

वार्षिक प्रतिवेदन ANNUAL REPORT 2025 AICRP ON PLANTATION CROPS



भा.कृ.अनु.प. - अखिल भारतीय समन्वित रोपण फसल अनुसंधान परियोजना
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ICAR- ALL INDIA COORDINATED RESEARCH PROJECT ON PLANTATION CROPS
ICAR-Central Plantation Crops Research Institute
KASARAGOD, KERALAM, INDIA - 671 124

<https://aicrponpc.org>

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Correct citation :

AICRP on PC, 2026. Annual Report 2025. ICAR-All India Coordinated Research Project on Plantation Crops, (Eds. B. Augustine Jerard, Sumitha, S and Elizabeth Mathew), ICAR-CPCRI, Kasaragod, 69p.

Published by

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Printed by

Kasaragod Printing and Multi Industrial Co-operative Society Ltd.

Kasaragod

Phone : 8281050060

August 2026

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I. प्रस्तावना

भारतीय कृषि क्षेत्र में रोपण फसल का एक अभिन्न हिस्सा हैं और कृषि उत्पादन, ग्रामीण आजीविका, रोजगार सृजन और राष्ट्रीय अर्थव्यवस्था में इसका महत्वपूर्ण योगदान हैं। यह क्षेत्र खेती, प्रसंस्करण, मूल्य संवर्धन और विपणन से जुड़े लाखों किसानों और श्रमिकों को आजीविका प्रदान करता है तथा अनेक कृषि-आधारित उद्योगों के लिए कच्चा माल उपलब्ध कराता है और निर्यात आय में भी योगदान देता है। किसानों की आय बढ़ाने और कृषि अर्थव्यवस्था को सुदृढ़ करने के लिए रोपण फसलों का सतत विकास अत्यंत महत्वपूर्ण है।

अखिल भारतीय समन्वित रोपण फसल अनुसंधान परियोजना वर्ष 1972 में शुरू हुई थी। इस परियोजना में देशभर के 28 अनुसंधान केंद्रों के माध्यम से नारियल, सुपारी, कोको, तेल ताड़ और पॉमैरा पर स्थानीय विशेष अनुसंधान का समन्वय है। वर्ष 2025 के दौरान, समन्वित अनुसंधान के माध्यम से फसल सुधार, अनुवांशिक संसाधन, फसल उत्पादन, फसल संरक्षण तथा प्रौद्योगिकी प्रसार के क्षेत्रों में महत्वपूर्ण उपलब्धियाँ प्राप्त हुईं।

इस वर्ष के दौरान तमिलनाडु में नारियल की ALR 4 (IC 610371) किस्म को वेस्ट कोस्ट टॉल की तुलना में इसके उत्कृष्ट उपज प्रदर्शन के आधार पर जारी करने की सिफारिश एक बड़ी उपलब्धि है। तेल ताड़ में ताजे फल गुच्छों तथा तेल की उच्च उपज प्राप्त होने से संकर NRCOP-9 और NRCOP-37 को क्रमशः तमिलनाडु और आंध्रप्रदेश राज्यों के तटीय क्षेत्रों में खेती के लिए जारी करने की अनुशंसित की गई। मृद फल गुठली नारियल के उत्पादन और संकर विकास के लिए बेहतर पैतृक की पहचान करने के उद्देश्य से, सात केंद्रों पर 13 बौने नारियल जर्मप्लाज्म का बहु-स्थान परीक्षण शुरू किया गया। तथा उपज और वायु-सहनशीलता के मूल्यांकन के अंतर्गत 15 आशाजनक लंबी नारियल जीनोटाइप्स को लाया गया। कई नारियल संकर संयुक्तों ने आगे के मूल्यांकन के लिए स्थान-विशिष्ट संभावनाएँ प्रदर्शित कीं। पॉमैरा के लक्षण-वर्णन हेतु से एक मानकीकृत डिस्क्रिप्टर विकसित किए जाने तथा ओडिशा और बिहार से शीघ्र पुष्पन करने वाले अभिग्रहणों (accession) की पहचान का प्रकाशन जारी ये उल्लेखनीय प्रगति है। कोको में, VTLC-3, VTLC-4 और VTLC-1 संकर आशाजनक पाया गया। समन्वित अनुसंधान के माध्यम से पोषक तत्व प्रबंधन, एकीकृत रोग प्रबंधन और पर्यावरण-अनुकूल कीट प्रबंधन पर स्थान-विशिष्ट अनुशंसाएँ भी विकसित की गईं, जबकि बड़े पैमाने पर जैविक नियंत्रण तथा देशव्यापी कीट एवं रोग निगरानी ने सतत फसल संरक्षण को सुदृढ़ किया। समन्वित अनुसंधान की प्रगति की समीक्षा और भविष्य की अनुसंधान रणनीति तैयार करने के लिए अखिल भारतीय समन्वित रोपण फसल अनुसंधान परियोजना की 34 वीं वार्षिक समूह बैठक 7-9 मई, 2025 के दौरान कृषि महाविद्यालय एवं अनुसंधान संस्थान, मदुरै, तमिलनाडु कृषि विश्वविद्यालय (INAU), में आयोजित की गई।

इस परियोजना को निरंतर प्रोत्साहन और मार्गदर्शन के लिए डॉ. मंगी लाल जाट, सचिव (DARE) एवं महानिदेशक, भारतीय कृषि अनुसंधान परिषद (ICAR), नई दिल्ली के प्रति अपनी हार्दिक कृतज्ञता व्यक्त करना अपना सौभाग्य मानता हूँ। डॉ. एस. के. सिंह, उप महानिदेशक (बागवानी विज्ञान) तथा डॉ. वी. बी. पटेल, सहायक महानिदेशक (फल और रोपण फसलें), भारतीय कृषि अनुसंधान परिषद, नई दिल्ली के प्रति उनके बहुमूल्य मार्गदर्शन और सहयोग के लिए आभार प्रकट करता हूँ। मैं डॉ. के. बी. हेब्बार, निदेशक, भा. कृ.अनु. प. – केंद्रीय रोपण फसल अनुसंधान संस्थान, कासरगोड़ तथा डॉ. के. सुरेश, निदेशक, भा. कृ.अनु. प. – भारतीय तेल ताड़ अनुसंधान संस्थान, पेड़वेगी का भी निरंतर सहयोग एवं सहकारिता के लिए अपनी कृतज्ञता व्यक्त करता हूँ। अनुसंधान कार्यक्रम के सफल क्रियान्वयन में बहुमूल्य योगदान के लिए अखिल भारतीय समन्वित रोपण फसल अनुसंधान परियोजना के विभिन्न केंद्रों के सभी वैज्ञानिक-प्रभारियों, वैज्ञानिकों, तकनीकी कर्मचारियों एवं सहायक कर्मचारियों के समर्पित प्रयास और उत्साह के लिए धन्यवाद। इस वार्षिक प्रतिवेदन के संकलन एवं प्रकाशन में वैज्ञानिक डॉ. सुमिता एस. द्वारा प्रदान किए गए सहयोग के लिए भी मैं उनका आभार व्यक्त करता हूँ। वार्षिक प्रतिवेदन की निगरानी एवं संकलन कार्य में श्रीमती एलिजाबेथ मैथ्यू, SRF तथा श्रीमती आरती ए. आर., निजी सहायक, पीसी सेल, भा. कृ.अनु. प. – केंद्रीय रोपण फसल अनुसंधान संस्थान, कासरगोड़ सहयोग एवं समन्वय के लिए मैं उनका हार्दिक साधुवाद व्यक्त करता हूँ।



I. PREFACE

Plantation crops are an integral part of Indian agriculture, contributing significantly to agricultural production, rural livelihoods, employment generation, and the national economy. The sector supports millions of farmers and workers engaged in cultivation, processing, value addition, and marketing, while also providing raw materials for several agro-based industries and contributing to export earnings. The sustainable development of plantation crops is therefore vital for enhancing farmers' income and strengthening the agricultural economy. The All India Coordinated Research Project (AICRP) on Plantation Crops, established in 1972, coordinates location-specific research on coconut, arecanut, cocoa, oil palm, and palmyrah through a network of 28 research centres across the country. During 2025, coordinated research generated significant achievements in crop improvement, crop production, crop protection, and technology dissemination.

One of the major achievements during the year was the recommendation of the coconut variety ALR 4 (IC 610371) for release in Tamil Nadu based on its outstanding yield performance over West Coast Tall. In oil palm, the hybrids NRCOP-9 and NRCOP-37 were recommended for release for cultivation in the coastal regions of Tamil Nadu and Andhra Pradesh, respectively, owing to their high fresh fruit bunch and oil yield. A MLT of 13 dwarf coconut accessions was initiated across seven AICRP centres to identify promising dwarf line for tender nut production and hybrid development, while 15 promising tall coconut genotypes were brought under evaluation for yield and cyclonic wind tolerance. Several coconut hybrid combinations exhibited location-specific promise for further exploitation. Significant progress was also made in palmyrah with the development and release of a standardized descriptor for germplasm characterization and identification of early flowering accessions from Odisha and Bihar. In cocoa, the hybrids VTLCH-3, VTLCH-4, and VTLCC-1 were identified as promising. The project also generated location-specific recommendations on nutrient management, integrated disease management, and eco-friendly pest management, while large-scale biological control and nationwide pest and disease surveillance strengthened sustainable crop protection. The XXXIV Annual Group Meeting of the AICRP on Plantation Crops was organized at the Agricultural College and Research Institute, TNAU, Madurai, during 7–9 May, 2025 to review the progress of coordinated research and formulate future research strategies.

I consider it a privilege to express my sincere gratitude to Dr. Mangi Lal Jat, Secretary, DARE and Director General, ICAR, for his constant encouragement and support. I place on record my sincere thanks to Dr. S. K. Singh, DDG (Hort. Science) and Dr. V. B. Patel, ADG (Fruits and Plantation Crops), ICAR, for their valuable guidance and support. I express my gratitude to Dr. K. B. Hebbar, Director, ICAR–CPCRI, Kasaragod, and Dr. K. Suresh, Director, ICAR–IIOPR, Pedavegi, for their continued support and cooperation. I sincerely appreciate the dedicated efforts of all the scientists, technical staff, and supporting staff of the AICRP on PC centres for their valuable contributions to the successful implementation of the research programme. I also acknowledge and appreciate the support of Dr. Sumitha S., Senior Scientist in compiling and bringing out this Annual Report. The services of Mrs. Elizabeth Mathew, SRF and Mrs. Arathi, PA, PC Cell, ICAR–CPCRI are appreciated for assisting in monitoring the reports and compilations.

Date : 31-07-2026
Place : Kasaragod

(B. Augustine Jerard)
Project Coordinator



II. कार्य सारांश

अखिल भारतीय समन्वित रोपण फसल अनुसंधान परियोजना (एआईसीआरपी) ने देशभर में स्थित अपने अनुसंधान केन्द्रों के नेटवर्क के माध्यम से नारियल, सुपारी, कोको, ऑयल पाम तथा पामेरा ताड़ पर समन्वित अनुसंधान को निरंतर सुदृढ़ किया है। वर्ष 2025 के दौरान फसल सुधार, जर्मप्लाज्म संरक्षण, फसल उत्पादन, फसल संरक्षण तथा प्रौद्योगिकी प्रसार के क्षेत्रों में इसे उल्लेखनीय प्रगति प्राप्त हुई।

उत्कृष्ट प्रदर्शन के आधार पर विगत वर्ष की एक प्रमुख उपलब्धि नारियल की किस्म ALR 4 (IC 610371) को तमिलनाडु में विमोचन हेतु अनुशंसित किया जाना रही। इस किस्म में वेस्ट कोस्ट टॉल की तुलना में फल उपज 47.4 प्रतिशत, खोपरा उपज 58.9 प्रतिशत तथा तेल उपज 50.7 प्रतिशत अधिक दर्ज की गई है, साथ ही इसमें कच्चे नारियल जल की मात्रा भी अधिक पाई गई है। भुवनेश्वर में SKL x GBGD संकर ने सर्वाधिक फल उपज (137 फल प्रति पाम प्रति वर्ष), अधिक कच्चा नारियल जल (455 मि.ली. प्रति फल), अधिक खोपरा मात्रा (192.35 ग्राम प्रति फल) तथा अधिक तेल प्रतिशत (66.28%) दर्ज किया। इस संकर ने प्रचलित किस्म की तुलना में फल उपज में 24.75 प्रतिशत तथा खोपरा मात्रा में 34.63 प्रतिशत की श्रेष्ठता प्रदर्शित की। बौना x बौना संकरों में अंबाजीपेटा में COD x MGD, रत्नागिरी में COD x MYD तथा वेप्पनकुलम में GBGD x MOD ने कच्चे नारियल उत्पादन में उत्कृष्ट प्रदर्शन किया, जिससे इनकी स्थान-विशिष्ट खेती की संभावनाएँ स्पष्ट हुईं। समन्वित नारियल सुधार कार्यक्रम के अंतर्गत कच्चे नारियल उत्पादन एवं संकर प्रजनन के लिए उपयुक्त बौने पैतृक वंशक्रम की पहचान हेतु 13 बौने नारियल जर्मप्लाज्म को सात एआईसीआरपी केन्द्रों पर बहु-स्थान मूल्यांकन के अंतर्गत शामिल किया गया। इसके अतिरिक्त, 15 आशाजनक लंबे नारियल जीनोटाइप को तीन केन्द्रों पर उपज एवं वायु सहनशीलता के मूल्यांकन हेतु बहु-स्थान परीक्षण में सम्मिलित किया गया है। ऑयल पाम में NRCOP-37 को इसकी उच्च तेल उपज (5.48 टन प्रति हेक्टेयर प्रति वर्ष) तथा 18.45 प्रतिशत तेल मात्रा के आधार पर आंध्र प्रदेश के तटीय क्षेत्र में विमोचन हेतु अनुशंसित किया गया है, जबकि NRCOP-9 को सुनिश्चित सिंचाई की परिस्थितियों में तमिलनाडु के तटीय क्षेत्र के लिए 6.58 टन प्रति हेक्टेयर प्रति वर्ष की तेल उपज दर्ज करने के आधार पर विमोचन हेतु अनुशंसित किया गया है।

पामेरा ताड़ के अभिलक्षणन हेतु एक मानकीकृत विवरणिका (Standardized Descriptor) विकसित कर एआईसीआरपी के सभी केन्द्रों पर अंगीकरण के लिए जारी किया गया है, जिससे जर्मप्लाज्म के एकरूप अभिलक्षणन एवं प्रलेखन को सुगम बनाया जा सके। ताजे प्राकृतिक ताड़ गुड़ एवं गुड़ पाउडर के उत्पादन की प्रौद्योगिकी प्रक्रिया के लिए एक पेटेंट आवेदन भी प्रस्तुत किया गया है। कोको में VTLCH-3, VTLCH-4, तथा VTLCC-1 संकर संयोजनों की पहचान विभिन्न मूल्यांकन केन्द्रों पर उत्कृष्ट प्रदर्शन करने वाले संकरों के रूप में की गई है।

विविध कृषि-जलवायु परिस्थितियों में नारियल की उत्पादकता में सुधार हेतु कल्प पोषक, कल्प वर्धनी तथा TNAU टॉनिक की प्रभावशीलता का मूल्यांकन करने तथा नारियल आधारित उत्पादन प्रणालियों में अंतरवर्ती फसल के रूप में दालचीनी के उच्च घनत्व रोपण की व्यवहार्यता का आकलन करने के लिए नए फसल उत्पादन प्रयोग प्रारंभ किए गए हैं। फसल उत्पादन एवं संरक्षण पर समन्वित अनुसंधान के अंतर्गत पोषक तत्त्व प्रबंधन, समेकित रोग प्रबंधन तथा प्रमुख कीटों के जैविक नियंत्रण संबंधी स्थान-विशिष्ट अनुशंसाएँ विकसित की गई हैं। बेसल स्टेम रॉट तथा स्टेम ब्लीडिंग रोगों के लिए समेकित रोग प्रबंधन मॉड्यूलों ने विभिन्न केन्द्रों पर उत्साहवर्धक परिणाम प्रदर्शित किए। परजीवी कीटों तथा परभक्षियों का बड़े पैमाने पर उत्पादन एवं खेतों में उनका विमोचन ब्लैक-हेडेड कैटरपिलर तथा आक्रामक श्वेत मक्खियों के पर्यावरण-अनुकूल प्रबंधन को सुदृढ़ बनाने में सहायक सिद्ध हुआ है। साथ ही, देशव्यापी निगरानी के माध्यम से प्रमुख कीटों एवं रोगों की घटना, मौसमी गतिशीलता तथा उनके प्राकृतिक शत्रुओं की सक्रियता संबंधी महत्वपूर्ण जानकारी प्राप्त हुई है।

किसान प्रशिक्षण, फ्रंटलाइन प्रदर्शन, फील्ड डे, अध्ययन भ्रमण तथा SCSP, TSP एवं NEH के अंतर्गत आयोजित विस्तार कार्यक्रमों के माध्यम से प्रौद्योगिकी प्रसार प्रमुख प्राथमिकता बन रहा है, जिससे रोपण फसलों में उन्नत प्रौद्योगिकियों को अपनाने में बढ़ावा मिला है। विगत वर्ष के दौरान एआईसीआरपी नेटवर्क के समन्वित प्रयासों ने किस्म विकास, आनुवंशिक संसाधनों के संरक्षण एवं उपयोग, सतत फसल प्रबंधन तथा भारत में रोपण फसलों की उत्पादकता बढ़ाने में महत्वपूर्ण योगदान दिया है।



II. EXECUTIVE SUMMARY

The All India Coordinated Research Project (AICRP) on Plantation Crops continued to strengthen coordinated research on coconut, arecanut, cocoa, oil palm, and palmyrah through its network of centres across the country. During 2025, significant progress was achieved in crop improvement, crop production, crop protection, PHT on palmyrah and technology dissemination.

A major milestone during the year was the recommendation of the coconut variety ALR 4 (IC 610371) for release in Tamil Nadu based on its superior performance. The variety recorded 47.4% higher nut yield, 58.9% higher copra yield, and 50.7% higher oil yield than West Coast Tall, besides exhibiting higher tender nut water content. At Bhubaneswar, the hybrid SKL $\times$ GBGD recorded the highest nut yield (137 nuts palm⁻¹ year⁻¹), with higher tender nut water (455 mL nut⁻¹), copra content (192.35 g nut⁻¹), and oil content (66.28%), outperforming the ruling variety by 24.75% in nut yield and 34.63% in copra content. Among the Dwarf $\times$ Dwarf hybrids, COD $\times$ MGD at Ambajipeta, COD $\times$ MYD at Ratnagiri, and GBGD $\times$ MOD at Veppankulam exhibited superior performance in tender nut yield, indicating their potential for location-specific cultivation. Thirteen dwarf coconut selections were brought under multi-location evaluation across seven AICRP centres to identify promising dwarf parents for tender nut production and hybrid breeding. In addition, 15 promising tall coconut selections were included in a MLT for yield and cyclonic wind tolerance across three centres. In oil palm, NRCOP-37 (Pedavegi-1) was recommended for release in Andhra Pradesh based on its superior oil yield (5.48 t ha⁻¹ year⁻¹) and 18.45% oil content, while NRCOP-9 (Pedavegi-2) was recommended for release in Tamil Nadu under assured irrigation, recording an oil yield of 6.58 t ha⁻¹ year⁻¹.

A standardized descriptor for palmyrah palm characterization was developed and released for

adoption across AICRP centres to facilitate uniform germplasm characterization, evaluation and documentation. Patent application was filed for a technology process for the production of fresh natural palmyrah jaggery and jaggery powder. In cocoa, the hybrid combinations VTLCH-3, VTLCH-4, and VTLCC-1 were identified as better performers across evaluation centres.

New crop production experiments were initiated to evaluate the efficacy of Kalpa Poshak, Kalpa Vardhini, and TNAU Tonic for improving coconut productivity and to assess the feasibility of high-density planting of cinnamon as an intercrop in coconut-based production systems. Research on crop production and protection generated location-specific recommendations on nutrient management, integrated disease management, and biological control of major insect pests. Integrated disease management modules for basal stem rot and stem bleeding demonstrated encouraging results across centres. Large-scale production and field release of parasitoids and predators strengthened the eco-friendly management of black-headed caterpillar and invasive whiteflies, while nationwide surveillance generated valuable information on the incidence, seasonal dynamics, and natural enemy activities of major pests and diseases. The centres have also produced quality planting material in improved varieties. Technology dissemination continued to be a major focus through farmer trainings, frontline demonstrations, field days, exposure visits, and extension programmes under SCSP, TSP, and NEH, facilitating the adoption of improved technologies across plantation crops. The coordinated efforts of the AICRP network during the year has substantially contributed to varietal development, conservation and utilization of genetic resources, sustainable crop management, for enhancement of productivity of plantation crops.



III. PROFILE OF AICRP ON PLANTATION CROPS

The present day All India Coordinated Research Project on Plantation Crops came into existence in the year 1972 as the All India Coordinated Coconut and Arecanut Improvement Project. The project was subsequently designated as AICRP on Palms following the incorporation of oil palm and palmyrah during the seventh and eighth plan periods. Later, cocoa was also added as one of the mandate crops and arecanut centres included during 2014. During the year 2025, it was renamed as AICRP on Plantation Crops. The mandate plantation crops, coconut (*Cocos nucifera* L.), arecanut (*Areca catechu* L.), oil palm (*Elaeis guineensis* Jacq.), palmyrah (*Borassus flabellifer* L.) and cocoa (*Theobroma cacao* L.) play a significant role in the sustainable livelihood of millions of small and marginal farmers in the country. The project is headquartered at ICAR-CPCRI, Kasaragod to carry out the location specific research on mandate crops (coconut, arecanut, oil palm, palmyrah and cocoa) with the following objectives:

- Identification, conservation and utilization of elite genetic resources for useful traits in palms and cocoa from different agro-climatic regions.
- Evaluation of varieties/hybrids under different locations and to facilitate release of varieties/hybrids of palms and cocoa through multi-location testing (MLT).
- To improve input use efficiency and develop location-specific palm based integrated farming systems to enhance the productivity per unit area.
- Evolving cost effective integrated insect-pest and disease management practices besides survey and surveillance of pests and diseases for forewarning.
- Development of post-harvest technologies in palmyrah.

Centres

The project is implemented in 28 centers with its headquarters at ICAR-CPCRI, Kasaragod among which, 15 centres are undertaking research trials on coconut, six on oil palm, four on arecanut, four on palmyrah and seven on cocoa. The centers are hosted at thirteen State Agricultural / Horticultural Universities, one Central Agricultural University and four ICAR institutes in fourteen states and one union territory.

State	Research Centre(s)	Crop(s)	Institution
Andhra Pradesh	Ambajipeta, Pandirimamidi, Vijayarai, Pedavegi	Coconut, Palmyrah, Oil Palm, Cocoa	Dr. Y.S.R. Horticultural University; ICAR-IIOPR
Andaman & Nicobar	Sri Vijaya Puram	Coconut, Arecanut	ICAR-CIARI
Arunachal Pradesh	Pasighat	Oil Palm	Central Agricultural University
Assam	Kahikuchi	Coconut, Cocoa	Assam Agricultural University
Bihar	Sabour	Coconut, Palmyrah	Bihar Agricultural University
Chhattisgarh	Jagdulpur	Coconut	Indira Gandhi Krishi Vishwavidyalaya
Goa	Old Goa	Coconut, Arecanut	ICAR-CCARI
Gujarat	Navsari	Coconut, Cocoa	Navsari Agricultural University

Karnataka	Arsikere, Sirsi, Bavikere, Shivamogga	Coconut, Cocoa, Oil Palm, Arecanut	University of Horticultural Sciences; KSNUAHS
Kerala	Kasaragod, Pilicode, Thrissur	Coconut, Cocoa	ICAR-CPCRI; Kerala Agricultural University
Maharashtra	Mulde, Ratnagiri, Wakawali	Oil Palm, Coconut, Cocoa, Arecanut	Dr. BSKKV
Odisha	Bhubaneswar	Coconut, Cocoa	Odisha University of Agriculture & Technology
Tamil Nadu	Aliyamagar, Killikulam, Pattukkottai, Veppankulam	Coconut, Cocoa, Palmyrah, Oil Palm	Tamil Nadu Agricultural University
Telangana	Konda Malleshpally	Palmyrah	Sri Konda Laxman Telangana State Horticultural University
West Bengal	Mondouri	Coconut	Bidhan Chandra Krishi Viswavidyalaya

Budget

The budget for the year 2025 was Rs 937.63 lakhs (ICAR Share)

(Rs. in lakhs)

Sl. No.	Head	Expenditure
1.	Pay and allowances	693.04
2.	T.A.	16.31
3.	RC	129.26
4.	HRD	1.53
5.	NRC	14.49
6.	NEH	30.25
7.	TSP	7.5
8.	SCSP	42.25
	Total	937.63



Staff strength

Category	Present strength
Scientific	31
Technical	14
Supporting	13
Total	58



Centre wise budget for 2025 (01.01.2025 to 31.12.2025) (ICAR share Rs. in Lakhs)

Centre	Pay	TA	RC	HRD	Eqpt.	NEH	TSP	SCSP	Total
Aliyamagar	102.75	0.95	12.03	0.00	0.00	0.00	1.18	6.75	123.66
Ambajipeta	80.00	0.82	9.45	0.00	4.50	0.00	0.00	11.50	106.27
Arsikere	52.60	0.77	7.50	0.00	0.00	0.00	1.18	2.75	64.80
Jagdapur	22.00	0.32	4.72	0.00	1.00	0.00	1.42	0.00	29.46
Kahikuchi (NEH)	51.08	0.00	0.00	0.00	0.00	15.50	0.00	2.65	69.23
Bhubaneswar	20.90	0.45	7.00	0.00	1.27	0.00	0.00	2.85	32.47
Mondouri	0.00	0.38	4.45	0.25	0.00	0.00	0.00	0.00	5.08
Ratnagiri	81.00	0.89	8.50	0.00	2.40	0.00	1.18	3.60	97.57
Veppankulam	70.50	0.84	5.50	0.00	0.00	0.00	0.00	5.35	82.19
Killikulam	46.00	0.49	3.60	0.00	0.20	0.00	0.00	1.55	51.84
Pandirimamidi	46.00	0.65	6.10	0.00	0.00	0.00	1.40	0.00	54.15
Pattukotai	26.50	0.45	4.45	0.25	0.00	0.00	0.00	0.00	31.65
Mulde	16.10	0.25	6.05	0.25	0.00	0.00	0.00	0.00	22.65
Vijayarai	26.26	0.40	4.15	0.00	0.60	0.00	0.00	3.65	35.06
Navasari	8.60	0.30	2.00	0.00	0.00	0.00	1.14	0.00	12.04
Sabour	19.50	0.17	3.00	0.00	0.00	0.00	0.00	0.80	23.47
Shivamogga	11.50	0.60	3.55	0.31	0.84	0.00	0.00	0.00	16.80
Wakawali	0.00	0.15	2.65	0.05	0.00	0.00	0.00	0.00	2.85
Pilicode	0.00	0.35	2.75	0.20	0.00	0.00	0.00	0.00	3.30
Bavikere	11.75	0.65	4.13	0.20	0.00	0.00	0.00	0.00	16.73
K Mallapally	0.00	0.15	1.90	0.02	0.00	0.00	0.00	3.80	5.87
Sirsi	0.00	0.35	1.95	0.00	0.00	0.00	0.00	0.00	2.30
Thrissur	0.00	0.08	1.52	0.00	0.00	0.00	0.00	0.00	1.60
Pasighat (NEH)	0.00	0.00	0.00	0.00	0.00	14.75	0.00	0.00	14.75
Port Blair (ICAR)	0.00	0.00	3.75	0.00	0.00	0.00	0.00	0.00	3.75
Goa (ICAR)	0.00	0.00	1.75	0.00	0.00	0.00	0.00	0.00	1.75
IIOPR, Pedavegi (ICAR)	0.00	0.00	3.50	0.00	0.00	0.00	0.00	0.00	3.50
Kasaragod (ICAR)	0.00	0.00	2.75	0.00	0.00	0.00	0.00	0.00	2.75
PC cell (ICAR)	0.00	5.85	10.56	0.00	3.68	0.00	0.00	0.00	20.09
Total	693.04	16.31	129.26	1.53	14.49	30.25	7.50	45.25	937.63

The project is implemented through the respective State Agricultural/Horticultural Universities

on 75:25 basis of which 75% is ICAR share and 25% share is from State Agricultural Universities.



IV. GENETIC RESOURCES AND CROP IMPROVEMENT

Coconut

Conservation and evaluation of coconut genetic resources in different agro climatic regions

Evaluation of conserved germplasm

This trial is ongoing at Bhubaneswar, Navsari and Sabour centres for the evaluation of coconut germplasm accessions for yield and their response to biotic and abiotic stresses. The experiment was laid out as an unreplicated observational trial with five palms per accession at Bhubaneswar and Navsari, and 5–10 palms per accession at Sabour. At Bhubaneswar, 16 germplasm accessions (12 tall and 4 dwarf) established in 2004, among the tall accessions, Tiptur Tall recorded the highest nut yield (98.20 nuts palm⁻¹ year⁻¹) with a copra yield of 18.27 kg palm⁻¹, while Gangabondam Green Dwarf (GBGD) was the best-performing dwarf accession, producing 92.75 nuts palm⁻¹ year⁻¹ with a copra yield of 14.01 kg palm⁻¹. At Navsari, 18 germplasm accessions established in 2004 were evaluated, and Kappadam emerged as the best-performing accession,

recording a nut yield of 90.67 nuts palm⁻¹ year⁻¹. At Sabour, 12 germplasm accessions established in 2013, the Sakhigopal Tall recorded the higher nut yield (69.00 nuts palm⁻¹ year⁻¹) with a copra yield of 8.07 kg palm⁻¹. The accessions, Tiptur Tall, Gangabondam Green Dwarf (GBGD), Kappadam Tall, and Sakhigopal Tall are identified as better for nut and copra yield performance at their respective agro-climatic regions.

Collection, Conservation and evaluation of location specific germplasm

This trial was initiated to collect, conserve and evaluate local coconut germplasm accessions for yield performance and their response to biotic and abiotic stresses. The experimental material comprised 10–15 local germplasm accessions (with IC numbers) collected and maintained at each centre. The accessions were evaluated either in replicated field trials or unreplicated observational trials, depending on the availability of planting material (Table 1).

Table 1. Local coconut germplasm under evaluation at different centres

S.No	List of centres	Year of planting	Design	No. of Accessions
1.	Aliyamagar	2008	RBD & Observational Trial	5,6
2.	Ambajipeta	2013	RBD	5
3.	Arsikere	2013	RBD	6
4.	Bhubaneswar	2003	Observational Trial	11
5.	Jagdapur	2011	RBD	6
6.	Kahikuchi	2005	RBD & Observational Trial	12
7.	Mondouri	2007	RBD & Observational Trial	5
8.	Navsari	2013	RBD	4
9.	Pilicode	2017	RBD	8
10.	Ratnagiri	2007	RBD & Observational Trial	6
11.	Sabour	2015-20	Observational	7
12.	Veppankulam	2005	RBD	7



Fig. 1. Pillalakodi Brown Tall (IC 610307)

Under this experiment, the high-yielding accession IC 610371 from Aliyarnagar was recommended to be released as ALR 4 during the Annual Group Meeting (AGM) 2025 and submitted for CVRC notification (Fig. 2). Based on the performance data recorded during 2024–25, several accessions exhibited superior yield performance for nut yield and copra yield are given below table 2.



Fig. 2. Crown View of IC 610371

Table 2. Promising germplasm accessions with better yield performance

Accessions yield above 100 nuts/palm/year	Copra yield (> 15 kg/palm)
Aliyarnagar- IC 610370 and IC 610371 Ambajipeta- IC 610309 (Jonnalarassi Brown), IC 610306 (Pillalakodi Green) and IC 610307 (Pillalakodi Brown)	Ratnagiri: IC 599115 (Rajapur) 17 kg/palm Bhubaneswar: IC 612457 (Odisha giant) 14.85 kg/ palm Kahikuchi: IC 610357 (Belsor) 17 kg/palm Veppankulam: IC 599264 (Adirampattinam) 18.1.kg/ palm; IC 599267 (Thamarankottai) 16.4 kg/palm

Evaluation of elite germplasm

This trial was initiated to evaluate elite exotic coconut germplasm accessions for yield performance and their response to biotic and abiotic stresses under varied agro-climatic conditions. Inter-se mated seed nuts of selected exotic accessions were supplied by ICAR–CPCRI to the AICRP

centres. The experiment comprised six test entries along with one local check and was laid out in a randomized block design (RBD) with three replications and four palms per accession per replication. The trial was established at six centres, namely Aliyarnagar, Arsikere, Ambajipeta, Bhubaneswar, Ratnagiri and Veppankulam, with

seedlings planted during 2014–2016. Verrikobari Tall was included as a common germplasm accession across all the centres. The trial has now reached the bearing stage, and yield evaluation is in progress. Across the six locations, Verrikobari Tall consistently

outperformed the other exotic germplasm accessions, indicating its stable yield performance and wide adaptability under varied agro-climatic conditions (Fig. 3).

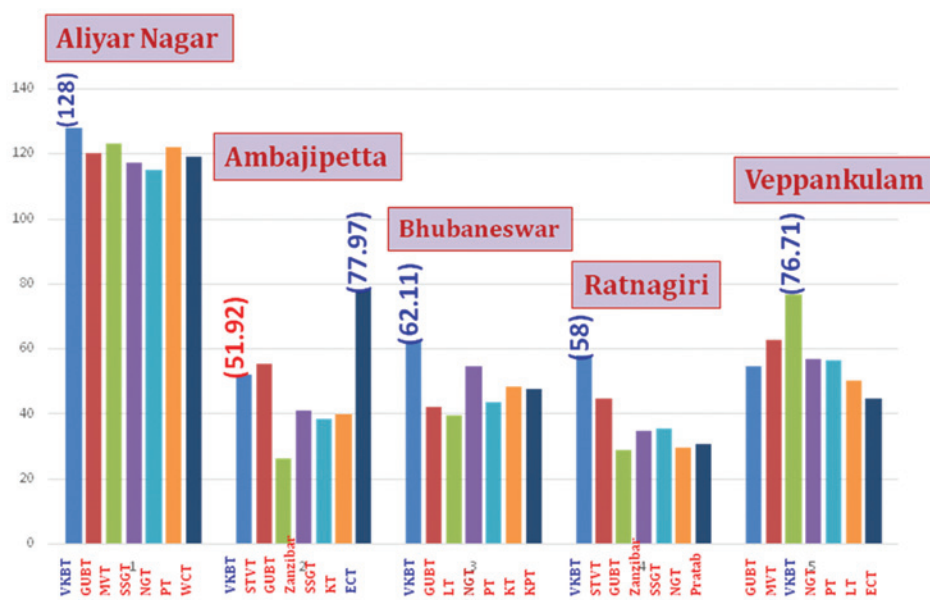


Fig. 3. Yield Performance of elite coconut germplasm accessions

At the Arsikere centre, the experiment was concluded as per the recommendation of the 34th Annual Group Meeting (AGM) due to the poor growth performance.

Evaluation of dwarf genotypes in different agro climatic regions of India

This multi-location trial was established across seven AICRP centres to evaluate the performance and adaptability of selected dwarf coconut selections under diverse agro-climatic regions of India. The trial comprised 13 dwarf lines from ICAR-CPCRI and ICAR-CIARI, namely Cameroon Red Dwarf, Niu Leka Dwarf, Nigerian Green Dwarf, Laccadive Orange Dwarf, Dweep Haritha, Dweep Sona, Hari Papua Orange Dwarf, Gudanjali, Chowghat Yellow Dwarf, Kalpa Suvana, Andaman Orange Dwarf, and Nikkore Dwarf. Seed nuts of nine lines were provided to the participating centres in two lots and were sown at the centres between April and August 2025 in polybags with

media of Soil+Sand+FYM (1:1:1) at all the centres. The field planting has been scheduled for 2026.

Evaluation of promising tall genotypes for yield and wind tolerance

This multi-location trial was initiated at three AICRP centres, namely Ambajipeta, Veppankulam, and Bhubaneswar, to evaluate promising selected tall coconut accessions for yield as well as tolerance to cyclonic wind damage. The trial comprised sixteen selected accessions, including nine exotic accessions (Kappadam, Lifou, Markham, Laguna, Niu Hake, Rotuma, New Guinea, West African Tall and Kalpa Ratna supplied by ICAR–CPCRI, Kasaragod and five elite indigenous accessions, namely Gandevi Tall (Navsari), Kamrupa (Kahikuchi), Orissa Giant (Bhubaneswar), VPM 6 (Veppankulam) and Seychelles Tall (Pilicode) (Fig. 4). Seed nuts of all accessions were sown in polybags, and the resulting seedlings are being maintained for subsequent field planting scheduled for 2026 and further evaluation.



Fig. 4. Seed nuts of tall coconut accessions

Evaluation of coconut Hybrids in different agro climatic regions

The hybrid evaluation programme comprised four experiments, namely (i) Evaluation of new coconut hybrids of location-specific cross combinations, (ii) Evaluation of Tall $\times$ Tall coconut hybrids, (iii) Evaluation of location-specific Tall $\times$ Tall coconut hybrids, and (iv) Evaluation of Dwarf $\times$ Dwarf coconut hybrids. These experiments were undertaken to assess hybrid performance for earliness, yield, adaptability, and stability under diverse agro-climatic conditions and to identify promising hybrids for region-specific cultivation and future varietal recommendation.

(i) Evaluation of new coconut hybrids of location-specific cross combinations

Trial was conducted at eight AICRP centres, namely Aliyarnagar, Ambajipeta, Arsikere,

Bhubaneswar, Kahikuchi, Mondouri, Ratnagiri, and Veppankulam, to evaluate the performance of newly developed (by respective centres) location-specific coconut hybrid combinations for yield and their response to biotic stresses under diverse agro-climatic conditions. The experiment was laid out in a Randomized Block Design (RBD) with four replications at each centre. The trial aims to identify superior hybrid combinations with high yield potential, adaptability, and tolerance to biotic stresses for region-specific cultivation. The best performing hybrid combinations identified at different AICRP centres based on nut yield during 2024–25 and their six-year mean yield are presented in Table 3.



Fig. 5a. Field view at Aliyarnagar



Table 3. Performance of Location-Specific Coconut Hybrid Combinations across AICRP Centres (2024–25)

S. No	AICRP Centre	Hybrid combinations under evaluation	Year of start	Better performing cross	Nut yield 2024-25 (nuts palm ⁻¹ year ⁻¹)	Mean yield of last 6 years (nuts palm ⁻¹ year ⁻¹)
1	Aliyamagar	Arasampatti Tall x MGD, MGD x Arasampatti Tall, Kenthali x Arasampatti Tall, COD x Arasampatti Tall, COD x WCT	2012 and 2014	COD x ALR	133	121
2	Ambajipeta	ECT x Cochin China, GBGD x Cochin China, ECT x PHOT, GBGD x PHOT, PHOT x GBGD	2011	ECT x GBGD	138	111
3	Arsikere	TPT x PHOT, TPT x LCT, LCT x MYD, LCT x MOD, TPT x MYD, TPT x MOD	2012	AGT x PHOT	99	90
4	Bhubaneswar	Sakhigopal x COD, MGD x Sakhigopal, Sakhigopal x GBGD, GBGD x GUAM, COD x Bana (IC-0612461)	2008	SKL x GBGD	152	103
5	Kahikuchi	Assam Green Tall (AGT) x CCNT, AGT x MYD, AGT x PHOT, Bengal Hazari x AGT, Assam Yellow Tall x PHOT	2009	AGT x PHOT	99	90
6	Mondouri	LCT x PHOT, PHOT x LCT, ECT x Java Tall, ECT x Jamaica, ECT x Bengal Hazari	2009	ECT x Kalpa Mitra	81	75
7	Ratnagiri	COD x Benaulim Yellow Round, COD x Pratap, COD x Benaulim Green Long, Benaulim Yellow Round x COD, Pratap x COD, Benaulim Green Long x COD	2006	COD x BYR	118	102
8	Veppankulam	WCT x Kenthali, WCT x MOD, MOD x WCT, ADOT x COD, WCT x MGD and Kenthali x WCT	2005	ADOT x COD WCT x MGD	173 150	111 115



Fig. 5b. Better performing cross ADOT x COD in Veppankulam

At Bhubaneswar, the location-specific hybrid Sakhigopal Local $\times$ Gangabondam Green Dwarf (SKL $\times$ GBGD) exhibited superior performance, recording a nut yield of 151.85 nuts palm⁻¹ year⁻¹, tender nut water content of 455 ml nut⁻¹ with 5.28° Brix TSS, copra content of 192.35

g nut⁻¹, and oil content of 66.28%. The hybrid registered a 24.75% increase in nut yield and 34.63% higher copra content over the ruling variety Sakhigopal Local, indicating its potential for varietal release and commercial cultivation in the region.

(i) Evaluation of Tall $\times$ Tall coconut hybrids

This ongoing experiment was started with the objective of assessing five Tall $\times$ Tall hybrids, viz., LCT $\times$ ADOT, ADOT $\times$ ECT, BENT $\times$ ADOT, ECT $\times$ LCT and WCT $\times$ TPT along with local check at various agro-climatic regions during 2011- 2013. The hybrids were produced at CPCRI, Kasaragod and supplied for evaluation at eight centres viz., Aliyarnagar, Ambajipeta, Arsikere, Bhubaneswar, Kahikuchi, Navsari, Ratnagiri and Veppankulam. The trial has been planted in three replications and six palms per replication. Preliminary trends showed that the hybrid, BENT $\times$ ADOT is best-performing hybrid at three centres (Veppankulam, Navsari and Kahikuchi), while WCT $\times$ TPT performed better at two centres (Bhubaneswar and Ratnagiri), whereas LCOT $\times$ ADOT better performed at Ambajipeta and Arsikere centres. (table 4). Continued evaluation is required to assess yield stability and adaptability across locations. (Fig. 6)

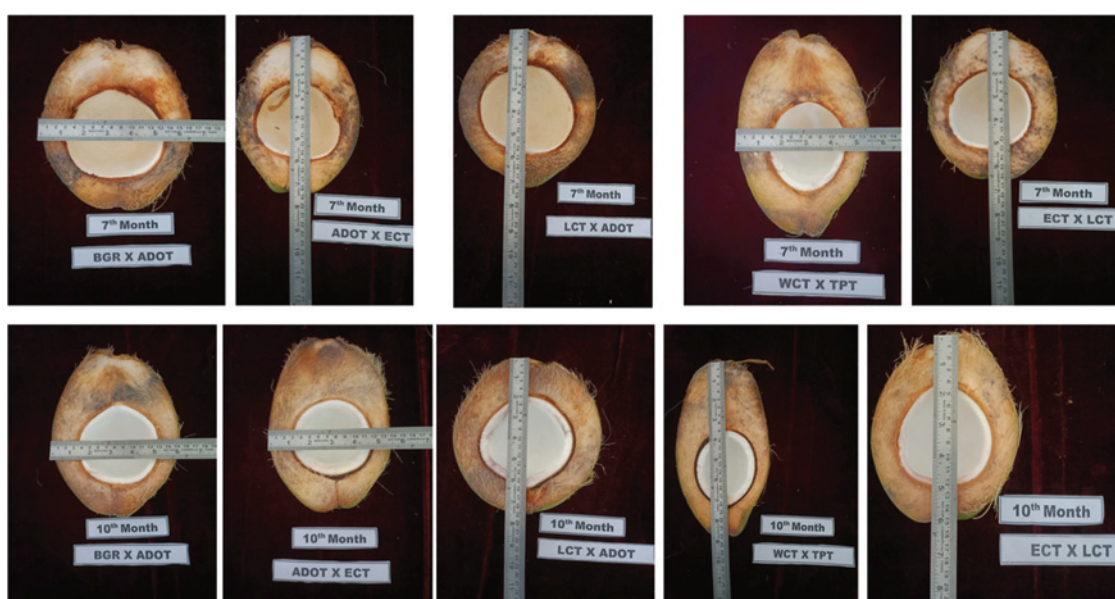


Fig. 6. Fruit traits of cross combinations

**Table 4. Centre-wise Performance of Tall × Tall Coconut Hybrids under MLT**

Center	Better performing hybrid	Year of Planting	Age of palm (year)	Yield (nuts palm ⁻¹ year ⁻¹)
Aliyamagar	ADOT × ECT	2011	14	149.00
Ambajipeta	LCT × ADOT	2011	14	107.30
Ratnagiri	WCT × TPT	2011	14	115.09
Veppankulam	BENT × ADOT	2011	14	156.16
Arsikere	LCT × ADOT	2012	13	90.78
Bhubaneswar	WCT × TPT	2013	12	121.00
Kahikuchi	BENT × ADOT	2013	12	70.80
Navsari	BENT × ADOT	2013	12	107.21

(i) Evaluation of location-specific Tall × Tall coconut hybrids

The experiment was laid out in RBD with three replications and six palms per hybrids per replication to evaluate location specific Tall x Tall cross combinations for yield and reaction to biotic and abiotic stresses at three centres viz., Ambajipeta, Ratnagiri and Veppankulam. In Ambajipeta, seven Tall x Tall hybrids (Java Tall x ECT, PHOT x ECT, Fiji Tall x ECT, ECT x PHOT, LCT x ECT, CCNT x ECT, ECT x Fiji Tall) with one local check were planted during 2011. There were no significant differences between the hybrids with respect to vegetative growth parameters. The data pertaining to yield attributes for the year 2025 showed that maximum nut yield (125.63 nuts palm⁻¹ year⁻¹) was recorded in ECT x PHOT which is on par with LCT x ECT (121.20 nuts palm⁻¹ year⁻¹), CCNT x ECT (107.03 nuts palm⁻¹ year⁻¹) and Java Tall x ECT (111.93 nuts palm⁻¹ year⁻¹) and lowest was recorded in ECT x ECT (88.24 nuts palm⁻¹ year⁻¹). In Ratnagiri centre, among seven Tall x Tall hybrids (PHOT x BENT, BENT x PHOT, PHOT x BYR, BYR x PHOT, BGL x PHOT, PHOT x BGL, LCT x BENT), the highest nut yield (104.78 nuts palm⁻¹ year⁻¹) recorded in BGR x PHOT with copra content (180.50 g). At Veppankulam, seven T x T cross combinations viz., WCT x PHOT, ECT x Zanzibar, ECT x Java Giant, ECT x PHOT, San Ramon x Zanzibar, WCT x CCNT and PHOT x WCT along

with a check variety VCH 3 were planted in 2009 as under planting and the old palms were removed during 2015. All the hybrid combinations produced more than 90 nuts palm⁻¹ year⁻¹, with PHOT × WCT (146.72 nuts palm⁻¹ year⁻¹) and ECT × Java Giant (146.65 nuts palm⁻¹ year⁻¹) recording the highest nut yields. San Ramon × Zanzibar recorded the highest copra content (193.73 g nut⁻¹), surpassing the check hybrid VHC 3, indicating its potential for enhanced economic returns.

(ii) Evaluation of Dwarf × Dwarf coconut hybrids in different agro climatic conditions

This experiment was laid out to identify and develop dwarf statured hybrids for tender nut yield and quality and to screen for pest and disease resistance. The experiment included five Dwarf x Dwarf hybrids viz., COD x MYD, COD x MGD, MGD x CGD, GBGD x MOD and CGD x MGD supplied by ICAR-CPCRI, Kasaragod and a local check to three centres during 2011-12. The palms were planted in RBD with four replications and six palms per genotype per replication.

Multi-location evaluation of Dwarf × Dwarf coconut hybrids continued at Ambajipeta, Ratnagiri, and Veppankulam to assess their yield performance under diverse agro-climatic conditions. At Ambajipeta, COD × MGD consistently exhibited superior performance throughout the evaluation period (2016–17 to 2024–25) (Fig 7), recording

the highest nut yield of 116.85 nuts palm⁻¹ year⁻¹ during 2024–25, followed by MYD × CGD (96.42 nuts palm⁻¹ year⁻¹). The hybrid COD × MGD maintained a clear yield advantage over the local check across the years, indicating its suitability for the region. At Ratnagiri, COD × MYD remained the most productive hybrid, with nut yield increasing steadily from 54.3 nuts palm⁻¹ year⁻¹ in 2016–17 to 94.58 nuts palm⁻¹ year⁻¹ in 2024–25 (Fig 8). Other hybrids, namely CGD × MGD, GBGD × MOD, and COD × MGD, also recorded higher yields than the local check, demonstrating their adaptability to the coastal agro-climatic conditions. At Veppankulam, all the hybrid combinations

showed a progressive increase in yield with palm age. GBGD × MOD (Fig 9) recorded the highest nut yield (98.43 nuts palm⁻¹ year⁻¹) during 2024–25, followed by MYD × CGD (92.91 nuts palm⁻¹ year⁻¹) and COD × MGD (91.99 nuts palm⁻¹ year⁻¹). The superior performance of these hybrids over the local check across years indicates their potential for enhanced productivity. Overall, COD × MGD, COD × MYD, GBGD × MOD, and MYD × CGD consistently recorded higher nut yields than the local checks under their respective agro-climatic conditions, demonstrating their promise for region-specific cultivation.

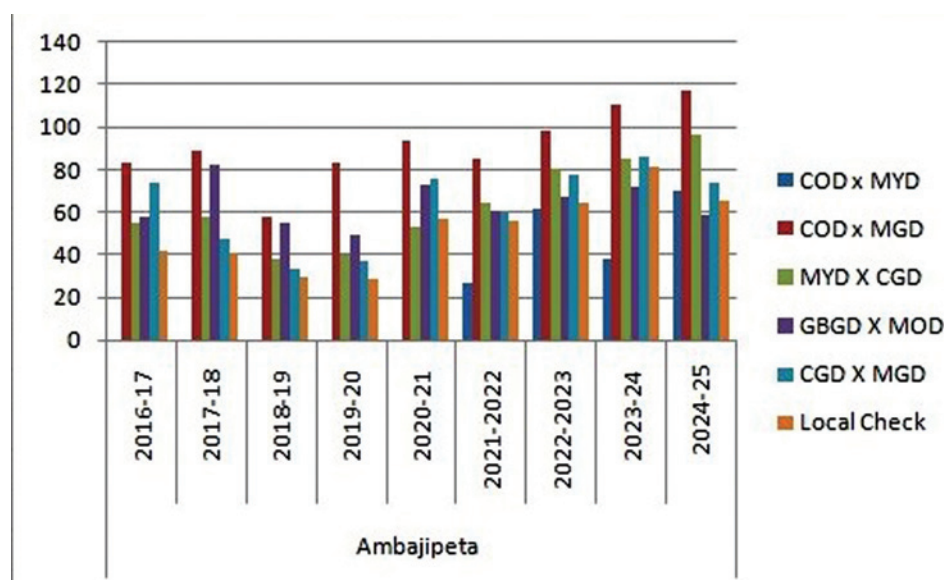


Fig. 7. Yield Performance of D x D hybrids at Ambajipeta

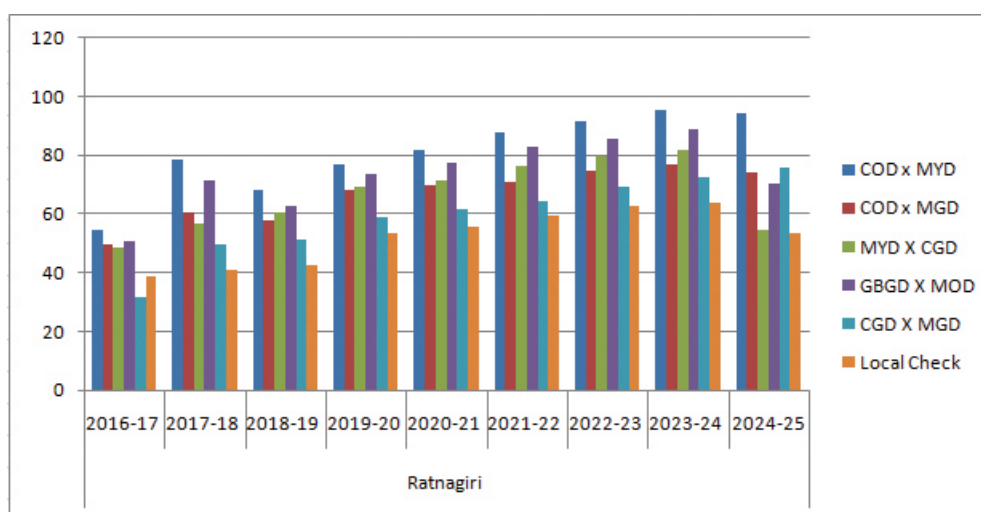


Fig. 8. Yield Performance of D x D hybrids at Ratnagiri

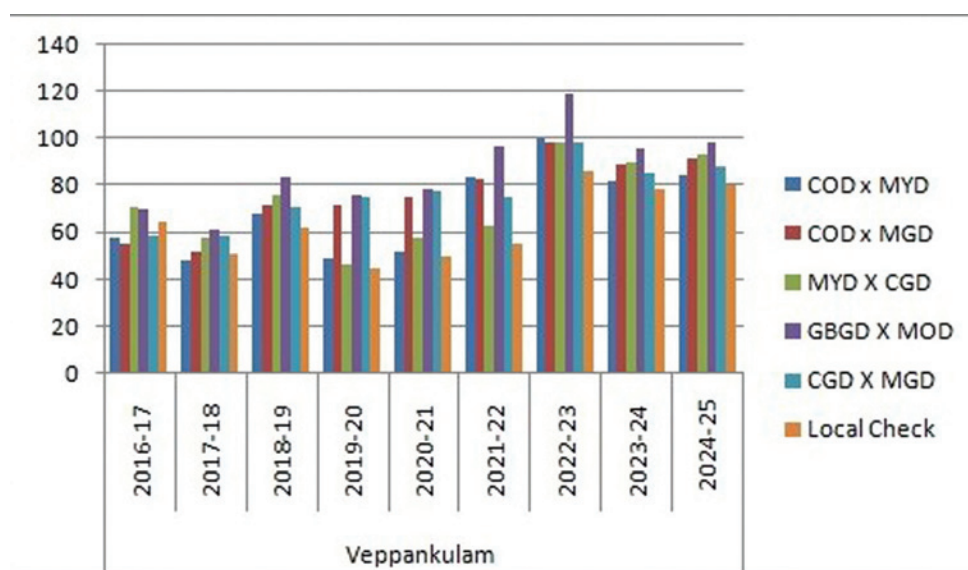


Fig. 9. Yield Performance of D x D hybrids at Veppankulam

Production of quality planting material in coconut

Evaluation of released coconut varieties in different agro-climatic regions

A multi-location trial was conducted (which commenced as a demonstration) to evaluate the performance of nationally released coconut varieties under diverse agro-climatic conditions. The trial comprised 10 nationally released varieties viz., Kalyani Coconut-1, Gautami Ganga, Konkan Bhatye Coconut Hybrid-1, Kera Keralam, Kera Bastar, Kalpa Samrudhi, Kalpa Pratibha, Kalpa Mitra, Kalparaksha, and Kalpa Dhenu along with a local check at eleven centre. The trial aims to exhibit the adaptability, productivity, and suitability of the released cultivars across different coconut-growing regions of the country, to facilitate their wider adoption by farmers and to explore them for extended recommendations in other regions. The results demonstrate the region-specific adaptability of the released varieties and their potential for enhancing coconut productivity under diverse agro-

climatic conditions. The centre-wise performance of the cultivars is presented in Table 5. Kalparaksha recorded superior performance at Aliyarnagar and Mondouri, while Gautami Ganga performed well at Arsikere and Jagdalpur. Kera Keralam emerged as the highest-yielding cultivar at Ambajipeta and Ratnagiri, whereas Kalpa Samrudhi, Kalpa Mitra, Kera Bastar, Konkan Bhatye Coconut Hybrid-1, and Kalpa Dhenu recorded superior performance at Bhubaneswar, Kahikuchi, Sabour, Veppankulam, and Navsari, respectively.

Nucleus seed gardens for released varieties

Production and distribution of quality planting material of released coconut cultivars and hybrids continued across AICRP centres to ensure the availability of genetically pure seedlings for farmers. During 2024–25, quality seedlings of released varieties and hybrids were produced and distributed through the participating centres, thereby strengthening the supply of improved planting material for region-specific cultivation (Table 6).

Table 5. Yield Performance of released coconut varieties across AICRP Centres

Name of center	Best performing Hybrid/variety	Year of planting	Age of palm (Years)	Number of nuts harvested/palm/year
Ambajipeta	Kera Keralam	2011	14	111.50
Aliyarnagar	Kalparaksha	2011	14	138.00
Arsikere	Gautami Ganga	2012	13	66.00
Bhubaneswar	Kalpa Samrudhi	2013	12	125.33
Jagdalpur	Gautami Ganga	2012	13	61.00
Kahikuchi	Kalpa Mitra	2013	12	58.80
Mondouri	Kalparaksha	2012	13	81.11
Ratnagiri	Kera Keralam	2011	14	91.60
Sabour	Kera Bastar	2012-13	12	67.00
Veppankulam	Konkan Bhatye coconut hybrid 1	2011	14	69.00
Navsari	Kalpa Dhenu	2013	12	106.01

Table 6. Production and distribution of quality planting material across centres

S. No.	Centre	Cultivar(s)/Hybrid(s)	Seedlings Distributed (Nos.)
1	Aliyarnagar	Kera Keralam, ALR 1, COD, MGD, CGD, MYD, Kenthali Dwarf, Kalpa Sankara, Kalpa Samrudhi and Chandra Sankara	31,192
2	Ambajipeta	Gautami Ganga, Double Century (PHOT), Kalpa Prathibha	907
3	Jagdalpur	Kera Bastar	2,726*
4	Kahikuchi	Kamrupa	840
5	Ratnagiri	Fiji Tall, East Coast Tall (ECT), Gangabondam Green Dwarf (GBGD), Konkan Bhatye Coconut Hybrid-1	2,074

**Fig. 10. Quality planting material production at Aliyarnagar**

Oil palm

All the ongoing oil palm research trials under the ICAR–AICRP on Plantation Crops are being carried out with the contribution of entries from ICAR–IIOPR, Pedavegi, which serves as the nodal institute for oil palm breeding in the country. The AICRP centres undertake multi-location evaluation of oil palm hybrids and progenies developed by ICAR- IIOPR to assess their regional oil yield potential, adaptability, and overall performance.

Evaluation of new cross combinations in North East region

The experiment was initiated in 2010 at Pasighat centre to evaluate 10 oil palm cross combinations (NRCOP-21 to NRCOP-30) for growth, yield, and adaptability under the agro-climatic conditions of the North Eastern region. The trial was laid out in a Randomized Block Design (RBD) with three replications, comprising six palms per plot. The experiment is being continued to identify promising cross combinations with superior performance and wider adaptability. During the evaluation, growth parameters such as stem girth and number of leaves did not differ significantly among the cross combinations. NRCOP-21 recorded the shortest palm height (3.82 m), whereas NRCOP-29 recorded the tallest palm height (5.06 m). NRCOP-23 exhibited superior reproductive and yield performance by recording the highest number of female flowers (9.90 palm⁻¹), the highest sex ratio (0.60), the maximum number of fresh fruit bunches (8.61 palm⁻¹), and the highest fresh fruit

bunch yield (186.90 kg palm⁻¹ or 26.70 t ha⁻¹). NRCOP-22 recorded the highest average bunch weight (22.72 kg). Overall, NRCOP-23 emerged as the most promising cross combination for the Northeastern region based on its superior yield and yield-attributing traits.

Evaluation of new progeny cross combination in oil palm

Multi-location experiment was initiated during 2011 at Pattukkottai, Mulde, Pasighat, and Vijayarai to evaluate ten oil palm progeny cross combinations (NRCOP-31 to NRCOP-40) (Fig. 11). NRCOP-37, evaluated under the AICRP on Plantation Crops at Vijayarai, was recommended for release for the coastal region of Andhra Pradesh. The hybrid recorded an oil content of 18.45% and an oil yield of 5.48 t ha⁻¹ year⁻¹, and the proposal has been submitted to the CVRC for notification. At Pasighat, the experiment was recommended for closure due to the presence of a rocky substratum, which adversely affected palm growth and resulted in consistently poor yield performance. In addition, two progenies were identified for inclusion in the varietal development pipeline based on their consistent performance. NRCOP-38 at Pattukkottai recorded a mean fresh fruit bunch (FFB) yield of 29.67 t ha⁻¹ with an oil yield of 6.70 t ha⁻¹, while NRCOP-31 at Mulde recorded a mean FFB yield of 27.11 t ha⁻¹ and an oil yield of 6.46 t ha⁻¹, indicating their potential for future varietal recommendation.



Fig. 11. Oil palm hybrids NRCOP-31 to NRCOP-40 at Pattukkottai.

Evaluation of D X P hybrids for dwarfness and yield in Oil Palm.

The Experiment was initiated during 2013 at Vijayarai to evaluate 11 D × P hybrids (NRCOP-41 to NRCOP-51) along with the control 646 for growth, yield, and dwarfness. The trial was laid out in a Randomized Block Design (RBD) with three replications, comprising nine palms per treatment planted in a triangular system at 9 × 9 × 9 m spacing. Growth parameters, including the number of leaves and sex ratio, did not differ significantly among the hybrids. However, significant variation was observed for bunch production and fresh fruit bunch (FFB) yield. NRCOP-41 recorded the highest number of bunches (13.84 palm⁻¹ year⁻¹) and the highest FFB yield (235.48 kg palm⁻¹ year⁻¹; 33.67 t ha⁻¹ year⁻¹). NRCOP-50 (32.64 t ha⁻¹ year⁻¹) and NRCOP-51 (32.13 t ha⁻¹ year⁻¹) were statistically on par with NRCOP-41. (Fig. 12) NRCOP-48 recorded the highest average bunch weight (28.52 kg) and produced a high FFB yield (31.03 t ha⁻¹ year⁻¹). Based on the present evaluation, NRCOP-41, NRCOP-50, NRCOP-51, and NRCOP-48 emerged as promising D × P hybrids, each recording more than 30 t ha⁻¹ year⁻¹ FFB yield



Fig. 12. Better performing hybrid NRCOP 41 at Vijayarai

Evaluation of oil palm hybrids

A multi-location experiment was initiated at Pedavegi, Pattukkottai, and Mulde using planting

materials supplied by ICAR–Indian Institute of Oil Palm Research (IIOPR), Pedavegi during 2021 to evaluate seven dwarf tenera oil palm hybrids (IIOPR-53 to IIOPR-59), including one check, for reduced height increment and enhanced productivity. The experiment was laid out in a Randomized Block Design (RBD) with four replications, comprising nine palms per plot planted at 8.5 m spacing in a hexagonal (equilateral triangle) system. The objective of the trial is to identify high-yielding dwarf tenera hybrids with reduced height increment and wide adaptability for cultivation in different oil palm-growing regions of the country. The trial has completed five years of field evaluation, and the hybrids have exhibited satisfactory growth and establishment across the centres.

Palmyrah

Survey and collection of palmyrah germplasm and evaluation

Under the ICAR–All India Coordinated Research Project (AICRP) on Plantation Crops, research on palmyrah germplasm was initiated in 1995 at Killikulam (Tamil Nadu) and Pandirimamidi (Andhra Pradesh) for the systematic survey, collection, conservation, and evaluation of genetic resources. Subsequently, Konda Mallepally (Telangana) and Sabour (Bihar) were included under the project during 2017 to strengthen germplasm collection and evaluation across diverse agro-climatic regions. Until 2015, a total of 265 germplasm accessions were collected and conserved at Killikulam, while 272 accessions were collected and conserved at Pandirimamidi.

Pandirimamidi

Systematic evaluation of the palmyrah germplasm (1991–2015 collections) maintained at the Pandirimamidi centre continued during 2025, resulting in the identification of valuable genetic variability for yield, quality, and breeding traits. The germplasm exhibited wide variation in growth, crown architecture, leaf production, flowering behaviour,

and yield attributes, providing a strong foundation for genetic improvement (Fig. 14). Several accessions consistently recorded superior fruit yield, with 1998/4 (229 kg palm⁻¹), 2008/2 (228 kg palm⁻¹), and 2002/7 (225 kg palm⁻¹) emerging as the highest-yielding accessions. Accession 1991/1 recorded the highest individual fruit weight (1,279 g), while 2003/Acc.4 produced the highest number of fruits (465 fruits palm⁻¹) with large fruit circumference (40.64 cm). Distinct qualitative variations, including black fruit colour, orange fruit apex, and pink endosperm, were identified among the germplasm. Biochemical characterization of pink endosperm accessions confirmed appreciable levels of carotenoids and anthocyanins, indicating their nutritional significance. Significant variability was also observed for phenological and special horticultural traits. An off-season fruiting accession (2003/Acc.3/

1), early and precocious-bearing accessions (2011 and 2012 collections), and short-statured palms (2009 collections) suitable for easy harvesting and neera tapping were identified (Fig. 13). Evaluation of neera yield revealed considerable variation, with Accession 1991/4 recording the highest neera yield (1.40 l day⁻¹ palm⁻¹ bunch⁻¹), followed by 2001/6 and 2002/4 (1.30 l day⁻¹). Based on cumulative evaluation, six elite parental lines possessing desirable traits such as dwarfness, short stature, precocious bearing, and high productivity were identified for use in future breeding programmes. One male and one female palm from each selected accession were earmarked as breeding parents, and bamboo scaffolding structures were established to facilitate floral observations, controlled pollination, and hybridization.



Fig. 13. Short statured – 2009/Acc.3/5 at Pandirmamidi

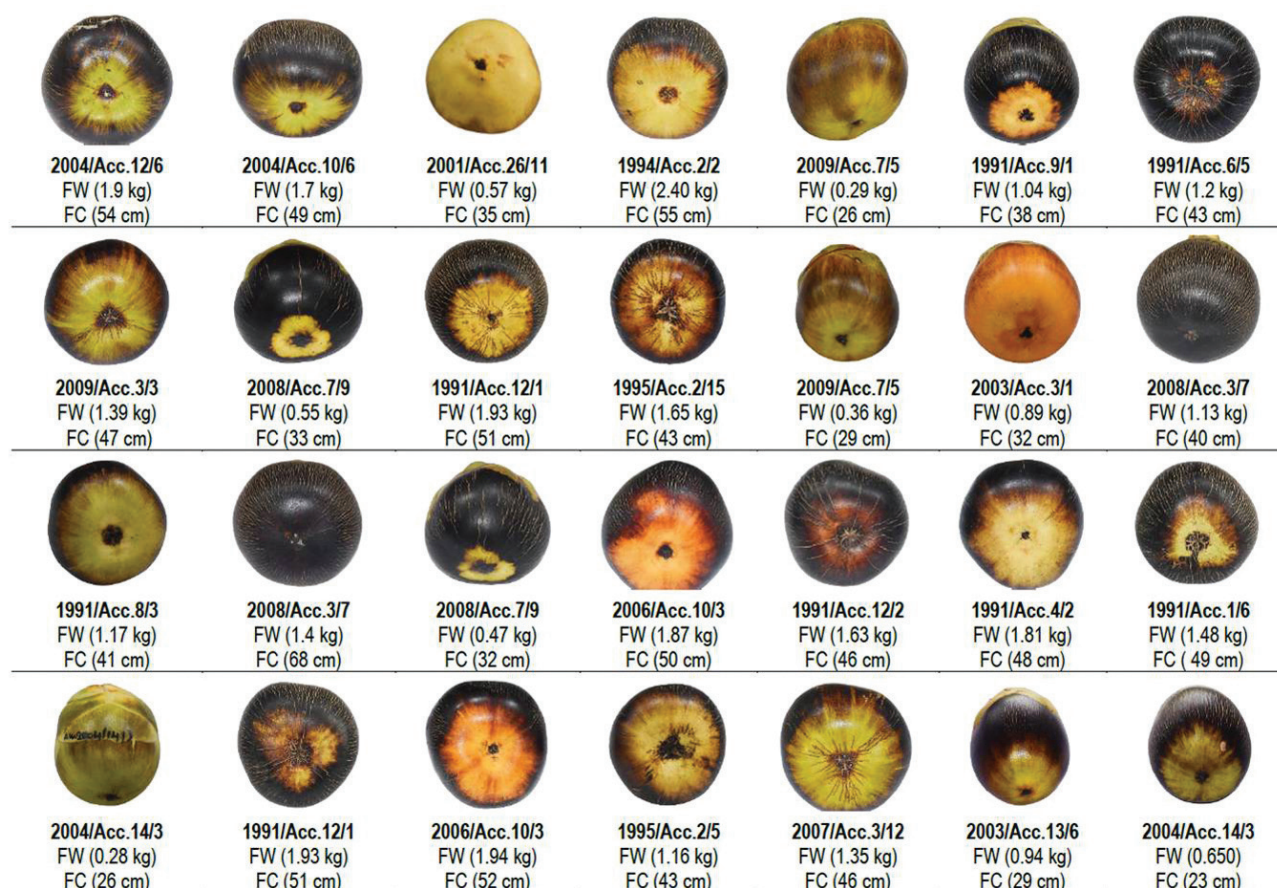


Fig. 14. Variability in fruit colour, shape and size among palmyrah germplasm maintained at HRS, Pandirimamidi

Killikulam

Based on their superior performance, six elite palmyrah germplasm lines (KKM-1, KKM-2, KKM-3, KKM-4, KKM-5, and KKM-6) identified at the Killikulam centre were selected for multi-location evaluation. Seed nuts of these elite lines were supplied to ICAR–CPCRI, Kasaragod for establishing coordinated multi-location trials (MLTs) at Vittal, Kasaragod, Kayamkulam, Pandirimamidi, Konda Mallepally, and Sabour to assess their adaptability, growth, yield, and stability across diverse agro-climatic regions.

Cocoa

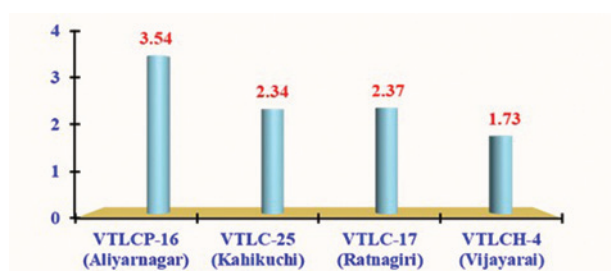
Multilocation trial (MLT) of cocoa clones under Palms

The experiment is being conducted at Aliyarnagar, Kahikuchi, Ratnagiri, and Vijayarai, where cocoa is grown as an intercrop under coconut and oil palm. The trial comprises 14–21 cocoa clones/hybrids, depending on the centre, and aims to identify superior genotypes with high dry bean yield, desirable yield attributes, and better adaptability under palm-based cropping systems. The centre-wise details of the experimental materials, main crop, and age of the plantations are presented in Table 7.

Table 7. Experimental materials, main crop, and age of the plantations

Centre	Clones	Main Crop	Age of Main Crop	Year of planting
Aliyamagar	14 Cocoa Clones (VTLC-1,3,5,6,8,9,10, 11,12,13, 14,15,16 & VTLC-9)	Coconut Var. WCT	20 Years	2013
Kahikuchi	16 Cocoa Clones (VTLC-13,15,17,18,20,23, 25,28, 36, 38, 39, 40, 128, 4A, EYT, & VTLC-1)	Coconut Var. AGT	53 Years	2015
Ratnagiri	21 Cocoa Clones (VTLC-1,13,15,17,18,25,37,128, VTLC-1,3,5,6,8,9,10,11,12,13, 14,15,16)	Coconut Var. D x T	34 Years	2012
Vijayarai	14 Cocoa Clones (VTLC-1,9,13,17, 18, 20, 25, 36, 37, 57, 65, 128 & VTLC-3,4)	Oil Palm	33 Years	2012

Overall, VTLC-16, VTLC-25, VTLC-17, and VTLC-57 were identified as the most promising cocoa genotypes for their respective agro-climatic regions based on superior dry bean yield and associated yield attributes (Fig. 15).

**Fig. 15. Dry Bean Yield (kg/tree)**

Sirsi

A total of 119 plants of cocoa were collected and planted in July 2024. Experimental material includes, 40 grafted plants (2 clones and 3 hybrids) and 79 seedlings (4 clones and 5 hybrids). Among the treatments, there was no significant difference observed for the characters viz., plant height, stem girth, canopy spread (E-W).

Arecanut

Evaluation of released Arecanut varieties in different agro-climatic regions

Seven released arecanut varieties, namely Mangala, Sumangala, Sreemangala, Mohitnagar, Swarnamangala, Madhuramangala, and Shriwardhani, planted during 2015 were evaluated

for chali yield at Wakawali and Shivamogga. At Wakawali, Shriwardhani recorded the highest chali yield (4.02 kg palm⁻¹), followed by Sumangala (2.94 kg palm⁻¹) and Mohitnagar (2.81 kg palm⁻¹). In contrast, at Shivamogga, Mangala produced the highest chali yield (2.91 kg palm⁻¹), followed by Mohitnagar (2.70 kg palm⁻¹) and Sumangala (2.38 kg palm⁻¹). The results indicated significant variation in varietal performance across locations, highlighting the region-specific adaptability of the released arecanut varieties.

New trial

Evaluation of new arecanut hybrid combinations has been initiated at four AICRP centres, namely Wakawali, Goa, Shivamogga, Sri Vijaya Puram, and CPCRI RS Vittal and Mohitnagar to assess their growth, yield potential, adaptability, and stability under diverse agro-climatic conditions. The evaluation comprises nine promising hybrid combinations, viz., HD × Shatamangala, HD × Mohitnagar, HD × Sumangala, Samrudhi × AAD 1, HD × Madhuramangala, Terai Shankar, AAD 1 × Samrudhi, Goa Local × HD, and HD × Goa Local, along with six parent varieties, namely Shatamangala, Swarnamangala, Samrudhi, AAD 1, Andaman Local, and Goa Local. Seed production of the selected hybrid combinations is currently in progress to facilitate the establishment of the trial.



V. CROP PRODUCTION

Coconut

Studies on fertilizer application through micro-irrigation technique in coconut

Sabour

Experiment was laid out with six fertigation levels viz., T_1 : No fertilizer; T_2 : 25% Recommended dose of fertilizer (RDF) (NPK) through drip system; T_3 : 50% RDF (NPK) through drip system; T_4 : 75% RDF NPK through drip system; T_5 : 100% RDF (NPK) through drip system; T_6 : 100% RDF (NPK) through soil application replicated four times in coconut variety Shakhigopal. The recommended dose of fertilizer was 500:320:1200 g N:P:K per palm per year. The fertilizers were split into 8 parts for application through fertigation. Application of 75% RDF through fertigation (T_5) recorded the highest number of inflorescences (9.7 palm⁻¹), which was on par with 100% RDF through fertigation (T_4). The lowest number of inflorescences (7.0 palm⁻¹)

was recorded in the control (T_1) without fertigation. Similarly, T_5 produced the highest nut yield (68 nuts palm⁻¹), followed by T_4 (63 nuts palm⁻¹) and T_6 (100% RDF through soil application; 62 nuts palm⁻¹), with no significant difference among these treatments. A progressive advancement in the initiation of new inflorescences was observed under fertigation treatments compared with the control over the three years of evaluation. During 2025, T_5 (75% RDF through fertigation) recorded the earliest initiation of new inflorescences during the first week of March, followed by T_4 and T_6 during the third week of March, while T_2 , initiated flowering in the fourth week of March. The control (T_1) and T_3 exhibited delayed inflorescence initiation during the first week of April. A similar trend was observed during the previous years, with T_5 consistently recording the earliest flowering (second week of May in 2023–24 and second week of February in 2024–25).

Table 8. Effect of different levels of fertigation on inflorescence emergence

Treatment /year	Initiation of new inflorescence		
	2023-24	2024-25	2025-26
T_1	4 th week June	2 nd week March	1 st Week of April
T_2	4 th week June	2 nd week March	4 th Week of March
T_3	2 nd week June	4 th Week February	1 st week of April
T_4	3 rd week May	2 nd week February	3 rd week of March
T_5	2 nd week May	2 nd week February	1 st week of March
T_6	4 th week May	3 rd week February	3 rd week of March

Coconut based cropping systems for different agro-climatic regions

Coconut based multispecies cropping systems under coastal littoral sandy soil

Bhubaneswar

The experiment was initiated in littoral sandy soil at Coconut Research Station, Konark during

January 2016. The result of the current year revealed that there was significant variation found among the palms under different nutrient management practices. Maximum number inflorescence (11.91/palm/year), female flower (266.74/palm/year) and nuts (83.75/palm/year) was recorded in the treatment N_2 (Green manuring + biofertilizers + organic recycling + soil

test-based nutrient (chemical fertilizers) application. The interaction effect of cropping system and nutrient management were significant only for number of female flowers/palm/year and numbers of nuts per palm. Maximum number of female flowers (289.73/palm/year) and maximum numbers of nuts (90.24/palm/year) harvested in the treatment CS_2N_2 . Number of leaves per palm and rate of production of leaves /palm/year were found statistically nonsignificant. The yield of pineapple (9260.64 q/ha) as well as cowpea (4647.00.00 kg/ha) was

maximum in plots receiving soil test based NPK nutrients (N_2). The sapota tree in the cropping systems started yielding from last 5 years and the maximum yield (18.52 q/ha) was obtained in the treatments CS_2N_2 (Fig. 16). The maximum net return (Rs. 4,64,431.00/ha) was obtained from the treatment CS_2N_2 . Whereas, lowest profit Rs. 78,831.00 was obtained from solo cropping systems with organic manure application that is CS_3N_1 .



Fig. 16. Experimental field of the coconut-based multispecies cropping system with pineapple and sapota at Bhubaneswar

Studies on high density planting of cinnamon as intercrop in coconut garden

A multi-location experiment was initiated in 2025 at Aliyarnagar (Tamil Nadu), Ambajipeta (Andhra Pradesh), Jagdalpur (Chhattisgarh), Ratnagiri (Maharashtra), and Veppankulam (Tamil Nadu) to evaluate the performance of high-density planting of cinnamon under coconut-based cropping systems. Air layers of the cinnamon variety 'Konkan

Tej' were procured from the Ratnagiri centre and supplied to all participating centres. Planting has been successfully completed at all locations, and pre-experimental observations, including soil pH and other baseline site characteristics, have been recorded to facilitate future evaluation of growth, productivity, and economic performance under different agro-climatic conditions (Fig. 17).



Fig. 17. Cinnamon Planting at Aliyarnagar

Organic farming in coconut-based farming system

Experiment was laid out in Randomized Block Design comprising of five treatments (Sole organic manure treatments -2, Sole chemical fertilization -1, Integrated options -2), each treatment replicated five times with six palms per treatment. A trench of 15 m length and 1.3 m (4 feet) width was excavated amidst six coconut palms for the treatments T_1 - T_4 . PGPR consortia, organic manure, husk burial and 50% recommended K_2O (600 g K_2O) as sulphate of potash were applied as per the treatments. Sunhemp seeds were sown @ 40 kg /ha in the interspaces of the coconut palms in the treatments T_1 to T_4 and was incorporated *in situ* at 45 days after sowing. Significant variation in nut yield was observed among the treatments across the four centres during the period 2021-22 to 2024-25. Treatment T_4 consistently recorded the highest nut yield at all centres throughout the study, demonstrating its superiority over the other treatments (Fig 18).

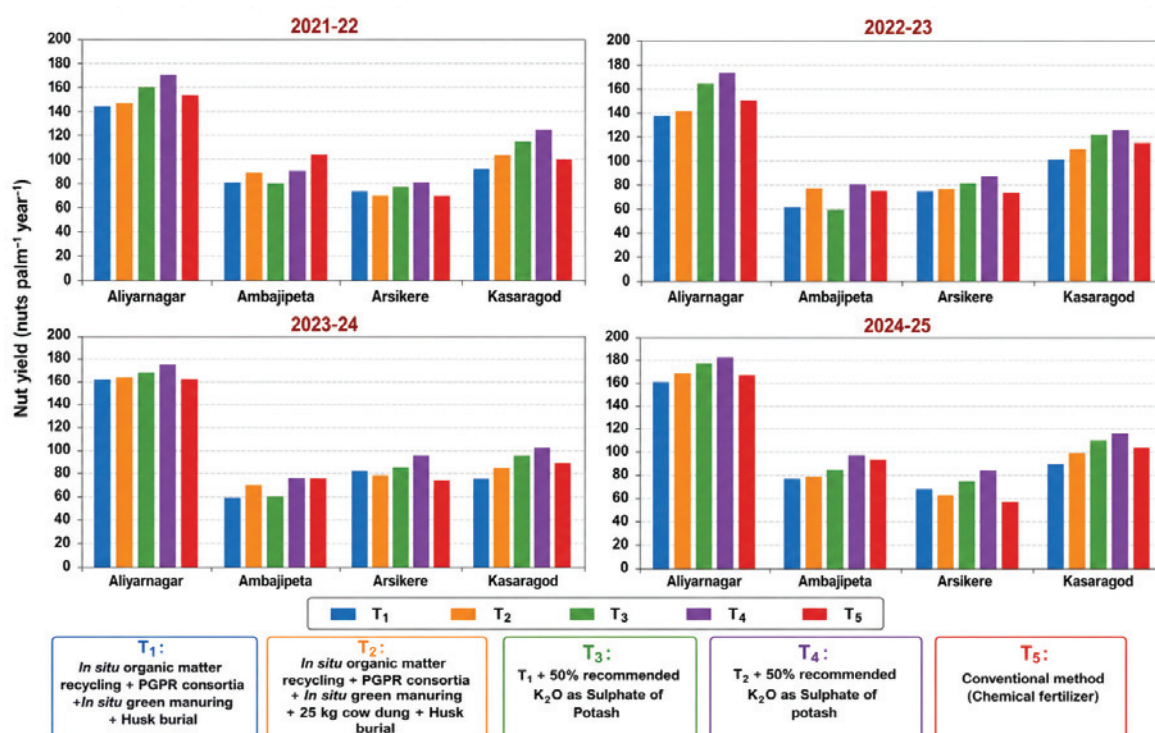


Fig. 18. Comparative nut yield performance of treatments across four centres (2021-22 to 2024-25)

Management of Root (wilt) disease in coconut (Farmer's garden)

Aliyarnagar

Management practices as per the package were continued in root (wilt) affected gardens at Manakkadavu village of Coimbatore district and the treatments were imposed during 2017. Disease assessment was done based on the disease grades assigned to flaccidity, yellowing and necrosis symptom in the second or third spiral as per the score chart. Disease intensity is calculated based on the following formula

$$DI = \frac{5 (F+Y+N) \times 10}{L}$$

Where F, Y and N are the grade points assigned to flaccidity (0-5), yellowing (0-3) and necrosis (0-2) and L is the total number of leaves.

Regular agronomical management practices reduced the average root wilt disease index from 15.86 (2015-16) to 7.00 (2024-25) in Coimbatore district. Nut yield in demonstration plot was 70 nuts /palm /year in Manakkadavu village and the nut yield was almost maintained compared to the pre-experimental period. However the yield obtained was not consistent over a period of time and the intensity of disease reduction did not sustain over long run appreciably.



Fig. 19. Location of the experimental site at Aliyarnagar

Table 9. Root wilt disease index in Manakkadavu village, Coimbatore Dist.

Particulars	Demonstration plot	
	2015-16	2024-25
	Pre treatment	Post treatment
Range of disease index	4 to 44	0- 40
Average disease index*	15.86	7.00
Nut yield	80	70



Validation of TNAU coconut tonic, Kalpa Vardhini and Kalpa Poshak, the nutrient mixture for the sustained growth, productivity and quality of coconut

A multi-location validation trial was initiated during 2025–26 at nine AICRP centres to evaluate the efficacy of TNAU Coconut Tonic, Kalpa Vardhini, and Kalpa Poshak for improving the growth, productivity, and nut quality of coconut. Initially, the experiment comprised four treatments: T_1 : Recommended dose of fertilizers (RDF) without micronutrients; T_2 : T_1 + Soil application of Kalpa Vardhini; T_3 : T_1 + Root feeding of TNAU Coconut Tonic; T_4 : T_1 + Soil application of Kalpa Vardhini + Root feeding of TNAU Coconut Tonic. During the Annual Group Meeting (AGM) held at Madurai in 2025, the technical programme was revised to incorporate TNAU Coconut Tonic in combination with Kalpa Vardhini for evaluating their synergistic effect on coconut performance. Initial soil samples were collected and analyzed before the commencement of the experiment (Table 10).

Table 10. The centre-wise details of the experimental materials

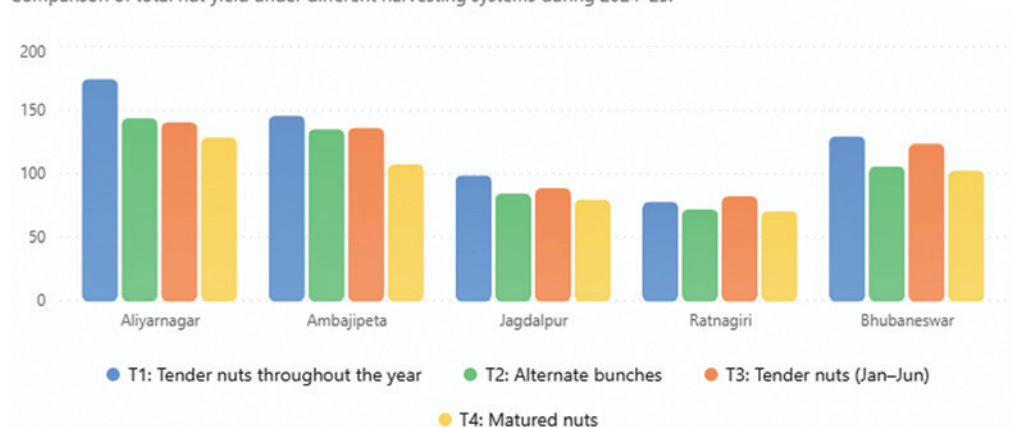
Centers	Variety	Age of the palms
TNAU Coconut Tonic and Kalpa Vardhini		
Ratnagiri	Chandrasankara	38
Mondouri	Java Tall	15
Kahikuchi	Kamrupa	15
Jagdalpur	Kera Baster	12
Pilicode	WCT	8
Kasaragod	WAT	54
Ambajipeta	ECT	39
Arsikere	TPT	43
Bhubaneswar	Sakhigopal	20
Kalpa Poshak		
Pilicode	Gangabondam	Newly planted
Jagdalpur	MGD	2 years

Studies on coconut harvesting frequency on growth and yield of coconut

To elicit the impact of tender nut harvesting frequency on growth and yield of coconut, on quality of tender nut and to work out the economics of the system an experiment was initiated during 2022. Experiment was laid out in a Randomized Block Design with four treatments viz., T_1 : Harvesting of tender nuts throughout the year, T_2 : Harvesting of alternate bunches for tender nuts, T_3 : Harvesting of tender nuts from January to June and T_4 : Harvesting of matured nuts throughout the year, replicated five times each accommodating 6 palms per replication at five centres. Across all centres, T_1 (harvesting tender nuts throughout the year) consistently recorded the highest number of nuts harvested. The highest yield was observed at Aliyarnagar (174 nuts palm⁻¹ year⁻¹), followed by Ambajipeta (145 nuts palm⁻¹ year⁻¹), Bhubaneswar (129 nuts palm⁻¹ year⁻¹), Jagdalpur (98 nuts palm⁻¹ year⁻¹), and Ratnagiri (77 nuts palm⁻¹ year⁻¹). The alternate bunch harvesting system (T_2) and seasonal tender nut harvesting (T_3) recorded intermediate yields, while T_4 (harvesting mature nuts throughout the year) consistently recorded the lowest yields across all centres (Fig. 20). The initial results indicate that harvesting tender nuts throughout the year enhances overall nut production, while alternate and seasonal harvesting provide a balance between tender nut and mature nut production. Since the experiment is in its initial phase, continued evaluation is required to assess the long-term effects on yield stability, tender nut quality, and economic returns.

Effect of tender nut harvesting frequency on nut yield across AICRP centres

Comparison of total nut yield under different harvesting systems during 2024–25.



Values for T2 and T3 represent the combined yield of tender and mature nuts.

Fig. 20. Effect of tender nut harvesting frequency on nut yield across centres

Oil palm

Nutrient requirement studies in oil palm under Northeast region

At Pasighat, application of 1500:750:1500 g N:P₂O₅:K₂O palm⁻¹ year⁻¹ recorded the highest fresh fruit bunch yield (137.44 kg palm⁻¹ or 19.64 t ha⁻¹), which was statistically on par with 1200:600:1200 g N:P₂O₅:K₂O palm⁻¹ year⁻¹ (134.83 kg palm⁻¹ or 19.26 t ha⁻¹). As the experiment is in the initial stage of establishment, the results should be considered preliminary. The progress of the trial was also affected during the COVID-19 pandemic, when nutrient application could not be carried out as scheduled due to lockdown-related restrictions and non-availability of fertilizers.

Plant Geometry and Optimization of nutrients in Oil palm

Nutrient optimization in oil palm studies began in 2019 at Bavikere center using a Factorial

RBD design. The grading of NPK levels as 0, 1 and 2; N₁-1200g, N₂-2400g, P₁-600g, P₂-1200g, K₁-1800g and K₂-3600 g. The study is still in its early stages, but two years of data showed no significant changes in palm height and girth across the treatments.

Plant geometry studies in oil palm

Plant geometry in Oil palm studies initiated during 2019 at Bavikere centre with four spacing viz., M₁: 9m x 9m x 9m (Triangular planting); M₂: 9m x 9m (Square planting); M₃: 10m x 10m x 10m (Triangular planting) and M₄: 10m x 10m (Square planting) in RBD design with five replications. The experiment is in initial stage and there are no significant differences among the treatments.

VI. CROP PROTECTION

Disease Management

Survey and surveillance of coconut diseases

Roving survey of coconut diseases

Roving survey conducted during 2025 in the major coconut-growing regions of Tamil Nadu, Andhra Pradesh, Karnataka, and Maharashtra to assess the incidence of bud rot, stem bleeding, basal stem rot (BSR), stem bleeding, leaf blight, and leaf spot diseases.

Tamil Nadu (Aliyarnagar and Veppankulam)

Surveys covered Coimbatore, Tiruppur, Dindigul, Theni, Tirunelveli, Kanyakumari, Thanjavur, Thiruvavarur, Pudukkottai, and Nagapattinam districts. Bud rot incidence was

highest in Coimbatore district (Pollachi South block, 11.8%). Basal stem rot was most prevalent in Tiruppur district (Pulavadi, 8.15%) and Kanyakumari district (Kuruthencode, 11.5%). Stem bleeding incidence was highest in Tiruppur district, with Periyapatti (12.8%) and Pulavadi (11.5%) recording maximum incidence. Leaf blight and leaf spot were severe in Coimbatore district, while Theni district recorded the highest leaf spot severity (13.84 PDI). In the east coast districts (Thanjavur, Thiruvavarur, Pudukkottai and Nagapattinam), only basal stem rot was observed, with the highest incidence (2.22%) in Udhayamarthandapuram, Thiruvavarur district, whereas bud rot, stem bleeding, leaf blight, leaf spot, and lethal wilt were absent.



Fig. 21. Roving survey at Peravurani Block villages of Thanjavur

Andhra Pradesh (Ambajipeta)

Surveys were conducted in Dr. B.R. Ambedkar Konaseema, East Godavari, West Godavari, and Eluru districts. Basal stem rot was the only major disease observed, with the highest district incidence in West Godavari (2.03%), followed by Dr. B.R. Ambedkar Konaseema

(1.82%), Eluru (1.66%), and East Godavari (0.40%). Among villages, Perupalem (9.28%) in West Godavari and Kesanapalle (5.69%) in Konaseema recorded the highest disease incidence.

Karnataka (Arsikere)

Surveys covered Tumakuru, Hassan, Mandya, and Chikkamagaluru districts. Basal stem



rot incidence was highest in Sira taluk, Tumakuru district (15.0%), while stem bleeding recorded maximum incidence (7.60%) in Arsikere taluk, Hassan district. Leaf blight severity was highest in Gubbi taluk, Tumakuru district (14.0 PDI), whereas leaf spot severity was highest in Mandya district (35.33 PDI). No bud rot incidence was observed in the surveyed districts.

Fixed plot survey of coconut diseases

Fixed plot surveys were conducted at Aliyarnagar, Ambajipeta, Arsikere, and Veppankulam during 2025 to monitor the temporal and spatial dynamics of major coconut diseases and their relationship with prevailing weather parameters.

Aliyarnagar monitored leaf blight and leaf spot in fixed plots at Puliyanakandi and Aliyarnagar villages. Disease severity was higher at Puliyanakandi, recording 68.50% leaf blight and 40.75% leaf spot severity, compared to 62.50% and 35.01%, respectively, at Aliyarnagar. Leaf blight incidence showed a positive correlation with temperature and negative correlation with relative humidity, whereas leaf spot severity was negatively correlated with temperature. Soil microbial analysis indicated higher populations of *Pseudomonas* spp. than *Bacillus* spp., with maximum populations during the January quarter, while *Trichoderma* spp. were the predominant fungal antagonists.

Ambajipeta established fixed plots for basal stem rot (BSR), stem bleeding, and bud rot. The incidence of BSR increased from 27.69% to 33.21%, with the disease index increasing from 19.68 to 26.95 during the study period. Stem bleeding incidence increased marginally from 11.65% to 12.56%, with the disease index increasing from 2.2 to 3.1. Correlation analysis revealed that BSR incidence and disease index were positively associated with forenoon relative humidity, while stem bleeding incidence was positively correlated with rainfall and relative humidity.

Arsikere monitored basal stem rot, stem bleeding, and leaf blight under fixed plot conditions. The disease index of BSR increased from 26.29% to 29.92%, with disease incidence increasing from 20.00% to 22.50%. Stem bleeding disease index increased from 18.07% to 19.32%, while leaf blight severity increased from 11.60% to 17.76%. Disease progression of BSR was positively associated with evening relative humidity and rainfall, whereas stem bleeding showed a positive association with temperature and a negative association with rainfall. Veppankulam monitored fixed plots for basal stem rot in Andami village, Thanjavur district. The horizontal spread of BSR increased from 41.30% to 42.67%, while the vertical spread (disease index) reached 24.66% during 2025. Correlation analysis indicated that temperature, morning relative humidity, and soil temperature were positively associated with the vertical spread of the disease, whereas rainfall and evening relative humidity were positively associated with the horizontal spread.

Alternate strategies for management of Basal stem rot disease

The trial evaluated four integrated disease management (IDM) modules comprising combinations of systemic fungicide application through root feeding and soil drenching, biological control agents (*Trichoderma* spp. and *Pseudomonas* spp.), neem cake enrichment, farmyard manure (FYM), and recommended nutrient and irrigation management practices. All modules were implemented under a common package of recommended agronomic practices, while the conventional fungicide treatment served as the check. Ambajipeta recorded significant disease suppression in all treatment modules after 36 months of treatment imposition. Module III was the most effective, recording the highest reduction in disease incidence (30.13%) over the initial disease level, followed by Module I (23.21%) and Module II (21.65%). Arsikere also demonstrated substantial



reduction in disease severity following IDM interventions. After 27 months of treatment, Module III recorded the lowest disease index (4.77) and achieved the highest disease reduction (82.28%) compared with the initial disease level. Several palms under Modules II and III became symptom-free, indicating recovery from the disease. An integrated disease management trial on basal stem rot was undertaken at Veppankulam during 2025. Among the four IDM modules evaluated, Module III consistently performed better, achieving 30.77% reduction in disease over the initial level, followed by Module II (27.35%). The untreated control showed progressive disease development, with a 42.80% increase in disease index.

Alternate strategies for management of stem bleeding disease

Four Integrated Disease Management (IDM) modules were evaluated for the management of stem bleeding disease in coconut. The modules comprised root feeding and soil drenching with systemic fungicides (Azoxystrobin + Tebuconazole or Hexaconazole), application of wound protectants (*Trichoderma* coir pith cake, Bordeaux paste, or *Trichoderma* paste), soil application of neem cake enriched with *Trichoderma harzianum* or *T. reesei* alone or in combination with *Pseudomonas fluorescens*, and application of farmyard manure (FYM) fortified with *Trichoderma* and/or *Pseudomonas* formulations. All treatments were implemented in conjunction with the recommended package of nutrient, irrigation, and crop management practices. At Ambajipeta, the experiment initiated during February 2023, demonstrated significant disease suppression following the imposition of IDM modules. After 33 months of treatment, Module I was found to be the most effective, recording 100% reduction in disease over the initial disease level with complete drying of stem bleeding lesions, indicating complete recovery of affected palms. Module III

was the next best treatment, registering 78.27% disease reduction, followed by Module II (74.41%).

At Arsikere, all IDM modules resulted in a progressive reduction in disease severity over the treatment period. After 27 months, Module II recorded the lowest disease index (4.56) compared with the initial disease index (27.11), corresponding to 83.17% reduction in disease severity. Module I and Module III also substantially reduced the disease index to 7.30 and 6.81, respectively. Several diseased palms under Modules II and III became symptom-free, indicating complete recovery. In contrast, the untreated control recorded an increase in disease severity, with the disease index rising from 27.33 to 40.85, highlighting the necessity of timely IDM interventions.

Leaf blight disease of coconut

Yield loss estimation

A field study was conducted at Puliyanakandi village, Anaimalai Block, Coimbatore district, by selecting 25 healthy and 25 leaf blight-infected coconut palms to assess the impact of leaf blight on nut yield during January–December 2025. The nut yield reduction due to leaf blight ranged from 10.40 to 16.39%, with a mean yield loss of 13.52%. In addition to leaf blight, rugose spiralling whitefly infestation (>10%) was also observed in the study area.

Epidemiology of leaf blight disease in coconut

Weekly observations on leaf blight disease were recorded during January–December 2025 to study its seasonal incidence in relation to prevailing weather parameters. The disease was observed throughout the year, with maximum incidence during the hot summer months (March–May) and reduced incidence during October–December. Correlation analysis revealed a positive association between maximum and minimum temperatures and leaf blight incidence, indicating increased disease severity with rising temperatures. In contrast, relative humidity

exhibited a negative correlation with disease incidence, suggesting that higher humidity was associated with reduced leaf blight severity. These

findings indicate that temperature is a key factor influencing the seasonal development of leaf blight in coconut.

Table 11. Correlation between leaf blight incidence and weather parameters

	Weather parameters	Correlation coefficient
Leaf blight incidence	Temperature (Maximum)	0.84
	Temperature (Minimum)	0.56
	RH (Morning)	- 0.86
	RH(Evening)	- 0.70
	Rainfall	0.593
	Evaporation	0.495

Root (wilt) disease in coconut

Assessing the incidence of root (wilt) disease in Tamil Nadu

A roving survey was conducted during January–December 2025 to assess the incidence of root (wilt) disease in major coconut-growing districts of Coimbatore, Tiruppur, Dindigul, Theni, Tenkasi, Tirunelveli, and Kanyakumari. The disease incidence varied considerably across locations. The highest incidence (42.53%) was recorded in Vellimalai village, Kuruthenkode block, Kanyakumari district, followed by Ampampalayam (40.87%) in Pollachi South block, Coimbatore

district, and Thappattaikeelanpudur (39.50%). Root (wilt) incidence was also observed in Theni and Tenkasi districts, with maximum incidences of 26.50% at Kombai (Cumbum block) and 27.75% at Panboli (Tenkasi block), respectively. No incidence was recorded in the surveyed villages of Dindigul and Tirunelveli districts. Among the surveyed districts, Kanyakumari recorded the highest overall disease incidence, followed by Coimbatore. To minimize further spread of the disease, three farmer awareness programmes were organized, emphasizing early diagnosis and eradication of severely affected palms (Fig. 22).



Fig. 22. Awareness programme in coconut root (wilt) conducted by Aliyarnagar centre

Pest Management

Pest surveillance in coconut

Roving surveys were conducted during 2025 in major coconut-growing regions of Tamil Nadu, Andhra Pradesh, Karnataka, and Maharashtra to monitor the incidence and intensity of major coconut pests. Rugose spiralling whitefly (RSW), Bondar's nesting whitefly (BNW), eriophyid mite, rhinoceros beetle (RB), red palm weevil (RPW), and black-headed caterpillar (BHC) were identified as the major pests across the surveyed regions.

In Tamil Nadu, Coimbatore recorded the highest incidence of rhinoceros beetle (7.30%) and rugose spiralling whitefly (31.30%), while Theni recorded the highest black-headed caterpillar incidence (25.13%) (Fig. 23) *Encarsia guadeloupae* parasitism on RSW ranged from 42.40–45.20%, and eriophyid mite damage remained below 25% in all districts.

In Andhra Pradesh, Eluru recorded the highest rhinoceros beetle (12.46%) and red palm weevil (3.88%) incidence, whereas West Godavari recorded the highest RSW incidence (50.35%). Dr. B.R. Ambedkar Konaseema recorded the highest Bondar's nesting whitefly incidence (56.85%) and eriophyid mite nut damage (54.38%). Black-headed

caterpillar incidence (9.49%) was observed only in Eluru.

Mandya recorded the highest incidence of rhinoceros beetle (17.76%), black-headed caterpillar (42.54%), and eriophyid mite (18.95%; MGI 2.59). Tumakuru recorded the highest RSW incidence (47.26%) and *Encarsia* parasitism (32.10%), while red palm weevil incidence remained below 0.2% in all surveyed districts of Karnataka.

In Maharashtra, Sindhudurg recorded the highest incidence of rhinoceros beetle (10.10%), rugose spiralling whitefly (5.71%), and Bondar's nesting whitefly (13.60%), whereas Ratnagiri recorded the highest eriophyid mite nut damage (23.90%). Black-headed caterpillar incidence was negligible and confined to Palghar (0.80%), while red palm weevil incidence remained below the economic threshold level.

Overall, the surveys indicated that rugose spiralling whitefly, Bondar's nesting whitefly, and eriophyid mite continue to be the major pest constraints in coconut-growing regions, while the high levels of *Encarsia guadeloupae* parasitism recorded in Tamil Nadu and Karnataka suggest effective natural biological control of rugose spiralling whitefly.

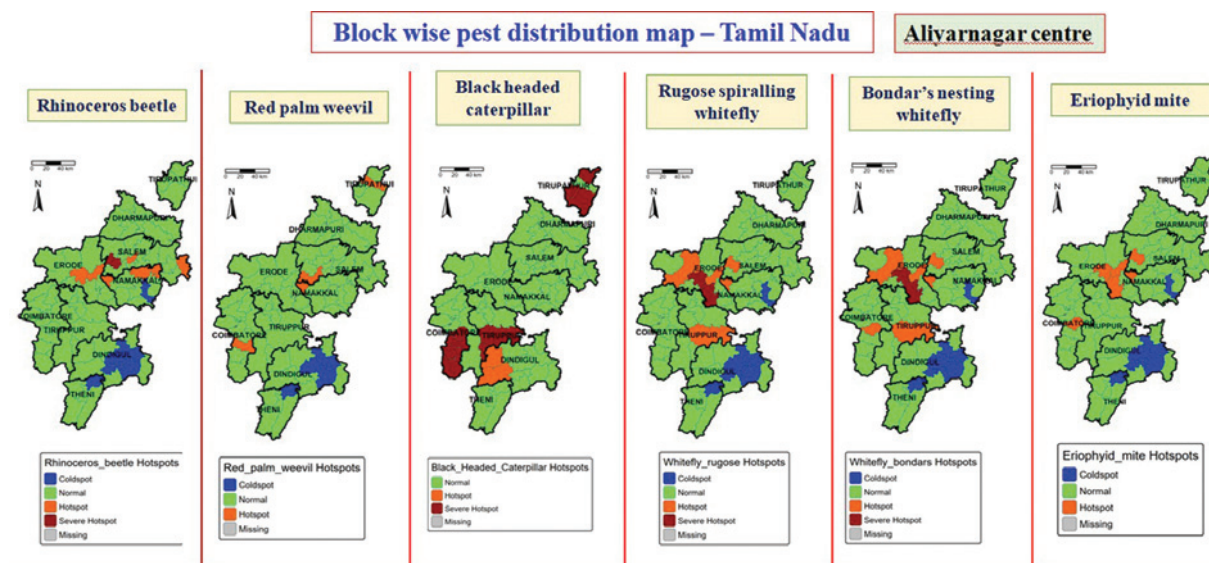


Fig. 23. Distribution map of major insect pests in coconut at Aliyarnagar

Production and supply of parasitoids and other natural enemies

Mass multiplication and field release of biocontrol agents for the management of coconut black-headed caterpillar (BHC) and the whitefly complex continued at Aliyarnagar, Ambajipeta, Arsikere, and Ratnagiri. Aliyarnagar centre produced and distributed, 6,73,700 adults of *Bracon brevicornis*, 56,000 eggs of *Apertochrysa astur*, and 44,200 *Encarsia guadeloupae*-parasitized whitefly puparia, covering 320 acres for BHC management and 582 acres for whitefly management. Field releases resulted in 28–33% parasitization of BHC larvae. At Ambajipeta, a total of 24.91 lakh biocontrol agents and 466 cc of *Trichogramma* cards were produced and distributed to farmers in Andhra Pradesh and Telangana. The major biocontrol agents supplied included *Bracon hebetor* (1,20,750), *Bracon brevicornis* (55,750), *Goniozus nephantidis* (46,500), *Apertochrysa astur* eggs (58,900) and grubs (22,07,702),

Chrysoperla zastrowii eggs (1,000), *Trichogramma japonicum* cards (61 cc), and *T. chilonis* cards (405 cc). The releases covered 1,318 acres, including 1,133 acres infested with rugose spiralling whitefly and 185 acres affected by black-headed caterpillar. The Arsikere centre mass-produced and released 48,000 *Bracon brevicornis* and 1,11,500 *Goniozus nephantidis* parasitoids for the management of black-headed caterpillar in approximately 6,150 coconut palms across Karnataka. At Ratnagiri, 41,451 *Bracon brevicornis* and 27,000 *Goniozus nephantidis* parasitoids were produced and released in research farms and farmers' fields. Timely releases of 4,000 *Bracon brevicornis* and 5,500 *Goniozus nephantidis* parasitoids successfully suppressed 20% black-headed caterpillar infestation in 2,000 coconut palms (11 ha) at Hatkanangale, Kolhapur, demonstrating the effectiveness of biological control under field conditions.



Fig. 24. Supply and Release of parasitoids for management of CBHC

Surveillance, assessment of natural enemies and management of whitefly complex in coconut

Monthly surveillance of rugose spiralling whitefly (RSW) and Bondar's nesting whitefly

(BNW) was carried out at Aliyarnagar, Ambajipeta, Arsikere, and Ratnagiri during 2025 to monitor seasonal incidence, natural enemy activity, and alternate host plants. The surveys revealed



considerable variation in whitefly incidence across locations. Monthly surveillance of rugose spiralling whitefly (RSW) and Bondar's nesting whitefly (BNW) was carried out during January–December 2025 in three coconut gardens at Aliyarnagar. Mean incidence and intensity of RSW were 28.1% and 28.5%, respectively, with peak infestation during April–May and the lowest incidence during December. The mean infestation grade index (IGI) of BNW was 1.9, with the highest infestation observed during April–May. Natural parasitization by *Encarsia guadeloupae* ranged from 36.0 to 50.0%, with a mean of 43.2%, indicating effective natural biological control. Among the alternate hosts, banana, custard apple, and cocoa supported whitefly populations, recording RSW incidence of 11–17%, 10–16%, and 5–6%, respectively.

At Ambajipeta, RSW incidence was highest during January (63.28%), while the highest population of different developmental stages was recorded during November–December. Natural parasitization by *Encarsia guadeloupae* ranged from 3.97 to 39.48%, and the predator *Apertochrysa astur* population varied from 1.50 to 2.39 per leaflet. BNW also recorded the highest incidence (63.28%) and intensity (59.45%) during January, with peak populations during January and December. The population of *A. astur* ranged from 0.78 to 2.61 per leaflet, while spider populations ranged from 0.90 to 1.30 per leaflet, indicating the active role of natural enemies in suppressing the whitefly complex.

Ratnagiri recorded relatively low infestation of the whitefly complex during May 2025. The incidence and intensity of rugose spiralling whitefly (RSW) ranged from 0.39–4.76% and 0.21–3.33%, respectively, with the highest infestation observed during May 2025 and the lowest during October 2025. The mean incidence and intensity were 2.67% and 1.91%, respectively, with a mean *Encarsia* parasitization of 8.83%. Bondar's nesting whitefly (BNW) incidence ranged from 0.79–10.60% and

intensity from 0.58–9.04%, with peak infestation during December 2025. The mean BNW incidence, intensity, and grade index were 5.49%, 5.16%, and 0.42, respectively. Low populations of natural enemies, comprising spiders (0.26) and predators (0.13 per four leaflets), were recorded throughout the observation period, indicating a generally low level of whitefly infestation under the Konkan conditions.

Seasonal monitoring of the whitefly complex at Arsikere revealed that rugose spiralling whitefly (RSW) incidence ranged from 9.40 to 72.38%, while intensity varied from 3.20 to 60.38%. The highest incidence (72.38%) and intensity (60.38%) were recorded during September 2025. The mean RSW incidence, intensity, and grade index were 34.50%, 25.69%, and 1.26, respectively. The average populations of spiders (1.84 per leaflet) and predatory insects (3.14 per leaflet), along with 26.82% *Encarsia* parasitization, indicated the active role of natural enemies in the biological suppression of rugose spiralling whitefly.

Evaluation of oil-based formulation of *Simplicillium lanosoniveum* (CPCRI SL 951) for the bio-suppression of exotic whiteflies in coconut

A multi-location trial was conducted at Aliyarnagar, Ambajipeta, Arsikere, and Ratnagiri to evaluate the efficacy of an oil-based formulation of *Simplicillium lanosoniveum* (CPCRI SL 951) against rugose spiralling whitefly (RSW). The treatments included conservation/augmentative release of *Encarsia guadeloupae*, foliar application of *S. lanosoniveum*, neem oil (0.5%), and water spray as control. The results across locations demonstrated that foliar application of *S. lanosoniveum* (CPCRI SL 951) and neem oil (0.5%) significantly reduced the incidence and intensity of rugose spiralling whitefly compared with the water spray. At Aliyarnagar, *S. lanosoniveum* recorded the lowest whitefly incidence (9.8%) and

intensity (20.0%), which was statistically on par with neem oil. Similar trends were observed at Ambajipeta, where neem oil and *S. lanosoniveum* treatments recorded the lowest whitefly nymphal population after the second spray. At Arsikere, neem oil was the most effective treatment, followed by *S.*

lanosoniveum, while *Encarsia guadeloupae* conservation resulted in the highest level of natural parasitization. At Ratnagiri, neem oil (7.17% incidence; 6.78% intensity) and *S. lanosoniveum* (8.71% incidence; 7.11% intensity) were statistically on par and significantly superior to the control.



Fig. 25. Imposing treatment for management of RSW

VII. POST HARVEST TECHNOLOGY IN PALMYRAH

Freeze-drying of palmyrah sap

Attempts to freeze-dry palmyrah sap were undertaken at Pandirimamidi and Killikulam centres to develop a stable, value-added sap product with improved storage characteristics. At Pandirimamidi, freeze drying at -50 to -55°C for 30 h using natural spices and 10% maltodextrin revealed that garlic-treated sap powder exhibited greater stability than maltodextrin-treated powder under ambient storage conditions. The powder showed good solubility, low moisture content, Hausner index of 1.22, flow index of 4.8, and water activity of 0.46, indicating reduced microbial growth and enhanced shelf life. At Killikulam, freeze-dried neera powder recorded low moisture content (1.66 g), water activity of 0.26–0.327, and a high solubility index (92–96%). GC–MS analysis confirmed the presence of important bioactive compounds, including sucrose (40.60%), ribulose-5-phosphate (33.50%), mannose (9.04%), D-fructose derivatives (7.76%), and D-mannitol (2.79%), highlighting the nutritional quality and storage stability of the freeze-dried neera powder.



Fig. 26. Collection of Fresh Palmyrah Neera for Freeze-Drying

Value-added products from palmyrah tuber

Studies on the development of value-added products from palmyrah tuber flour were undertaken to enhance its utilization as a nutritious functional food ingredient at Pandirimamidi. Composite bread prepared by incorporating 30% palmyrah tuber flour with wheat flour exhibited the best sensory acceptability while improving the nutritional profile. Similarly, cookies prepared using 50% palmyrah tuber flour in combination with wheat flour showed acceptable sensory quality, whereas higher levels of incorporation adversely affected consumer acceptability. The results demonstrated the potential of palmyrah tuber flour as a suitable ingredient for developing nutritionally enriched bakery products.

At Killikulam, palmyrah tuber flour-incorporated papad was standardized using 20% palmyrah tuber flour and 80% black gram flour (Fig 26), which recorded a high sensory score of 8.1/9.0. The developed product was nutritionally superior, containing 15.23% protein, 0.72% crude fibre, 11.71% total ash, 3.4 mg iron, and 158 mg calcium per 100 g, indicating its potential as a value-added health food with commercial prospects.



Fig. 27. Palmyrah tuber flour incorporated papad

Utilization of Palmyrah Plant Parts for Fibre and Fuel

Pandirimamidi center has evaluated the fibre potential of different palmyrah plant parts, including

the leaf base (sheath), petiole, and fruit fibres, for industrial applications. The leaf base fibre exhibited an average length of 458 mm, thickness of 6.9 mm, and tensile and flexural strengths of 0.007 and 0.44 GPa, respectively, indicating its suitability for fibre-based products. Wet-processed palmyrah fruit fibre contained 62.64% cellulose, 15.85% hemicellulose, 12.64% lignin, and 2.16% ash, demonstrating favourable physicochemical properties for value addition. The average fibre recovery from a three-seeded fruit was 74.82 g (3.5%), highlighting the potential of palmyrah fruit as a sustainable source of natural fibre for diversified industrial applications.

Popularization of Palmyrah climbing device

Efforts were made at Konda Mallepally and Pandirimamidi to popularize the Chemberi Joseph model palm climbing device among palmyrah toddy tappers. At Konda Mallepally, field evaluation

revealed that the device required an average of 10.94 minutes to climb a palm compared to 5.8 minutes using the traditional method. Although the conventional manual climbing method was found to be faster and easier (by traditional climbers), the climbing device was demonstrated in Devarakonda, Mallepally, and Tatikole villages of Nalgonda district to create awareness on its use by new generation climbers (Fig 28). At Pandirimamidi, demonstrations of the Joseph model climbing device were conducted during Human Resource Development (HRD) training programmes under the Tribal Sub Plan (TSP) involving 200 toddy tappers engaged in neera tapping. Following the demonstrations, 18 participants purchased the climbing devices for regular field use, indicating encouraging adoption of the technology among trained beneficiaries.



Fig. 28. Training on Popularization of climbing device (Joseph model) among rural youth

VIII. MONITORING, REVIEWS AND MEETINGS

Approved technical programmes were monitored by visiting the center, reviewing the monthly progress report of the centres. Reviewed the Centres and ascertained the implementation of technical programmes as per the schedule through physical mode. Time to time advice and direction was given for proper implementation of the technical programmes through online meetings, emails, personal contact and over direct contact via phone as and when required. Monthly progress report and

budget utilization information were obtained from centres regularly and the same were reviewed critically. During the review meetings, discussions were held with concerned scientists of centres for the smooth implementation of the research programmes. During review meeting by project coordinator, guidelines for proper utilization of budget, improving publications and the technical programmes were provided.

Dates	Place of visit
20.01.25 to 21.01.25	Konda Malleshpally, Telangana
02.02.25 to 07.02.25	Port Blair, Andaman and Nicobar Islands
11.02.25 to 12.02.25	Sabour, Bihar
21.03.25 to 25.03.25	Ambajipeta, Pandirimamidi, Pedavegi, Vijayarai centres, AP
14.05.25	Thrissur, Kerala
16.07.25 - 19.07.25	Aliyarnagar, Tamil Nadu
05.08.25 - 10.08.25	Veppankulam and Pattukkotai, Tamil Nadu
18.08.25- 23.08.25	Kahikuchi, Assam
04.09.25 - 07.09.25	Veppankulam and Pattukkotai, Tamil Nadu
16.09.25 - 18.09.25	Killikulam, Tamil Nadu
27.10.25 - 31.10.25	Kahikuchi, Assam



IIOPR Director visited Pattukkottai; PC visited HRS, Pandirimamidi



XXXIV AGM of AICRP on PC

The XXXIV Annual Group Meet of All India Coordinated Research Project on Plantation Crops was organized at Agricultural College & Research Institute, Madurai (TNAU), during May 7-9, 2025. Dr. S. K. Singh, DDG (Horticulture), ICAR New Delhi was the Chief Guest of the inaugural session. Dr. V. B. Patel, ADG (F& PC), ICAR, New Delhi, Dr. K. B. Hebbar, Director, ICAR, CPCRI, Kasaragod, Dr. K. Suresh, Director, IOPR, Pedavegi, Dr. R. K. Mathur, Director, IIOR, Hyderabad and Dr. P. P. Mahendran Dean, AC & RI, Madurai were the Guests of honour. Dr. P. Rethinam, Former Director, Asian and Pacific Coconut Community, Jakarta and Dr. R. V. Nair, Former Head, ICAR- CPCRI Kasaragod were the invited ICAR experts.

Dr. K. B. Hebbar, Director, CPCRI, Kasaragod urged scientists to focus on priority areas such as climatic resilience, yield forecasting, pest and disease prediction, phenology monitoring, irrigation and water-stress management, and market forecasting. He commended palm scientists for developing biocontrol strategies against major coconut pests and stressed the need for close collaboration with the State Department of Horticulture to address field level challenges. He has highlighted the scope of quality data generation from different AICRP centres related to low/ high temperature effects, salinity, drought etc which would help in developing newer research areas in the sector. Dr. K. Suresh, Director, IOPR, Pedavegi, lauded scientists for their contributions and encouraged technological interventions to tackle price fluctuations, pest and disease threats, and climatic uncertainties. Dr. R. K. Mathur, Director, IIOR, Hyderabad, advised discouraging monocropping, strengthening real-time surveillance of biotic stresses, and using IoT applications to proactively reach farmers.

Dr. P. Rethinam, Former Director, Asian and Pacific Coconut Community, Jakarta (invited ICAR

experts for AGM) emphasized the production of quality planting materials through composite mother palm gardens, along with value addition, product diversification, and by-product utilization in plantation crops. He urged the development of location-specific cropping system models to enhance farm productivity. He suggested the application of digital technologies, AI in the plantation crops-based systems which are important for nutritional, social and economic wellness of farmers through employment security and food security. He suggested that the output from oil palm plantation can be easily increased if area expansion happens.

Dr R.V. Nair, Former Head, Division of Crop Improvement, ICAR-CPCRI (invited ICAR experts for AGM) emphasized the need to reorient coconut breeding programmes towards meeting future production and planting material requirements. He stressed the importance of establishing isolated seed gardens of selected Dwarf $\times$ Tall (D $\times$ T) hybrids at AICRP centres to ensure the sustained production of quality hybrid seed nuts. He highlighted that Dwarf $\times$ Tall hybrids have consistently demonstrated superior yield potential and heterotic advantages over Tall $\times$ Dwarf combinations and, therefore, deserve greater emphasis in future breeding programmes. Dr. Nair further underscored the need to identify location-specific dwarf varieties suitable for different agro-climatic regions and to intensify resistance breeding for managing root (wilt) disease. Also recommended to organizing a brainstorming session involving coconut breeders from ICAR-CPCRI, AICRP centres, and other experts to deliberate on future breeding objectives, breeding strategies, hybrid development, and seed garden establishment for strengthening the national coconut improvement programme.

Dr. V. B. Patel, ADG (F & PS), emphasized that the production of quality planting materials, including palmyrah, is the need of the hour. He highlighted the crop's potential in states like Bihar, Tamil Nadu, Gujarat, and Andhra Pradesh for

livelihood generation, nutritional security, and value-added product development. He further noted that non-traditional coconut belts with climatic vulnerabilities offer an excellent platform for screening varieties for tolerance to abiotic stress, which should be effectively utilized. He indicated the infestation by RSW and other pests in coconut and many other plantation crops as a big challenge. He urged the plantation scientists to give more emphasis to promotion of cocoa. He suggested taking up demand driven research rather than providing supply driven research. He suggested that research on health issues due to palm oil could be developed as a multi-institutional project including ICAR, ICMR etc.

Dr. S. K. Singh, DDG (Horticulture), ICAR, New Delhi, highlighted the importance of the All India Coordinated Research Project on Plantation Crops (AICRP-PC) in transforming farmer livelihoods through work on Coconut, Arecanut, Palmyrah, Cocoa, and Oil Palm. He emphasized that Coconut, the “Kalpavriksha,” remains vital to rural prosperity but faces pest, disease, and climate challenges, requiring climate-resilient varieties, quality planting material, and crop diversification. Palmyrah, with its

drought tolerance and nutritional value, should be promoted for organized farming. Cocoa offers rising opportunities amid global shortages, while Oil Palm shows promise with new hybrids and efficient resource use. He stressed that innovation and collaboration under AICRP-PC can advance sustainability and rural growth in the plantation crop sector. He urged the plantation scientists to address the issues of farming community in respective regions.

Horticultural Research Station, Pandirimamidi, Andhra Pradesh was adjudged as the best AICRP (Palms) Centre for the year 2024-25. A total of 13 publications including three books (book on coconut (ISBN 978-81-987562-1-3), palmyrah (ISBN 978-81-987562-0-6) and Descriptor for palmyrah), two technical bulletins, one manual, three booklets and four technical folders were released by the dignitaries. About 80 participants from different AICRP centres participated in the meet. The inaugural session was followed by technical sessions on variety release proposal, genetic resources and crop improvement, crop production, crop protection, post-harvest technology and ToT activities.



Release of Publications by DDG Hort. Science



Best AICRP on PC centre 2024-25 to HRS, Pandirimamidi



Salient Recommendation and research highlights emerged at XXXIV AGM

- NRCOP-37 tested under AICRP on Palms Vijayarai is recommended for release as Pedavegi-1 for cultivation in Coastal region of Andhra Pradesh. The hybrid recorded oil content of 21.09% resulting in oil yield of 6.26 tonnes/ha/annum.
- Coconut accession IC 610371 which recorded a mean annual nut yield of 137.4 nuts palm⁻¹ year⁻¹, representing a 47.4% increase over the locally cultivated West Coast Tall (WCT) is recommended for release as ALR-4. The accession also produced a copra yield of 3.67 t ha⁻¹ and an oil yield of 2.32 t ha⁻¹, which were 58.9% and 50.7% higher than WCT, respectively. In addition, the tender nut water volume at seven months stage was 520 ml, compared to 380 ml in WCT, indicating its suitability for both copra and tender nut purposes.
- Multi-location evaluation of 13 dwarf coconut genotypes was approved across seven AICRP centres comprising Cameroon Red Dwarf, Laccadive Orange Dwarf, Nigerian Green Dwarf, Niu Leka Dwarf, Chowghat Yellow Dwarf, Dweep Sona, Dweep Haritha, Kalpa Suvarna, Nikkore Dwarf, Hari Papua Orange Dwarf, Andaman Orange Dwarf, Gudanjili Dwarf and Chowghat Orange Dwarf.
- Evaluation of 15 promising tall coconut genotypes for yield and wind tolerance was initiated, including Kamrupa, Orissa Giant, Kappadam, Lifou, Markham, Laguna, Niu Drau, Niu Hake, Rotuma, Rennell, New Guinea, VPM 6, Seychelles Tall, Gandevi Tall and the standard check.
- A new experiment on arecanut hybrid combination was initiated at Vittal, Mohitnagar, Goa, Wakawali, Shivamogga and Sri Vijaya

Puram using six promising hybrid combinations involving Hirehalli Dwarf, Shatamangala, Madhuramangala, Samrudhi, Andaman Arecanut Dwarf-1 and Goa Local.

- A standardized descriptor for palmyrah palm characterization was developed and released for systematic germplasm characterization, evaluation, documentation, and adoption in ongoing trials and future germplasm collections.
- Six elite accessions were identified from conserved germplasm of Palmyrah for early flowering, larger fruits size and yield for MLT.
- Early flowering was observed in two palmyrah germplasm accessions collected from Odisha and Bihar, flowering within 8–9 years after planting at Killikulam and Pandirimamidi. These accessions were identified for multiplication and multi-location evaluation.

Orientation training for newly joined scientists under AICRP on PC

Two orientation training programmes organized at ICAR–CPCRI, Kasaragod, during February 21–22 and September 22–26, 2025 for newly joined scientists of the AICRP on Plantation Crops from Killikulam, Kahikuchi, Jagdalpur, Veppankulam, Aliyarnagar, Goa, Ambajipeta, and Arsikere centres. The programme covered key aspects of crop improvement, crop production, crop protection, and processing, biotechnology and post-harvest technology (PB & PHT) through interactive sessions with scientists at CPCRI and practical demonstrations. Exposure visits to ICAR–CPCRI Regional Station, Vittal, and ICAR–CPCRI Research Centre, Kidu were also organized to familiarize participants with ongoing research activities, field experiments, gene bank management and laboratory facilities, thereby strengthening their technical capacity for effective implementation of AICRP research programmes.



Orientation training programme organized at ICAR – CPCRI, Kasaragod





IX. TRANSFER OF TECHNOLOGY & OTHER OUTREACH PROGRAMME

The AICRP on Plantation Crops continued to strengthen technology dissemination through training programmes, frontline demonstrations, field days, farmer-scientist interactions, exposure visits, and awareness campaigns across the coordinating centres. Emphasis was given to promoting improved production technologies, integrated nutrient management, integrated pest and disease management, quality planting materials, post-harvest technologies, and value addition in coconut, arecanut, cocoa, oil palm, and palmyrah. The coordinating centres organized on-campus and off-campus training programmes for farmers, extension personnel, rural youth, and entrepreneurs to enhance knowledge and facilitate adoption of improved technologies. Frontline demonstrations on improved varieties, nutrient management, water management, integrated pest and disease management, and cropping systems were conducted under farmers' field conditions to showcase the performance of recommended technologies. Regular field visits, diagnostic surveys, advisory services, and distribution of extension literature further strengthened the linkage between research and farming communities. The coordinated efforts of the AICRP network contributed to capacity building, increased awareness, and wider adoption of location-specific technologies, thereby promoting sustainable plantation crop production across diverse agro-climatic regions.

The state-wise details of Transfer of Technology (ToT) activities undertaken by the AICRP centres during the reporting period are presented below. In addition to the regular extension programmes, several centres also implemented special outreach programmes under the Scheduled Caste Sub Plan (SCSP), Tribal Sub Plan (TSP),

and North Eastern Hill (NEH) initiatives, focusing on capacity building, technology dissemination, quality planting material distribution, and livelihood enhancement among farmers in targeted regions.

Northeastern Hill (NEH)

The NEH Programme is being implemented at only two centres, Kahikuchi (Assam) and Pasighat (Arunachal Pradesh). Up to December 2025, the Kahikuchi centre conducted six training programmes and two demonstration programmes. The training programmes focused on scientific cultivation practices of coconut and other important fruit crops, improved production technology of coconut, production technology and management practices in cocoa, coconut-based multistoried cropping systems, and scientific production and management practices in coconut. These programmes were organized at HRS, Kahikuchi, Barkhal (Bongaon), Bamunigaon, Gameraimura, and Jakuwapara, benefiting 168 participants, comprising 96 men and 72 women. In addition, two demonstration programmes on pit making and planting of coconut seedlings and fertilizer application in cocoa were conducted at Bamunigaon and HRS, Kahikuchi, respectively, with the participation of 42 farmers (37 men and 5 women). At the Pasighat centre, farmers from three districts—Lower Dibang Valley, East Siang, and Upper Siang—participated in a training programme on “Intercropping in Oil Palm” and demonstration, organized by the AICRP on Plantation Crops, College of Horticulture and Forestry, Pasighat, on 18 December 2025 at the Centre of Excellence–Oil Palm demonstration block. Overall, 10 extension programmes were organized under the NEH Programme during the reporting period.



NEH Activities at Kahikuchi and Pasighat centres

Scheduled Caste Sub Plan (SCSP)

Under the Scheduled Caste Sub Plan (SCSP), extension activities were undertaken across 10 AICRP on Plantation Crops centres - Aliyarnagar, Ambajipeta, Arsikere, Kahikuchi, Bhubaneswar, Ratnagiri, Veppankulam, Killikulam, Vijayarai, and Sabour. A total of 38 training programmes were organized, benefiting 1,446 Scheduled Caste farmers through capacity-building on improved production and management practices in plantation crops. In addition to the training programmes, quality planting materials and critical agricultural inputs were distributed to facilitate the adoption of recommended technologies. At Aliyarnagar, beneficiaries received

coconut seedlings, vermicompost, *Bacillus subtilis*, *Trichoderma viride*, and TNAU Coconut Tonic. Ambajipeta distributed 1,240 kg of IDM Special to 60 farmers and supplied 3,500 East Coast Tall (ECT) coconut seedlings to 86 farmers. Vijayarai supplied 490 East Coast Tall (ECT) coconut seedlings and 3,400 cocoa seedlings to farmers. These interventions strengthened the adoption of improved crop production technologies, enhanced access to quality planting materials and farm inputs, and contributed to improving the productivity and livelihood security of Scheduled Caste farming communities.



Planting material distributed to SCSP beneficiaries

Tribal Sub Plan (TSP)

The Tribal Sub Plan (TSP) programme was implemented through six AICRP on Plantation Crops centres—Aliyarnagar, Arsikere, Jagdalpur, Ratnagiri, Pandirimamidi, and Navsari. A total of 15 training programmes were organized, benefiting 811

Scheduled Tribe farmers through capacity-building on improved production, management, and value addition in plantation crops. As part of the programme, quality planting materials and skill development support were provided to enhance technology adoption and livelihood opportunities.



Planting material distributed to TSP beneficiaries



Training Programmes Organized by AICRP on Plantation Crops Centres

Sl. No.	Centre	Major Training Topics Covered	No. of Training Programmes	No. of Participants
1	Veppankulam	Scientific coconut cultivation, crop production technologies, crop protection, integrated management practices	11	911
2	Aliyamagar	Improved coconut production technologies, crop improvement, crop management practices	15	1,042
3	Pattukkottai	Oil palm cultivation	8	213
4	Killikulam	Value addition in palmyrah	4	163
5	Ambajipeta	Advances in coconut cultivation, IDM Special application, quality planting material production	6	250
6	Pandirimamidi	Palmyrah utilization and value addition, processing technologies, entrepreneurship development, income generation	23	410
7	Vijayarai	Coconut and cocoa production technologies, quality planting material management	4	130
8	Arsikere	Advanced coconut production technologies, good production practices, improved varieties, integrated pest and disease management	6	470
9	Shivamogga	Improved arecanut production and protection technologies, INM, basal stem rot management, spindle bug management, leaf spot management, intercropping systems	5	411
10	Ratnagiri	Scientific coconut cultivation, integrated crop management, pest and disease management	34	2,080
11	Mulde	Oil palm production technology and intercropping in oil palm	6	202
12	Navsari	Scientific coconut cultivation, nutrient management, pest and disease management	6	443
13	Mondouri	Scientific coconut cultivation and improved crop management practices	1	85
14	Bhubaneswar	Scientific coconut cultivation and improved crop management practices	5	300
15	Jagdulpur	Scientific coconut cultivation and improved crop management practices	12	441
16	Sabour	Integrated nutrient and water management in coconut	1	43
17	Pasighat	Oil palm production technology, intercropping systems, nutrient management, harvesting practices	6	150
		Total	153	6809

**EFC target for the year 2025**

S.No	Points of output against the outlay	Achievements
1	Number of germplasm accessions to be collected and characterized	Coconut 3, palmyrah – 6
2	No. of improved varieties/hybrids expected to be evolved/released for cultivation	
	1. Coconut	1 (ALR 4)
	2. Oil palm	1 (NRCOP 37)
	3. Cocoa	VTLCH 3, VTLCH 2 and VTLCC 1
3	Number production technologies to be standardized/ refined or up scaled for enhanced productivity	1
4	Evolving cost effective integrated insect-pest and disease management practices	1
5	No. of Front-Line Demonstrations to be organized at the Institute/Farmers Fields including technology parks for benefit of stakeholders by main Institutes including NEH & TSP.	69
6	No. of trainings to be organized for capacity building of farmers and other stakeholders including development of new training modules	153 benefited 6809
7	Quantity (or Number, as applicable) of breeders/Truthfully Levelled seed/ rooted cuttings/mushroom spawn/ seeds of tuber crops including potato/grafted or budded or layered plants of improved varieties of horticultural crops for R (Research Institutes) & D (farmers/State Govt.)	2,50,000*
8	Valued added products/ and Technologies for processing of fruits and vegetables including waste utilization	1

* Seedlings



X. PUBLICATIONS

PC Cell

Popular article

Jerard. B. A., Sumitha, S., Subramanian, P., Jagdeesha, Chandrasekhar, G. S. and Sudarshan, G. K. 2025. Ball Copra Production and Marketing. *Indian Coconut Journal*. 35(4), 10-14. (Hindi)

Books

Jerard, B. A., Sumitha, S., Niral, V. and Hebbar, K. B. 2025. Coconut varieties released for cultivation in India. ICAR-AICRP on Plantation Crops, ICAR-CPCRI, Kasaragod 142p. ISBN: 978-81-987562-1-3.

Jerard, B. A., Sumitha, S., Hebbar, K. B., Patel, V. B. 2025. *THE PALMYRAH - A versatile palm of tropics*, ICAR-AICRP, ICAR-CPCRI, Kasaragod, Kerala, India, 104p. ISBN: 978-81-987562-0-6.

Book Chapter

Jerard, B. A., Sumitha, S., Ramesh, S. V., Krishnakumar, V. and Hebbar, K. B. 2025. Palms and Sap Yielding Palms - Their Prevalence and Utilization - Global Scenario (Page 1-40, Chapter 1) In: Coconut Palm Sap - A Natural Beverage and Source of Value-Added Products. (Eds. K.B. Hebbar, V. Krishnakumar, S.V. Ramesh), Nova Science Publishers, Inc., 415 Oser Avenue, Suite N, Hauppauge, NY, 11788, USA. 291p. ISBN: 979-8-89530-705-2. DOI: <https://doi.org/10.52305/EJMS4171>

Maheswarappa, H. P., Jerard, B. A. and Sumitha, S. 2025. Coconut: A potential plantation crop for circular economy in India. In Book: Circular Economy in Agriculture in India. (Eds: Samra, J. S. and Sharma, A. R.). Centre for Research in Rural and Industrial Development (CRRID), Chandigarh, India. ISBN: 9788185835969. pp 228-261.

Descriptor for Palmyrah

Sumitha, S. and Jerard, B. A. 2025. Descriptors for Palmyrah (*Borassus flabellifer* L.), ICAR-

AICRP on Plantation Crops, ICAR- CPCRI, Kasaragod, 56p. ISBN: 978-81-987562-2-0.

Technical folder

Jerard, B. A., Sumitha, S. and Subramanian, P. 2025. Palmyrah Cultivation. Extension Folder 2025/01. ICAR-AICRP on Plantation Crops. ICAR - CPCRI Kasaragod, 8p.

Aliyarnagar

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Boomish, P., Jahanmohan, K.R., Senthilnathan, S., Sudhalakshmi, C. and Sujatha, P. 2025. Guiding farmers in choosing the right farmer organization: A systematic Approach. *Plant Science Today*. <https://doi.org/10.14719/pst.7995> (NAAS: 6.7)

Nivetha, S., Arulprakash, R., Binoy, C. and Citra, N. 2025. Hymenopteran parasitoids of black headed caterpillar *Opisina arenosella* walker (Lepidoptera: Xylorctidae) in South India. *Plant Science Today*. <https://doi.org/10.14719/pst.5978> (NAAS: 6.90)

Presentation of papers in Seminar / Symposium / Conference / Workshop

Arulprakash, R., Alagar, M., Sudhalakshmi, C., Latha, P. and Suresh, J. 2025. Biorational approaches for the management of whitefly complex in coconut. International Conference on One Health Perspectives in Global Plant Protection Research at TNAU, Coimbatore. January 19th to 21st, 2025. Page No. 231

Sudhalakshmi, C., Rani, S., Rajalingam, G. V., Latha, P., Arulprakash, R. and Jerard, B. A. 2025. Soil Carbon Sequestration and Green House Gas Emission in Coconut based Integrated Farming System in Tamil Nadu, India. Proceeding of 89th Annual Convention of Indian Society of Soil Science at TNAU,



Coimbatore. November 18th to 20th, 2025.
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2025. Coconut varieties. Uzhavarin valarum
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Thavaprakasash, N., Sudhalakshmi, C. and
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velanmai. 17(08): 13-16.

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17(08): 22-28

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2025. Integrated Pest Management in coconut.
Uzhavarin valarum velanmai. 17(08): 29-36

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Thavaprakasash, N., Arulprakash, R., Latha,
P., Radhajeyalakshmi, R. and Jerard, B. A.
2025. Booklet on 'Cocoa cultivation'. Coconut
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Sudhalakshmi, C., Rajalingam, G.V.,
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P., Radhajeyalakshmi, R., Venkatesan, K.,
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Booklet on "Fruit farming in coconut
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Latha, P., Sudhalakshmi, C., Meena, B.,
Arulprakash, R., Thavaprakasash, N., Shanthi
M., Irene vedamani, P., Sumitha, S. and
Augustine Jerard, B. A. 2025. Coconut basal

stem rot Integrated disease management.
(English & Tamil)

Latha, P., Sudhalakshmi, C., Meena, B.,
Arulprakash, R., Thavaprakasash, N., Shanthi
M., Irene vedamani, P., Sumitha, S. and
Augustine Jerard, B. A. 2025. Preparation of
bordeaux mixture, bordeaux paste and their
uses. (English & Tamil)

Latha, P., Sudhalakshmi, C., Meena, B.,
Arulprakash, R., Thavaprakasash, N., Shanthi
M., Irene vedamani, P., Sumitha, S. and
Augustine Jerard, B. A. 2025. Coconut bud
rot Integrated disease management. (English &
Tamil)

Latha, P., Sudhalakshmi, C., Meena, B.,
Arulprakash, R., Thavaprakasash, N., Shanthi
M., Irene vedamani, P., Sumitha, S. and
Augustine Jerard, B. A. 2025. Coconut grey
leaf blight integrated disease management.
(English & Tamil)

Latha, P., Sudhalakshmi, C., Meena, B.,
Arulprakash, R., Thavaprakasash, N., Shanthi
M., Irene vedamani, P., Sumitha, S. and
Augustine Jerard, B. A. 2025. Coconut leaf
blight, integrated disease management. (English
& Tamil)

Latha, P., Sudhalakshmi, C., Meena, B.,
Arulprakash, R., Thavaprakasash, N., Shanthi
M., Irene vedamani, P., Sumitha, S. and
Augustine Jerard, B. A. 2025. Coconut leaf
rot Integrated disease management. (English &
Tamil)

Latha, P., Sudhalakshmi, C., Meena, B.,
Arulprakash, R., Thavaprakasash, N., Shanthi
M., Irene vedamani, P., Sumitha, S. and
Augustine Jerard, B. A. 2025. Coconut root
wilt integrated disease management. (English
& Tamil)

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Sudhalakshmi, C., Elayarajan, M. and
Jagadeeswari, D. 2025. Text Book on



Fundamentals of Soil Science. Agrobios Publishers (ISBN No. 978-81-981289-1-1)

Sudhalakshmi, C., Elayarajan, M. and Jagadeeswari, D. 2025. Fundamentals of Soil Science. Agrobios Publishers, Jodhpur (ISBN: 978-93-49317-16-1)

Veppankulam

Research Articles

Surulirajan, M., Vinayak Hegde, Senthil Kumar, N., Kumanan, K., Sudhalakshmi, C., Anandha Krishnaveni, S., Paramasivam, M., Sumitha, S. and Jerard, B. A. 2025. Novel fungicidal management for basal stem rot disease of coconut: In vitro and In vivo perspective. *Plant Science Today*, 12(3):1-9.

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Kumanan, K., Shanmuganathan, M., Nithya Devi, A. and Sheeba Joyce Roseleen, S. 2025. Analysis of biomolecules associated with tender Coconut water of six dwarf Coconut varieties (*Cocos nucifera* L.). 14th NABS National Conference on Innovations in Biology and Biotechnology for their Application in Agriculture and Animal Sciences for Food Security. AC&RI, Kudumiyamalai

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Manivannan, M. I. and Meenakshi, V. 2025. Preparation of tuber flour and fibre in Palmyrah. SPIC Pannai Cheithi. Vol.11, Issue 04. pp 16-18.

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Krishnamoorthy, V. and Kumanan, K. 2025. Oil palm production technologies, Agricultural Research Station, Pattukkottai.

Krishnamoorthy, V. and Kumanan, K. 2025. Production Technologies for oil cultivation, Agricultural Research Station, Pattukkottai.

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Anoosha, V., Chalapathi Rao, N.B.V., Neeraja, B., Govardhan Rao, V., Kireeti, A., Naram Naidu, L. and Jerard, B. A. 2025. Integrated Pest Management of Coconut Rugose Spiraling Whitefly *Aleurodicus Rugioperculatus* Martin. *Indian Journal of Entomology* 88(1): 121-123. DoI. No.: 10.55446/IJE.2025.2197. NAAS rating: 5.59.

Anoosha, V., Chalapathi Rao, N.B.V., Govardhan Rao, V., Kireeti, A. and Neeraja, B. 2025. Impact of Inundative Releases of Parasitoids (*Bracon hebetor* and *Goniozus nephantidis*) against Coconut Black Headed Caterpillar under Severe Infestations. *Indian Journal of Ecology*, 52(6): 1594-1597. NAAS rating: 5.38.



Govardhan Rao, V., Neeraja, B., Kireeti, A. and Anoosha, V. 2025. Status of coconut diseases in Andhra Pradesh, India. *Journal of Eco-friendly Agriculture*, 20(2): 439-446. NAAS rating: 5.36.

Govardhan Rao, V., Neeraja, B., Snehalatha Rani, A., Chalapathi Rao, N. B. V., Anoosha, V., Kireeti, A., Sumitha, S. and Jerard, B. A. 2025. Economic impact of coconut diseases and their management through sustainable and eco-friendly approaches: An extension report on technology dissemination to boost productivity and resilience in coconut plantations of Andhra Pradesh. *Indian Journal of Plant Protection*, 53 (2): 85-96. NAAS rating: 4.46.

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Govardhan Rao, V., Mutyala naidu, M., Anoosha, V., Kireeti, A., Sumitha, S. and Jerard B. A. 2025. *Phytophthora palmivora*: A facultative pathogen of coconut and cocoa cropping system -ecological dynamics in Tropics and management strategies-A Comprehensive Review. *Plant Archives*, 25 (2): 2493-2506. NAAS rating: 5.59.

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Govardhan Rao, V., Neeraja, B., Chalapathi Rao, N.B.V., Mamatha, K. and Kireeti, A. 2025. Udyana Pantalalo Sukshma

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Chalapathi Rao, N. B. V. and Anoosha, V. 2025. Biological Control Approaches against Major *Lepidopteran* Insect Pests of Coconut in Andhra Pradesh. Book on Emerging Insect Pests and Diseases of Coconut and their management. 68-73 pp. ISBN no: 978-81-985383-8-3 ICAR-NBAIR Document No.04/2025.

Chalapathi Rao, N. B. V and Anoosha, V. 2025. Large Scale Mass Production of Predator, *Apertochrysa astur* for Management of Invasive Whiteflies in Coconut. Book on Emerging Insect Pests and Diseases of Coconut and their management. 74-77 pp. ISBN no: 978-81-985383-8-3 ICAR-NBAIR Document No.04/2025.

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Phani Kumar, J., Vengaiah, P. C., Rajendra Prasad, K., Narasimha Murthy, G., Jerard, B. A., and Sumitha, S. 2025. Morpho-phenological diversity and performance of Palmyrah (*Borassus flabellifer* L.) accessions. *Electronic Journal of Plant Breeding*, 16(4), 463–469. <https://doi.org/10.37992/2025.1604.060>

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Pamphlet

Susila, T., Madhavi Latha, P. and Ravi Kiran, T. 2025. Chocolate making from cocoa beans (Cocoa beans nundi chocolate tayari – Telugu)

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Pathak, S., Borah, A. and Mahanta, P. (2025). Integrated Pest Management (IPM) in Coconut (Assamese).

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Malshe, K. V., Wankhede S. M., Ghavale, S. L. and Kshirsagar, P. J. 2025. Feasibility assessment of bitter gourd (*Momordica charantia*) as intercrop in coconut (*Cocos nucifera*) garden. *International Journal of Agriculture Extension and Social Development* P-ISSN: 2618-0723, E-ISSN: 2618-0731 NAAS Rating: 5.04 8(5): 325-326.

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Wankhede, S. M., Malshe, K. V. and Joshi Makrand. 2025. Management on bud rot in coconut. *Agrowon* 08 June 2025, pp. 11.

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Popular articles

Intercropping of turmeric under coconut garden. Article published in *Divya Bhaskar* Daily Gujarathi language Newspaper on dated 26/03/2025.

Doubling the farmers income by growing of turmeric under old coconut garden. Article published in *Divya Bhaskar* Daily Gujarathi language Newspaper on dated 03/05/2025.

Soil, climate and planting methods in coconut. Article published in *Divya Bhaskar* Daily Gujarathi language Newspaper on dated 17/05/2025.

Fruit dropping and their remedies in coconut. Article published in *Divya Bhaskar* Daily Gujarathi language Newspaper on dated 02/08/2025.

Jagdalpur

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Extension/Technical bulletins

Waman, A. A. and Bohra, P. 2025. Broad Dhaniya Intercropping in Arecanut for the Prosperity of Island Farmers. Technical Folder, ICAR-CIARI, Sri Vijaya Puram, pp. 1-4.

वामन अजित अरुण और बोहरा पूजा (2025) । द्वीपों के किसानों की समृद्धि के लिए सुपारी में ब्रॉड धनिया का अंतरफसलन। तकनीकी फोल्डर, भा.कृ.अनु.प. केंद्रीय द्वीप कृषि अनुसंधान संस्थान, श्रीविजयापुरम, पृ. सं.1-4.

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Waman, A. A. and Bohra, P. 2024. Culantro Cultivation in Arecanut Interspaces: A Profitable System for the Island Farmers. *Spice India*, 37(10):12-13.

No publications were reported during the reporting period from the following centres: Arsikere, Bavikere, Mulde, Wakawali, Bhubaneswar, Sabour, Pilicode, Thrissur, Mondouri, Sirsi, Shivamogga, Kondamallepally, Pasighat, Goa, and Pedavegi.

Awards:

- Dr. P C Vengaiah, Sr. Scientist (FST) & Head was received Best service in tribal area award by PO ITDA on 15th August 2025
- Dr. P C Vengaiah, Sr. Scientist (FST) & Head was awarded “Fellow Institution of Engineers (India) during 2025”
- HRS Pandirimamidi received Best AICRP center Award by ICAR- AICRP on Plantation Crops for the year 2024-25
- Dr. P C Vengaiah, Sr. Scientist (FST) & Head was Awarded “Best Research Award” in Food technology by Eruvaaka foundation during 2025.



XI. WEATHER DATA OF AICRP CENTRES (2025)

ALIYARNAGAR					
Month	Temperature (°C)		RH (%)		Rainfall (mm)
	Max.	Min.	Forenoon	Afternoon	
January	30.8	28.2	90.2	80.0	4.6
February	34.5	29.5	90.8	71.3	0
March	36.4	28.7	90.9	64.7	11.0
April	35.6	28.7	92.3	69.3	112.5
May	35.1	24.3	88.9	74.4	149.3
June	37.5	23.6	85.2	77.9	115.4
July	30.9	27.8	85.8	75.7	69.6
August	31.7	28.2	86.8	78.9	80.3
September	34.9	28.6	80.1	64.3	17.3
October	31.7	29.4	86.6	71.8	120.2
November	30.6	23.3	85.3	69.7	80.4
December	30.7	22.5	88.0	72.7	49.8

AMBAJIPETA					
Month	Temperature (°C)		RH (%)		Rainfall (mm)
	Max.	Min.	Forenoon	Afternoon	
January	30.2	18.2	97.1	51.3	0
February	33.9	20.1	100.0	46.3	0
March	35.4	22.2	98.7	50.1	0
April	37.7	24.3	98.7	60.2	22.0
May	34.5	25.7	98.4	60.8	28.5
June	32.5	25.7	84.0	56.9	28.5
July	43.2	26.3	75.7	63.7	44.0
August	32.4	26.2	91.4	71.1	138.1
September	32.7	25.7	85.2	68.5	24.0
October	31.4	24.9	92.6	70.3	136.5
November	31.4	21.8	74.1	53.0	17.5
December	27.5	17.2	72.1	49.4	23.0



ARSIKERE					
Month	Temperature (°C)		RH (%)		Rainfall (mm)
	Max.	Min.	Forenoon	Afternoon	
January	30.9	17.6	94.1	54.6	0
February	34.0	18.7	92.2	44.2	0
March	35.6	19.1	89.8	38.9	9.8
April	35.8	20.6	88.0	52.0	32.3
May	33.0	20.7	96.7	57.1	172.1
June	29.3	20.2	97.1	69.2	17.2
July	30.5	19.9	97.6	74.7	18.5
August	30.2	19.7	98.9	73.9	64.2
September	30.8	19.4	98.4	68.5	15.4
October	31.0	19.2	99.4	65.1	353.5
November	30.3	17.5	92.2	61.0	0
December	30.0	17.1	91.5	51.5	0

BAVIKERE					
Month	Temperature (°C)		RH (%)		Rainfall (mm)
	Max.	Min.	Forenoon	Afternoon	
January	31.2	16.9	72.0	46.0	1.9
February	33.4	17.6	70.0	44.0	1.6
March	35.8	20.8	67.0	41.0	11.2
April	36.3	22.1	74.0	46.0	55.8
May	34.6	22.6	79.0	53.0	72.6
June	29.6	21.5	82.0	60.0	163.2
July	27.7	21.2	90.0	78.0	216.7
August	27.7	22.1	90.0	78.0	408.7
September	29.3	21.9	88.0	72.0	129.3
October	30.2	21.5	86.0	68.0	152.0
November	30.0	19.2	81.0	59.0	46.6
December	30.0	17.7	76.0	50	10.5



BHUBANESWAR					
Month	Temperature (°C)		RH (%)		Rainfall (mm)
	Max.	Min.	Forenoon	Afternoon	
January	28.6	15.3	93.0	53.0	0
February	33.3	20.6	94.0	48.0	29.1
March	35.4	22.2	90.0	46.0	11.0
April	36.3	24.9	88.0	54.0	72.1
May	36.5	25.9	89.0	59.0	69.8
June	34.1	25.7	91.0	69.3	323.1
July	32.5	25.3	93.0	75.0	406.3
August	32.7	25.4	92.0	79.0	227.1
September	33.0	25.0	93.5	76.1	199.1
October	32.9	23.8	92.0	71.0	256.1
November	30.7	17.3	85.0	47.0	0
December	28.0	13.3	89.0	47.0	0

GOA					
Month	Temperature (°C)		RH (%)		Rainfall (mm)
	Max.	Min.	Forenoon	Afternoon	
January	34.8	20.3	79.1	36.5	0
February	36.0	21.4	84.7	42.4	0
March	36.2	23.6	83.2	48.9	2.6
April	35.3	25.7	83.2	54.8	9.8
May	33.2	25.1	86.3	68.0	579.4
June	30.8	24.2	91.6	80.2	765.8
July	29.4	23.6	92.5	84.5	1105.7
August	29.1	23.7	94.1	83.3	840.1
September	29.8	23.8	93.2	78.2	228.3
October	32.5	23.8	90.6	69.8	397.1
November	33.3	21.7	80.3	48.6	172.3
December	33.7	20.0	67.6	33.7	0



JAGDALPUR					
Month	Temperature (°C)		RH (%)		Rainfall (mm)
	Max.	Min.	Forenoon	Afternoon	
January	29.1	10.2	83.0	34.0	0
February	32.9	13.9	80.7	32.5	0
March	35.6	16.7	80.5	30.5	0.6
April	36.0	20.7	83.6	44.5	87.0
May	33.6	21.8	85.5	58.2	248.4
June	31.4	22.6	89.7	67.7	137.0
July	28.5	22.1	92.6	78.5	550.7
August	29.8	22.3	92.3	75.9	501.1
September	30.7	22.0	93.9	74.3	287.3
October	30.4	19.8	93.4	65.6	141.4
November	29.5	12.6	84.2	38.8	0
December	27.8	7.2	81.3	28.3	0.6

KAHIKUCHI					
Month	Temperature (°C)		RH (%)		Rainfall (mm)
	Max.	Min.	Forenoon	Afternoon	
January	24.4	13.7	94.1	78.0	3.1
February	26.3	14.3	85.8	64.6	1.2
March	30.6	17.8	85.1	37.4	18.3
April	31.7	21.6	88.9	62.3	473.1
May	30.3	23.7	98.3	71.0	439.1
June	33.3	26.6	92.9	73.9	186.6
July	33.6	27.4	92.0	73.3	208.4
August	32.2	26.7	97.4	77.6	316.6
September	33.0	26.4	97.6	77.6	199.6
October	31.1	24.1	94.3	78.4	50.6
November	28.1	19.1	95.1	78.6	27.8
December	24.7	14.2	94.8	80.5	0



KILLIKULAM					
Month	Temperature (°C)		RH (%)		Rainfall (mm)
	Max.	Min.	Forenoon	Afternoon	
January	31.0	16.2	68.9	52.0	29.6
February	34.2	16.3	68.9	47.4	0
March	36.0	16.5	69.6	45.1	6.6
April	37.8	18.7	67.8	39.2	5.0
May	37.2	19.2	65.8	45.1	33.0
June	37.5	19.0	63.5	42.8	3.8
July	37.1	20.0	57.2	38.4	3.0
August	36.9	18.6	60.9	39.4	67.0
September	37.5	19.0	60.4	38.7	117.8
October	34.4	17.0	68.6	50.9	41.4
November	31.7	15.6	72.6	57.8	201.0
December	32.1	14.8	73.4	55.4	152.8

KONDAMALLEPALLY					
Month	Temperature (°C)		RH (%)		Rainfall (mm)
	Max.	Min.	Forenoon	Afternoon	
January	30.8	15.4	98.0	39.7	0
February	35.6	17.8	90.2	25.8	0
March	37.7	20.5	83.6	25.6	6.6
April	39.6	25.0	71.5	23.5	19.1
May	37.7	26.0	81.9	37.5	37.6
June	35.9	25.8	88.7	42.6	90.9
July	32.7	24.9	91.1	61.1	128.2
August	32.0	24.0	99.2	76.1	266.8
September	32.5	24.7	94.3	61.7	170.3
October	34.0	21.8	90.2	44.1	0.6
November	32.1	19.1	85.1	47.1	18.1
December	30.7	15.3	85.3	42.8	0



MONDOURI					
Month	Temperature (°C)		RH (%)		Rainfall (mm)
	Max.	Min.	Forenoon	Afternoon	
January	24.7	11.1	98.4	60.7	0
February	29.1	15.0	96.7	52.4	1.9
March	33.8	19.3	94.3	38.8	0.1
April	34.9	23.2	92.4	57.7	2.1
May	35.1	24.6	93.8	65.9	6.4
June	33.7	25.4	96.7	79.6	9.5
July	32.0	25.1	98.4	86.6	14.0
August	32.5	24.6	96.5	82.2	10.0
September	34.1	24.9	95.7	75.9	3.8
October	32.7	22.4	96.4	73.1	4.6
November	28.9	14.9	96.7	59.5	0
December	24.2	11.2	97.4	65.8	0

MULDE					
Month	Temperature (°C)		RH (%)		Rainfall (mm)
	Max.	Min.	Forenoon	Afternoon	
January	34.6	15.8	94.0	43.0	12.4
February	36.4	15.9	93.0	39.0	0
March	37.0	19.0	90.0	43.0	0
April	37.4	21.9	86.0	47.0	0
May	37.1	22.9	87.0	52.0	78.6
June	31.1	21.9	94.0	80.0	1067.7
July	29.3	20.9	96.0	90.0	2041.3
August	30.4	21.4	94.0	82.0	1071.2
September	31.2	21.6	93.0	80.0	565.0
October	33.3	21.0	94.0	68.0	365.2
November	34.8	16.9	92.0	51.0	102.4
December	33.9	16.6	92.0	50.0	1.6



NAVSARI					
Month	Temperature (°C)		RH (%)		Rainfall (mm)
	Max.	Min.	Forenoon	Afternoon	
January	31.7	14.5	83.1	38.9	0
February	34.1	14.3	78.4	30.4	0
March	36.4	17.4	81.2	29.4	0
April	36.1	22.1	91.1	47.3	0
May	33.5	24.1	88.0	65.4	72.0
June	32.0	24.3	91.5	76.7	305.0
July	30.3	24.0	94.9	86.0	546.0
August	30.6	23.6	92.4	82.4	402.0
September	31.1	23.2	94.0	81.0	293.0
October	33.3	23.4	90.6	60.2	220.0
November	32.0	18.8	93.3	52.2	11.0
December	31.8	16.9	92.1	32.9	0

PANDIRIMAMIDI					
Month	Temperature (°C)		RH (%)		Rainfall (mm)
	Max.	Min.	Forenoon	Afternoon	
January	27.3	19.6	94.0	42.0	0
February	30.3	20.9	93.0	38.0	0
March	35.7	22.1	92.0	36.0	18.0
April	38.1	20.2	90.0	38.0	41.4
May	39.6	18.9	90.0	45.0	141.6
June	39.1	22.8	80.0	65.0	196.0
July	34.4	26.4	76.0	72.0	349.4
August	35.3	22.5	80.0	76.0	237.8
September	34.3	22.6	90.0	73.0	158.6
October	34.0	26.2	89.0	71.0	169.8
November	33.7	26.8	93.0	64.0	6.2
December	30.3	20.3	98.0	38.0	0



PATTUKOTTAI					
Month	Temperature (°C)		RH (%)		Rainfall (mm)
	Max.	Min.	Forenoon	Afternoon	
January	39.0	35.0	90.7	63.5	0
February	39.0	35.0	93.1	48.6	33.0
March	39.0	35.0	91.6	58.9	104.7
April	39.0	35.0	90.7	59.9	81.3
May	38.8	34.6	82.6	62.5	129.9
June	38.8	35.0	87.7	57.9	13.0
July	32.5	29.5	76.0	68.3	30.5
August	26.1	24.9	80.7	63.9	111.2
September	26.3	24.6	51.1	53.9	64.7
October	26.3	24.7	74.5	70.0	206.2
November	26.4	24.2	75.2	70.2	320.4
December	26.0	24.0	76.2	71.0	33.5

PILICODE					
Month	Temperature (°C)		RH (%)		Rainfall (mm)
	Max.	Min.	Forenoon	Afternoon	
January	32.6	20.7	93.0	60.5	3.6
February	33.2	22.1	93.0	63.2	0
March	34.1	24.8	90.9	65.8	14.1
April	33.9	25.2	88.2	65.9	35.2
May	32.0	24.5	91.0	77.2	918.1
June	29.9	23.8	95.8	86.2	972.6
July	28.1	23.2	97.3	89.2	1196.8
August	28.8	23.6	95.5	85.7	580.4
September	29.5	23.7	94.7	82.2	277.6
October	30.4	24.1	94.5	81.1	228.8
November	31.5	23.0	92.9	75.6	21.0
December	31.7	19.6	93.6	69.3	7.0



RATNAGIRI					
Month	Temperature (°C)		RH (%)		Rainfall (mm)
	Max.	Min.	Forenoon	Afternoon	
January	33.7	19.8	65.7	56.6	0
February	35.0	20.0	67.0	56.0	0
March	34.6	22.7	67.0	61.0	0
April	33.5	25.1	77.3	65.6	0.9
May	32.0	24.9	81.0	75.0	20.8
June	30.6	25.1	87.2	81.5	23.1
July	29.6	24.8	87.7	85.8	26.3
August	28.6	24.4	91.5	87.4	38.3
September	29.0	23.8	91.4	85.6	91.4
October	32.7	24.0	83.3	77.0	8.8
November	33.2	20.9	66.2	64.1	4.7
December	33.6	18.7	48.9	51.3	0

SABOUR					
Month	Temperature (°C)		RH (%)		Rainfall (mm)
	Max.	Min.	Forenoon	Afternoon	
January	20.7	9.0	87.1	78.1	0
February	26.7	10.9	85.1	74.9	0.4
March	31.0	16.8	82.3	68.4	0
April	34.2	20.3	80.1	62.3	88.1
May	34.3	23.9	85.1	67.0	35.4
June	34.3	26.3	79.6	63.0	132.8
July	31.8	26.4	86.4	80.2	351.7
August	32.5	26.3	84.0	78.4	186.8
September	33.2	26.3	83.0	76.1	55.0
October	31.2	22.7	84.6	77.8	174.3
November	27.8	14.5	85.9	73.0	76.4
December	21.5	12.1	88.5	79.1	0



SHIVAMOGGA					
Month	Temperature (°C)		RH (%)		Rainfall (mm)
	Max.	Min.	Forenoon	Afternoon	
January	31.2	15.1	77.1	50.9	0.0
February	33.9	17.1	77.5	37.2	0.0
March	35.6	20.2	77.6	38.3	3.6
April	34.6	22.6	79.5	42.9	135.4
May	31.7	22.3	81.5	61.7	120.6
June	29.4	20.7	84.6	74.0	83.8
July	27.1	19.4	90.5	85.1	138.0
August	26.8	19.3	90.1	81.1	195.0
September	28.6	19.9	87.4	75.1	79.0
October	30.0	20.4	84.9	65.4	92.6
November	30.1	17.9	78.4	56.7	0.0
December	29.6	14.6	71.5	47.7	0.0

SIRSI					
Month	Temperature (°C)		RH (%)		Rainfall (mm)
	Max.	Min.	Forenoon	Afternoon	
January	31.0	15.0	74.0	54.0	0.0
February	34.0	18.0	69.0	57.0	0.0
March	37.0	21.0	69.0	56.0	13.8
April	37.0	22.0	77.0	70.0	65.4
May	33.0	22.0	90.0	81.0	296.6
June	30.0	21.0	94.0	89.0	839.0
July	29.0	21.0	97.0	91.0	1084.4
August	28.0	21.0	93.0	89.0	690.4
September	29.0	20.0	90.0	89.0	186.0
October	30.0	20.0	90.0	89.0	63.8
November	30.0	17.0	86.0	73.0	0.0
December	29.0	13.0	71.0	44.0	0.0



SRI VIJAYA PURAM					
Month	Temperature (°C)		RH (%)		Rainfall (mm)
	Max.	Min.	Forenoon	Afternoon	
January	30.2	24.4	70.0	72.2	74.2
February	30.8	23.7	71.1	71.3	28.2
March	32.1	24.8	66.9	68.9	0.2
April	31.7	25.5	74.7	82.6	163.6
May	31.4	25.5	79.7	85.7	466.8
June	30.0	25.1	87.2	86.7	754.1
July	30.3	25.7	85.3	84.9	343.1
August	30.0	24.5	84.4	87.6	433.6
September	29.4	24.3	87.0	91.3	805.4
October	30.3	24.6	80.6	87.8	292.2
November	30.6	24.9	72.9	80.4	66.0
December	30.1	24.5	72.4	75.6	66.6

THRISSUR					
Month	Temperature (°C)		RH (%)		Rainfall (mm)
	Max.	Min.	Forenoon	Afternoon	
January	33.0	23.8	71.0	44.0	0
February	36.0	23.4	75.0	31.0	0
March	36.3	25.4	87.0	53.0	34.8
April	39.8	25.4	92.0	63.0	90.1
May	32.5	24.6	87.0	74.0	620.4
June	30.5	23.9	96.0	81.0	850.5
July	29.3	23.1	97.0	85.0	728.4
August	29.8	23.6	97.0	81.0	712.5
September	31.9	24.2	95.0	68.0	206.5
October	32.2	23.9	93.0	66.0	369.6
November	32.1	23.8	85.0	57.0	12.0
December	31.9	22.3	76.0	51.0	46.9



VEPPANKULAM					
Month	Temperature (°C)		RH (%)		Rainfall (mm)
	Max.	Min.	Forenoon	Afternoon	
January	39.0	35.0	90.7	63.5	26.0
February	39.0	35.0	93.1	48.6	37.2
March	39.0	35.0	91.6	58.9	108.8
April	39.0	35.0	90.7	59.9	73.2
May	38.8	34.6	82.6	62.5	123.7
June	38.8	35.0	87.7	57.9	33.6
July	32.5	29.5	76.0	68.3	28.0
August	26.1	24.9	80.7	63.9	91.4
September	26.3	24.6	51.1	53.9	32.4
October	26.3	24.7	74.5	70.0	119.7
November	25.2	23.7	85.4	73.0	318.8
December	22.5	21.2	62.8	70.9	61.6

WAKAWALI					
Month	Temperature (°C)		RH (%)		Rainfall (mm)
	Max.	Min.	Forenoon	Afternoon	
January	29.5	12.9	94.1	56.0	13.0
February	31.4	12.4	90.2	49.5	0
March	34.6	17.8	88.2	50.7	0
April	34.1	20.8	88.0	63.2	0.2
May	32.9	23.0	86.7	67.3	8.6
June	31.0	23.1	91.2	75.2	648.6
July	28.2	23.1	95.2	89.4	1213.8
August	28.2	22.5	95.0	90.6	1094.9
September	29.1	22.3	92.9	85.0	44.3
October	30.7	19.9	92.2	77.7	139.1
November	32.5	15.5	89.9	54.3	0
December	32.9	16.1	92.8	52.0	0

* Meteorological data could not be included for the Pasighat and Vijayarai centres due to repair and maintenance of weather station.



XII. STAFF POSITION

Head Quarters	
Project Coordinator's Cell, ICAR-CPCRI, Kasaragod, Kerala - 671 124	
Project Coordinator	: Dr. B. Augustine Jerard
Scientist (SPMA)	: Dr. Sumitha S
Personal Assistant	: Mrs. Arathi A R
SRF	: Mrs. Ananya P S (up to February 2025) Mrs. Elizabeth Mathew (from March 2025 onwards)
Clerical Assistant	: Mr. Suresh (On contractual)

ICAR- AICRP on Palms Coordinating Centres	
Horticultural Research Station, Ambajipeta	
1.	Dr. V. Govardhan Rao, Asst. Professor (Plant Pathology)
2.	Dr. Vadde Anoosha, Asst. Professor (Agri. Entomology)
3.	Sri. A. Kireethi, Asst. Professor (Horticulture)
4.	Dr. K. Mamatha, Associate Professor (Horticulture) (up to May 2025)
5.	Dr. M. Sanghamitra, Scientist (Horticulture) (26.07.2025 onwards)
Horticultural Research Station, Pandirimamidi	
6.	Dr. J. Phani Kumar, Scientist (Horticulture)
7.	Dr. P. C. Vengaiah, Sr. Scientist (Food Science & Technology)
Horticultural Research Station, Kahikuchi	
8.	Dr. D. Chowdhury, Pr. Scientist (Plant Breeding)
9.	Dr. A. Borah, Scientist (Horticulture)
Saheed Gundadhur College of Agriculture & Research Station, Jagdalpur	
10.	Dr. Beena Singh, Asst. Professor (Horticulture)
11.	Dr. Bhujendra Kumar Kothari, Asst. Professor (Agronomy)
Horticultural Research & Extension Station, Arsikere	
12.	Dr. Sudharshan G. K, Asst. Professor (Plant Pathology)
13.	Dr. G.S. Chandrasekhar, Asst. Professor (Agri. Entomology) (up to July 2025)
14.	Dr. Prashant, Asst. Professor (Agri. Entomology) (from August 2025 onwards)
15.	Dr. Jagadeesha, Associate Professor (Horticulture)
Regional Coconut Research Station, Bhatye, Ratnagiri	
16.	Dr. K. V. Malshe, Associate Professor (Agronomy)
17.	Dr. S. M. Wankhede, Asst. Professor (Agri. Entomology)
18.	Dr. S. L. Ghavale, Asst. Professor (Horticulture)



Department of Horticulture, OUAT, Bhubaneswar	
19.	Dr. A. K. Sahoo, Asst. Professor (Horticulture)
Coconut Research Station, Aliyarnagar	
20.	Dr. Arul Prakash, Associate Professor (Agri.Entomology)
21.	Dr. C. Sudhalakshmi, Associate Professor (Soil Science)
22.	Dr. G. V. Rajalingam, Professor (Horticulture)
23.	Dr. Latha, Associate Professor (Plant Pathology)
Coconut Research Station, Veppankulam	
24.	Dr. K. Kumanan, Associate Professor (Horticulture)
25.	Dr. M. Surulirajan, Associate Professor (Plant Pathology)
26.	Dr. N. Senthilkumar, Associate Professor (Agronomy)
Agricultural College & Research Institute, Killikulam	
27.	Dr. M. I. Manivannan, Assoc. Professor (Horticulture)
28.	Dr. V. Meenakshi, Assoc. Professor (FSN)
Department of Plantation Crops, BCKVV, Mondouri	
29.	Dr. A. B. Sarangi, Professor (Horticulture)
Agricultural Research Station, Pattukkottai	
30.	Dr. V. Krishnamoorthy, Professor (Horticulture)
Regional Agricultural Research Station, Pilicode	
31.	Dr. Remya Rajan, Asst. Professor (Horticulture)
Cocoa Research Centre, KAU, Thrissur	
32.	Dr. Aswini A., Assistant Professor (Horticulture)
College of Horticulture, Mulde	
33.	Dr. M. S. Shedge, Asst. Professor (Horticulture)
Horticultural Research Station, Vijayarai	
34.	Dr. Madhavi Latha, Asst. Professor (Horticulture) (up to May 2025)
35.	Dr. T. Ravi Kiran, Scientist (Horticulture) (from May 2025 onwards)
Bihar Agricultural College, Sabour	
36.	Dr. Ruby Rani, Asst. Professor (Horticulture)
37.	Dr. Ahmar Aftab, Associate Professor (Horticulture)
Navsari Agricultural University, Navsari	
38.	Dr. Pankaj P. Bhalerao, Asst. Professor (Fruit Science)
College of Horticulture & Forestry, Pasighat	
39.	Dr. Barun Singh, Assoc. Professor (Horticulture)
UAHS, Shivamogga	
40.	Dr. Shreeshail Sonyal, Asst. Professor (Plant Pathology)



AHRS, Bavikere, College of Agriculture, Navile, Shivamogga	
41.	Dr. Pavithra A. H., Assistant Professor (Agronomy) (up to July 2025)
42.	Dr. Yogesh L.N., Assoc. Professor (Agronomy) (from July 2025 onwards)
CES, Wakawali (Dapoli)	
43.	Dr. R. C. Gajbhiye, Professor (Horticulture)
ICAR- CCARI, Goa	
44.	Dr. V. Paramesha, Sr. Scientist (Agronomy) (up to July 2025)
45.	Dr. Akula Chinapolaiah, Sr. Scientist (SPMAP) (from July 2025 onwards)
ICAR- IOPR, Pedavagi	
46.	Dr. G. Ravichandran, Principal Scientist (Seed Science)
ICAR- CIARI, Sri Vijaya Puram	
47.	Dr. Ajit Arun Waman, Sr. Scientist (SPMA)
HRS, Konda Malleshpally, Telangana (ASKLTSHU)	
48.	Dr. C. H. Raja Goud, Senior scientist (Entomology)
Horticulture Research and Extension Centre, Sirsi, Uttara Kannada	
49.	Dr. Sudheesh Kulakarni, Scientist (Horticulture)
ICAR-CPCRI, Kasaragod, Kerala	
50.	Dr. P. Subramanian, Principal Scientist and Head

