



# काजू समाचार CASHEW NEWS



भा.क.अनु.प. – काजू अनुसंधान निदेशालय, पुत्तूर के अर्ध वार्षिक वार्ता पत्र  
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## DIRECTOR'S DESK



### Efforts at ICAR-DCR for diagnostic and management strategies to combat the emerging diseases of cashew

Cashew (*Anacardium occidentale* L.) is an important commercial plantation crop supporting the livelihood of farmers. Cashew is grown in warm and humid tropical and subtropical regions and India is a major key player in cashew processing and exporter of cashew kernels in the international market leading to considerable foreign exchange earnings. Cashew cultivation is expanding in non-traditional areas with recommended cultivation practices with the efforts of this Directorate. The low production and productivity are mainly attributed to both biotic and abiotic factors. Among the biotic factors pests are considered as major threat to cashew. It's well known in India that yield losses due to the pest damage is more than the diseases unlike in other cashew growing countries where the situation is vice-versa.

Diseases of cashew such as anthracnose (*Colletotrichum gloeosporioides*), gummosis or die back (*Lasiodiplodia theobromae*), powdery mildew (*Oidium anacardii*), black mold (*Pigriella anacardii*), angular leaf spot (*Septoria anacardii*), pink disease (*Corticium salmonicolor*), shoot rot and leaf fall (*Phytophthora nicotianae*), foot and root rot (*Pythium* spp.) and red rust disease (*Cephaleuros* spp.) have been documented in different cashew growing regions in the world. Among the reported fungal diseases, anthracnose and gummosis diseases are considered to be important.

In India, information is available on the incidence levels, nature of occurrence, yield loss and economic importance of different pathogens in cashew plantations as well as cashew nurseries and their management strategies are not developed. However, in other major cashew growing countries, many diseases due to infection by different fungal pathogens starting from seedling stage to harvesting of cashew nuts with economic importance and causing significant yield loss have been reported. However, proper identification and documentation of different disease occurring on cashew from India is lacking. In the current scenario, as the crop area is increasing with recommended cultivation practices and expanding to non-traditional areas, the



chances for occurrence of economically important diseases needs attention. Hence, it is essential and urgently needed to address the problems through diagnostic and integrated approaches to combat the emerging diseases in major cashew growing regions of India.

ICAR-DCR is mainly focusing on researchable issues like, the identification and documentation of different diseases occurring in major cashew growing regions of the country viz., i) regular monitoring to identify emerging / re-emerging diseases of cashew, ii) identification of causal agent of the disease through morphological and molecular approaches and iii) development of ecofriendly approaches for management of major diseases of cashew.

Recently, cashew leaf blight caused by *Neopestalotiopsis clavispora* under nursery conditions, anthracnose of cashew apple incited by *Colletotrichum siamense* and wilt disease by *Fusarium* spp. were documented using morphological and multigene approaches. The microbial analysis of cashew kernels (broken) revealed the presence of *Aspergillus* spp. and *Penicillium* spp. pathogens in the product which is a major concern for export and import of processed cashew kernels.



**Cashew leaf blight**



**Anthracnose disease**

The Directorate has taken new initiative and established a “Pest Diagnostic Laboratory” with state of art facilities under RKVY-RAFTAAR, Govt. of Karnataka. The facilities are being used for cultural, morphological and molecular identification of pathogen associated with the disease samples. The developed services are also available on payment basis for diagnostic and microbial analysis of cashew infected, kernels and value-added products of cashew samples from the cashew processing industries, entrepreneurs and other stakeholders.



**Pest diagnostic laboratory**



**Dr. J. Dinakara Adiga**



## RESEARCH HIGHLIGHTS

### Nethra Jumbo-2: A new Cashew Hybrid

In Cashew more than 80 percent of varieties belong to the medium (7g) to small nut (5g) category. Very few bold nut types are available among the commercially cultivated varieties. The bold nut types ease the process of harvesting, and picking fallen fruits and save the labour charges. Bold nut types fetch a maximum price at the market as well as by the processors. Therefore, a study was initiated to evolve bold nut cashew hybrids which fetch premium price in export market. Nethra Jumbo-2 was developed through hybridization process by crossing NRCC Sel-2 x Bhedasi. Nethra Jumbo-2 has the special character of a jumbo nut (12g), precocious bearing, cluster bearing habit, and higher yield. The added advantage of this hybrid is uniformity in nut size, wherein, more than 80% of nuts are uniform in size. As this hybrid is an early flowering type, loose attachment of peel to Kernel and the advantage of a higher market price at the beginning of the cashew season can be exploited. The hybrid Nethra Jumbo-2 is recommended on account of jumbo nuts, with premium grade kernel (W130), higher yield over the standard variety Bhaskara and NRCC Selection-2.



(Dr. J. D. Adiga., G.L. Veena., G.S. Mohana., E. Eradasappa., S. Siddanna., G. N. Manjesh., H. P. Bhagya and Babli Mog, ICAR-Directorate of Cashew Research Puttur-574202)

### Identification and comprehensive genetic characterization of cashew (*Anacardium occidentale* L.) accessions with special characters as genetic stocks for genetic improvement

In cashew crop improvement, effective utilization of germplasm holds a great potential for enhancing yield and quality of the produce. A systematic survey of Cashew National Gene bank located at ICAR-DCR, Puttur was conducted and 11 unique germplasm accessions with distinct traits for nut size, shape, styler region, CA shape, weight and color and CA to nut ratio were identified. These accessions were studied for morphological, biochemical and genetic variations. Morphological characterization showed substantial variations for most of the studied traits. Further, strong correlations were observed between nut weight and CK weight ( $r = 0.95$ ), and between nut weight and shell thickness ( $r = 0.95$ ), suggesting the scope for synchronized selection for these traits during breeding. Biochemical analyses showed significant variations with respect to cashew nut shell liquid (CNSL) content, CK oil, CA juice content and Total Soluble Solids (TSS) of CA juice in the studied accessions. Besides correlation was observed between CNSL content and shell thickness, suggesting sharing of the pathways influencing these traits. Finally, the molecular diversity analysis of the identified accessions with nine genic SSR markers identified 64 alleles in total among the accessions and Neighbor-joining (NJ) clustering resulted in formation three distinct clusters. Overall, this research underscores the genetic and phenotypic diversity present in identified cashew germplasm accessions and their potential use as genetic stocks for genetic improvement in cashew.

(Siddanna, S<sup>1</sup>., K. Manoj<sup>1</sup>., K. Ashwitha<sup>1</sup>, B. M. Muralidhara<sup>2</sup>., K. Manjunatha<sup>1</sup>., E. Eradasappa<sup>1</sup>., H. P. Bhagya<sup>1</sup>., G. S. Mohana<sup>1</sup> and J. D. Adiga<sup>1</sup>)

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## Unravelling the salt tolerance mechanisms of Indian Cashew

The biochemical and physiological processes underlying the tolerance trait of Indian cashew varieties to salinity have not been explored. As a result, a pot culture experiment evaluated salinity stress effects (0, 50, 100, 150 and 250 mM NaCl) on cashew plant growth, biomass, ion content and osmolytes. The findings showed that growth parameters, relative water content (RWC), photosynthetic pigments and soluble sugars (SS) greatly reduced under salinity in concentration-dependent manner in cashew. Under high salt condition (250mM), the stress tolerance index (STI) dropped as a result of decreased potassium ion content (K<sup>+</sup>) and increased sodium ion (Na<sup>+</sup>) buildup. Notably, the salt-tolerant variety, Bhaskara exhibited higher STI and efficient Na<sup>+</sup> exclusion, suggesting its effective utilization of these mechanisms for salt tolerance. RWC, leaf pigments, K<sup>+</sup>/Na<sup>+</sup> ratio, and SS were identified as key factors mitigating salt stress, leading to increased biomass and salt tolerance in cashew.

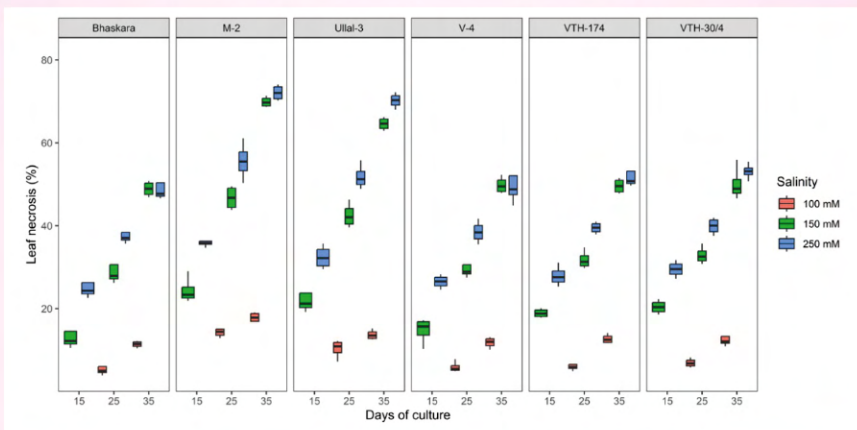


Fig.1: Effect of NaCl concentration on total leaf necrosis of six cashew varieties. Error bars show mean±S.E.



Fig. 2: Visual leaf necrosis symptoms in Bhaskara (tolerant variety) (A) and Madakkathara-2 (sensitive variety) (B) after 25 days of salt treatment

(Babli Mog, J.D. Adiga, Shamsudheen M, Bhagya HP, Thondaiman V, Veena G.L, Manjesh GN and Jyoti Nishad: ICAR-Directorate of Cashew Research, Puttur-574202)

### First Attempt on Intergeneric Hybridization in Cashew

Efforts were made towards crossing of two different genera to broaden the genetic pool, by creating hybrids with diverse characteristics. With this objective a first attempt was made in cashew (*Anacardium occidentale L.*) which was crossed with *Semecarpus kurzii* Engl. belongs to the family Anacardiaceae.



*Semecarpus kurzii* is wild in habit and early flowering type. Initially, there were no fruit set in cross involving *S. kurzii* and *A. occidentale*, there was an intergeneric crossing barrier which hinders the successful pollen germination and fertilization. Therefore, a preliminary treatment was used to break the crossing barrier to get fruit set. After preliminary treatment, the hybridization attempted and successful fruit set was observed. The fruits and nuts were subjected for morphological and biochemical characterization. Further the collected seeds from the cross were sown to raise  $F_1$  progenies. The raised  $F_1$  progenies were being evaluated for morphological characters. The leaf venation pattern of parents along with the hybrids were studied. The diaphanized leaves were stained and observed under microscope to record the variability.



(G.L. Veena, J.D. Adiga and G.N. Manjesh, ICAR-Directorate of Cashew Research, Puttur-574202)

### Pollination by native bees yielded superior cashew fruits

Pollination efficiency of three bee species viz., a native bee (*Braunsapis mixta*), stingless bee (*Tetragonula iridipennis*) and Indian bees (*Apis cerana indica*) was assessed in the cashew variety, VRI-3. Bee confinement method was adopted using fine mesh nylon net cages to cover four trees in each treatment and the bees were allowed inside. For Indian bees, a four framed hive was kept and sugar feeding was done at weekly intervals to supplement its food requirement. Artificial bee nests occupied by *B. mixta* were used in one treatment and a colony of *T. iridipennis* was used in another treatment. Observations indicated that all the three bee species actively foraged on cashew flowers even under confinement and successfully pollinated the cashew flowers. The mean nut yield per tree was more in the trees that were confined with stingless bees (1.45 kg) followed by *Braunsapis* sp. (1.20 kg) and Indian bees (0.89 kg). However, the fruits harvested from *B. mixta* caged trees were of superior quality with bigger sized and heavier cashew apples (58.30 g) and nuts (7.07 g) followed by stingless bees. But then, the apples (34.5 g) and nuts (6.33 g) were smaller in the Indian bees pollinated ones when a sample of nuts were examined.



Fig. 1. Fruits (VRI-3) harvested under different bee pollination

(K. Vanitha., G.L. Veena. T. N. Raviprasad., H. Rajashekara., M. Shamsudheen and Babli Mog: ICAR-DCR, Puttur-574202)



## Seedling rot disease of cashew-A first report

The seedling rot disease samples from cashew seedlings were collected from the nurseries of ICAR-Directorate of Cashew Research, Puttur, Karnataka during August 2023. The typical symptoms were observed during the monsoon season as initial water-soaked lesions in the leaves and later developed as necrotic spots of irregular size and severely affected leaves showed blight appearance and complete rotting and drying of seedling were also observed (Fig A & B). The seedling rot disease incidence of 25-30 % was recorded in cashew nursery. The mycelial growth on potato dextrose agar media appeared whitish to yellow in colour on the upper surface and brown to dirty white on reverse side of plates. The growth pattern developed a distinctive layer by overlapping one above the other with an open flower appearance and surrounded by lobed margin (Fig. C). The conidia were diamond shaped (Fig D). Morphological and cultural characteristics confirmed the pathogen as *Beltrania* sp.

Further, molecular characterization with internal transcribed spacer (ITS) was done to confirm the species. The ITS gene sequence was analyzed using nucleotide BLAST in NCBI database and confirmed the species as *Beltrania rhombica*. ITS gene sequence was submitted to NCBI with the GenBank accession No. PQ144276. A phylogenetic tree was generated from the ITS sequences obtained from NCBI database. Based on cultural, microscopic and molecular characterization the pathogen was confirmed as *Beltrania rhombica* (Fig 2). To the best of our knowledge this is first confirmed report of seedling rot disease caused by *Beltrania rhombica* from India.

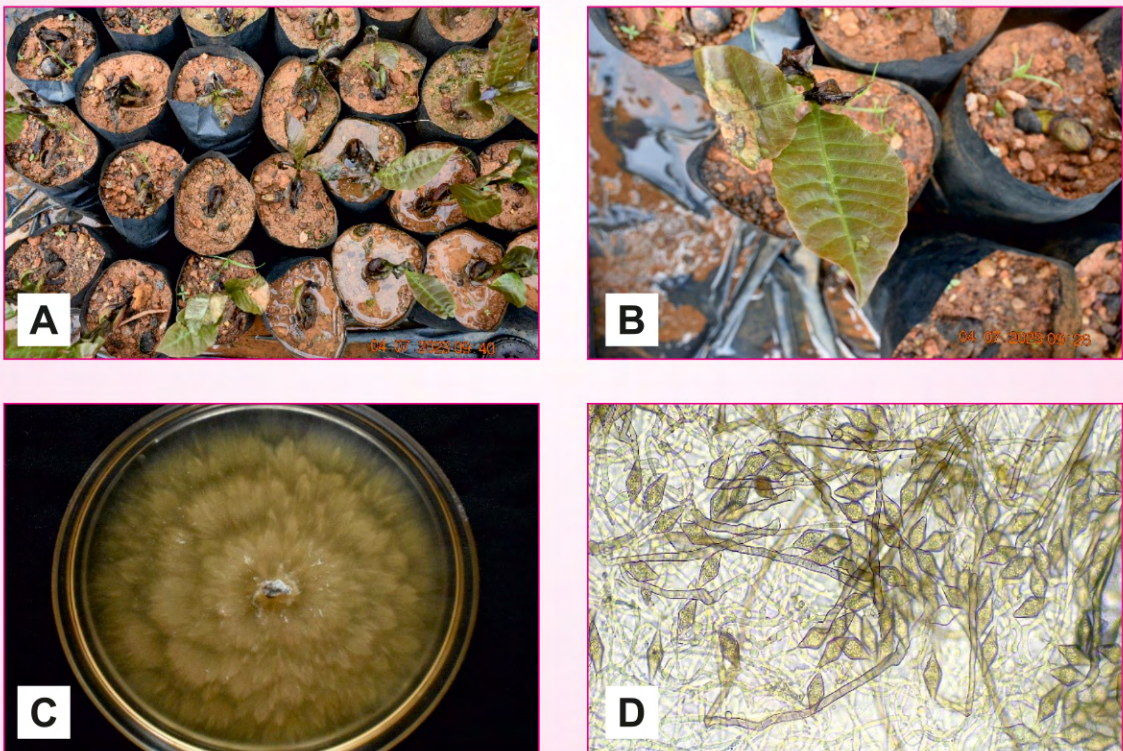


Fig 1. (A) & (B)-Typical symptoms of seedling rot disease, (C) - Pathogen growth on PDA media, (D) - Conidia of pathogen at 20X magnification



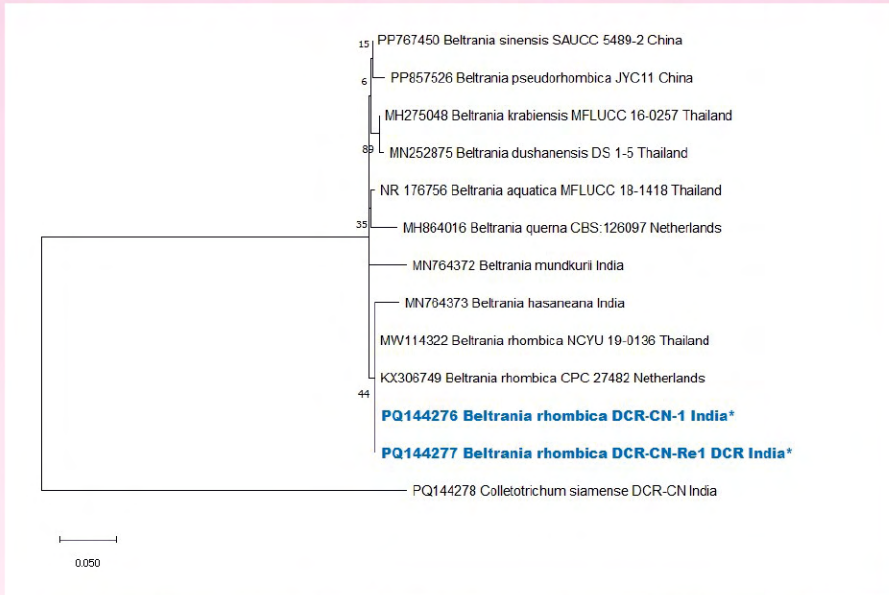


Fig.2 Phylogenetic tree produced using ITS gene sequence showing the phylogenetic relationship of *Beltrania rhombica* isolated from cashew and *Colletotrichum siamense* as out-group retrieved from GenBank, using the Maximum-likelihood (ML) method.

(H. Rajashekar<sup>1</sup>., R. T. P. Pandian<sup>2</sup>., K. Vanitha<sup>1</sup>, T. N. Raviprasad<sup>1</sup>., S. Siddana<sup>1</sup> and H. P. Bhagya<sup>1</sup>) <sup>1</sup>ICAR-Directorate of Cashew Research, Puttur-574202, Karnataka; <sup>2</sup> ICAR-Central Plantation Crop Research Institute, Regional Station, Vittal-574243, Karnataka

### Mechanized slicer for cashew apple

A Multi blade rotary system for cashew apples is developed for size reduction for further processing either to vacuum fry to prepare crispy nutritive chips or drying shredded pieces to convert in to amorphous form as basic ingredient in value addition as food, feed or fuel. It consists of feeding, singulation, slicing and discharge mechanism. Cost of the machine worked out to be 2.0 lakh. Performance of the slicer evaluated and its operational capacity found to be in the range of 78 to 90 Kgh-1 with average round slice recovery of 68 %. Floor space required is 2.38 M2 and total power requirement is around 1.54 HP. A patent application is filed in Regional Patent Office, Chennai (Patent application No. 202441050857 dated 3<sup>rd</sup> July, 2024)



(D. Balasubramanian<sup>1</sup> and Ravindra Naik<sup>2</sup>., <sup>1</sup>ICAR-DCR, Puttur-574202, Karnataka; <sup>2</sup>ICAR-CIAE, RS, Coimbatore, Tamil Nadu)



## Cashew apple cup cake

Consumers are increasingly conscious of the foods they consume due to the rise in lifestyle diseases like diabetes. As a result, there is a growing demand for low glycemic index foods. Cakes and cupcakes are liked by people of all ages, so a new formulation has been developed for a cupcake made from cashew apples and semolina that is low in glycemic index, low in fat, and rich in phytochemicals. The characteristic features of this cake are that it is prepared without refined flour, table sugar, and eggs. This cake is also low in saturated and unsaturated fatty acids making it a good choice for diabetics and health-conscious consumers. This product is high in fiber and polyphenols, offers excellent sensory quality, and maintains a low glycemic index.



(Jyoti Nishad<sup>1</sup>, K. Nishmitha<sup>2</sup>, H. Rajashekara<sup>1</sup>, Aswathy Chandrakumar<sup>1</sup>, G. L. Veena<sup>1</sup>, J. D. Adiga<sup>1</sup>)

<sup>1</sup>ICAR-Directorate of Cashew Research, Puttur-574202, <sup>2</sup>St. Aloysius College, Mangalore)

## Studies for increasing shelf-life of cashew apples

Cashew apple is a nutritionally rich fruit with plenty of vitamin-C, phenolics, flavonoids, anthocyanins, carotenoids, sugars, fibers, amino acids, and minerals. Around 10–30 ton/ha of cashew apples are produced globally, of which only 5-10% is processed, remaining 90–95% is left in the field due to lack of technological know-how for its preservation and utilization. Thus, this study aims to fill the gap between consumer demand and availability of cashew apple by prolonging its shelf life. Fruits of VTH 174 of 817 and 819 stage were selected for storage studies based on the physicochemical analysis and sensory evaluation. Different packaging materials (LDPE, PP and HDPE) were evaluated for their efficiency to increase the shelf life of the cashew apples. Studies were also conducted to compare low temperature storage and ambient storage. The samples were evaluated for physicochemical, biochemical, microbial and sensory properties. Results revealed that fruits of 817 stage packed in LDPE bags can be stored at low temperature (5°C) for 20 days without significant effect on the quality parameters.



Cashew apples – 0 day



Cashew apples – After 20 days

(Jyoti Nishad, H. Rajashekara., G. L. Veena, D. Balasubramanian., K. Manjunatha and J. D. Adiga)

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- Babli Mog, J. D. Adiga, Mohana G.S, Shamsudheen M, Eradasappa E, V. Thondaiman, Veena G. L, Manjesh G.N, Bhagya H. P, Manjunatha K, Vanitha K, Ibandalin Mawlong, M. Sujith Kumar, Anil Kumar Yadav, Rajkumar Dagadkhair. 2024. Increased revenue from Cashew: Focusing on cashew apple utilization. KERALA KARSHAKAN. Volume - 11 Issue – 08, February 2024
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### Training Manual:

- Balasubramanian, D., Veena, G. L and Jyoti N., 2024. Training manual on Entrepreneurship development program on Cashew Processing and Value addition. ICAR, DCR Puttur. Karnataka PP. 116.
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### Trainings / Seminars/ Conferences

Name of the Scientist	Title and Venue	Date
Dr. Aswathy Chandrakumar	Co-ordinated a training programme on Capacity building of farmers on scientific cashew production technologies under TSP in ICAR-DCR, Puttur	1 <sup>st</sup> & 2 <sup>nd</sup> February, 2024
	Organized training on Cashew based intercropping in collaboration with Rotary club, Puttur at ICAR-DCR, Puttur	20 <sup>th</sup> February, 2024
	Co-coordinator in the 5 days training program on “Cashew Production and Processing Technologies” organised under TSP at ICAR-DCR in collaboration with KVK, Rastakuntumbai in ICAR-DCR, Puttur	12 <sup>th</sup> – 16 <sup>th</sup> February, 2024
	Co-coordinator in 5 days training programme and orientation about commercialized technologies (Cashew apple cookies, fruit bar, jam, and jelly) for the 3 SC beneficiaries of Gadag District, Karnataka held at ICAR-DCR, Puttur	19 <sup>th</sup> – 23 <sup>rd</sup> February, 2024
Dr. Babli Mog	Served as Co-organizer in the 5-day training programme on 'Horti Preneurship for livelihood Improvement in Rural Youths' under scheduled caste sub plan organized at ICAR-K.H. Patil Krishi Vigyan Kendra, Hulkoti, Gadag.	16 <sup>th</sup> -20 <sup>th</sup> January, 2024
	Attended International Conference on “Prospects and challenges of environment and biological sciences in food production system for livelihood security of farmers (ICFPLS-2023)” at ICAR-CIARI, Port Blair, Andaman & Nicobar Islands, India	18 <sup>th</sup> -20 <sup>th</sup> September, 2023
	Attended 3 Days International Conference on Impact of Climate Changes on Global Food, Livestock, Livelihood and Environmental Security: Advanced Approaches and Mitigation Strategies “ICGFLLS-2023” through Hybrid Mode organized by Navsari Agricultural University (NAU) Navsari, Gujarat & National Agriculture Development Cooperative Ltd, Baramulla, Jammu and Kashmir In-collaboration with ICAR-NAHEP-Centre for Advanced Agricultural Science & Technology (CAAST)-NAU-Navsari.	28 <sup>th</sup> -30 <sup>th</sup> December, 2023
	Attended 2 days international conference on agriculture, environment, and sustainable development (ICAESD – 2024): Broad	20 <sup>th</sup> -21 <sup>st</sup> March, 2024



Name of the Scientist	Title and Venue	Date
Dr. Babli Mog	<p>theme: CLIMATE CHANGE AND BIODIVERSITY through Hybrid Mode organized by RAJIV GANDHI UNIVERSITY, ARUNACHAL PRADESH, INDIA</p> <p>Presented as Oral (Online) entitled "Effect of paclobutrazol on vegetative and reproductive traits of cashew (<i>Anacardium occidentale</i> L.)" in International Conference on "Prospects and challenges of environment and biological sciences in food production system for livelihood security of farmers (ICFPLS-2023)" at ICAR-CIARI, Port Blair, Andaman &amp; Nicobar Islands, India</p> <p>Presented as Oral (online) entitled "Effect of temperature on the pollen germination of cashew (<i>Anacardium occidentale</i> L)" in International Conference on Impact of Climate Changes on Global Food, Livestock, Livelihood and Environmental Security: Advanced Approaches and Mitigation Strategies "ICCGFLLES-2023"; through Hybrid Mode organized by Navsari Agricultural University (NAU) Navsari, Gujarat &amp; National Agriculture Development Cooperative Ltd, Baramulla, Jammu and Kashmir</p> <p>Presented as Oral (online) entitled 'Pollen morphological study and the effect of temperature on the pollen germination of cashew (<i>Anacardium occidentale</i> L.) varieties' in international conference on agriculture, environment and sustainable development (ICAESD - 2024): Broad theme: CLIMATE CHANGE AND BIODIVERSITY during MARCH 20 - 21, 2024 through Hybrid Mode organized by RAJIV GANDHI UNIVERSITY, ARUNACHAL PRADESH, INDIA</p>	<p>18<sup>th</sup> -20<sup>th</sup> September, 2023</p> <p>28<sup>th</sup> -30<sup>th</sup> December, 2023</p> <p>20<sup>th</sup> to 21<sup>st</sup> , March, 2024</p>
Dr. D. Balasubramanian	<p>3 days training programme on "Entrepreneurship Development Program on Cashew processing and Value addition" under ABI at ICAR-DCR, Puttur for the students of M.Sc., (Food Technology) from Ramaiah University of Applied Sciences, Bangalore</p> <p>Short course on Patents 'AgrIP 2024' organized by IT&amp;TM Unit, ICAR, New Delhi and Zonal Technology Management, ABIC, ICAR-Central Institute of Fisheries technology, Kochi, Kerala</p> <p>Cashew Awareness Campaign and Area Expansion Programme' organized in collaboration with Assam Agricultural university, under NEH funding of the AICRP on Cashew at CPCRS, Tinsukia, Assam.</p> <p>Organized one day 'Village level awareness programme on Agri Business Incubation in Cashew' for the Women Self-help Group at Betampady village, Puttur, Karnataka under NAIF-ABI scheme</p>	<p>19<sup>th</sup> to 21<sup>st</sup> February, 2024</p> <p>15<sup>th</sup> January to 15<sup>th</sup> February, 2024</p> <p>17<sup>th</sup> to 21<sup>st</sup> March, 2024.</p> <p>16<sup>th</sup> March, 2024</p>



Name of the Scientist	Title and Venue	Date
	<p>Training program on '3-days Cashewnut Processing' organized for following Incubatees at Agri Buisness Incubation Centre, ICAR-DCR, Puttur, Karnataka</p> <p>Mr Vasanth Kumar, Karnataka</p> <p>Mr Purusothama K, Karnataka</p> <p>Mr A Mohamed Lizanul Nathir, Tamil Nadu</p> <p>Mrs. Sahitha Banu, Tamil Nadu</p> <p>Mr. Mohamed Fazian, Tamil Nadu</p> <p>Mr. Mohamed Hilmy, Tamil Nadu</p> <p>Mr Ganesh Karva, Karnataka</p> <p>Mr M G Muthu Bharathy, Tamil Nadu</p>	<p>26<sup>th</sup> to 28<sup>th</sup> February, 2024</p> <p>26<sup>th</sup> to 28<sup>th</sup> February, 2024</p> <p>15<sup>th</sup> to 17<sup>th</sup> April, 2024</p> <p>15<sup>th</sup> to 17<sup>th</sup> April, 2024</p> <p>15<sup>th</sup> to 17<sup>th</sup> April, 2024</p> <p>7<sup>th</sup> to 9<sup>th</sup> May, 2024</p> <p>7<sup>th</sup> to 9<sup>th</sup> May, 2024</p> <p>7<sup>th</sup> to 9<sup>th</sup> May, 2024</p>
<p>Dr. Bhagya H. P.</p>	<p>Organised cashew production and processing training at ICAR-DCR, Puttur to Kolhapur, Maharashtra farmers (141 no.).</p> <p>Participated in XIVth Scientific Advisory Committee (SAC) Meeting of ICAR-Krishi Vigyan Kendra (D.K), Mangalore</p> <p>Participated in Annual Group Meeting of AICRP, 2023 on Cashew at Kerala Agricultural University, Thrissur, Kerala organized by Cashew Research Centre, Madakkathara (AICRP centre)</p> <p>Co-organised training programme on Capacity building of farmers on scientific cashew production technologies under TSP for 25 ST farmers and 3 facilitators from WASSAN to be held at ICAR-DCR, Puttur</p>	<p>4<sup>th</sup> January, 2024</p> <p>6<sup>th</sup> January, 2024</p> <p>17<sup>th</sup> to 19<sup>th</sup> January, 2024.</p> <p>31st January to 2nd February,2024</p>



Name of the Scientist	Title and Venue	Date
Dr. Bhagya H. P.	<p>Organized a training program on cashew-based cropping systems in collaboration with the Rotary Club, Puttur at ICAR-DCR, Puttur.</p> <p>Participated in the training on "Plant Quarantine Procedure for Import and Export" conducted at National Institute of Plant Health Management, Hyderabad</p>	<p>20<sup>th</sup> February, 2024</p> <p>6<sup>th</sup> – 10<sup>th</sup> May, 2024</p>
Dr. Jyoti Nishad	<p>Organized one day training as co-organizer on "cashew cultivation and processing" at ICAR-DCR, Puttur for Kohlapur, Maharashtra Farmers.</p> <p>Organized 5 days training programme as co-coordinator on Hortipreneurship for livelihood improvement in rural youths under SCSP at ICAR-KH Patil, KVK, Hulkoti</p> <p>Conducted 5 days training programme and orientation as co-coordinator about commercialized technologies (Cashew apple cookies, fruit bar, jam, and jelly) for the 3 SC beneficiaries of Gadag District, Karnataka in collaboration with ICAR-K.H Patil KVK, Gadag under the SCSP Scheme at ICAR-DCR, Puttur.</p> <p>Conducted 3 days training programme as co-coordinator on "Entrepreneurship Development Program on Cashew processing and Value addition" under ABI at ICAR-DCR, Puttur for the 30 students of M.Sc (Food Technology) from Ramaiah University of Applied Sciences, Bangalore.</p> <p>Conducted village level awareness programme as co-coordinator on Agri Business Incubation in Cashew for women self-help group at Bettampady village under NAIF-ABI scheme., Betampaddy.</p> <p>"Cashew Awareness Campaign and Area Expansion Programmes" organized in collaboration with Assam Agricultural University; under NEH funding of the AICRP on Cashew, during the F.Y., 2023–24 as a resource person SMAPRS, BURALIKSON</p> <p>Acted as co-coordinator in organizing The Cashew Day-2024, an annual event of the ICAR-Directorate of Cashew Research. The theme was "Value addition of Cashew apple".</p> <p>Conducted Entrepreneurship Development Programme as organizer on "Cashew Based Value Added Products Formulation" at ICAR-DCR, Puttur under NAIF-ABI scheme on Cashew</p>	<p>4<sup>th</sup> January 2024</p> <p>16<sup>th</sup> to 20<sup>th</sup> January 2024</p> <p>19<sup>th</sup> to 23<sup>rd</sup> February 2024</p> <p>19<sup>th</sup> to 21<sup>st</sup> February 2024</p> <p>01<sup>st</sup> March 2024</p> <p>04<sup>th</sup> to 09<sup>th</sup> March 2024</p> <p>16<sup>th</sup> March 2024</p> <p>16<sup>th</sup> March 2024</p>



Name of the Scientist	Title and Venue	Date
Dr. Jyoti Nishad	Attended 112th Foundation Course for Agricultural Research Service (FOCARS) at ICAR-National Academy of Agricultural Research Management (NAARM), Rajendra Nagar, Hyderabad Training	11 <sup>th</sup> to 10 <sup>th</sup> July 2023
	Completed one month orientation training from at ICAR-Directorate of Cashew Research, Puttur, Karnataka	17 <sup>th</sup> to 23 <sup>rd</sup> July 2023
	Attended one-week online training programme on “Digital Competency, New Tools and Software for Efficient Computer Applications” which is organized by ICAR-Indian Agricultural Statistics Research Institute (IASRI)	03 <sup>rd</sup> to 09 <sup>th</sup> January 2024
	Attended short course training programme on “Advances in Applications of Nanotechnology in Agriculture” organized by ICAR- Central Institute for Research on Cotton Technology (ICAR-CIRCOT), Mumbai, India.	29 <sup>th</sup> to 08 <sup>th</sup> February 2024
Dr Manjesh G. N.	Organised training programme on “Hortiprunership for livelihood improvement in rural youths” at Gadag, Karnataka.	16-20 <sup>th</sup> January 2024
	Participated in 21-day -CAFT program entitled “Advanced Forecasting Techniques in Agriculture Science Research” organised by ICAR-IASRI, New Delhi.	24 <sup>th</sup> January to 13 <sup>th</sup> February 2024
	Organised training Programme on “Cashew Cultivation and Cashew Apple Utilization” at Thrissur, Kerala.	02 <sup>nd</sup> March 2024
	Conducted an awareness programme and training on “Cashew cultivation” in collaboration with AAU-ZRS, Diphu, Assam.	08-09 <sup>th</sup> March 2024
	Coordinated a training programme on “Attracting rural youths towards horticulture” collaboratively with K.S.N. UA and HS-Agricultural and Horticultural Research station Sringeri, Chikkamagaluru, Karnataka.	22 <sup>nd</sup> June 2024
	Coordinated a training programme on “Entrepreneurship opportunities in Horticulture” for farm women of Dakshina Kannada, Karnataka.	25 <sup>th</sup> June 2024



Name of the Scientist	Title and Venue	Date
Dr. Manjunath K.	<p>Attended the SRIJAN: Orientation programme for ICAR-ZTMCs/ITMUs at NASC Complex, New Delhi.</p> <p>Organised training programme on “Capacity building of farmers on scientific cashew production technologies” at ICAR-DCR, Puttur</p> <p>Organised training programme on “Cashew Production and Processing Technologies” at ICAR-DCR, Puttur</p>	<p>17<sup>th</sup> - 19<sup>th</sup> January 2024</p> <p>31<sup>st</sup> January to 2<sup>nd</sup> February 2024</p> <p>12<sup>th</sup> – 16<sup>th</sup> February 2024</p>
Dr. Mohana G. S.	<p>Represented ICAR-DCR in the Regional Committee Meeting Zone VIII of ICAR held at ICAR-Central Institute of Brackish Water Aquaculture (ICAR-CIBA), Chennai, Tamil Nadu.</p> <p>Resource person for Cashew awareness campaign and area expansion programs organized in association with Assam Agricultural University under NEH program of AICRP; in SMAPRS Buralikson, Jorhat, Assam.</p>	<p>15<sup>th</sup> to 17<sup>th</sup> February 2024</p> <p>04<sup>th</sup> to 09<sup>th</sup> March, 2024</p>
Dr. Rajashekhara H.	<p>Attended XIVth Scientific Advisory Committee (SAC) Meeting of ICAR-Krishi Vigyan Kendra (D.K), Mangalore</p> <p>Acted as co-organizer for conducting one day training cashew cultivation and processing at ICAR-DCR, Puttur</p> <p>Participated in Annual Group Meeting of AICRP on Cashew held at Kerala Agricultural University, Thrissur, Kerala</p> <p>Organized one day training program for farmers as Coordinator under RKVY project on Improved Cashew Production Technologies at HREC, Kanaberggi, Belgagavi</p>	<p>6<sup>th</sup> January 2024</p> <p>4<sup>th</sup> January 2024</p> <p>17<sup>th</sup> -19<sup>th</sup> January 2024</p> <p>21<sup>st</sup> February 2024</p>
Dr. Siddanna Savadi	<p>Coordinated internship programme for four final year B. Tech (Biotechnology) students, College of Agriculture Hassan, UAS, Bangalore was conducted at Centre of Excellence for Biotechnology, ICAR-DCR, Puttur</p> <p>Guided research project works of six M. Sc. (Biotechnology) student of St. Berchmans College, Changanassery were carried out at ICAR-Directorate of Cashew Research (DCR), Puttur, Dakshina Kannada, Karnataka-574202</p>	<p>18<sup>th</sup> March 2024 – 22 June 2024</p> <p>1<sup>st</sup> April 2024 –30<sup>th</sup> June 2024</p>



Name of the Scientist	Title and Venue	Date
Dr Veena G. L.	Acted as Co-Organizer for five days training programme on Hortiprunership for livelihood improvement in rural youths under SCSP	16 <sup>th</sup> January to 20 <sup>th</sup> January 2024
	Acted as course coordinator for 3 days training programme on Entrepreneurship development programme on Cashew processing and value addition under ABI	19 <sup>th</sup> February to 21 <sup>st</sup> February 2024
	Coordinated a training programme on Attracting rural youths towards horticulture collaboratively with K.S.N. UA and HS-Agricultural and Horticultural Research station Sringeri to SC beneficiaries (50 nos) and provided them vegetable seed kit and garden tools.	22 <sup>nd</sup> June 2024
	Co-Organized training programme on Cashew cultivation and processing on 04.01.2024 for 141 farmers from Kolhapur Maharashtra	04 <sup>th</sup> January 2024
	Coordinated a training programme on Entrepreneurship opportunities to SC beneficiaries (35 Nos.)	25 <sup>th</sup> June 2024
	Organized village level awareness programme on EDP-Agri-business Incubation in cashew for women self help group at Bettampady village under NAIF-ABI	01 <sup>st</sup> March 2024
	Co-organized a Entrepreneurship Development Programme on Cashew Based Value added Products Formulation under NAIF-ABI	16 <sup>th</sup> March 2024
	Coordinated one day training programme on Attracting Rural Youths towards Horticulture collaboratively with K.S.N.UA and HS- Agricultural and Horticultural Research Station Aneunda Sringeri to SC beneficiaries	21 <sup>st</sup> June 2024



## NEWS AND EVENTS

### Cashew Day 2024

The institute celebrated the Cashew Day-2024 on 16-03-2024 (Saturday) at the Directorate. Shri Ramakumar Rajarathnam, progressive cashew farmer, Chitradurga, was the chief guest of the program and he highlighted the importance of cashew cultivation prospects in rainfed areas especially in plain parts of Karnataka. Dr. M.K. Rajesh, Head CPCRI, Regional Station, Vittal graced the program as guest of honor and appreciated the contribution made by DCR, Puttur on cashew cultivation and production technology. He also highlighted the various cashew varieties released by the Institute and the contribution of the biotechnology in respect of whole genome sequencing of cashew variety for the first time and releasing of other value-added products of cashew apple for increasing the farm income of farmers. During the program, Nethra Jumbo-2 (H-125), a new variety developed by this directorate was released and distributed the cashew grafts to farmers and also the cashew value added products like cashew fruit bar, Nethra-CAAPP cookies were also released on this occasion. The extension leaflet folders on different aspects were also released in the event. An e-book on 25 cashew fruit recipes in 11 languages written by Smt. Soukhya Mohan was also released. Under Schedule Caste Sub Plan, agricultural inputs chain saw and brush cutters were also distributed to selected farmers in the program. The two special lectures were also delivered on waste to wealth: adding value to cashew apple by Dr. Veena, G.L. Scientist, DCR, Puttur and Value addition in cashew apple by Dr. Jalaja S. Menon, Head, Cashew Research Station, Madakathara, Kerala Agriculture University (KAU), Thrissur. In both presentations, highlighted about the importance of the cashew apple which can be used to prepare various value-added products and increase in income of cashew farmers. An exhibition was also arranged to showcase the technologies of the Directorate. Total 150 participants attended the event.



### World Intellectual property day 2024

The Institute Technology Management Unit (ITMU) of ICAR-Directorate of Cashew Research (DCR), Puttur organized a programme for celebration of World Intellectual Property (WIP) Day on 9<sup>th</sup> May 2024. The theme of the event was "IP and the SDGs: Building Our Common Future with Innovation and Creativity". Dr. J. Dinakara Adiga, Director of ICAR-DCR, chaired the event, which included a technical talk by IP expert Dr. Pinki Chakraborty on patent registration with a focus on SDGs. A publication on Technology Inventory of ICAR-DCR technologies for commercialization was also released. The Director emphasized the importance of IPs in research institutes.

(Coordinators: Dr. Siddanna Savadi, PI, ITMU and Dr. Manjunatha K, Co-PI, ITMU)



A technical talk by Dr. Pinki Chakraborty, IP expert, on the WIPO Day-2024





Release of Technology Inventory on ICAR-DCR, technologies for commercialization by Dr. J. Dinakara Adiga, Director, ICAR-DCR, Puttur

### Entrepreneurship Development Programme (EDP) on “Cashew based Value Added Products Formulation”

An Entrepreneurship Development Programme on "Cashew based Value Added Products Formulation" was held on 16<sup>th</sup> March 2024 at ICAR-Directorate of Cashew Research in Puttur, Karnataka. The programme, conducted under the Agri-Business Incubation Scheme, was attended by 26 farmers. Dr. J. D. Adiga, Director of ICAR-DCR, highlighted the importance of entrepreneurship for self-reliance and income generation. Dr. D. Balasubramanian discussed the current state of entrepreneurship in India and the role of ABI in promoting agri-entrepreneurship. The potential for startups in cashew value addition was explored to raise awareness and enthusiasm among attendees. Dr. Veena G L and Dr. Jyoti Nishad presented technologies for cashew apple and cashew nut value-added products, while Dr. Manjesh, G. N. facilitated the implementation of EDPs. Participants were encouraged to share their experiences and provide feedback on the programme.

(Coordinator: Dr. Jyoti Nishad, Scientist (Food Technology) and Co-coordinators: Dr. D. Balasubramanian, Principal Scientist, Nodal officer ABI, and Dr. Veena G L, Scientist (Fruit Science).







Quinquennials Review Team submitted Report for the period from 2018-2024 to Secretary, DARE and Director General, ICAR New Delhi on 4<sup>th</sup> June, 2024

### Foundation Day 2024

Directorate of Cashew Research, Puttur, Dakshina Kannada celebrated its 39<sup>th</sup> foundation day on 18<sup>th</sup> June 2024. Dr. S K Singh, Deputy Dir. General (Horticulture), ICAR, New Delhi was the Chief Guest on the occasion and had joined the program online. In his address, he said that the need of the hour was to equip ourselves with newer and newer technologies to face the challenges of modern-day cashew farmers. The award for Best Research Paper of DCR was given to Dr. Manjunath and his group for their studies on the mechanization of cashew nut separation. Different publications of the institute on Cashew Processing, Agribusiness entrepreneurship, and Transfer of technology were released on the occasion. A folder on a web application “Cashew Farmers Tracking System (CFTS)” was also released on the occasion. This application would help cashew farmers to get details of the purchased varieties and the database would help the institute to track the farmers up to their village level.

Dr. Dinakar Adiga, the Director of DCR, in his introductory remarks, recollected how the directorate has grown to cater to the needs of cashew farmers in the last four decades. He explained the various technologies and varieties developed by DCR for the benefit of cashew farmers. Dr. Nataraj Karaba, Professor and Head of Crop Physiology, University of Agricultural Sciences, GKVK, Bangalore, who delivered the foundation day lecture, emphasized the need to go for genetic engineering techniques to develop superior varieties which in turn can also minimize the time duration to get final results. He explained how the Hologenome concept which has helped in other tree crops may help cashew also in exploring better-performing cashew cultivars. Dr. Kempe Gowda, Joint Director, Agriculture, Mangalore and Dr. Deepaja, Joint Director, Agriculture (RKVY), Bangalore graced the occasion as guests Shri Gopalkrishna Kamath, Member of the Institute Management Committee of DCR and a cashew processor by profession expressed there was a big gap in demand for raw cashew nut by the industry and its production in the country. The industry and research fraternity together need to work to overcome this barrier, he felt. A total of 110 participants attended the programme.





## SCSP/TSP/NEH ACTIVITIES

### Hortipreneurship for livelihood improvement in rural youths and Promotion of Nutrition Garden and providing inputs under SCSP at ICAR- K H Patil KVK, Gadag

A five-day training programme on Hortipreneurship for rural youths was organized by the directorate in collaboration with ICAR-K.H. Patil, KVK, Hulkoti, Gadag, Karnataka as part of the scheduled caste sub-plan programme from 16<sup>th</sup> to 20<sup>th</sup> January 2024. Dr. Suresh Kumbar, Dr. Manjesh, Dr. Veena, Dr. Jyoti Nishad, and Dr. Sudha V. Mankani addressed participants at an event in Shirahatti, Gadag, highlighting the importance of horticulture in entrepreneurship development and advanced technologies available for rural youth. They discussed the contribution of the horticulture sector to agriculture GDP, opportunities for entrepreneurship in horticulture, nutritional benefits of fruits and vegetables, and the importance of balanced nutrition in daily diet. Dr. Veena also spoke about the nutritional importance of Cashew apple and technologies for value addition available at ICAR-DCR Puttur. A series of lectures and exposure visits to various progressive farmers' fields, nurseries, and the Hi-tech horticulture unit, UAS, Dharwad were organised.

[Organisers: Drs. Manjesh G.N., Rajashekara, H., Narayana H.B., and Hemavathi, R.H.; Co-organisers: Drs. Veena G.L., Babli M., Jyoti, N., Vanitha K., and Aswathy C.]



### Demonstration cum hands-on training in cashew apple-based technologies of ICAR-DCR, Puttur to SC beneficiaries of Gadag under SCSP

In collaboration with ICAR-K.H. Patil, KVK, Hulkoti, Gadag, Karnataka, the cashew apple-based technologies of this Directorate [Cashew apple jam, jelly, pomace powder cookies, and fruit bar] were commercialized through the ITMU unit of this Directorate to Three small-scale entrepreneurs of Gadag District under SCSP. As a part of the commercialization of technologies, demonstrations cum hands-on training were organized under the SCSP scheme from 19<sup>th</sup> to 23<sup>rd</sup> February 2024. In this programme, Dr. J. D. Adiga, the Director, ICAR-DCR, Puttur interacted with the beneficiaries about the technical know-how of cashew cultivation, the area expansion of cashew at Gadag District and emphasized the DCR technologies especially the cashew apple utilization and their value addition in the context of huge wastage of cashew apples in the fields. Further, the lead developers of technologies Cashew apple Jam and Jelly by Dr Rajkumar A.D. Scientist, [Food Technology, ICAR-DOGR, Pune] and Cashew apple pomace powder cookies and fruit bar developed by Dr. Veena GL Scientist, [Fruit Science, ICAR-DCR, Puttur] have briefed about the scope of cashew apple-based products and given an overview of the preparation of products, labelling, and marketing strategies and demonstrated the respective technologies developed to the licensees and hands-on training was provided to them. [Coordinators: Drs Manjesh, GN., and Veena G.L.; Co-Coordiators: Drs. Siddanna S., Rajkumar A.D., Jyoti N., Vanitha, K., and Aswathy C.]





### Training Programme on “Cashew Cultivation and Cashew Apple Utilization” cum Distribution of inputs to the SC beneficiaries of Thrissur, Kerala

As a part of the Scheduled Caste Sub Plan (SCSP) scheme of this Directorate, the training programme was organized in collaboration with Cashew Research, Station, Madakkathara, Kerala and Department of Agriculture and Farmers Welfare, Ollukkara Block, Thrissur on 02.03.2024. In this programme Dr. Jalaja S. Menon, Assistant Prof and Head, CRS, Madakkathara chaired the programme and addressed the gathering about the training programme of this Directorate, and emphasized the use of cashew cultivation and cashew apple utilization by preparation of value-added products. Mr Ravi (President, Ollukkara Block panchayath), the chief guest, spoke about the importance of the training programme in today's context to become self-reliant by generating additional income out of cashew apples and encouraged Women farmers to take up small-scale processing of cashew apple for value-added products. Ms. Sathyavathi Varma Assistant Director of Agriculture, Kerala State Agriculture Department, Ollukkara Block. spoke about various state government schemes under Agriculture and emphasized to get benefitted. Further, Dr Manjesh G N, Scientist, [SPM&AP, Nodal officer SCSP] highlighted the Central government schemes available for farmers under SCSP and briefed them about the training programme. Besides, Dr. Rajasekhara, H Scientist, [PI. Path. The co-Nodal officer SCSP] emphasized to the trainees the proper use of inputs and to get the maximum benefit out of the training programme. As part of a training series of lectures covering aspects of cashew cultivation and cashew apple utilization, demonstrations were organized on cashew apple value-added products and softwood grafting techniques. Field visits were also covered as a part of the training programme to Bee Park, the cashew museum, the cashew varietal block and the cashew nursery of CRS, Madakkathara. This training programme was benefitted by 35 SC farmers of 4 Panchayaths of Ollukkara Block, Thrissur, Kerala. The beneficiaries were also provided with a training kit, cashew grafts and other inputs [cashew apple-based products.]. [Coordinators: Drs Manjesh, GN., and Rajashekara H].







**Distribution of Inputs to SC beneficiaries of Puttur taluk, Dakshina Kannada, Karnataka on Cashew Day held at ICAR-DCR, Puttur**

The institute celebrated Cashew Day 2024 on 16-03-2024 on this occasion under the SCSP scheme of this Directorate inputs like brush cutters and chain saws were distributed to the SC beneficiaries of Puttur Taluk, Dakshina Kannada. A total of 24 brush cutters and 13 chain saws were provided to the beneficiaries. Further, the beneficiaries also took part in the Cashew Day celebration and visited the exhibition stalls, they were briefed about the value-added products from cashew apple, the recent varieties, and other technologies of this Directorate. [Coordinators: Drs Manjesh GN, Veena GL., Rajashekara H., Babli M., Jyoti N., and Aswathy C]



**Training Programme on “Attracting Rural Youths towards Horticulture” and Distribution of Vegetable seed kits and Garden tools to SC beneficiaries under the SCSP scheme at Anegunda, Chikkamagaluru, Karnataka**

As a part of the Scheduled Caste Sub Plan (SCSP) scheme of this Directorate, one-day training programme on "Attracting Rural Youths towards Horticulture" was organized followed by the distribution of vegetable seed kits and garden tools to SC beneficiaries in collaboration with K.S.N UA &HS, Agricultural and Horticultural Research Station, Anegunda, Sringeri, Chikkamagaluru district on 22<sup>nd</sup> June 2024. In this programme Dr. Narayana Swamy, Professor and Head, AHRS chaired the programme. The Chief guest of the programme Shri Vittala Hegde addressed the gathering and briefed them about the importance of growing vegetable crops in the kitchen garden. Shree Gopala KM guest of the programme highlighted about importance of agriculture for rural youths rather than shifting towards city life. ICAR-DCR Scientists delivered the lectures pertinent to the training. The trainees were taken to a progressive farmer's field at Koppa where trainees had an exposure to mixed cropping systems and fruit crop nurseries. Later the inputs were distributed to 50 beneficiaries to promote Kitchen gardening. [Organisers: Drs Manjesh G.N., Veena GL., and Thondaiman V.]





### Training Programme on “Entrepreneurship opportunities in Cashew” and promotion of Nutrition gardening for farm women under the SCSP scheme

Organized a training programme for the farm women under the SCSP scheme on 25.06.2024. The training aimed to impart awareness of the entrepreneurial opportunities in cashew, emphasising scientific nursery management and cashew apple value addition for doubling their income. Dr J Dinakara Adiga, Director, ICAR-DCR, Puttur, provided an overview of Cashew cultivation. Further series of lectures on cashew nurseries, entrepreneurship opportunities in cashew apple processing and the importance of nutrition gardening for human health were delivered. A total of 35 farm women attended the programme, and seed kits were distributed to the participants. [Coordinators: Drs. Manjesh GN., Veena GL., Thondaiman V., Babli Mog, and Aswathy C.]





## Training Programme on “Cashew Production and Processing Technologies” to the ST beneficiaries under the TSP scheme

As a part of the Tribal Sub-Plan (TSP/STC) scheme of this Directorate, in collaboration with KVK, Rastakuntubai, Acharya N. G. Ranga Agricultural University, Guntur organized a five-day training programme on “Cashew Production and Processing Technologies” from 12<sup>th</sup> to 16<sup>th</sup> February 2024. In this programme, Dr. J. D. Adiga, Director, ICAR-DCR, Puttur chaired the programme and addressed the gathering about the training programme of this Directorate and emphasized the scientific cashew cultivation and processing technologies. Dr. Manjunatha K., Scientist (FMP), Nodal Officer TSP, briefed about the implementation of the programme. Dr. S. Srinivasa Raju, SMS (Hort.) KVK, Rastakuntubai, introduced the trainee farmers and briefed them about the problems in cashew cultivation practices in Andhra Pradesh. A series of lectures and exposure visits to various progressive farmers' fields and cashew processing industry visits were organized.

[Organisers: Dr. Manjunatha K, Dr. Aswathy C.; Co-organisers: Drs. Eradasappa E., Siddanna Savadi, Bhagya H.P.]



## Training on Capacity Building of farmers on Scientific Cashew Production Technologies organised

ICAR-Directorate of Cashew Research, Puttur in collaboration with WASSAN NGO from Vizag, Andhra Pradesh organised two days training programme for the ST farmers of Parvathipuram Manyam district and Vizianagaram district on scientific cashew production technologies from 1<sup>st</sup>-2<sup>nd</sup> February, 2024. The training programme aimed to create awareness among the ST farmers on recommended packages of practices for cashew as the yield was very low in their farms. The training programme aimed at sensitizing the farmers about the improved varieties of cashew and providing information on cashew production technologies such as softwood grafting, canopy management, management of Tea Mosquito Bug, Cashew Stem and Root Borer and disease management. Farmers were given hands-on training on softwood grafting and pruning techniques. As a part of the training programme, farmers were also taken for an exposure visit to the field of Shri Natesh Moodayur., who is a progressive farmer. Drone technology was also demonstrated to the farmers to create awareness. A total of 25 farmers attended the training. The training was co-ordinated by Dr. Aswathy Chandrakumar, Scientist (Agrl. Extension), Dr. Manjunatha K and co-coordinated by, Dr. Eradasappa E, Dr. Bhagya H P, and Dr. Siddanna Savadi.



### Training programme on “Cashew production and processing” to Kolhapur, Maharashtra farmers

A one-day training programme on "cashew cultivation and processing" was conducted at ICAR-DCR, Puttur, on January 4, 2024. This program was organized by a team of Dr. Bhagya, H.P., Dr. T.N. Raviprasad, and Dr. Aswathy Chandra Kumar. Dr. T. N. Raviprasad, Principal Scientist (Agril. Entomology), initiated the training program by explaining the cashew crop introduction to India,



production practices and the importance of this crop. During this program, cashew processing was dealt by Dr. D. Balasubramanian and Dr. Jyothi Nishad; nursery management in cashew was explained by Dr. Veena G. L. and Dr. Rajashekara H. After completion of different sessions, followed by a museum visit by Dr. K. Manjunath and P. G. Bhat for 141 farmers from Kolhapur, Maharashtra.



Cashew production and processing training program to Kolhapur, Maharashtra farmers at ICAR-DCR, Puttur.

### Training on Cashew based intercropping

ICAR-Directorate of Cashew Research, Puttur organised a training on Cashew based intercropping in collaboration with the Rotary club Puttur on 20.02.2024 at the Directorate. Dr. N Yadukumar, retired Principal Scientist, ICAR-DCR, Puttur explained the scope of intercropping in cashew and shared his experience abroad. The training was attended by the ICAR-DCR staff and rotarians. A total of 50 participants were present for the training programme.



### Village Level Awareness Programme on Agri-business Incubation in Cashew

A village level awareness programme on Agri-business Incubation in cashew for Women Self Help Group was organized under Agri-Business Incubation (ABI) scheme of ICAR-Directorate of Cashew Research, Puttur, on 1st March 2024 at Bettampady village. A total of 25 women participants attended the programme. Dr. D. Balasubramanian, Principal Scientist, Nodal officer ABI, ICAR-DCR, inaugurated the programme and discussed about the status of entrepreneurship in India, and role of ABI in improving the Agri-entrepreneurship in India. He created awareness and inspired the gathering by explaining the scope and importance of agribusiness in



cashew. Dr. Veena G L, Scientist (Fruit Science) coordinator of this programme explained about the cashew apple value addition, and technologies developed at ICAR-DCR, Puttur and procedures to be followed to adapt the technologies. Dr. Jyoti Nishad, Scientist (Food Technology) coordinator briefed about the cashewnut value addition and importance of FSSAI labelling and packaging in commercialization of the product. A demonstration of cashew apple and cashewnut value added products was given to the participants followed by sensory evaluation of the products. Mrs. Anitha a progressive women farmer and entrepreneur addressed the gathering by sharing her experiences and encouraged the participants about Agri startups. The participants were then asked to share their experiences, ask queries, and give their feedback about the awareness programme.

(Co-ordinators: Dr. Veena G L., Dr. Balasubramanian, D and Dr. Jyoti Nishad, ICAR-DCR, Puttur)



**MEETINGS CONDUCTED (IMC/IJSC/RAC/IRC/HINDI)**

**ITMC meeting**

The 27<sup>th</sup> Institute Technology Management Committee (ITMC) meeting was held on 16.02.2024 at ICAR-DCR, Puttur under the Chairmanship of Dr. J. Dinakara Adiga, Director, ICAR-DCR, Puttur. In the meeting, activities of the ITMU and Action Taken Report (ATR) on proceedings of the previous ITMC meeting and agenda items of the meeting i.e., patent filing of “Cashew Apple Slicer” were discussed. ITMC recommended to apply for patent of the same by consulting of attorney from the ICAR empaneled list.





## TRANSFER OF TECHNOLOGY

### Advisory visits / Consultancies / Lecture delivered / Exhibitions

Name of the Scientist	Title and Venue	Date
Dr. Aswathy Chandrakumar	Field visit for monitoring and evaluation of FLD plots established in Puttur and advisories were given to farmers. 10 FLD plots were visited.	23 <sup>rd</sup> January, 2024
	Resource person and explained the activities of ICAR-DCR, Puttur and explained about Cashew museum in the training programme "Capacity building of farmers on scientific cashew production technologies" organized under TSP in ICAR-DCR, Puttur	1 <sup>st</sup> February, 2024
	Resource person and delivered a lecture on "Prospects of Cashew cultivation in India" during the 5 days training program on "Cashew Production and Processing Technologies" organised under TSP at ICAR-DCR in ICAR-DCR, Puttur	13 <sup>th</sup> February, 2024
	Advisory on the establishment of a Cashew orchard to Shri. Krishna Murthy Rao at Moodabidre, D.K., Karnataka.	21 <sup>st</sup> May 2024
	Resource person and explained the activities of ICAR-DCR, Puttur and explained about Cashew museum in the training programme "Entrepreneurship opportunities in Cashew" organized under SCSP in ICAR-DCR, Puttur	25 <sup>th</sup> June 2024
Dr. Bhagya H P	Delivered a lecture on Training and pruning in cashew during capacity building of farmers on scientific cashew production technologies to ST farmers	1 <sup>st</sup> to 2 <sup>nd</sup> February, 2024
	Delivered a lecture on canopy management in cashew during 5 days training programme on "Cashew Production and Processing Technologies" organized at ICAR-DCR Puttur for ST farmers from Andhra Pradesh	12 <sup>th</sup> to 16 <sup>th</sup> February, 2024
	Coordinated and exhibited ICAR-DCR technology during Cashew Day 2024, celebrated at ICAR-DCR Puttur	16 <sup>th</sup> March, 2024
	Participated and Exhibited ICAR-DCR technologies at Jackfruit mela conducted at Jain Bhavan Puttur.	24 <sup>th</sup> to 26 <sup>th</sup> May, 2024
	Field survey has been taken up to identify suitability of cashew cultivation as apart of consultancy project of MBMA for area expansion of cashew in Garo hills of Meghalaya.	23 <sup>rd</sup> to 27 <sup>th</sup> June, 2024



Name of the Scientist	Title and Venue	Date
Dr. D. Balasubramanian	Delivered lecture on Processing Mechanism and Value addition in Cashew in the National Level Training (NLT) conducted by Directorate of Cashew and Cocoa development (DCCD), Cochin at Cashew Research Station, KAU, Madakkathara, Thrissur, Kerala	27 <sup>th</sup> to 29 <sup>th</sup> January, 2024
	One day stakeholders' consultation workshop on 'Unlocking opportunities of Plantation Crops sector in Meghalaya conducted at Shillong, Meghalaya.	2 <sup>nd</sup> February, 2024
	Delivered lecture on 'Cashewnut processing in India - Scope and Challenges' during 5 days training programme on "Cashew Production and Processing Technologies" conducted at ICAR-Directorate of Cashew Research under TSP.	14 <sup>th</sup> February, 2024
	Delivered lecture on 'Entrepreneurship development in cashew ecosystem & role of Agribusiness Incubator.' during 5 days training programme on "Cashew Production and Processing Technologies" conducted at ICAR-Directorate of Cashew Research under TSP.	14 <sup>th</sup> February, 2024
	Exhibition stall put up for ICAR-DCR and ABIC at National Horticulture Fair – 2024 conducted at ICAR-Indian Institute of Horticultural Research, Hesaraghatta, Bangalore.	5 <sup>th</sup> to 7 <sup>th</sup> March, 2024
Dr. D. Balasubramanian Ms Divya and Mr Annu	Exhibition stall put up for ICAR-DCR and ABIC at Cashew Fest, organized by Karnataka Cashew Manufacturer Association (KCMA) in collaboration with Fiza Mall at Mangalore, Karnataka	20 <sup>th</sup> to 21 <sup>st</sup> April, 2024
Dr. D. Balasubramanian Dr Veena G. L. and Dr. Jyoti Nishad	Exhibition stall put up for ICAR-DCR and ABIC at National Technology Day conducted at Nitte University, University Enclave, Mangalore, Karnataka	11 <sup>th</sup> May, 2024
Dr. D. Balasubramanian Dr. Bhagya, H. P, Dr. Jyoti Nishad, Mr. Prakash G. Bhat and Ms. Divya	Exhibition stall put up for ICAR-DCR and ABIC during Jack Fruit Fest-2024 conducted at Jaina Bhawana, Puttur, Karnataka	24 <sup>th</sup> to 26 <sup>th</sup> May, 2024.
Dr. Eradasappa E	Presented a talk on 'cashew varieties and cultivation aspects' in the 'Cashew awareness campaign and area expansion programme in Tinsukia organized by ICAR-DCR Puttur in collaboration with AAU under AICRP NEH scheme	17 <sup>th</sup> -21 <sup>st</sup> March, 2024.
	Presented talk on "Popular cashew varieties in India" in the one-day training program on Improved cashew production technologies: Scientists-Farmers Interactions in the approved project of RKVY at HREC, Kanabargi, Belagavi	21 <sup>st</sup> February, 2024.



Name of the Scientist	Title and Venue	Date
Dr. Eradasappa E	Presented talk on "Popular cashew varieties in India" in the training programme "Capacity Building of Farmers on Scientific Cashew Production Technologies under TSP" at ICAR-DCR, Puttur.	31 <sup>st</sup> January to 2 <sup>nd</sup> February, 2024
	Presented a talk on 'ICAR-DCR research activities' in the Stakeholders meet on "Cashew and Cocoa for the North East States" in Indian Institute of Bankers Management, Guwahati.	29 <sup>th</sup> April, 2024
	Presented three cashew varieties viz., Nethra Ganga, Nethra Jumbo-1, Nethra Ubhaya release proposals before SVRC at Vikasa Soudha, Bengaluru.	13 <sup>th</sup> March 2024
Dr. Jyoti Nishad	Lecture was delivered on "Value addition of Cashew nut" in 5 days training programme on "Cashew Production and Processing Technologies"	12 <sup>th</sup> to 16 <sup>th</sup> February, 2024
	Lecture on value addition of cashew kernels was delivered to college students of M S Ramaiah university of Applied Sciences, Bangalore	20 <sup>th</sup> February, 2024
	Lecture on Labelling & Packaging of Processed Cashew Apple and Kernels was delivered to college students of M S Ramaiah university of Applied Sciences, Bangalore	20 <sup>th</sup> February, 2024
	Exhibited the products and technologies developed at ICAR-DCR in horticulture fair organized by ICAR-CPCRI regional station, Vittal	28 <sup>th</sup> February, 2024
	Delivered guest lecture on "Freezing of Food" to Postharvest Engineering students of AMITY University, Noida	03 <sup>rd</sup> April, 2024
	Exhibited the products and technologies developed at ICAR-DCR in NITTE Mangalore: National Technology Day celebration at NITTE University, Paneer campus, Deralakatte	11 <sup>th</sup> May, 2024
	Exhibited the products and technologies developed at ICAR-DCR and Agri Business Incubation Center of this Directorate in Fruit celebration day organized at Jaina Bhawan, Puttur	24 <sup>th</sup> to 26 <sup>th</sup> May, 2024
Dr. Manjesh G. N.	Delivered lecture on the Importance of micronutrients in Cashew under project "Drone Technology Demonstration" funded by Central Sector Scheme of A&FW, Gol. to farmers of DK, Karnataka.	10 <sup>th</sup> January, 2024
	Delivered a lecture on "Entrepreneurship opportunities in Horticulture" during the programme on "Hortipreneurship for livelihood improvement in rural youths" held at Hulkoti, Gadag, Karnataka.	16 <sup>th</sup> January, 2024



Name of the Scientist	Title and Venue	Date
Dr. Manjesh G. N.	Delivered a lecture on “Commercial nursery management in Cashew” during the programme on “Hortipreneurship for livelihood improvement in rural youths” held at Hulkoti, Gadag, Karnataka.	16 <sup>th</sup> January, 2024
	Participated and displayed the exhibits at the Horticulture Fair held at ICAR-CPCRI, Kidu, DK, Karnataka.	28 <sup>th</sup> February, 2024
	Delivered a lecture on Cashew Production and an Overview of ICAR-DCR activities in the training programme on “Cashew Cultivation and Cashew Apple Utilization” at Thrissur, Kerala.	2 <sup>nd</sup> March, 2024
	Exhibited DCR technologies during the celebration of Cashew Day 2024.	16 <sup>th</sup> March, 2024
	Advisory on the establishment of a Cashew orchard to Shri. Krishna Murthy Rao at Moodabidre, DK, Karnataka.	21 <sup>st</sup> May, 2024
	Delivered a lecture on “Opportunities in Horticulture Sector” during the programme on “Attracting the rural youths towards Horticulture held at Sringeri, Karnataka.	22 <sup>nd</sup> June, 2024
	Acted as a resource person and delivered a lecture on “Entrepreneurship opportunities in Cashew Nursery” during the programme on "Entrepreneurship opportunities in Cashew" and promotion of Nutrition Gardening” held at ICAR-DCR, Puttur	25 <sup>th</sup> June, 2024
	Delivered a lecture on “Nutrition gardening for human health” during the programme on "Entrepreneurship opportunities in Cashew" and promotion of Nutrition Gardening held at ICAR-DCR, Puttur	25 <sup>th</sup> June, 2024
Dr. Manjunatha K.	Demonstrated a drone technology in Cashew in the training programme entitled “Capacity building of farmers on scientific cashew production technologies under TSP scheme" at ICAR-DCR, Puttur	2 <sup>nd</sup> February, 2024
	Delivered a guest lecture on the topics entitled “Mechanization in Plantation Crops” and “Applications of UAV for Crop Protection” in a five-day training program for Andhra Pradesh’s ST farmers on “Cashew Production and Processing Technologies,” held at ICAR-DCR, Puttur	12 <sup>th</sup> to 16 <sup>th</sup> February, 2024
	Delivered a guest lecture on the topics (1) Farm Mechanisation – Scope and Importance, (2) Repairs and Maintenance of Farm Implements and Machinery and (3) Custom hiring of Farm Machinery in the programme "Diploma in Agriculture Extension Services for Input dealers (DAESI)" for Batch-VI organized by ICAR - KVK, Mangaluru.	3 <sup>rd</sup> May, 2024



Name of the Scientist	Title and Venue	Date
Dr. Mohana G.S.	Lecture delivered on 1) Cashew Genetic resources in India and 2) ICT applications in cashew during the 5-day training program under TSP on cashew production and processing technologies at ICAR- DCR, Puttur	12 <sup>th</sup> to 16 <sup>th</sup> February, 2024
Dr. Rajashekara H.	Resource person for District Level Seminar on wilt and anthracnose: emerging diseases of cashew in the DCCD sponsored program held (online) at Shaheed Gundadhur College of Agriculture and Research Station, Kumhrawand, Jagdalpur, Chattisgarh	12 <sup>th</sup> February, 2024
	Delivered a lecture in training program organized under TSP Scheme of the Institute on Cashew Diseases: Identification and their Management	14 <sup>th</sup> February, 2024
Dr. Veena G. L.	Delivered a lecture in Hindi at DCCD sponsored District level seminar on Cashew Cultivation programme of Jagadalpur held on 12.02.2024	12 <sup>th</sup> February, 2024
	Delivered a lecture on Value addition of Cashew apple in 5 days training programme on Cashew production and processing technologies	14 <sup>th</sup> February, 2024
	Delivered a lecture on Utilization of Cashew apple and quality testing and Hands on training on cashew apple processing in a training programme on Raw Cashewnut processing and value-added products of cashew apples at ICAR-DCR Puttur from 19 <sup>th</sup> to 21 <sup>st</sup> February 2024.	20 <sup>th</sup> February, 2024
	Acted as resource person and delivered a special lecture on “Waste to wealth adding value to Cashew Apple” on occasion of Cashew Day 2024 at ICAR-DCR Puttur	16 <sup>th</sup> March, 2024
	Participated and displayed the ICAR-DCR developed technologies in National Technology Day at NITTE University Mangalore	11 <sup>th</sup> May, 2024
	Delivered a lecture on “Opportunities in Fruit Crop Sector” one day training programme on Attracting Rural Youths towards Horticulture collaboratively with K.S.N.UA and HS- Agricultural and Horticultural Research Station Anegunda Sringeri to SC beneficiaries	21 <sup>st</sup> June, 2024
	Acted as resource person and delivered lecture on Valorisation in cashew apple waste to wealth and Entrepreneurship opportunities display and demonstration of value-added products from cashew apple	25 <sup>th</sup> June, 2024



Name of the Scientist	Title and Venue	Date
Dr. Veena G. L.	Acted as Resource person and delivered a lecture on Valorisation in Cashew apple waste to wealth in Entrepreneurship opportunities in cashew and promotion of nutrition gardening cum seed kits distribution at ICAR_DCR Puttur	25 <sup>th</sup> June, 2024

### Radio/TV talks/Others

Name of the Scientist	Title and Venue	Date
Dr. Jyoti Nishad	Radio Talk at Community Radio Station 'Sahakar Radio Gadag' on "Food Licensing".	17 <sup>th</sup> January, 2024
Dr. Manjesh G.N.	Delivered a radio talk on "Nutrient Management in Cashew" at Community Radio Station, Sahakar Radio, Gadag.	17 <sup>th</sup> January, 2024
Dr. Veena G. L.	Radio talk on Technologies developed at ICAR-DCR Puttur for commercialization in Community Radio Station, Sahakar Radio, Gadag	17 <sup>th</sup> January, 2024
Dr. Aswathy Chandrakumar	Talk on prospects of cashew cultivation in Kerala in YouTube channel of Chully farm <a href="https://www.youtube.com/watch?v=9s9vawydx1k">https://www.youtube.com/watch?v=9s9vawydx1k</a>	12 <sup>th</sup> June, 2024

### Technologies Commercialized under non-exclusive licensing

Sl. No	Name of the Technologies	Name of the Developers	Name of the licensee	Licensed at the rate
1	Cashew apple pomace powder cookies	Dr. Veena. G.L Dr. J.D. Adiga Dr. Shamshudeen M Dr. Preethi. P Dr. Rajashekara. H Dr. Manjesh. G N Dr. Thondaiman. Dr. Bhagya. H.P. Dr. Babli Mog Dr. Aswathy Chandrakumar	i) Shri. Narayan Roop Singh Laman I. Gadag ii) Sri. Praveen Nayak, Gadag	40.000+18% GST
2	Cashew Apple Fruit Bar	Dr. Veena. G.L Dr. J.D. Adiga Dr. Shamshudeen M Dr. Preethi. P Dr. Rajashekara. H Dr. Manjesh. G.N. Dr. Thondaiman. V Dr. Aswathy Chandrakumar	i) Sri. Praveen Nayak, Gadag ii) Shri. Chandra Tavarappa Nayak, Gadag	40.000+18% GST



## Genetic Stocks Registered

Sl. No	Name of Genetic Stock	Name of the PI and Associates	Accession No.
1	H-125	Drs. J.D. Adiga, M G Bhat, Veena G L, Mohana G S, Eradasappa E, Siddanna Savadi, Shamshudeen M, Muralidhara B M, Bhagya HP, Manjesh G N, Raviprasad TN, D Balasubramanian, Babli Mog, Rajkumar Dagadkair and R K Meena	INGR24041
2	NRC-121	Dr., G.L. Veena, J D Adiga, Mohana GS, Eradasappa E, Sianna Savadi, Vanitha K, Shamshudeen M and Thondaiman V	INGR 24040
3	NRC 301	Dr. Eradasappa E, PL Saroj, RK Meena, Preethi P, Vanitha K, Veena G L, Loganathan M, Rajkumar A Dagadkair, Janani p, Siddanna Savadi, T N Raviprasad, JD Adiga, Shamshudeen M, D Balasubramanian, Mohana GS, Bhagya H P, KRM Swamy, M Gangadhara Nayak, MG Bhat, Rajashekara H and Babli Mog	INGR 24044
4	Sel-480	Dr. J.D. Adiga, M G Bhat, Veena G L, Mohana G S, Eradasappa E, Siddanna Savadi, Shamshudeen M, Muralidhara B M, Bhagya HP, Manjesh G N, Raviprasad TN, D Balasubramanian, Babli Mog, Rajkumar Dagadkair and R K Meena	INGR 24042

## Exposure Visit

Sl. No.	Name & Address	Purpose of visit	Date of visit	No. of Participants	Coordinators
1	University of Horticultural Sciences, Bagalkhot	Educational Tour	19 <sup>th</sup> January 2024	50	Dr. Aswathy Chandrakumar and Dr. Babli Mog
2	Madhusudhan D L Horticulture University Hassan	Educational Tour	29 <sup>th</sup> February 2024	30	Dr. Aswathy Chandrakumar, Dr. Veena G.L. & Dr. Manjesh G N
3	Farmers, Lingadahalli, Tarikere	Exposure	16 <sup>th</sup> March, 2024	45	Bhagya, H P and Eradasappa E
4	B.Sc. (Hons.) Horticulture Dr. PDKV, Akola to	Educational tour	21 <sup>st</sup> March, 2024	26	Bhagya H P
5	III BSC (Hons) College of Horticulture, Mysore, UAHS, Bagalkhot	Educational Tour	26 <sup>th</sup> March 2024	56	Dr. Bhagya H.P and Dr. Veena G.L
6	B.Sc. (Hons.) Horticulture, University of Horticultural Sciences, Bagalkot, COH, Kolar	Educational tour	28 <sup>th</sup> March, 2024	58	Bhagya H P and Veena G L



Sl. No.	Name & Address	Purpose of visit	Date of visit	No. of Participants	Coordinators
7	B.Sc. (Hons.) Horticulture, University of Horticultural Sciences, Bagalkot, COH, Sirsi	Educational tour	1 <sup>st</sup> April, 2024	58	Bhagya H P and Jyothi Nishad
8	B.Sc. (Hons.) Horticulture University of Horticultural Sciences, Bagalkot, COH, Haveri	Educational tour	3 <sup>rd</sup> April, 2024	33	Bhagya H P. and Jyothi Nishad
9	III B.Sc. (Hons.) Horticulture, COH, Mulde, Maharashtra		4 <sup>th</sup> April, 2024	44	Bhagya H P
10	Ms. Vijitha V DAESI Facilitator ICAR-KVK ,Mangalore	Educational Tour	17 <sup>th</sup> May 2024	40	Dr. Aswathy Chandrakumar and Dr. Bhagya H P
11	T. Nadana S Dept of Agriculture Cuddalore, Tamil Nadu	Exposure Visit	28 <sup>th</sup> May 2024	9	Dr. Aswathy Chandrakumar, Dr. Thondaiman V
12	Dr. Vengopal BEST University Gorantta Andra Pradesh	Educational Tour	15 <sup>th</sup> June 2024	155	Dr. Eradasappa E and Dr. Vanitha K
13	Dr. Shivanand Gowda BEST University Gorantta, Andra Pradesh	Educational Tour	17 <sup>th</sup> June 2024	115	Dr. Aswathy Chandrakumar and Dr. Jyoti Nishad

## Fronting Demonstrations

### 'Front Line Demonstration of newly developed cashew varieties of ICAR-DCR Puttur'

Total 91 Front Line Demonstrations of four varieties viz., Nethra Ganga, Nethra Jumbo-1, Nethra Ubhaya, Bhaskara were established in 91 farmers field (91 acres) under the external project funded by DCCD Kochi. Each farmer was given financial assistance of Rs.8000 through direct benefit transfer (DBT) mode and the FLDs were taken up in three states viz. Karnataka (Dakshina Kannada, Udupi, Chitradurga, Mysuru, Hassan, Haveri, Tumakuru, Gadag, Koppal, Kodagu), Kerala (Kasaragod) and Andhra Pradesh (Anantpur and Parvathipuram Manyam). Project investigators Eradasappa, E., Aswathy Chandrakumar and Bhagya, H.P. visited the FLD fields of farmers during February-March 2024 to verify the planting and advised farmers regarding management of cashew plantation for establishment and maintaining register for yield data and works.

(Eradasappa, E., Mohana, G.S., Aswathy Chandrakumar, Bhagya, H.P., Adiga, J.D: ICAR-DCR, Puttur-574202)






### Frontline demonstrations on drone technology

Conducted five frontline demonstrations on drone technology for spraying agricultural chemicals, micronutrients, and organic pesticides in farmers' fields, covering 8 acres and 543 farmers participated in the programme. The demonstrations were conducted under the scheme “Drone Technology Demonstration (DTD)” funded by Central Sector Scheme of Dept. of Agriculture & Farmers Welfare, implemented through ATARI (Sub Mission on Agricultural Mechanization) with aim to create awareness about Drone applications in agriculture among the farmers, extension workers and other stakeholders.





(Manjunatha K–Coordinator; Aswathy Chandrakumar, Bhagya H.P–Co-coordinators and Manjesh G.N. – Expert)







### RECOGNITION AND AWARDS

Name of the Scientist	Title	Photo
<p>Dr. Babli Mog</p>	<p>Inducted into PG faculty member of regional academic hubs of IARI-Bengaluru hub of ICAR-IARI in Plant Physiology.</p>	
	<p>Received Scientist of the year award in the International Conference on Multidisciplinary approaches in Engineering, Science, Agriculture and Social Studies through hybrid mode during 3<sup>th</sup> to 4<sup>th</sup> June, 2023 organized by Dr. Bhimrao Ambedkar University, Agra</p>	
	<p>Received 2nd Best oral presentation award (Online mode) in the technical session THEME 1 for the topic “Pollen morphological study and the effect of temperature on the pollen germination of cashew (<i>Anacardium occidentale</i> L.) varieties” during the “International Conference on Agriculture, Environment and Sustainable Development (ICAESD – 2024)” from 20<sup>th</sup> to 21<sup>st</sup> March 2024, organized by the Department of Horticulture, Rajiv Gandhi University, Arunachal Pradesh, India.</p>	
	<p>Received Best Women Scientist Award in the 1<sup>st</sup> international conference on 'Natural Resource Management and Environmental sustainability for future generations' on 20<sup>th</sup> April, 2024 (applied online) organized by Government college, Hisar and Vital Biotech, Kota.</p>	





Name of the Scientist	Title	Photo
Dr. Bhagya H P	Inducted into PG faculty member of regional academic hubs of IARI-Bengaluru hub of ICAR-IARI in Horticulture.	
	Reviewed research article in Journal of Horticultural sciences on 7.06.2024	
	Nominated as Expert for cashew area expansion at Meghalaya	
	Reviewed research article in Journal of Advances in Biology and Biotechnology on 18 <sup>th</sup> April, 2024	
	Reviewed research article in Innovations in Agriculture journal on 15 <sup>th</sup> May, 2024	
Dr. D Balasubramanian, Dr. Raghuram Kukkade, Ms. Divya, Mr. Gopalakrishna	II BEST stall award for the exhibition stall put up at National Horticulture Fair – 2024 conducted at ICAR-Indian Institute of Horticultural Research, Hesaraghatta, Bangalore, Karnataka (5 <sup>th</sup> -7 <sup>th</sup> March, 2024)	
Dr. D Balasubramanian	Acted as 'Panel Member' during National Technology Day conducted at Nitte University, University Enclave, Mangalore, Karnataka (11 <sup>th</sup> May, 2024)  Acting as 'Nodal officer' and 'Member of Expert Committee' for the Contractual Project on 'Scaling up of Cashew Value Chain through Area Expansion and Improving Value Addition Processes' (3 <sup>rd</sup> May, 2024)	
Dr. E. Eradasappa	Expert Committee Member, Meghalaya cashew area expansion programme (May 2024 to May 2026)	
	Expert Committee Member, BIS-FAD10 Panel-IV (12.03.2024 to till date)	
	Acted as external member of selection committee for the selection of Project fellow (01 Post) and Project Assistant (08 Post) on contract basis under the Revolving Fund Scheme (10-01-2024 at 10.00 a.m. at ICAR- Central Plantation Crops Research Institute-Coconut Research Center, Kidu, D.K District.	
Dr. Jyoti Nishad	Inducted into PG faculty member of regional academic hubs of IARI-Bengaluru hub of ICAR-IARI in Food Technology.  Received commendation letter from ICAR-CIRCOT, Mumbai for best presentation during the short course on “Advances in Applications of Nanotechnology in Agriculture”  Acted as Reviewer in Journal of Food Science and Technology, Scientia Horticulturae, Trends in Food Science and Technology; Industrial Crops and Products, Journal of Food Measurement and Characterization, Journal of the Saudi Society of Agricultural Sciences, Journal of Chemistry, Journal of Food Processing and Preservation; Advances in Food Chemistry and Journal of Food Process Engineering	



Name of the Scientist	Title	Photo
Dr. Manjesh GN	<p>Recognised as Question Paper Setter for B.Sc. (Hons) of Odisha University of Agriculture and Technology, Bhubaneswar for the course FS-226- Plantation Crops.</p> <p>Recognised and deputed as an expert on “Cashew Production and Processing Technology” during the “Horticulture Fair” organised by ICAR-CPCRI, Vittal on 28<sup>th</sup> February 2024</p>	
<p>Dr. Manjunatha K Dr. Siddanna Savadi Dr. J. D. Adiga Dr. D. Balasubramanian Dr. Ravindra Naik Dr. Muralidhara B.M. Dr. Chethan C. R</p>	<p>Best Research Paper Award for the research paper entitled “Evaluation of fruit detachment forces and related characteristics reveal differential fruit detachments at developmental stages and cultivar differences in cashew” published in Scientia Horticulturae”</p>	
Dr. Mohana G. S.	<p>Recognized as a member of the Doctoral Advisory Committee of Mr. Kedar Sawant, Ph.D. Scholar at the Dept. of Information and Communication Technology, MIT, Manipal.</p> <p>Recognized as the guide for carrying out the group mini project by three B.Sc. students of St. Philomina College, Puttur on Basic Cashew Breeding Techniques</p> <p>Recognized as a member of the IMC of CPCRI, Kasaragod from 09-02-2024 for three years Chairman of the selection of YP- I for PME cell at ICAR- DCR, Puttur</p> <p>External Expert, SRF upgradation committee, Department of Biosciences, Mangalore University, Konaje, Mangalore</p> <p>Expert Member in the Assessment Committee for Technical Staff Category-III (Lab Technician) at NRC- Banana, Trichy, Tamil Nadu</p> <p>Chairman, Departmental Promotion Committee, ICAR- DCR, Puttur for promotion of UDC</p>	
Dr. Rajashekara H	<p>Nominated as Data Officer from the Directorate for participation in the Round-II study on evaluation of innovation excellence indicators by GII</p> <p>Acted as Course Associate in PL PATH 514 Integrated Disease Management (2+1) for PhD students from IARI-Bengaluru hub of ICAR-IARI.</p> <p>Acted as reviewer in reputed journals of Plant Pathology in national and international like Plant Disease, Pest Management Science, Frontiers in Plant Science (Plant Pathogen Interactions), Indian Phytopathology, European Journal of Plant Pathology, Cogent Food and Agriculture, Discover Life.</p>	



Name of the Scientist	Title	Photo
Dr. Siddanna Savadi	IARI Faculty and Research Guideship in IIHR academic hub of IARI.	
Dr. Veena G L	<p>Nominated as a Member of the executive Committee of Indian Society of Plantation Crops journal biennium 2024-25.</p> <p>Nominated as Member of the Board of Examiners for MSc (Food Science and Nutrition) the examination in Department of Biosciences Mangalore University</p> <p>Acted as Question Paper setter for Food science and Nutrition Course of Mangalore University for the period of 2024-25</p> <p>Nominated as Question Paper Setter for B.Sc. (Hons) of Odisha University of Agriculture and Technology Bhubaneswar for the course FSC 123- Tropical and Sub tropical fruits</p> <p>Cleared Parangat examination conducted by Rajbhasha Vibhag, Hindi Shikshan Yojana Government of India</p>	

### Staff News

Rejoined	
1	Dr. V. Thondaiman, scientist – Rejoined ICAR – DCR, Puttur from CUTN – Tamil Nadu, w.e.f. 27.05.2024
Inter – Institutional Transfer	
1.	Sri. Sasi. K.K, Assistant Finance & Account Officer, transferred to ICAR-CPCRI, Kasaragod, Kerala on 25.04.2024
Retirement	
1.	K. Padminikutty, Assistant retired on superannuation on 31.01.2024
2.	Sri. K. Muralikrishna, CTO retired on superannuation on 31.05.2024
3.	Sri. Krishnappa Naik, SSS retired on superannuation on 31.05.2024
4.	Sri. K. Annu, SSS retired on superannuation on 31.05.2024
Promotion	
1.	Dr. Babli Mog, Scientist (Plant Physiology) to the Post of Senior Scientist on 01.01.2023
2.	Dr. Rajashekara. H, Scientist (Plant Pathology) to the Post of Senior Scientist on 01.01.2023
3.	Dr. V. Thondaiman, Scientist Spices, Plantation, Medicinal & Aromatic Plants) to the Post of Senior Scientist on 01.01.2023



<b>Appointment</b>	
1.	Sri. Ashwin. G, appointed as Finance & Account Officer w.e.f. 22.04.2024
2.	Sri. Ashvini Kumar Singh, appointed as Technician (T-1) w.e.f. 06.05.2024
3.	Sri. Rahul Yadav, appointed as Technician (T-1) w.e.f. 06.05.2024
4.	Sri. Lalan Kumar, appointed as Technician (T-1) w.e.f. 24.05.2024
<b>Inter –Institutional Transfer/ Deputation with promotion</b>	
1.	Sri. Jayarajan, V. V, LDC, Transfer/Deputation Basis from CPCRI, Kasaragod with promotion to the post of UDC w.e.f. 03.06.2024.

### Distinguished visitor

Sl. No.	Name & designation	Address	Date of visit
1	Dr. B N S Murthy Former Director	Former Director, ICAR-IIHR, Bengaluru	5 <sup>th</sup> March, 2024
2	Dr. V B Patel ADG (Fruit & Plantation)	ADG (Fruit & Plantation) ICAR HQs, New Delhi	5 <sup>th</sup> April, 2024
3	Dr. R N Padaria Joint Director (Agricultural Extension)	ICAR-IARI, New Delhi	5 <sup>th</sup> April, 2024
4	Deepaja S. M. Joint Director of Agriculture	Joint Director of Agriculture, RKVY Section, Bengaluru	18 <sup>th</sup> June, 2024

## FARMERS CORNER

### Success stories of Cashew farmers from Andhra Pradesh

Sri Muppena Ramana Reddy from Gopalapuram, West Godavari District, Andhra Pradesh who was basically a tobacco farmer faced continuous losses and approached CRS, Bapatla and has taken up the cashew planting with BPP-8 and BPP-9. During the 12<sup>th</sup> year viz., 2024, he harvested on an average 13.24 Kg/plant, (1920 Kg from 145 plants) and has been felicitated by DCCD, Kochi.

Sri Pedakam Peda Maraiiah, Pandugudem Eluru has BPP-8 and BPP-9 planted under SCSP area expansion programme, during the year 2017, and has obtained the net income of Rs. 60000 per ha from scientific cultivation of these varieties.

Sri Pedakam Babu, Pandugudem, Eluru has also planted BPP-8 and BPP-9 under SCSP area expansion programme at third harvest with a net income of Rs. 51000 per ha.

### Success Story of Cashew Farmers of Maharashtra

The success stories of few enterprising farmers who benefited from AICRP Cashew, Vengurla are listed below. Shri. Vilas Anantrao Thakur, Gawadewadi, has been cultivating Vengurla-4 & Vengurla-7 varieties with productivity range of 2.5 to 3.0 ton per hectare of raw nuts with net profits up to 3.50 lakh per hectare. He has adopted of recommended dose of fertilizer and drip irrigation along with foliar application of nutrients.

Shri. Raja Rajeshwar Mhavalankar, Sawantwadi, has. Vengurla-4 & Vengurla-7 in his 40ha plot and has adopted



recommended cashew POP developed by Dr. BSKKV, besides selling of RCN, he also prepares cashew fenny from cashew apple in Goa.

Shri. Balkrishna Gangadhar Gadgil, Vetore, Sindhudurg has adopted all the technologies developed by AICRP-Cashew, RFRS, Vengurla which increased the cashew production to 2.5 - 3.0 t/ha. He has formed a Co-operative society of farmers and through which the farmers sell their RCN.

Shri. Dilip Ganpat Narkar from Lanja, is obtaining 2.5 to 3.0 tons/ha by adopting cashew production technology developed by the AICRP-Cashew, viz., application of RDF, plant protection schedule and use hormones and nutrients as a foliar spray for yield enhancement. He is successfully running a fruit processing unit.

Shivram Mahadev Arolkar has taken up cashew plantation under the employment Guarantee scheme with a yield of 2 to 2.5 tones/ha by adopting all cashew production technologies developed by the AICRP-Cashew and applies micro-nutrients as a foliar spray for yield enhancement. He has established the cashew nursery which is supplying good quality grafts of Vengurla-4 & Vengurla-7.

### “Occiana”: Plantation Corporation of Kerala [PCK] embarks on a new venture

The Plantation Corporation of Kerala produces around 1000 MT of raw cashew nut every year, and the cashew apple, which is often discarded as waste, except for the utilization as seasonal fresh juice in the sales outlet of Kasaragod. The Corporation approached the Kerala Agricultural University for technology on establishing a cashew apple processing unit at the Kasargod estate.

The staff of the PCK had undergone training from CRS, Madakkathara on value-addition of cashew apple followed by a consultancy visit to Kasargod estate. The outcome of these efforts culminated in the development of production and commercialization of 'Occiana', a carbonated cashew apple drink. Approximately 85,000 bottles of ready-to-drink carbonated beverage, Occiana and cashew apple syrup are being sold annually; reducing the nutritional drain of healthy cashew apples and enhancing income levels to the corporation.



## INDUSTRY NEWS

All India Cashew Association (AICA) - An Inclusive All India body for Cashew Value Chain Participants in India  
Ragul Kamath, President

All India Cashew Association (AICA) is a not-for-profit company formed during the year 2023, by nine state-level cashew processing / Cashew manufacturing associations of Andhra, Goa, Gujarat, Karnataka, Kerala, Maharashtra, Odisha, Tamil Nadu, and West Bengal. The board comprises of three Directors from each of the nine founding state cashew associations and three advisory members and is run by an executive committee.

AICA aims to be an inclusive pan-India body for the entire cashew value chain participants in India. Therefore, it is envisaged that AICA will soon expand its membership to Farmer cooperatives, Associations representing interests of traders and brokers, Service providers to the cashew industry such as banking, logistics, machinery manufacturers and suppliers of products and even individual members.

AICA aims to work with the various departments of governments, private sector and non-government stakeholders on three broad agenda in the next three to five years. These include (1) Technology upgradation and modernisation of processing factories with a view to increasing our competitiveness in the export markets;



(2) Increasing raw cashew production in India by supporting initiatives aimed at improving productivity, expanding area and development of new variety and (3) supporting initiatives on clinical studies on health benefits of cashew kernels and developing a strategy for generic promotion to sustain growth in cashew kernel consumption.

1. Increasing the production of raw cashewnuts in India to 24.0 lakh tons by 2044 from the current production of 7.0 lakh tons.

2. Enhancing the growth of cashew industry in terms of the market value of cashew kernel from current level of Rs. 25,000 Cr to Rs. 75,000 Cr in the next 10 years.

3. Sustain and provide direct employment to over 1.5 million rural women while pursuing factory modernisation.

4. Increase India's share of exports of cashew kernels to 15% from the current 7% over the next 10 years.

5. Contribute to government in terms of employment, sustainability goals, empowerment of women.

Contact email ID [president@allindiacashew.com](mailto:president@allindiacashew.com), for those who are interested in contributing to the cause of AICA.

## AICRP ON CASHEW

### 1. Research highlights:

At Paria centre, Gujarat, a higher B:C ratio of 2.93 was recorded in cashew + coriander intercropping. A cashew germplasm with a bold nut of 10 g was identified for In-Situ evaluation at Vasoli, Warchiwadi, Sindhudurg. Under MLT trials at Hogalagere, Ullal – 3 continued to give the highest cumulative nut yield (33.15kg/tree) than the local check Chintamani – 1 (28.76kg/tree). Aromatic turmeric (*Curcuma aromatica*) was found economically profitable with the highest B:C ratio of 3.23 at Madakkathara. Among the different hybrids of 2000 evaluated at Bapatla, the cumulative nut yield per tree was the highest in H-218 (194.05 kg) for 14 harvests. Two cashew hybrids viz., H – 113 and H - 139 were found promising for bold nut, high yield, cluster bearing, late synchronized flowering, high shelling percentage; and for precautionary - early season flowering, short spreading type canopy respectively. The findings of Darisai center indicated highest net return of Rs 4.26 Lakhs for cashew + ginger intercropping followed by Rs. 3.05 Lakhs in case of cashew + colocasia.

### 2. Publications

#### Research Papers

Ramteke, V., Paikra, M. S., Netam, R. S., Kerketta, A., Nirala, Y., Singh, D. P., Veena, G. L., Adiga, J. D., Mohana, G. S. and Raviprasad, T. N. 2024. Genetic variability, trait association, and path analysis studies for nut yield and yield-related traits in cashew (*Anacardium occidentale* L.). *Journal of Agricultural Science and Technology*, 26 (2): 403-414.

Das, S, Ali Md, Bandyopadhyay S, Poduval M. 2024. Multivariate analysis from maturase K (matk) gene –based markers and morphological indices in Indian cashew. *Plant Genetic Resources: Characterization and Utilization*, 22(1):17-26.

#### Book Chapters

Bhingarde, R. T., Desai, V. S. and Khapare, L. S., 2024. Cashew production technologies in Maharashtra. *Technologies for cashew production and postharvest management in India* published by Director, Directorate of Cashewnut and Cocoa Development, Kochi, Kerala: pp 25-35.

Aswathanarayana Reddy, N., Srikantaprasad, D., Ramachandra, R.K. and Jagadish, 2024. Good agricultural practices for scientific cashew cultivation in southern plains of Karnataka. In: *Technologies for cashew*



production and post-harvest management in India. Ed. Jalaja S Menon, KAU, Cashew Research Station, Madakkathara (Kerala). Pp. 64-105.

Sathish, G., Baskaran, A., Jaya Prabhavathi S. and Baskaran, R., 2024. Cashew Production Technologies in Tamil Nadu. In: Dr. Menon, Jalaja S. (Eds.) Published by Director, Directorate of Cashew nut and Cocoa Development, Kottai, Kerala KAU Press, Mannuthy, pp: 74-80.

Ramteke, V., Mandawi, N. C., Netam, R. S. and Thakur, P. 2024. Application of Artificial Intelligence and Machine Learning in Agriculture. In: Menon, Jalaja S. (Eds.) Technologies for cashew production and postharvest management in India.

### 3. News and Events

RFRS, Vengurla centre has successfully organized Cashew DCCD sponsored District Level Seminar on Cashew at Asniye, Tal. Sawantwadi, Dist. Sindhudurg on 15.02.2024. National-level training on cashew funded by the Directorate of Cashew nut and Cocoa Development, (DCCD) Kochi was organized for Field level implementing officials of cashew growing states in India on 27/01/2024 to 29/01/2024. by CRS, Madakkathara attended in the inaugural function.

#### **Conducted Annual Group Meeting 2023 of the All India Coordinated Research Project on Cashew from 17<sup>th</sup> to 19<sup>th</sup> January 2024.**

The Annual Group Meeting of scientists of All India Coordinated Research Project on Cashew was held at Kerala Agricultural University on 17<sup>th</sup> January, 2024 for the three-day annual review of research progress and charting out the technical programme for the next year. Dr. B. Ashok, IAS, Vice Chancellor of the Kerala Agricultural University presided over the function online. Dr. Madhu Subramanian, Director of Research of the KAU welcomed the gathering. The ADG (HS -I) Dr. V. B Patel, PC (Cashew), Dr. J. D Adiga and Scientist-in-charge, Dr. T. N Raviprasad, and few senior level scientists from DCR participated in the deliberations. As part of the annual meeting, the CRS, Madakkathara has organized an exhibition of various commercial and traditional products of cashew apple with a novel ready-to-drink non-alcoholic beverage.

A training programme on Cashew Apple utilization was conducted by Pilicode centre at Chemberi funded by DCCD, Kochi to create awareness on cashew apple utilization for enhancing farm-level income.

A training on “Productivity Improvement in Cashew” has been conducted by Bhubhaneswar Center at Angargaon, Ganjam in collaboration Fairtrade International- Network of Asia Pacific Producers FT NAPP and Maa Bhagawati Jaivik Producer Company Limited on 10.04.2024.

The Jhargram center organised training on “Cashew nursery technique” at Nayagram Block of Jhargram District, for scheduled caste farmers.

The Tura center organized training Programme on Improved Management Practices including Processing of Cashew at Tura, West Garo Hills, Meghalaya and on “Production Technology of Cashew for better income of the Farmers” at ICAR-KVK Peren, Nagaland.





#### 4. SCSP/TSP Activities

Under SCSP/TSP activities, AICRP Paria organized training under SCSP on Scientific Cashew cultivation at AES, NAU, Paria and at Gandevi, Navsari as well as, a TSP training on Scientific Cashew cultivation at Kosimpada, Dharampur, Valsad and also distributed various agricultural inputs



**AICRP Vengurla, Maharashtra center** organized three one day training programmes (50 trainees / training) under SCSP programme at Nirwade, Tal. Sawantwadi; Gothos, Tal. Kudal and Vasoli, Tal. Kudal on 20.02.2024, 22.02.2024 and 18.03.2024, respectively.

Under SCSP activity, a training on scientific cultivation practices for higher yield in cashew for 254 farmers and cashew grafts were distributed for the beneficiaries at AICRP Hogalagere centre.



At AICRP Vridhachalam, training on creating awareness about cashew cultivation and expanding cashew area in Scheduled Caste areas and tribal areas was conducted

AICRP Madakkathara centre organized two training programme namely, Establishment of cashew plantation and scope of income from cashew and Home-scale utilization of cashew apple and its nutritional benefits for SC farmers of Kollam district. Under TSP activity, one training programme was conducted and cashew grafts were distributed for expansion of 2 ha area.

Under SCSP/TSP activities, awareness seminar on scientific cashew production for 50 tribal farmers and 150 Scheduled caste farmers were conducted by AICRP- Pilicode centre

Under SCSP program, cashew grafts were distributed for area expansion of 7 hectares and under TSP programme cashew grafts distributed for 3 hectares by AICRP Bapatla centre.

Under SCSP activity, AICRP Bhubaneswar centre conducted three trainings and distributed to a total of 135 beneficiaries. Under TSP, training on cashew cultivation for livelihood security of tribal farmers was conducted and inputs were also distributed for the 50 farmers



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Under SCSP activity, AICRP Bhubaneswar centre conducted three trainings and distributed to a total of 135 beneficiaries. Under TSP, training on cashew cultivation for livelihood security of tribal farmers was conducted and inputs were also distributed for the 50 farmers



**AICRP Jagdalpur organized two training programmes under SCSP and one training programme under TSP at Bastar District.**



AICRP Jhargram centre organized training programme for SC farmers on “Improved technology of cashew cultivation” at three places for 180 beneficiaries. Two-hectare cashew plantation was established for 3 ST farmers.

From AICRP Darisai, under SCSP, four trainings were conducted for 160 farmers and under TSP two trainings were conducted for the 80 farmers.





## 5. Transfer of Technology

### ICAR - DCR INITIATES EFFORTS FOR CASHEW AREA EXPANSION IN ASSAM

The present cashew scenario in our country shows significant shortage of raw cashew nuts (RCN) to meet the domestic demand of existing cashew processing industries. Further, due to the establishment of cashew nut processing facilities in those cashew producing countries, viz., Mozambique, Tanzania, Ivory Coast, Guinea-Bissau etc., the import of raw nuts on which the cashew processing industry was largely dependent; has been considerably impacted. In this context, efforts are being made by various agencies to boost domestic raw nut production through expansion of cashew area in the potential non-traditional tracks of the country. This Directorate has freshly made inroads into a very potential state for cashew production in the North Eastern region, viz., Assam in collaboration with Assam Agricultural University, (AAU), Jorhat. Initially various regional research stations of AAU were contacted to get an idea of the potential areas and cashew awareness programs informing the history of cashew in India; its uses and by-products, cultivation aspects, economics and value addition; were conducted to give an insight to the local farming community about the feasibility of cultivating cashew in the upland areas of their region which is currently lying uncultivated. The scientists of ICAR-DCR from various disciplines developed a comprehensive presentation covering all the above information, and in collaboration with AAU have successfully organized more than 10 cashew awareness campaigns and participated as resource persons in the several potential areas in Diphu, Gossaigaon, Tinsukia, Kahikuchi and Buralikson. The local farmers had some basic information about cashew and its cultivation and in some locations few farmers had cashew trees grown in their vicinity. However, cashew is not presently being cultivated on a commercial scale.

In certain localities, few young farmers have formed FPOs and showed keen interest in taking up cashew cultivation and also small-scale cashew processing. Currently, some of the farmers do have two to three acres of cashew cultivation with non-descript, seedling origin cashew trees. All the local production of RCN is being diverted for processing to small units located in Mankachar district, bordering Bangladesh thereby providing negligible profit margins for the cultivator

The scientists involved in NEH activities have collected details of interested farmers who will be supplied with quality cashew grafts for taking up planting in the ensuing season. Efforts are also being made to hold extensive cashew awareness campaigns in a phased manner and in the most potential localities which have suitable climatic and edaphic conditions favorable for good cashew productivity. Thus, the Directorate through its efforts envisages to improve the livelihood incomes of the local farmers of Assam and thereby aid in considerably enhancing the domestic RCN production in the country in the near future.





**The following scientists were involved as resource person for conduct of massive awareness program**

<b>Name of Scientist</b>	<b>Designation</b>
Dr. T. N. Raviprasad	Principal Scientist (Agrl. Ento) and SIC PC Cell
Dr. D. Balasubramanian	Principal Scientist (AS&PE)
Dr. Mohan G.S	Principal Scientist (Gen & Cyto)
Dr. Eradasappa E	Senior Scientist (Pl. Breeding)
Dr. Vanitha K	Senior Scientist (Agrl. Ento)
Dr. Babli Mog	Senior Scientist (Pl. Physiology)
Dr. Rajashekara H	Senior Scientist (Pl. Pathology)
Dr. Veena G. L.	Scientist (Fruit Science)
Dr. Siddanna S	Scientist (Agri. Biotechnology)
Dr. Bhagya H. P.	Scientist (SPM&AP)
Dr. Manjesh G. N.	Scientist (SPM&AP)
Dr. Manjunatha K	Scientist (FM&P)
Dr. Jyoti Nishad	Scientist (Food Technology)

## 6. Radio Talks / TV Programmes

<b>Name of the Scientist</b>	<b>Title and Venue</b>	<b>Date</b>
AICRP Bapatla Dr. K. Umamaheswara Rao, Senior Scientist (Hort.) and Head	Jeedimamidi lo pootha, pinde mariyu kaya dasalo teesukovalasina jagrattalu Radio talk in All India Radio Station, Vijayawada	21.03.2024
	Jeedimamidilo yajamanya paddathulu, Suman TV	30.04.2024
AICRP Bhubaneswar Dr (Mrs) Kabita Sethi	Nutan Kaju bagicha karibe kipari, AIR, Puri (Establishment of New cashew Orchard)	21.06.2024
Dr. Mini Poduval	Live programme on "Cashew nut cultivation in West Bengal" in Krishi Darsan programme of Kolkata Dooradarshan.	17.05.2024





भाकृअनुप  
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DCR