coordination with Line Departments

ICAR-KVK, Kasaragod conducted two webinars in Coordination with Vorkady Grama Panchayath and Kudumbasree CDS, Kasaragod on June 3rd and 4th, 2021. The first Webinar (Kannada) was on 'Effective utilization of local food sources for

immunity building' (Roganirodhaka shakthi vardhisalu pradheshika aahaara sampanmoolagala balake), especially during Covid-19 pandemic. The programme was commenced with a welcome address by Smt. Shewta (Vice Chairperson), presidential address

by Smt. Veetha H. Prasad, Chairperson, CDS, Inaugural address by Smt. Bharathi Sathish, President, Vorkady Grama Panchayath and introductory remarks by the Chief Guest, Sri T.T. Surendran, DMC, Kudumbasree.

ICAR - Krishi Vigyan Kendra, Alappuzha

Planting materials and inputs distributed to SC families

With focus on improving the nutritional security of the socially and economically backward SC families of the society, Mango and Jack grafts, curry leaf seedlings, bush pepper plants, seed rhizomes of ginger and turmeric were distributed along with bio-agents and organic manure to 100 selected SC farmers of Venmony panchayath as part of the Schedule Caste Sub Plan (SCSP) of the Govt. of India. The programme organized

by the KVK in collaboration with Gramadeepam library, Punthala which was attended by Sri. Jebin P.Varghese, Chengannur Block panchayath president; Smt. Sunimol T.C., Venmony Grama panchayath president; Smt. Manjula Devi, District panchayath member; Dr. P. Muralidharan, Head, KVK; Shri Babu, Ward member; Sri Shajilal, Secretary, Taluk Library Council; and Sri M.S. Rajeev and Smt. G. Lekha, SMSs of the KVK. The programme,

arranged by strictly following the COVID protocol, was attended by 32 farmers and media persons.



Distribution of planting materials to SC families

Awareness programme on "Balanced fertilizer application"

An online training on 'Balanced use of fertilizers for soil and crop health' was conducted

as part of the National awareness Campaign on 18.06.2021. Twenty two farmers attended the

programme organized on the occasion of "Bharat Ka Amrut Mahotsav"



Training programmes

During the period 10 training programmes were organized benefiting a total number of 331 farmers/rural youths. The details of the training programmes were as follows:

Training	No. of Programmes	Participants		
		Men	Women	Total
On campus (online)	9	124	194	318
Off campus	1	11	2	13
Total	10	135	196	331

Extension activities:

- α) Help line service (calls attended and responded) – 168
- β) Agro-clinic – 47
- χ) Soil & water testing -7
- δ) Newspaper coverage – 5

COMMERCIALIZATION OF TECHNOLOGY

During the period from April to June, 2021, 4 technologies were commercialised by the Institute to entrepreneurs through MoA as per the details given below, an amount of Rs. 62,000/- have been collected as technology transfer fees.

Director, CPCRI handing over signed MOA to Shri. Suhas Mohan



S.N.	Technology	Date of licensing	Transfer fees Rs.	Entrepreneurs
1	Aqua formulation of EPN Kalpa EPN	08-04-2021	5000	Mr. Suhas Mohan, Supritha Nilaya. Rathnagiri Bore, Chikkamagalur 577 101, Karnataka
2	Preservation of carbonated tender coconut water	05-05-2021	25000	Smt. Livia Thomas, The Director, Scarlet Naturals Pvt. Ltd., 20/353, M.M. Bazar, Aluva Road, Angamaly, Ernakulam
3	Knowhow for processing of cocoa nibs	17-06-2021	7000	Smt. Latha Sabbam, C/o CocoaBuzz, DayalRaj Apartments, Opp: ABC Hospital, Maharanipeta, Visakhapatnam, Andhra Pradesh-530002
4	Kalpa Soil Care (coir pith composting (urea free))	18-06-2021	25000	The Secretary, Poinachi Farmers Welfare Co-Operative Society Ltd. No. S. 534, Poinachi, Thekkil P.O., Chengala via, Kasaragod District, Kerala State - 671541
		Total	62000	

Participation in national seminars/ symposia/ conferences/ workshops/webinars

Name & designation	Title	Organizer & Date
Dr. V. Niral, Principal Scientist	National online Seminar on Coconut Production and Value Addition	Dr. Y.S.R. Horticultural University, Horticultural Research Station, Ambajipeta 26 February 2021
Dr. Thava Prakasa Pandian, Scientist	National e-Conference on Plant Health and Food Security: Challenges and Opportunities conducted by Indian Phytopathological Society	ICAR-IARI, New Delhi (25-27 March 2021)
Dr. Thava Prakasa Pandian, Scientist	International Symposium on Coastal Agriculture: Transforming Coastal Zone for Sustainable Food and Income Security conducted by Indian Society of Coastal Agricultural Research, ICAR-Central Soil Salinity Research Institute, Regional Research Station	Canning Town - 743 329, West Bengal 16th to 19th March, 2021
Dr. V. Niral, Principal Scientist (Genetics), Crop Improvement and Dr. Nagaraja, N. R., Scientist	International Webinar on Exchange on PVP Post Control Measures	PPV&FRA, New Delhi on 8.04.2021.

Dr. Regi Jacob Thomas Principal Scientist Dr. Merin Babu Senior Scientist	Annual Review & Action Plan meeting of KVK's in Kerala State	Directorate of Extension, Kerala Agricultural University 20.4.2021 to 23.4.2021
Dr. S. Elain Apshara, Principal Scientist	15 th INGENIC Asia-Pacific Breeders Meeting- Virtual	Brisbane, Australia 20-23 April 2021
Dr. Nagaraja, N. R., Scientist	Attended online meeting of the SCSP project	ICAR-CPCRI, Kasaragod, Kerala on 20.04.2021.
Dr. V. Niral, Principal Scientist	COGENT ITAG1 on In- & Ex-situ online conservation	Alliance of Bioversity and CIAT, 22 April 2021
Dr. Rajkumar, Scientist	Webinar on Unmanned aerial vehicles for precision agriculture organized by Bharatiya Engineering Science and Technology innovation University,	Andhra Pradesh 12.06.2021
Dr. Regi J. Thomas, Principal Scientist	International Workshop on 'Scientific Writing'	ICAR-NDRI, Karnal under IDP-NAHEP 23 th & 24 th June 2021
Dr. Nagaraja, N. R., Scientist	Attended online Annual Review Meeting of the project 'DUS Centre for Arecanut' funded by PPV&FRA, New Delhi.	PPV&FRA, New Delhi on 23rd June 2021
Dr. Sandip Shil, Scientist	Workshop on "Enhancing Agricultural Resilience through Index-based Flood Insurance and Post-flood Management Interventions in India".	ICAR-IIWM & IWMI 29-30 June 2021
Dr. P. Muralidharan, Head, KVK, Dr. S. Ravi, Dr. K. Sajnanath, Dr. T. Sivakumar, Mr. M.S.Rajeev, SMSs	Review cum Action Plan Workshop of NICRA project of KVKs of Zone XI	ICAR-ATARI, Bengaluru on 26.06.2021
Dr. Nagaraja, N. R., Scientist	Attended online Annual Review Meeting of the MIDH (Mission for Integrated Development of Horticulture)/ NHM (National Horticulture Mission) programmes implemented through Directorate of Arecanut and Spices Development, Calicut	DASD, Calicut during 25th to 26th June 2021

Technical Staff

Dr. K. Sajnanath	Sensitization workshop on the network project entitled 'Impact assessment of selected interventions by KVK under DFI for enhancing farmers income' (Online)	ICAR – ATARI Jodhpur on 22.04.2021
Dr. S.Ravi, SMS (AH)	Webinar on "Innovative extension strategies for sustainable livestock development"	Madras Veterinary College, TANUVAS, Chennai on 29.04.2021
Mrs. Lekha, G.	National webinar on "Promise of biological control for sustainable pest management"	MPUAT, Udaipur on 17.05.2021
Mrs. Lekha, G.	Online training on "Management of African snail"	Organized by KAU, Thrissur on 02.06.2021
Dr. T. Sivakumar, Mrs. Lekha, G., Dr. S. Ravi & Dr. K. Sajnanath	Capacity Development Programme on "Virtual Farmers Field School"	Hosted by ICAR – ATARI, Sone VIII, Organized by University of Agricultural and Horticultural Sciences, Shivamoga, Karnataka on 14.6.2021
Mrs. Jissy George	Webinar on "Value added products of Banana"	Organized by NRCB, Trichy on 23.06.2021
Mrs. Jissy George	Webinar on "New opportunities of food processing"	Organized by KAU- ABI, Thrissur on 26.06.2021



CELEBRATIONS

World Bee Day

World bee day was celebrated on May 20th as part of "Bharat Ka Amrut Mahotsav" with a webinar on "Importance and rearing techniques of honey bees" and a

quiz contest for vocational higher secondary students organised by KVK, Alappuzha. Out of the 36 students participated, Mr. Adithya A of Govt. VHHS, Mavelikkara, Ms.

Amala B, Govt. VHHS, Mavelikkara and Ms. Bhavana Prasannan, Govt. VHSS, Eravankara won the first, second and third place, respectively.

Anti Terrorism Day

Anti Terrorism Day was observed on 21 May 2021 by taking the 'Anti-Terrorism Pledge' by all staff member of ICAR-CPCRI at Headquarters and other units. Staff joined the online programme in which Dr. Anitha Karun, Director read the

pledge in English and Dr. Alka Gupta, Principal Scientist read the pledge in Hindi. Dr. Anitha Karun mentioned about various terrorist attacks on our country and recent loss of our citizen Smt. Soumya at Israel. She emphasized the need of bringing awareness among public,

especially the youth, about the potential threat of terrorist outfits and our responsibility to keep away such movements from the country. Mr. T. E. Janardhanan, AO proposed vote of thanks.

World Milk Day

ICAR KVK Kasaragod conducted 2 programmes on June 1st to mark the occasion of World Milk Day 2021 - a Webinar on "Milk and Milk products in Human Nutrition and Rural income" and an Orientation Programme on "Milk as a Complete Food". Around 45 (10 men and 35 women) participants attended online.

The latter orientation programme for Adolescent children was conducted with the coordination of ICDS, Manjeshwar, Kasaragod which was attended by 42 adolescent children (10 boys and 32 girls) who were selected ambassadors of Anaemia campaign 12.

World Milk Day was celebrated on 1st June, 2021 with the theme "Animal Health and Productivity" organised by KVK, Alappuzha as part of "Bharat Ka Amrut Mahotsav". An online training programme on 'Dairy farming as economic enterprise' was conducted in which 19 dairy farmers participated.

World Environment Day celebrated at ICAR-CPCRI, RS, Kayamkulam

As part of the World Environment Day celebrations 2021, a Virtual Interactive Workshop on the theme: 'Ecosystem restoration' was conducted at ICAR-CPCRI, Regional Station, Kayamkulam on 7th June 2021. More than 200 students, from twenty one colleges from all fourteen districts of Kerala participated in the workshop, which was conducted through Zoom meeting and simultaneously broadcasted through the ICAR-CPCRI YouTube channel. Dr. S. Kalavathi, Acting Head welcomed the gathering. A special lecture on 'Restore

ecosystem to save our planet' was delivered by Prof. D. Thankamony, Former Head, Environmental Engineering Division, College of Engineering, Thiruvananthapuram. The lecture was followed by

elocution competition for students. In the afternoon session, the staff members of the station actively participated in the fruit tree planting campaign inside the campus by following COVID-19 protocols.



Online meeting and planting activities as a part of World Environment Day

International Day of Yoga

The 7th International Yoga Day inaugurated by Dr. Anitha Karun, Director (Acting), ICAR-CPCRI, Kasaragod was observed with an online demonstration of simple yoga exercises that can easily be practiced at workplaces to provide comfort for eyes, ears, neck, and hands. The live demonstration session, conducted through videoconferencing mode, was led by Smt. K. Sreelatha, ACTO (Hindi), with the support from Shri Narayana Naik (Assistant). The event was attended by all

staff members of ICAR-CPCRI and ICAR-DCR, Puttur, Karnataka.



Director and staff performing Yoga exercises as a part of the International Yoga Day

Distinguished visitors

Sri K. Somaprasad, MP (Rajya Sabha) visited Agro-Processing Training cum Incubation Centre (APTIC) of KVK - Alappuzha on 28 June 2021.



Sri K Somaprasad MP interacting with scientists at KVK Alappuzha

PERSONALIA

PROMOTIONS

Name of the staff	From (designation)	To (designation)	w.e.f.
Sri M. Krishnan	Skilled Support Staff	T1-Technician	22.04.2021
Sri K. Sukumaran	Skilled Support Staff	T1-Technician	14.06.2021

TRANSFERS

Name & Designation	From	To	w.e.f.
Smt. Mayalekshmi, Senior Technical Officer	ICAR-SBI, RC, Kannur	ICAR-CPCRI, Regional Station, Kayamkulam	3.5.2021
Smt. Deepa T., Upper Division Clerk	ICAR-CIFT, Kochi	ICAR-CPCRI, Regional Station, Kayamkulam	22.6.2021
Smt. Arathy R. Pillai, Skilled Support Staff	ICAR-CMFRI, Kochi	ICAR-CPCRI RS, Kayamkulam	25.6.2021

RETIREMENTS

Name	Designation	From (Place)	w.e.f.
Sri K.B. Thankachan	Skilled Support Staff	ICAR-CPCRI, Regional Station, Kayamkulam	31.05.2021
Sri N. Reghu	Skilled Support Staff	ICAR-CPCRI, Regional Station, Kayamkulam	31.05.2021
Sri S. Janardhana	Skilled Support Staff	ICAR-CPCRI, Research Centre, Kidu	31.05.2021
Sri M.P. Rajendran Nair	Tech. Officer (Mech. Engg.)	ICAR-CPCRI, Kasaragod	30.06.2021

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